Chapter 14
Business Consulting and Development

The SRI Approach

The range of business development work at SRI has been enormously broad. That breadth stemmed both from the early corporate planning methodologies SRI developed and from its broad-based science and technology organization. While its methodological innovations created some of the first comprehensive corporate planning tools, SRI's technological underpinnings also enabled it to make crucial marketplace distinctions. Few, if any, of the competing management consulting firms were able to make such distinctions. Here were some overall characteristics of the SRI approach:

- New corporate or institutional planning methods were introduced that were well grounded in organizational theory and ongoing practice.
- The work was often technology-centered; that is, it dwelt on the relationship between management and its use of technology. The up-to-date nature of science and technology in the rest of SRI, though not always explicitly invoked, formed a basis for understanding how technology could or could not be used.
- The work was objective and care was taken not to compromise that objectivity in whatever relationship ensued.
- Though there were a few exceptions in the telecommunications, chemical, and petroleum industries, projects were generally not oriented toward large-scale, detailed, and long-lasting overhaul of corporate infrastructures.
- The problems tackled were often "rifle shots" rather than broad examinations.
- The work was almost entirely client-private, making it difficult to describe openly.

The latter two characteristics are especially poignant in light of the unscrupulous practices of some large accounting/consulting firms that have recently come to light. As a result of their desires for lucrative, long-term relations with their clients, they strayed from giving objective and truthful advice. In my long experience at SRI, objectivity was never a negotiable or abrogated aspect of its work.

We will start by recounting the development of planning methodology at SRI and, as strategic planning became a vital part of operations, by indicating how such planning gained a respectable foothold in corporate America. Other innovations such as new marketing analysis tools and providing planning information also flourished. We then offer selected accounts of how SRI contributed to important changes in corporate goals and missions. Finally, Appendix B briefly covers the regrettable atrophy of nearly all of SRI's Business Group.

Contributions to Corporate Planning

In the early 1950s, the pace of change in the United States seemed to quicken. New technologies were beginning to pour out of laboratories at unprecedented rates. Businesses had to somehow gauge these changes as opportunities or threats and react accordingly. These challenges to corporate life became an important stimulus for the fledgling Institute, and in the late 1950s SRI took initiatives in the area of corporate consulting, particularly planning, that brought it to a place of preeminence in that field.[A] Drawing on its technical depth in industrial sectors like electronics, chemicals, petroleum, forest products, and a few others, SRI launched a variety of research and consulting services for the business community. In that endeavor adherence to Stanford's stipulation that consulting was an inappropriate activity for SRI had began slowly to erode.

Principals from the Institute group called Economics Research began to help corporations

assess their strengths and weaknesses in the context of their changing business environments and to assist them in aligning their businesses. SRI believed there were three motivations for Corporate America to focus more intently on the future: growing complexity in operations, including international operations; the increased pace of decisions needed to remain competitive; and the variety of outside influences occurring, including the march of technology. The work was, in effect, corporate planning—supplementing the skill of entrepreneurs, who in simpler times would have gone it alone.

Because most of this SRI work was carried out for individual companies, the results were proprietary, and the generic innovations with which SRI helped systematize long-range corporate planning were themselves only slightly more public. This was also the time when SRI's widely recognized Long-Range Planning Service (LRPS), a subscription service for the corporate sector, was launched. That service continues today, over 4 decades later, in an SRI-affiliated company called SRI Consulting Business Intelligence. A brief account of the genesis and the contributions of that planning work follows, including important planning methodologies and examples of individual corporate assistance and planning services.

The Origins of the Long-Range Planning Service

In essence, SRI embarked in the 1950s on a mission of enabling the industrial sector to better cope with change. LRPS, housed in a program of the same name, was intended as a natural adjunct to that mission. SRI's Robert W. Smith (see Figure 14-1) provided the vision for this subscription service; it was based on ideas he had developed while at the Stanford Graduate School of Business. It was also motivated by the fact that SRI had competencies in a number of technical fields and that the economics part of SRI needed a revenue stream that could help smooth out the income from its characteristically short-term projects. He discussed the idea with Hoot Gibson in the early 1950s, but when they brought it before the Institute's Business Advisory Council, there wasn't much interest. So they set it aside.

A few years later, in the mid-1950s, Smith, then assistant director of Economics Research, invested a bit of his overhead money in trying

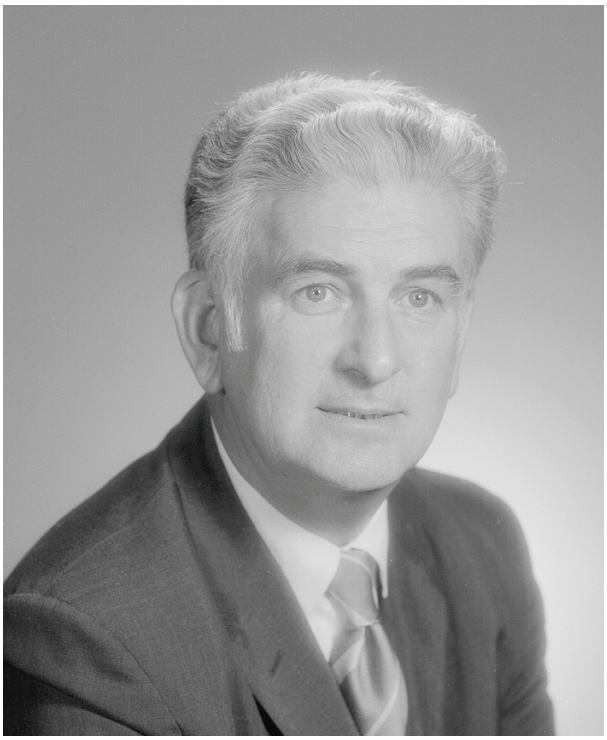

Figure 14-1. Economist Robert W. Smith.

to find out why certain companies in the decade before 1949 had grown so rapidly. He also had the insight to consider how they were doing at that time, 1954. Surprisingly, over 40% had either stagnated or disappeared altogether.[B] Smith asked whether an analysis of such information would help form a basis for long-range corporate planning and explored these issues in a series of memos around the middle of 1956.[C]

Gaining internal support and a small investment grant from his boss, Joe Lovewell, Smith prepared a sample report on forecasting the need for synthetic fibers. It was finished in April 1958. By summer, with that report in hand and armed with innovative ideas, Smith and a few SRI staff hit the road to test Corporate America's interest in a research-based forecasting service.[1]

The response they got was heartening, and in January 1959 SRI officially launched the first research-based, broad-scale service in support of corporate planning.[D] Not unexpectedly, it was called the Long Range Planning Report Service (the name was later shortened), and it had 73 notable corporate clients right out of the

[1] The proselytizing group consisted of Smith, Lovewell, Pat Dowling, Jim MacIsaac, and Bill Royce.

gate.[2] The plethora of subject areas, the time perishability of the information, and the pragmatic aspects of revenue generation suggested that the Service be a continuing one, paid for annually on a multiclient basis. The initial fee was something like $2,500 per year. An important leader in the early phases of LRPRS was N. Robert Maines, who, after leaving to direct planning for J.C. Penney, was replaced by Robert D. Bruce.[3] The Service grew rapidly and soon preempted the field. By 1962, it had over 250 clients and by 1967 over 400, 100 of which were foreign.[E]

As the Service matured, its basis seemed sound: since SRI was a *research* organization, the Program could provide a useful service that monitored changes in the technical, economic, political, and social fields. Moreover, it complemented other SRI work in corporate strategy and the planning assistance provided to individual firms. LRPS reports were of two general types: ones that prescribed the nature and benefits of the planning process, including who should be the responsible parties; and ones that addressed content, defining the present and 10- to 15-year horizons of specific business and technology sectors. The first type was to encourage corporate planning, and the second was to offer information of strategic interest to long-range plans in selected business sectors.

Regarding the planning process itself, the corporate sector was moving to planning as a matter of course. From a 1961 survey of Fortune 500 companies, SRI learned that 60% were undertaking formal long-range or strategic planning, another 24% were planning to do so, and only 16% were not.[F] By 1964, the number doing so had risen to 72%, with only 10% not doing so. A ground swell was in progress, and to take advantage of it SRI established early on a specialized group in the theory and practice of corporate planning. The group performed comparative studies on the planning practices in use and then developed a framework for business planning that many of its LRPS clients used. SRI examined all aspects of the planning process, including the reasons for planning, the responsibility of corporate executives and the line structure, ways to assess the market and competitive environments, the financial aspects of planning, the interdependence of plan formation by all segments of the organization, and means to assure the successful execution of a plan. Between 1961 and 1994, SRI staff wrote about 75 reports on the methods and practice of corporate management and planning.[G] At one point, the subscription list exceeded 500, suggesting that SRI had clearly filled a perceived need.

In the area of forecasting, by the mid-1960s LRPS had published about 300 reports, with a rate of about 40 reports issued a year. These reports dealt with specific but diverse fields of interest such as cryogenics, microencapsulation, antitrust policies, nuclear power, consumer values, the labor force, electroluminescence, and pleasure travel. Authors were drawn from knowledgeable people across SRI, Stanford or other universities, or individual consultants. Often both technical specialists and economists or sociologists were paired to provide a balanced view.

Because just providing written material didn't always meet the needs of the client base, SRI also included opportunities for extensive interaction, ranging from directed technical assistance for individual companies to weeklong seminars for executive planners to engender more effective planning methods in their companies. In the area of forecasting, SRI included an inquiry service that provided interchange with the report authors, visits from key company personnel, and traveling seminars and roundtables. Another important feature of LRPS was its annual client conference, which brought 300-500 clients to the San Francisco Bay Area. Beginning in 1966, a conference was also held in Europe. All these efforts sought to assure an effective transfer of ideas and practices.[4] These closer relationships with clients also served to increase the Institute's technical business. Since LRPS reports were also a showcase of SRI's capabilities, they attracted some clients by the expertise they evidenced. From these interactions came new products and marketing concepts.

[2] For a list of the original set and how their participation continued, see Appendix I.

[3] The Program leadership following Bruce was: William S. Royce, James C. Selover, Richard C. Funkhouser, Merle Evers, Joseph E. R. Carrier, Paul E. Shay, Gary Anderson, and William D. Guns.

[4] Besides those people mentioned, other contributors to LRPS were: Pat Dowling, Jim MacIsaac, Robert Dawson, E. S. Calhoun, Arnold Mitchell, Dan Shearer, Eleanor Connolly, Riggs Monfort, Ken Taylor, Edith Molton, Gloria Esdale, Alice Greene, Jean Ware Nelson, Doug Hurd, John Gayle, and Millicent Craig.

Origin of the Term "Stakeholder"

Several novel concepts arose from these innovative practices. One was the notion of "stakeholders." In common use today, the term loosely describes all those parties who have a critical interest in the operation and success of any enterprise. SRI first formulated the term in about 1963.[5] Since then, the concept has grown to such global acceptance that formal theories and international conferences are now held on the concept of stakeholders.[6] Many, including economist Milton Friedman,[H] have said that the only purpose of a company is to make a profit for its shareholders; that is, the shareholders are the only stakeholder group to which managers are accountable. SRI's viewpoint, expressed years earlier, was that a corporation is beholden to more that just its shareholders and defined stakeholders as:[I]

A stakeholder in an organization is any group or individual who can affect or is affected by the achievement of the organization's objectives.

That very broad definition originally included the groups shown in a 1965 briefing slide: the shareowners, employees, customers, suppliers, lenders, and society (see Figure 14-2). In some respects, this is a set of participants any one of which, through their withdrawal, could cause the enterprise to fail. Many academics have created their own version of the concept by adding such stakeholders as the environment and competitors. In any case, SRI's definition clearly reflects today's climate for business better than any narrow construct such as just shareholders. Though shareholders are still perhaps the most important

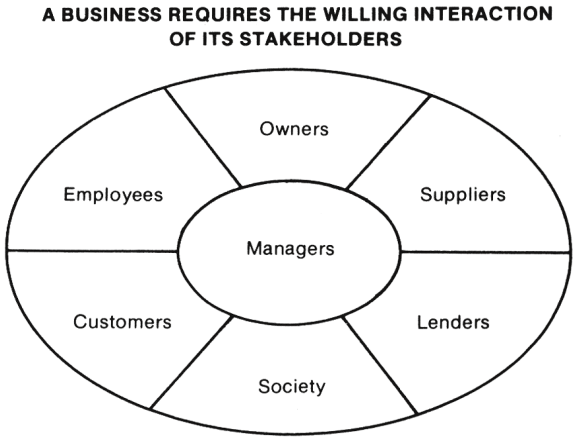

Figure 14-2. The candidate stakeholders in an enterprise (from SRI's BIP Research Report 635, *Stakeholder Values and Corporate Success,* Sept 1980).

stakeholders, for managers to be successful today they must base their decisions on broader issues. SRI went on to develop methods for defining, analyzing, and showing the cross-impacts created by the expectations of the various stakeholders.

Another innovation from around 1965 was a computerized financial planning model that planners could use to determine the 5- and 10-year results of executing a strategic plan under various sets of assumptions. SRI's program, which was probably the first of its kind, used the dial-up feature of General Electric's (GE) Time-Sharing System in Cleveland and was thus available across the country.[7] As might have been expected, other consulting firms such as Battelle and A.D. Little soon began offering competing programs. New planning specialist houses also entered the field: the Boston Consulting Group (an SRI client that adopted SRI material), the Strategic Planning Institute, and GE-McKinsey. At the same time, the characteristically "faddy" business of corporate management methodology was cycling, and SRI efforts were being questioned. In addition, reductions in the LRPS client base caused SRI to re-examine its approach to planning. The result was the emergence in the early 1970s of new, more sophisticated planning and decision aids, in essence the sought-after next-generation tools. By the mid-1970s, the LRPS Program itself had

[5] According to Bill Royce (see Endnote D), the first printed use of "stakeholders" in a business sense appeared in LRPS Report 168 entitled *The Strategic Plan* published in April 1963. In the preparation of that report, Robert Stewart, Knight Allen, and Marion Doscher were discussing who should have influence on a corporate purpose. Doscher defined them as "stakeholders," to her an old Scottish term meaning those with a legitimate claim on something of value. Actually, its semantics go something like this: stakeholder is literally the holder of a wager but stake is also short for grubstake, an early U.S. Western term meaning an advance given to a prospector in expectation of a share in his finds. It thus conveys a natural interest in an enterprise. Regardless, it caught on and was used extensively thereafter. Because the term is now so common, a couple of external affirmations of its SRI origins may be helpful: see a paper on business ethics by Johanna Kujala at www.mcb.co.uk/ services/conferen/jun98/bale/kujala.html and Igor Ansoff's *Corporate Strategy*, McGraw-Hill, 1965, p. 34.

[6] An example is the Stakeholder Theory Conference, University of Toronto, May 1996.

[7] Manuel Stotomayor designed the program, called "Topline" to show how much a company could grow if it did its best. Walt Wiebensen of Engineering did the programming.

been revamped and given its present name, the Business Intelligence Program.

Methods in Corporate Planning

To see how this re-examination contributed to new corporate planning methods, it is necessary to return to the early 1960s when SRI's contributions to planning first began. According to Royce,[J] planning methodology began at SRI in response to LRPS clients who were pleased with SRI's information on *what* to plan for, but also wanted help in knowing *how* to plan. In 1962, SRI's first foray into this field came with the formation of a group under LRPS called TAPP, for the Theory and Practice of Planning. Robert F. Stewart, who had developed some novel ideas in corporate planning at Lockheed, was put in charge of the new group[8] and in early 1963 started an important series of LRPS reports on planning, the first of which was titled *A Framework for Corporate Planning*. This series was distilled into what came to be known as the "SRI System of Plans," which was widely copied and adapted in corporate circles. Figure 14-3 illustrates the system.

SRI also started other initiatives in the techniques of corporate growth and renewal in the early 1960s. A three-pronged, internal strategy unfolded consisting of: the planning process, which was embodied in TAPP; the creative thinking process, which grew into the Innovation Management Program under Joe McPherson (discussed later); and the Corporate Strategy Program under Knight Allen, which included techniques that promoted corporate adaptation and growth. From this milieu, with a number of linkages to the Stanford Business and Engineering Schools and close relationships with a few other pioneers in corporate

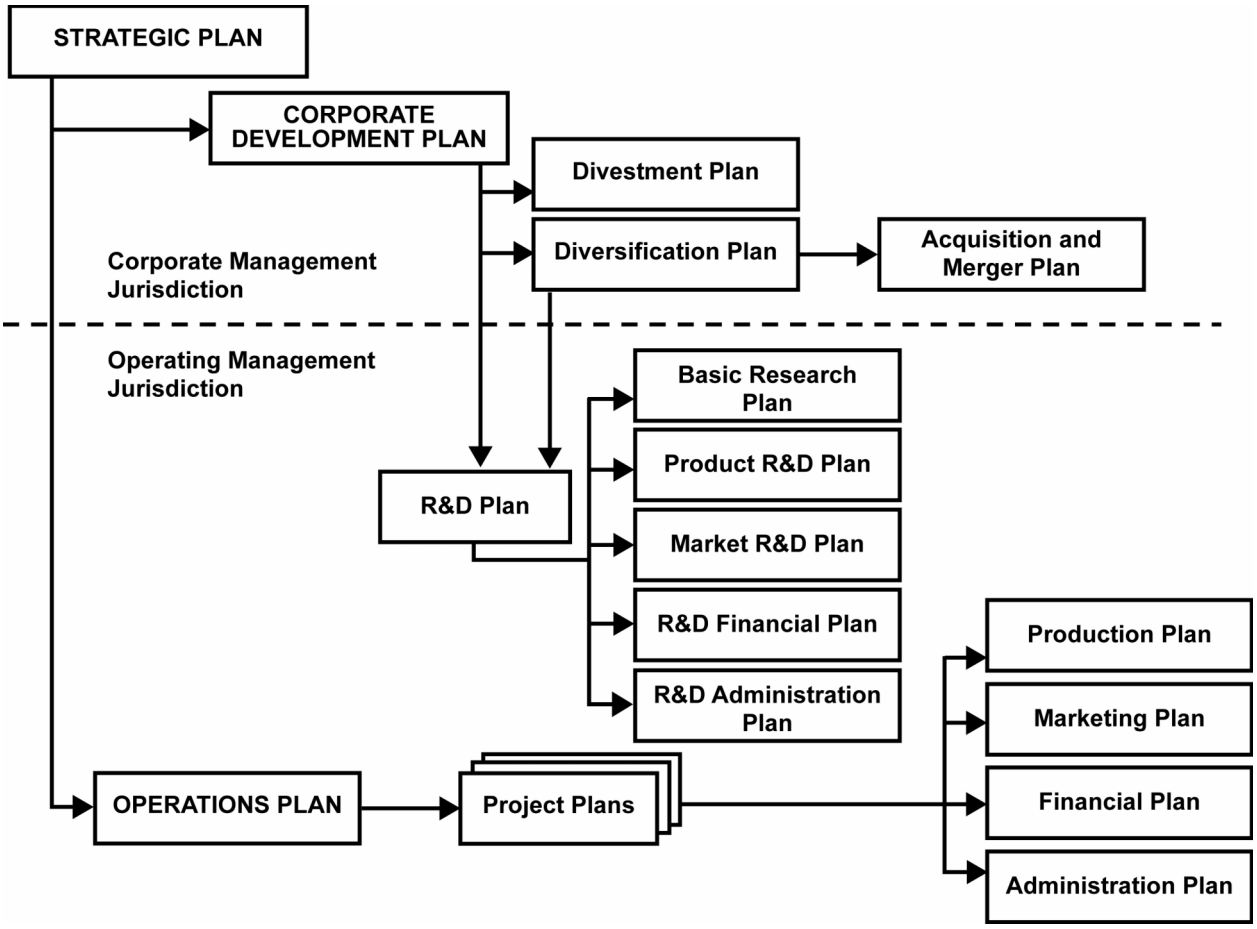

Figure 14-3. SRI's System of Plans (~1965).

[8] Stewart also brought Otis Benepe and Marion Doscher with him from Lockheed. Birger Lie came, as a full-time "consultant," from the Norwegian Productivity Institute, and Albert Humphrey came from Boeing. Other SRI contributors were Robert Smith, Knight Allen, Morse Cavender, Arnold Mitchell, Igor Ansoff, Robert Dawson, and William Royce.

planning, SRI gained prominence in both the methods and practices of corporate decision making and strategy definition.

These were fruitful times in this part of SRI. Out of the concepts mentioned above came a number of other innovations for looking at and conducting planning for any organization. One approach, a step-by-step logic method created by SRI's Otis Benepe, was intended to let a small team of planners build a strategic plan. This method was formulated as a *decision-making process* and drew on what has proven to be a long-lasting, repeatable rationale patterned on how humans normally approach such a challenge. They called it the Chain of Reasoning, and, as still practiced today, it looks something like this.

Values → Appraisal → Motivation → Search → Select → Program → Act → Monitor

Though the logic is simple and straightforward, the detailed method extensively defines each of the stages and their transitions, thus providing planners with comprehensive information and insights, and not letting them be hampered by *a priori* constraints.

These methods were taught to corporate executives in International Executive Seminars, which were held four times a year from 1965 through 1971 in the United States and abroad, and eventually involved 500 different companies. Importantly, the proposed methods often received early testing in real corporate settings, frequently tailored to fit the situation. SRI was careful to tell clients when a method had been proven in one or more companies, and never included the method in a LRPS or TAPP report until it had been successfully employed. Though successful, SRI management eventually decided this approach had become too applied, and handed the methods over to a set of employees who left SRI in 1970 to pursue the methods' use.[K] Those ex-employees called the methods Participatory Planning and then TAM, for Team Action Management, and they have been successfully using them for about 30 years, on both sides of the Atlantic.[9, L]

The value and intricacies of the logic chain above can also be seen in another feature that took on a life of its own. From the reasoning chain's first steps emerged the following question set about an enterprise and its environment:

- What is good about the present situation; that is, what is satisfactory?
- What is good about the future? What are important opportunities?
- What is bad about the present; that is, what are our critical faults?
- What is bad about the future or, in other words, what are the coming threats?

This method was called SOFT, an acronym keyed to the last word in each of the above questions. SRI presented seminars using this method in Europe for a time, and one of the attendees in Zürich, the consulting firm of Urick and Orr, embraced it and began using it. That firm changed the names slightly by letting S represent strengths and substituting W (for weakness) for F, rearranging terms to make it pronounceable, and creating a livelier acronym called SWOT. Such naming seems important only for recognition in the consulting marketplace but, in any case, the associated methodology has become almost generic to planning processes anywhere.

These planning methods and educational seminars that arose out of the TAPP effort also challenged the earlier Stanford stipulation that SRI should stick only with research. To allay Stanford's fears, SRI management invited the University's Graduate School of Business to provide such training in corporate planning, but it demurred. So, SRI proceeded, ultimately offering training to over 1,000 people between 1965 and 1971. But SRI's innovation in planning methods still wasn't complete. Two powerful methods for corporate decision making emerged that would also gain worldwide prominence: decision analysis and scenario-based planning. Much of the former came to SRI from the Stanford engineering area, whereas the latter was developed largely at SRI itself.

Not coincidentally, both of these new areas tried to help corporate planners cope with the inevitable uncertainties that influence future decisions or outcomes. One of the dominant uncertainties in any planning process is the type of future the company will face. Since no one can consistently forecast such things as the environment for competition, regulation, or market demand, SRI adopted early on the use of both statistics and alternative futures. The

[9] The basic dogma of planning created at SRI, including those mentioned, were put widely into practice in the United States, Mexico, Scandinavia, England, and other European countries. Today, these methods are in full use in the planning exercises of over 100 companies.

former is more aligned with decision analysis and the latter with scenario planning.

Alternative Futures and Scenario Planning

The notion of building a hypothetical future and then trying to project resources ahead to somehow profit in that future is probably an ancient one. Governments and futurists have used it to gauge policy, to budget, and sometimes even to deploy resources. The noted Cold War futurist Herman Kahn used similar techniques to imagine the future climate for conflict. The modern name for such an exercise is scenario planning, and SRI has been using that technique for a wide range of assignments since the late 1960s. SRI has some claim to being the first to formalize the technique and give it broad utility.

The need for a way to look more formally at the future arose at SRI in about 1969 in work SRI's Educational Policy Research Center was doing for the U.S. Office of Education, the Department of Transportation, and the Environmental Protection Agency (EPA). The Center's director was Willis Harman, a noted electrical engineering professor from Stanford who had redirected his professional life.[10] New tools were needed to help the U.S. government understand the implications of new or proposed policies. For example, SRI created 10-12 scenarios for the EPA, each with a central concept or theme. In these initial efforts, the themes were arrived at in brainstorming sessions. Thus, the planning sessions in these nonmilitary governmental agencies were devolving into a practice in vogue at the time, alternative futures. But it soon became apparent to the SRI researchers that a tighter coupling was needed between alternative futures and decision-making, especially if the approach was to find good use in the corporate world.

In the 1970s, several people who would become noted in this field became associated with the Center: Peter Schwartz joined the Center in 1973–1974, and Pierre Wack of Royal Dutch Shell and Ian Wilson of GE became colleagues/clients. The Center, plus these people and SRI's Arnold Mitchell, made significant contributions toward making scenario-based planning appropriate for corporations. In essence, it became a more rigorous, repeatable, less personality-driven methodology that could guide corporate planning. Further, to engage senior executives, only a few different scenarios could be used. In 1978-1979, a new, six-step, circular or reentrant process emerged that schematically resembled that shown in Figure 14-4.[M] This process had three important innovations:

- A decision focus
- The concept of scenario logic
- A high-impact/high-uncertainty matrix to identify the scenario logics.

Scenario logics are essentially a way to organize the various scenarios or outcomes to assure each has a consistent and logical basis and is adequately differentiated from the other alternatives.

Typically, these are not just a mean and two extremes, but rather a set of futures, each of which has a core or basis that can be

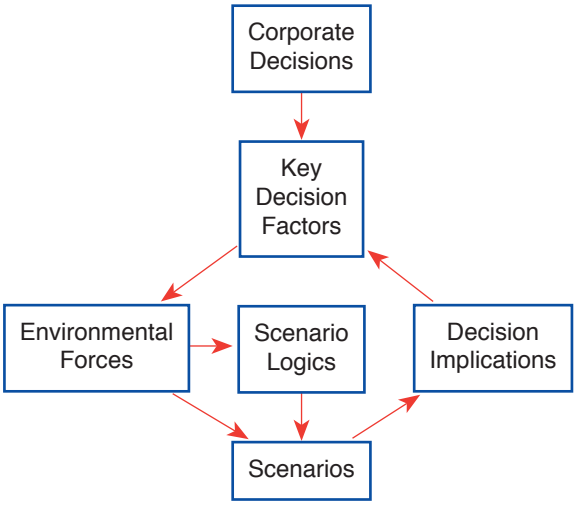

Figure 14-4. The SRI six-step scenario methodology (from Business Intelligence Program Report 822).

[10] Harman spent about 16 years at SRI and during that time and afterward left a broad imprint on thought—ideas that were not just limited to gauging the future for corporate or government planning. Some of his ideas had important implications, such as the impacts and implied responsibilities of multinational industries when they, rather than governments, come to dominate the human condition. Others were more mystical, such as his early and extended experimentation with LSD. Noted author Art Kleiner reviews in his book, *The Age of Heretics* (Doubleday, New York, 1996), some of SRI's impacts on New Age thinking. In particular, he asserts that a book by Harman and his SRI colleague, Oliver Markley, *The Changing Images of Man* (Pergamon Press, Elmsford, NY, 1982), gave the best introduction yet as to how conventional organizations should address the more holistic concepts of a planet of limited capacity. That book, which contained contributions by other SRI staff and noted mythologist Joseph Campbell, was written during Harman's stay at SRI. *Heretics* also attributes to SRI the bringing of the term "paradigm" into wide (over)use.

independently substantiated. Nor are the futures simply optimistic or pessimistic. Sometimes a "wild card" option is included when a specific event or decision could conceivably cripple the enterprise.[11] The scenarios can also account for social, economic, political, and technological change.

It is important to note that scenario planning, as it was developed at SRI, was mostly qualitative and intended less to predict outcomes than to understand the forces that would drive an outcome. Through gained insight or foresight, such planning helps order perceptions about different futures. It also helps prevent being misled by or even preoccupied with extrapolation of the present situation. More specifically, scenario planning has worked well in three corporate settings: forecasting the future of a business unit; treating a general, corporate-wide issue; and tackling a very specific corporate decision. As in all strategic decision practices, those who are responsible for executing a decision *must* be intimately involved in the planning—sometimes a difficult stipulation to carry out.

Though scenario planning typically doesn't hone in on specific predictions, some of SRI's positions may have seemed otherwise to a tunnel-visioned corporate executive. For instance, take SRI's interaction with Henry Ford II.[N] SRI was developing a notion emerging in the United States that it called "voluntary simplicity." Given the oil embargo of 1975 and the subsequent rise in oil prices, this notion meant, among other things, smaller, more economical cars as a component of the coming "frugality." In a project with The Ford Motor Company, Schwartz, Mitchell, and others concluded that this concept had two important implications: smaller, less profitable cars and an opportunity to provide better services to maintain existing ones. Henry Ford II had heard this future from his internal planners but didn't like it, and he was also at odds over this future with the company's charismatic President, Lee Iacocca. Ford had come to SRI because he hoped the Institute would provide a dissenting opinion. Schwartz made a presentation to Ford and his entourage at SRI. On hearing SRI's confirming view of a future with more economical cars—and one that persisted for 5–6 years rather than 2—Ford turned to his assistant and revoiced his skepticism: "The Arabs are gonna go away…and Americans ain't gonna want Jap cars." He then offered to Schwartz, "If they wanted 'em, we would do 'em, but Americans don't want 'em."[O] Ford would go on to experience "devastating losses" without small cars, and the Japanese would make substantial market incursions.

Most of SRI's work in scenario planning has addressed fairly circumscribed problems, including scanning the external environment before internal corporate initiatives are put into practice. Clients have included oil companies such as Royal Dutch Shell, ARCO, Statoil of Norway, Amoco, and others interested in the often-volatile future price and availability of crude oil, not to mention demand and pump price. Energy providers such as Pacific Gas and Electric have also used scenario planning. Another role for SRI has been to enable a company to adopt such scenario planning methods for internal purposes. Du Pont is a good example of a large company that, with SRI's help and encouragement, adopted this methodology for use in its planning activities.

With this new methodology in hand, SRI formed a new Strategic Environment Center around the beginning of 1979, led by Schwartz. Ian Wilson soon joined. In 1982, Schwartz left SRI to take Pierre Wack's place at Royal Dutch . Shell. Wilson and Tom Mandel became principals in the Center. All this movement didn't interfere with the collegial and ongoing relationships the developers had created. After about 30 years, scenario planning still is carried on by SRI's affiliate, SRI Consulting Business Intelligence. Bill Ralston leads the activity, and some of its more recent influences have been felt at companies such as Weyerhaeuser and Rohm & Haas.

So, in a world of considerable flux in corporate planning methodologies, scenario planning has been in existence for over 30 years. Its base of acceptance in both the academic and corporate communities remains strong. SRI was pivotal in both the development of the methodology and in its continuing practice.[12]

[11] As indicated by Bill Royce, SRI urged a company building and operating ships to carry liquefied natural gas from the Mediterranean to the United States to consider a situation in which the king of the source country decided to prohibit export of the gas. That scenario did happen, and the company had followed SRI's advice and had an alternative plan in place.

[12] In 1987, Schwartz, Jay Ogilvy, and three futurist colleagues founded Global Business Network, a planning company operating in Emeryville, CA. Both Schwartz and Ogilvy have

Decision Analysis at SRI

As the name suggests, decision analysis is a model or methodology for decision making. In essence, it is a structured way of thinking about how a particular decision or action taken may or may not lead to some desired result. Once a particular decision to be made is identified, statistical methods or logic are then used to represent different forms of uncertainty about important input parameters and about how they are processed to estimate a result. At best, the methodology reveals the relationships between actions and objectives in quantitative terms.

The technique, given a well-formulated pending decision and enough information, comprehensively applied, can provide decision-makers with options whose uncertainties fairly glisten with precision. In effect, the decision is expressed so that the risks and benefits are quantitatively known. Here is a brief example: a CEO had to decide whether to place a new product on the market. The company faced not only uncertainties about market size, timing, and competition, but also about possible government regulatory impacts. After a bevy of multidimensional analyses of costs, risks, and possible benefits, the decision eventually was reduced to the following: proceeding with the product would provide a 20% chance of an overall $88 million profit and an 80% chance of losing $4 million.[P] The decision analysis technique successfully distilled the problem, but the choice was still not easy; it was influenced by personal tolerance for risk or reward.

Decision analysis originated at Harvard and Stanford. Awareness of formalisms for organizational decision-making under stated conditions of risk and benefit came through interdepartmental discussions at SRI in about 1963.[13] Shortly thereafter, a number of joint internal seminars in applied decision theory were held between SRI and Stanford's group in Engineering Economic Systems. Professors Ron Howard of Stanford and Howard Raiffa of Harvard introduced the new field. That interplay led directly to the establishment of a Decision Analysis Program at SRI in 1968, headed by James E. Matheson,[14] who, with Carl Spetzler, had come from Stanford.

Over the course of a little more than a dozen years at SRI (1969-1983), the successful application of decision analysis to SRI clients was wide and varied. In the commercial sector it was used to evaluate new products, define market strategies, analyze facilities expansion, devise a commodity buying strategy, derive the value of information in mineral exploration, and develop financial portfolio management models. In government the technique has also been applied to space exploration, nuclear reactor development, weather modification, forest fire suppression, and national energy policy (see section on oil shortage later in this Chapter).

One of SRI's legacies for decision analysis is the set of companies formed by those who left SRI to practice the field. They include:[15]

- Decision Focus Inc. (Executive Development Inc.)—Warner North
- Applied Decision Analysis (a subsidiary of PriceWaterhouseCoopers)—Adam Borison, Stan Friedman, Lee Merkhofer, Pete Morris, and Lynn Weber
- Strategic Decision Group—Carl Spetzler, Paul Skov, and James Matheson
- Litigation Risk Analysis—Marc Victor
- Strategic Economic Decisions—Horace "Woody" Brock
- The Beron Group and The Litigation Risk Management Institute—Bruce Beron.

As a final word in this area, SRI effectively had two groups employing this technology, but from different slants. Matheson's approach gave more emphasis to the single, profound, strategic decision on which the company's future hung. The second group, headed by Spetzler and Paul Skov, called its approach Strategic Management; it considered multiple, intricate, and coupled decisions. In 1978, Spetzler and Skov perfected their techniques in projects for GTE and Merrill Lynch, and within a year they had set up their own SRI program

written books and published other insights on preparing for the future. Coincidentally, one of their colleagues was Stewart Brand, who spent some time working with Doug Engelbart in the early days of SRI's Augmentation Research Center.

[13] According to Royce, Oliver Whitby of SRI's Engineering Group advised the corporate planning staff to engage some of the leaders in applied decision theory, including the decision analysis creator at Harvard, Howard Raiffa.

[14] Jim Matheson joined SRI in 1966 as a young Stanford Ph.D. working in systems analysis. He helped found a new company, Strategic Decision Group, in 1981 and is currently Chairman of SmartOrg.

[15] Another nonprofit company that concentrated on the future, but was not associated with the decision analysis or planning methods, was The Institute for the Future, founded by former SRI employee Dr. Roy Amara in 1968.

(see a later section about one of the Merrill Lynch projects). This group prospered until the two principals left SRI in 1983. As seems characteristic of SRI, change fosters both success and failure. Decision analysis work lasted for perhaps 13 years at SRI, with the heyday perhaps in 1978-1981. Matheson left SRI in the summer of 1980, and 2 years later Spetzler and Skov left to form the new company mentioned above.

Innovation Search

While much of SRI interests in planning thus found its way outside the Institute, some continued here in several forms. One of the most enduring and most influential was the Innovation Search mentioned above. This was a form of exploration built around the diverse nature of SRI's technical awareness and the personality of its able facilitator, Joe McPherson. The idea emerged after a number of executive planning seminars were held in which McPherson noted a shortage of ideas. SRI's Joe Grippo, a colleague of McPherson's, suggested a form of brainstorming that would draw on specialists from SRI's broad talent base.

The notion was straightforward: bring the principals of a company to SRI, let them explain their challenges as they saw them to a set of SRI experts in fields of potential interest, and then open up a usually wide-ranging exploration of what opportunities the company might want to consider. The Innovation Search was, quite simply, gently guided brainstorming that left the sponsor with a variety of good ideas for future products or sometimes whole new technologies. Its power consisted of the participation by key company people and informed SRI technical staff. The interaction was leavened by the depth of knowledge of the SRI technical participants and the fact that, as researchers, they were inherently used to breaking molds and venturing ideas. This operation continued successfully at SRI for over a decade, and a wide range of sponsor types took advantage of it.

The SRI Business Intelligence Program

What began 50 years ago as LRPS eventually became the SRI Business Intelligence Program in 1976 and continues today as SRI Consulting Business Intelligence (SRIC-BI).[16] Considering all the vagaries and variability of the corporate economic sector and the fashion-like cycles of business consulting methods, that is remarkable staying power. Its present mission is similar to its initial one: to identify the defining forces of change, thereby helping clients expand their perspectives and then take needed actions. The activity continues to exploit its relationship with SRI's resident technical experts. SRIC-BI still publishes more than 70 documents a year on a wide variety of high-interest topics such as neural networks, mobile communications, e-cinema, consumer behavior, knowledge management, e-learning, genomics, e-commerce, fuel cells, broadband, and consumer finance. Some of these are drawn from a list of 40 current technical topics that SRIC-BI has selected as important and in which the Institute has resident expertise.

Supporting the published forecasts is ongoing advice tailored to specific companies and the use of scenario planning. SRIC-BI's contributions to clients' corporate strategies center on forecasting future technologies and potential products and services. A materials company looking to enter the structural ceramics market uses SRIC-BI to locate a potential joint venture partner, an R&D company with a new technique for making ceramics; a joint venture is formed, and the new company then enters the structural ceramics market with several products. A guidance system company identifies a new parallel computer architecture and licenses the new technology; this architecture will be at the heart of the firm's new products. A chemical company terminates an investment in a polymer matrix composite when it is advised of the likelihood of poor future returns. These topics are indicative of SRIC-BI's ongoing work.

[16] LRPS was renamed the Business Intelligence Program in 1976 under Paul Shay. It was later headed by Gary Anderson and then by Bill Guns. Following the demise of the Business Group at SRI in the late 1990s, SRIC-BI became an employee-owned affiliate of SRI in 2001, and Bill Guns heads the new company.

Market Segmentation

Most of us are repelled by the notion of being categorized, and we may find such categorization particularly repugnant if someone believes our reactions to consumer offerings are predictable. All of us think of ourselves as independent and capable of rational judgment each and every time we make a purchase. The fact that a process leading to that predictability has an arcane name like psychographic segmentation only adds to our skepticism. Nonetheless, psychographics, along with demographics, has become a pillar supporting today's advertising strategies. SRI developed such a system almost 30 years ago, one that still has wide utility and acceptance. It is called VALS™.[17]

VALS™, which stands for Values and Lifestyles, is an SRI invention of the late 1970s. The brainchild of SRI's Arnold Mitchell (see Figure 14-5), VALS™ was intended to aid manufacturers and other marketing groups better define which segments of the population to direct their products to.[18] Given the billions of dollars being spent on advertising, deriving as much yield as possible from each such dollar spent would be aided by directed advertising.

Established in 1978 and with revised versions still in use today, VALS™ is one of the first major consumer segmentation systems based on lifestyle characteristics. It has been used throughout the United States

Figure 14-5. Arnold Mitchell, creator of VALS™.

and in Japan and Europe to aid in product design, development, and positioning, and to enhance advertising effectiveness and corporate image. A tool like VALS™ is particularly helpful early in the introduction of a new product, when defining a significant relationship between the new product and its principal market. A couple of examples:

- A U.S. watch manufacturer, Timex, used VALS™ to identify a target population for a new blood-pressure monitor for home use. The targeted groups were two: the "societally conscious" and the "achievers," and all aspects of an advertising campaign were directed at them. The company captured 34% of the market within a year, compared with 9% for its closest competitor.
- As a new service, a Minnesota medical center planned to offer cosmetic surgery, which turned out to be an area about which different groups of consumers had sharp differences of opinion. VALS™ segmented groups of potential users, and the Center placed advertising in publications read by the segment deemed to be the most receptive. The campaign was so successful that the advertising campaign had to be discontinued after a few weeks because of overwhelming response.

[17] Most of the material covered here comes from an interview with and the writings of Bill Guns, whose familiarity with the history of VALS™ and leadership of a new SRI company that uses it, give him a good perspective on its concept and history.

[18] Mitchell's first work in the consumer values arena was a 1963 report for SRI's Long Range Planning Service. In his work on VALS™, Mitchell tried to explain the fragmentation of values among Americans. Many clients found the social movements of the 1960s and 1970s difficult to understand. Mitchell's work offered a theory based on the notion that a new mind-set had emerged in the United States, a mind-set that was "inner-directed." Mitchell made the case that this new mind-set was motivated in ways different from the American archetype and that many of the apparent changes in social values emanated from people who had this internal, intrinsic-to-self point of view.

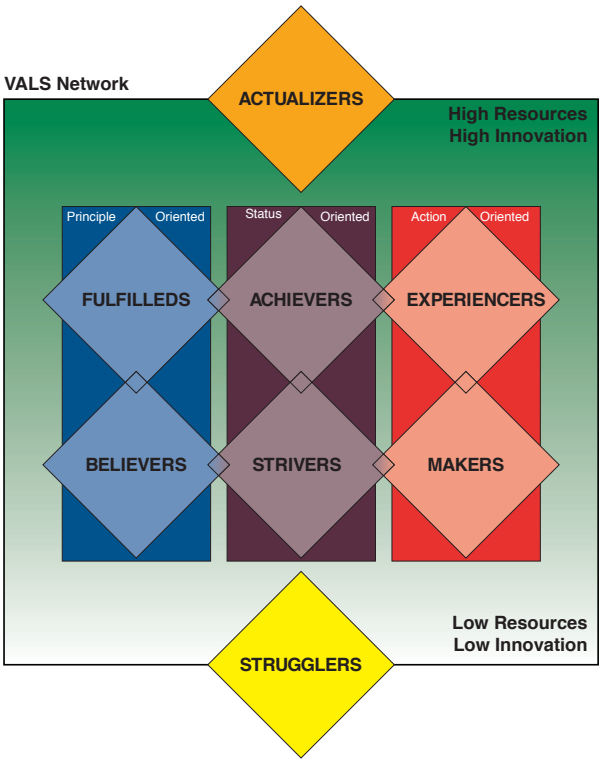

Figure 14-6. A consumer typology from VALS 2™ which was created to achieve better statistical performance and in the process went from 9 to 8 segments.

Uses such as product repositioning also work. A foreign car manufacturer introducing a sport utility vehicle saw an expensive and award-winning television advertising campaign fail to result in any increase in sales. Using VALS™ it targeted a new, rebellious consumer group using a "breaking the rules" theme, and sales increased 60% in 6 months.

VALS™ has many other uses such as designs for targeted mail programs and the selection of corporate media spokespersons. In one of its first applications, VALS™ also helped in the selection of a company logo. Two advertising companies were vying for a Merrill Lynch account, and one used VALS™ and Arnold Mitchell to propose a single bull as the firm's logo. That company won, and the next day their competitor became a VALS™ client (see later in this chapter for the story).

How is psychographic segmentation made? Figure 14-6 presents the VALS 2™ model, which starts, as a point of departure, with a matrix-like typology. The horizontal axis represents an individual's *self-orientation* while the vertical axis has to do with the consumer's available *resources*. The elements of the matrix are then given one-word descriptors for adult consumers fitting that specific area. Regarding *self-orientation*, most people are motivated by one of three powerful forces: principle, status, and action. As an example, principle-driven consumers are guided in their choices by abstract, idealized criteria rather than feelings, events, or approval. *Resources*, on the other hand, include not just material means but physical and psychological dimensions as well.

To understand the depth to which each category goes, here is the explanation of an "experiencer:" "Experiencers are motivated by self-expression. As young, enthusiastic, and impulsive consumers, Experiencers quickly become enthusiastic about new possibilities but are equally quick to cool. They seek variety and excitement, savoring the new, the offbeat, and the risky. Their energy finds an outlet in exercise, sports, outdoor recreation, and social activities.

Experiencers are avid consumers and spend a comparatively high proportion of their income on fashion, entertainment, and socializing. Their purchases reflect the emphasis they place on looking good and having 'cool' stuff."[Q]

Armed with an understanding of the concept, let's briefly review how VALS™ and its SRI program activity unfolded. Mitchell started the VALS™ Program in 1978 to explore and then codify both existing and changing American values. In the summer of 1981, Marie Spengler joined him to lead a team of people that could help clients understand and exploit the VALS™ point of view. Key players in that group were Jay Ogilvy, who led the research effort, and Brooke Warrick, who led the marketing and consulting efforts. Although they found success in the advertising companies and those that depended on them, some marketing professionals were not impressed with VALS™. Either the segmentations were too broad and difficult to differentiate or the process was thought unworkable. "When SRI made a presentation to the Market Research Council, they were laughed out of the room."[R] Nevertheless, by the mid-1980s there were 130 VALS™ clients, including major TV networks, advertising agencies, publishers

such as *Time*, and major consumer companies such as AT&T, Avon, Coca-Cola, General Motors, and Procter & Gamble.

The VALS™ program also had several types of services under its umbrella. The Leading Edge Program conducted annual surveys of consumers to explore Americans' changing values and opinions, and to provide reports to clients about important new ideas. For example, Donald Michael wrote the world's first report on organization learning for the VALS™ program in 1980. Ogilvy wrote a report, *The Experience Industry*, in the mid-1980s that was substantially ahead of its time. Mitchell's business bestseller, *Nine American Lifestyles,* made him a bit of a celebrity and created an image of the VALS™ brand that continues today. According to SRI's Fred Weil, VALS™ changed the way that advertising companies conducted their surveys and ran their focus groups.[5] Rather than just determining the respondent's sex or income or making demographic assumptions, surveys began including questions to assess the respondent's psychographic segment. Through such groundbreaking efforts, VALS™ gained national attention in the 1980s as an important new tool for building market strategies. One indication of its popularity was its appearance in a Gallo television ad. In the early 1980s, in a famous commercial from Bartles & Jaymes (a Gallo company), a folksy, understated Ed Jaymes had a flip chart on his front porch and was lecturing his colleagues about new-fangled marketing ideas. The diagram on the flip chart was the VALS™ system graphic!

After Mitchell died in 1986, the VALS™ team began to update the system. SRI assembled a team led by François Christen and leading researchers from Stanford and Berkeley to develop a system that would be based on more enduring traits of Americans. This effort led to VALS 2™, which was completed in 1989 and debuted in 1990. Based on psychological attributes and individual difference measures, the new system was far more robust as a statistical tool than original VALS™. VALS 2™ identified three "self-orientations" as the foundation of the system. But it dropped the concept of "inner-directedness" because of better statistical measures in the new system. Figure 14-6 shows the eight groups of consumers.

Old clients were uneasy with the new design at first. Many were heavily invested in the original VALS™ and loved the system and the intuitive insights that it offered. (Even today, some clients use the familiar concepts from the old system.) VALS 2™ suffered some significant birth pains. However, acceptance has grown as clients have seen the reliability and enduring quality of the new system.

The VALS™ team continued to develop other tools. In 1990, a team led by Bruce MacEvoy created Japan VALS™, the first general non-U.S. system. From other efforts, led by MacEvoy and W. Lee Ruggels, came GeoVALS™ in 1994 and UK VALS™ in 1996. They then created iVALS™ as a tool to explore the emerging Internet surfer. Today, the VALS™ Program emphasizes several applications: product development, strategy, communications, and positioning. Many of the famous VALS™ cases are based on positioning and advertising campaigns that appeal to each individual mind-set. The Program continues to serve clients in a variety of categories. Projects in 2000 included work in telecommunications, yogurt, travel, automobiles, and real estate. Now under the ownership of SRI Consulting Business Intelligence, VALS™ is still evolving to meet specific needs around the world.

Business Consulting in Sweden

For the 25 years between the late 1950s and the early 1980s, it would be hard to overestimate the influence SRI had on the commercial sector of Sweden and, to a lesser extent, the other Scandinavian countries. During that time, SRI's management consulting side had hundreds of projects and came to be the most prominent consulting firm in that region of Europe. Although it is difficult to completely assess SRI's impact 20 years later, we will try to convey something of the value left by what may have been 100 different SRI staff members who contributed to the region from offices in California, London, and Stockholm itself.

In the mid 1950s, Weldon "Hoot" Gibson of SRI, through an introduction from Stanford's Ernie Arbuckle, became acquainted with two of the most important men in Swedish industry, Marcus Wallenberg and Axel Johnson.

Wallenberg's principal influence was in banking, which also placed him in high leadership positions in many industrial companies. Johnson was the third generation of leaders by that same name who had built perhaps a hundred companies in consumer goods, foodstuffs, trade, and shipping. Between the two, they controlled many of the major financial institutions and industrial companies in Sweden. Both of these men had attended SRI's International Industrial Development Conference in 1957 (the predecessor of the IICs mentioned in Chapter 13).

Sweden had not been ravaged by World War II, and the decade following the war found Sweden's industrial sector profiting enormously from its ability to participate in the reconstruction of those countries that were destroyed. This period of industrial prosperity and absence of competition from Germany and Japan engendered a growing complacency and arrogance that did not go unnoticed by people like Wallenberg and Johnson. As competing countries rebuilt with modern, efficient plants, the Swedish leadership saw an urgent need for industrial modernization and engaged SRI to help. By the late 1960s, SRI had about 15 professionals residing in Stockholm and total contract revenues there of about $2 million per year. Over the decade starting from the early 1960s, SRI project revenues from Sweden were probably higher than from any other foreign country.

After completing a few projects for the Johnson group in 1956–7 and one in 1958 for the large Wallenberg mining company, Atlas Copco, two important additions were made to the SRI-Sweden staff. Swedish clients recommended that SRI hire Raoul Gatien, an industrial engineer and management consultant who had spent some time in the American automobile industry in Detroit. Gatien turned out to be pivotal in SRI's entrance into the Swedish marketplace, and he soon launched three large and extended projects: one for the Wallenberg group's ASEA (a General Electric type of company) in 1959; one to revamp part of the operations of the Scandinavian Airline System (SAS) that began in 1962; and the third to rekindle work for the Johnson group in 1963. By the time Gatien died in 1971, SRI had worked for about 45 Swedish companies in industries that included banking, candy, dentifrices, pulp and paper, glassware (Orrefors), department stores (NK), cars (Volvo and SAAB), appliances (Electrolux), fertilizers, railway equipment, steel, machinery, and power companies.[T] Accordingly, SRI had become the "consultant of choice" throughout Sweden and Scandinavia.[U] Later, the large Soderberg family of companies also became a client.

The SAS Work

A job for SAS brought the second important figure to SRI-Sweden: Dennis Finnigan, then head of SRI's consulting practice in electronic data processing. Finnigan became a favorite consultant to the Wallenberg group and an integral part of its entry into the world of computers and data processing. It was a time for streamlining both organizations and administrative procedures. This industrial operations research work became widely enough known that it was also adopted by large portions of both the Johnson and Soderberg combines.

The work for SAS illustrates SRI's crucial role in Sweden.[19] Finnigan and Al Lee (both of whom later became head of SRI's Management Systems Division) won 10 years of continuing projects with SAS, which became SRI's largest commercial client during that time. Work for SAS included:

- In 1962, Finnigan had the lead responsibility for SAS's first worldwide communications-based computer reservations system. This project brought people from SRI, SAS, IBM, and other organizations together during a 2-year effort to create a unique, real-time, on-line system for passenger reservations, check-in, and follow-up. The project resulted in new computer hardware and software that IBM took first to the rest of the airline world and later to banks, insurance companies, department stores, and other industries.
- SAS had bought an automated cargo-handling system for the Copenhagen airport that was over budget and late—and didn't work. Finnigan was asked to look into it, and although he was unfamiliar with the system's innards, he could clearly see what it wasn't doing. Back at SRI, he went to the Engineering Group and talked to Jack Bialik. Within a week, Bialik and a couple of his cohorts left to spend several months in

[19] The SAS consortium was created as a partnership of the three Scandinavian countries. Each country had an equal private and government stake. In Sweden, which held three-sevenths of the total, the three industrialists mentioned above were important participants in the private holdings.

SRI INTEGRITY AT WORK

A 1969 project for Stockholm's Enskilda Bank (Wallenberg's) involved automobile manufacturer Saab and Scania-Vabis, a large truck manufacturer. On one of his frequent trips to Sweden, Dennis Finnigan received a call from Dr. Marcus Wallenberg to come to his office. At the time Finnigan was doing some computer consulting for Volvo as well as for Saab. Wallenberg reminded him of a verbal agreement both of them had with the President of Volvo: that if Finnigan's consulting for Volvo and Saab ever went outside technical consulting and into more sensitive or strategic areas, he would resign from one or the other. As it turned out, Wallenberg was about to ask him to delve into a strategic matter and, given the exclusionary agreement, doing so required a decision on the spot! Finnigan said he didn't need to think it over; he would work with Wallenberg. Wallenberg picked up the phone, dialed the president of Volvo, and handed the phone to Finnigan. Finnigan proceeded to tell the president of Volvo that SRI could no longer work for Volvo (and to his knowledge, SRI never did thereafter). Wallenberg then asked Finnigan to take on the assignment, something so secret that even SRI's principal resident, Raul Gatien, could not know about it, since he would have a hard time keeping it from all his Swedish connections. The project concerned the confidential initiative to merge Saab and Scania. Wallenberg said that the work could not be conducted by anyone then working in Sweden, nor could it be performed inside Sweden; he suggested Switzerland. Wallenberg gave Finnigan a day to find a project leader and get under way. But Finnigan persuaded him to open another office in Stockholm that Gatien and others would not be aware of. Wallenberg agreed, and Ed Robison and Bob Shreve were brought to lead the project. The project was never revealed to other SRI staff (except Hoot Gibson in Menlo Park) until after the merger took place; SRI took its proprietary work seriously. (General Motors now owns all of Saab, and Volvo owns Scania.)

Copenhagen. There they wrote one of SRI's few formal reports on its Swedish work.[20] They had determined that the system suffered both from hardware and software problems, and they opened their report by saying, "the system was doomed to failure"! They then proceeded to defend this conclusion. The report enabled SAS to terminate the project and even recover some of its costs. From this example, the stock of all SRI staff in Sweden soared. In reality, however, it was just SRI responding in its typical tailored and objective fashion.

Other Restructuring Work

Finnigan's other major restructuring projects were with Saab-Scania, Electrolux, ASEA-Brown-Boveri (ABB), Stockholm's Enskilda Bank (see box), and various companies of the Axel Johnson group.

The latter case is interesting. The 132 companies in the Axel Johnson group were trying to understand the new role of data processing and how they should enter into this increasingly critical arena. Johnson himself, like most leaders of the day, did not know exactly what "data processing" meant, or how to proceed in regard to it. He asked SRI to help interpret the role data processing should play in his organization. But rather than trying to build a template for how each of the 132 companies might introduce data processing to its operations, Finnigan suggested that Johnson start a 133rd company! Because of their common, group interests, Finnigan proposed the establishment of a data processing service company to serve the other companies' data processing needs. The new company, DATEMA, not only became the model for other industrial groups in Sweden and in Germany, Britain, Holland, Italy, and Japan, but by also taking on business outside the Johnson group, it became one of the Johnson group's largest companies.

Administrative Rationalization

To return to the question posed at the outset about the poor state of the Swedish industrial base compared with the newly renovated firms and practices in Germany and the United States, Finnigan's approach came to be called "administrative rationalization," The approach had several major components:

- The project had to have the active support of top management. Usually the president or CEO became chairman of the project steering committee.
- The client had to assign high-quality, full-time personnel to the project who later often became the ones to implement the recommendations.

[20] The results of virtually all SRI's work in Scandinavia were reported orally or in letter reports.

- The project teams had to be drawn from a wide range of departments within the company. This exposure, then, became a cross-training opportunity.

The last stipulation was mirrored in the SRI team itself, which comprised both management and technical skills, drawn from throughout the Institute to assure a comprehensive perspective on the task at hand. As each rationalization project was completed, a small client/SRI team was left in place to help assure that enough expertise was available to carry out the recommendations.

In total, Finnigan's work in Sweden was both pervasive and noteworthy. His legacies there came from both his supervision of many of the SRI efforts as well as his individual contributions, some of which continued after he left SRI in 1981. The superior quality of his work was noted by the King of Sweden in 1982 in his award to Finnigan of The Royal Order of the North Star, the Swedish equivalent of knighthood (see Figure 14-7). To quote briefly from the press release:[V]

> "Mr. Finnigan is a veteran of the Swedish scene, having been engaged in various assignments almost continuously for more than 20 years. He first arrived in Sweden in 1959 to assist Scandinavian Airlines System with a reorganization plan.
>
> Over the years Mr. Finnigan has worked with most major Swedish business and industrial organizations, such as the two automobile manufacturers Volvo and Saab, electronic and electric companies such as L.M. Ericsson and ASEA, the Swedish Match Company, the Johnson Group of shipping and industrial companies, Atlas Copco, Alfa Laval, banks, etc. He has also helped public enterprises such as Vattenfall (hydroelectric energy) and the Telecommunications Administration."

The release further stated that the medal was for "the creation of good and useful establishments" and the training of hundreds of "Swedish women and men." Though not mentioned in the press release, some examples of the people SRI trained were:

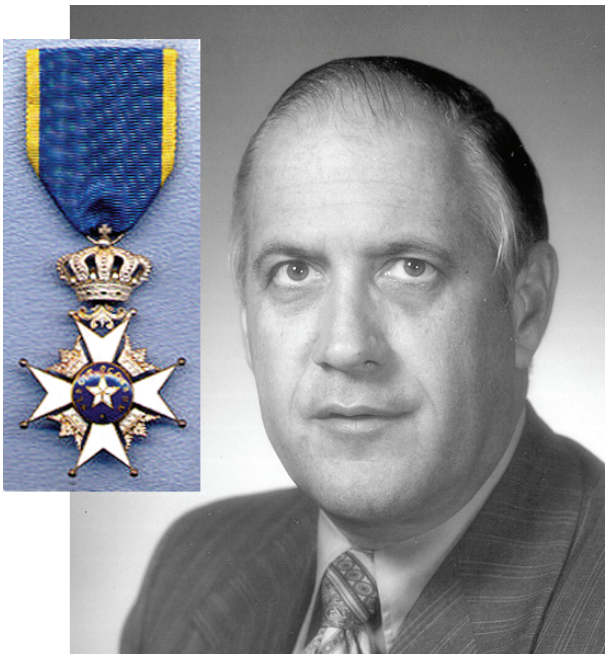

Figure 14-7. Dennis Finnigan and his Order of the North Star award from the King of Sweden.

- Knut Hagrup and Jan Carlzon, who both became presidents of SAS
- Percy Barnevik of ASEA, later ABB, and now chairman of the Wallenberg holding company Investor AB
- Bjorn Stigson of Flakt, who now leads a World Business Council of over 120 companies trying to advance sound business development with conservative use of the earth's resources
- Goran Ennerfelt, president and CEO of Johnson AB
- Gosta Bysted of Electrolux, now vice chairman of Johnson AB.

During the latter part of his work in Sweden, Finnigan joined SRI's Office of Research Operations, where he remained supervisor of the work in Scandinavia.

The following box exemplifies the quality of character of both SRI and its people, and gives evidence of the kind of organization SRI aspired to be. For his work in Scandinavia, Finnigan won SRI's coveted Gibson award in 2002.

THE CHARACTER OF SRI

The work that transpired in the 1950s and 1960s in Sweden dramatically illustrates how SRI was viewed overseas in those days, and the privileged position it had earned. As preamble, keep in mind that at SRI's founding, Stanford University did not want SRI to become a management consulting organization, even in part. Stanford saw SRI as a place of research, the conclusions of which would presumably speak for themselves, and this stipulation may have had some impact on how SRI perceived itself. It is also relevant to note that for most of its existence SRI has considered itself an "institute" and not a company. Semantically, an institute operates around a cause, whereas a company operates to make a profit. In the mid-1990s, after the Stanford policy became moot, I introduced that latter observation to a new SRI management. It wasn't particularly well received, even though nearly all SRI staff deeply identified with their "institute," even those in the consulting business. How did this manifest itself in the work in Sweden?

Dennis Finnigan recalls that in the 1950s and 1960s our clients in Sweden and other countries viewed SRI as decidedly different from its competitors. There were perhaps four reasons for this perspective:

- Integrity—SRI could be trusted to keep its word and never more so than in matters proprietary or confidential.
- Objectivity—SRI was not beholden to anyone.
- Client attachment—SRI did not have client interdependence as an end goal.
- Technical expertise—SRI had a wide and competent technical base from which to draw.

By the 1960s, SRI had attained a preferred position within the Wallenberg and Axel Johnson industrial worlds that comprised hundreds of companies. It also had preferred access to whatever client resources were needed to do the jobs asked of it. Astonishingly, the work for the Wallenberg group ran as just one project from 1959 to 1981! In all this work, no proposals were written, and no formal report was printed. All that existed was a master contract with handshakes and a trust that was extended to the SRI people who worked on this client's behalf—at one point more than 30 people! This all gave clear evidence of SRI's sterling character. But one more, very personal episode needs mention.

Finnigan was in Stockholm in 1982 when he received a call from Marcus Wallenberg. Wallenberg was very ill and not expected to live much longer. He sent his limousine to bring Finnigan to his home, where he greeted him personally at the door. His surprising request of Finnigan was that he accept a very important personal role regarding Wallenberg's family. Finnigan immediately assured him that he would. While this episode speaks mostly about Finnigan's personal character, it also happened to a person who was SRI's principal representative in countless tasks across the Wallenberg industrial and banking empire. He had gained honor in that work, in part because of the organization he represented. Had SRI not exemplified the above qualities, this entreaty would likely never have been made.

Recreation and Tourism

SRI was one of the first research organizations to perform multidisciplinary research in the areas of recreation, tourism, and the arts. Until then, most ventures in these fields were planned simply as the fulfillment of someone's dream—a philanthropist or entrepreneur, designing "by the seat of his pants." In several cases, SRI pioneered research methodologies that others later emulated and standardized. Here are a few examples.

"Project Mickey"

Walt Disney's first notions were of a modest but "magical little park" where kids and their parents could have fun together. He envisioned it on 8 acres adjacent to his Burbank studios, a place where his employees and their families could go and relax. But then World War II came along, and any realization of his dream had to be put on hold. During that hiatus, however, his vision continued to grow, and by the end of the war it was clear that to build his "little" park would need a lot more land and a lot more money.

While Walt Disney and the Disney studios had a remarkable vision of an amusement park and what it might contain, they had few skills related to designing, building, or managing it. It was through an SRI client in the Los Angeles

area, famed architect Charles Luckman,[21] that they learned of SRI. Walt Disney himself phoned the Los Angeles SRI office and spoke with Harrison "Buzz" Price. "What do you guys do for a living?" was his opener. A good question, and the answer must have pleased him because by the end of the day SRI had secured two Disney projects.

Through this brief interaction, then, "Project Mickey," as it is termed on the Institute's project logs, came to be. Although these first projects lasted just about 6 months, the SRI project team would come to exercise considerable influence over the location and operational design of the park. Starting in June 1953 and funded at $27,960, Project Mickey became the first of many projects in tourism at SRI and certainly the one with the most lasting impact. The leadership for the first phase of the project, site selection, came from SRI's Los Angeles office in the person of C.V. Wood (who used initials only), a first-rate entrepreneur. As evidence, by 1954, during the project's second phase, Roy Disney hired Wood to become the Executive Vice President and General Manager of Disneyland and to oversee construction of the park. As a result, SRI's Price led the second phase, which concentrated on economic feasibility and planning.

As stated, the first phase of the SRI work was related to location and demographics. Initially, the SRI team compared 10 regions in the Los Angeles basin. The bases of comparison were population growth, weather, and other precise criteria to avoid sites already extensively developed, oil fields and reserves, bad topography, airports, and land under government control. About 100–200 acres were sought, somewhere in Los Angeles County or Orange County. Walt Disney's only stipulations about where to place the park were that he didn't want it near the beach and the land should be relatively flat. On the basis of climate and access to population, the region was narrowed to one encompassing 5 miles on either side of the Santa Ana Freeway and extending from the Los Angeles County line to Santa Ana. Within this area, SRI studied 10 potential sites, and these were ultimately reduced to a rank-ordered set of four. By August 1953, a formal report was submitted, indicating that SRI's first choice was the 139-acre "Ball Road Subdivision" along the Santa Ana Freeway and East of the San Gabriel River (see Figure 14-8). The Disneys agreed.

These walnut, citrus, and bean farms, then, would yield to one of the world's most famous kingdoms. The land price, from some 17 owners, was expected to average about $6,200 per acre. It was bought for less—$4,600 an acre. This phase of the project went so well that, as mentioned, Roy Disney later offered Wood the job of constructing Disneyland. Wood in turn hired a retired Admiral and former SRI client, Joe Fowler, to manage day-to-day construction. He also asked his former colleague from SRI Menlo Park, Bill Platt, to undertake ongoing financial tasks and some construction supervision. Completing the construction of such a unique environment in just 18 months was clearly a remarkable accomplishment—one that, in retrospect, might have put its scheduled grand opening at risk.

The second or operational planning phase began in about October 1953. This aspect of the study started with initial assumptions about attendance that predicted a peak rate of perhaps 28,500 visitors per day, with a total of 2.5 million visitors per year. These first figures would produce annual revenues of $5 million, operating costs of not quite $4 million, and an 8-year payout.[W] By the end of the study, however, attendance estimates were pegged at 5 million per year, and capital requirements, first estimated at $5–6 million, were revised upward to over $9 million.[X]

To understand such operations better, SRI held discussions across the United States with more than 10 major amusement park operators, four ride manufacturers, and others.[22] SRI's financial planning was detailed and included revenues from parking, admission, rides, food, and souvenirs; the operating organization required; and even the type and number of turnstiles to be used. Consideration was also given to how much walkway space was required for peak loads and the kind of services needed to keep the public happy and free of fatigue. The report was capped off with some detailed schedules that showed an advance opening in mid-1955.

The construction of Disneyland was both a marvel and a nightmare. The 18-month schedule was tight under the best of

[21] He had designed both Cape Canaveral and Johnson space centers and Boston's Prudential Center.

[22] Much of this survey was done by Bill and Barbara Spaulding during the summer of 1953. Bill also was in charge of the removal of 10,000 orange and 4,000 walnut trees.

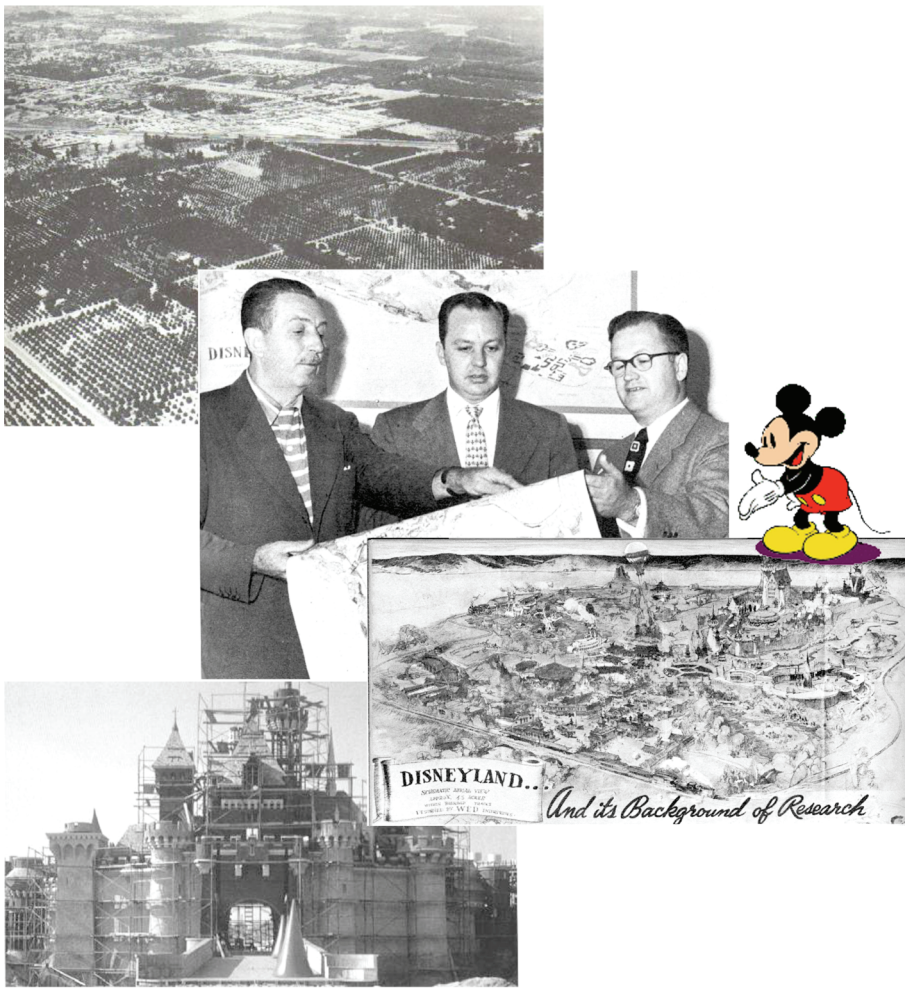

Figure 14-8. The designing of Disneyland (clockwise: The Orange County property, Walt Disney with C.V. Wood and Harrison Price of SRI, a rodential consultant, an artist's sketch, and the Disneyland Castle under construction).

circumstances, all of which seemed to be absent. Trees tagged red and green for removal or not all fell to a color-blind bulldozer operator. The watercourses, so prominent in the design, wouldn't hold water in the loamy Orange County soil. Construction was also plagued by strikes and bad weather. Perhaps most importantly, all this effort was totally new, and in many cases the designers had to make important changes during the course of construction. These "unpredictables" all had their cost impacts. Given the present size of the Disney empire, it may seem odd that the escalation in construction costs was a major problem, but it was. Money for such an enterprise was difficult to find, and Walt Disney would come to put a lot of his personal money into the project. Thus, the rising costs were ominous.

But when Wood moved to Disneyland, he had an idea for helping meet the rising cost of the project. The creative notion was to offer major vendors a promotional tie-in to the park; that is, allowing them to become an "official" airline, soft drink, hotel, etc. These associations helped cover the growing gap between the initial estimate of around $9 million to the $17 million it took to open the doors. Some financial people openly speculated whether any amusement park could ever repay such a huge investment.

Contrary to some recounts, SRI was not involved in the more thematic aspects of the design. It was Walt Disney's idea for not one, but four, linked sections of the park that would offer families a variety of novel experiences all on one site. Each section would present a combination of traditional rides, enriched by the Disney touch and an ample supply of the Disney characters. The "four-leaf clover," as the layout was called, would turn out to be excellent at dispersing crowds. Also, Disneyland, as it already was being called, would be spotlessly clean, staffed by freshly uniformed personnel, and serve wholesome food.

Almost exactly 2 years after SRI became involved, including an amazingly short 18 months of round-the-clock construction, Disneyland opened on July 17, 1955. The opening was not intended to be general, but one geared toward select people and their acquaintances—some 15,000 tickets at the most. However, tickets came to be issued freely, even duplicated, and the crowd swelled beyond any expectation. Wood reported that some enterprising people had placed ladders over the barbed wire near the stables at the back of the park and were charging $5 per entrant to use them.[Y] Clearly, Disney lost track of how many

people entered that first day. And there were access problems as well. Because the Santa Ana Freeway was not yet completed, Wood had arranged with the state for the new Harbor Blvd. exit to be paved. Traffic was still horrendous, and the total inflow reached perhaps 33,000 people on what came to be called Black Sunday.

Promotion for Disneyland was greatly aided by the new ABC television series that featured Disney stories and characters.[23] But that first day the parts of the park that were unfinished were hidden from the television cameras. Also, beyond the cameras, other aspects of the first day did not go well. Rides failed, food ran short, a gas leak occurred, asphalt was not yet set, and the press was generally uncomplimentary.[24] In retrospect, the hurried schedule undoubtedly caught up with them. As a result, a committee took over running Disneyland, and Walt Disney himself moved on site into a few rooms over the park's fire station. The kinks were worked out in a few weeks, and Disneyland was an "immediate" success. Crowds continued to be substantially greater than those for which anyone, including SRI, had planned. But Wood's days at Disney were numbered. Though they had dealt with countless construction difficulties, including the trade unions' impact on a tight schedule, hiring and training people, and traffic and parking, the early operations were not at all smooth. Because of operational glitches and in part because his strong leadership skills were a bit in competition with his boss, Walt Disney, sometime in late 1955 Wood lost his job.

During the construction, Price continued SRI's preopening work for Disneyland in the area of merchandising, which eventually developed into 30 Disneyland shops. While most of the segments of Disneyland are now familiar to everyone, one, called Holiday Land, which was intended to change with the various holiday seasons, was never built. By the time Disneyland opened, the site had grown to 190 acres and included space for the Disneyland Hotel. Also during the construction period, Disney and the adjacent town of Anaheim worked to annex Disneyland. Part of the background for that annexation was another Disney-sponsored SRI study by Platt that revealed the cost benefit of Disneyland for Anaheim.

For nearly all of the SRI people who worked on Disneyland, either directly, as did Wood, or indirectly as did Harrison, Platt, and others, this was their first venture into the tourism world. It is a tribute to the talent that SRI attracted that these people helped Disneyland off to a good start, showing where it should be located and that for its expected level of attendance it could be profitable. Given the uniqueness and complexity of construction, including mundane problems like getting the porous soil to hold a lake, the construction phase was amazingly short. The first year's attendance reached about the 5 million SRI had estimated but, needless to say, the popularity of the park thereafter far outstripped anyone's estimates. That first year, each person left behind $5 in expenditures, an amusement park record. Because of its uniqueness and in spite of the rushed opening, the project established SRI as a pioneer in research on recreation and tourism.

From Disneyland, Wood went on to supervise the building of other parks in Massachusetts and New York City, as well as recreation developments around the country, notably Six Flags in Texas. He became President of all of the Warner Bros. theme parks. Along the way, he partnered with chain-saw tycoon Robert McCullough to develop Lake Havasu City, Arizona. As part of that project, and with no doubt planned incongruity, Wood transplanted the 150-year old London Bridge to the Arizona desert in 1968.[Z] Price went on to establish Economic Research Associates (ERA)—interestingly enough, with the aid of Walt Disney. Walt had tried to hire Harrison for several years, but when Harrison told Disney that he doubted he, Walt, would take internal advice, Disney "insisted" that he start ERA and even guaranteed its first 3 years of operation.[AA]

The Kennedy Center for the Performing Arts[BB]

In 1955, a group of civic leaders in Washington, D.C. prevailed on Congress to help establish a center for the performing arts worthy of the nation's capital. At the time, Washington had only one legitimate theater, the timeworn National, and only Constitution Hall for the

[23] ABC became a part owner of Disneyland in the beginning, and only later would Roy Disney buy back ABC's interest. Ironically, Disney now owns ABC.

[24] Interestingly, attention was brought to the unset asphalt by a short couple alongside SRI's Price as they were all entering the Castle. Price recalls that the woman's spiked heels were sinking into the asphalt, and she and her husband, Frank Sinatra, were complaining. H. A. Price, personal communication, October 15, 1999.

presentation of major concerts. Constitution Hall was out of favor with many because its owners, the Daughters of the American Revolution, refused to allow black performers there.

Congress authorized a District of Columbia Auditorium Commission to explore the feasibility and prepare designs for such a center, provided that private money could be secured to build it. The Commission was composed of a dozen prominent local citizens—a blend of politicians and "patrons of the arts." None had professional experience either in designing or in managing such a facility.

The Commission hired two organizations to help. The prominent architectural firm of Periera & Luckman[25] out of Los Angeles was to do preliminary designs. SRI Washington was to conduct a preliminary economic study to provide design and feasibility parameters. The two teams would work jointly on identifying and evaluating sites.

Members of the Commission were free with their opinionated guidance for the studies. One member wanted the center to be "as much as possible like the Met" (New York's venerable opera house). Another thought Carnegie Hall should be the model. A third desired a "completely modern, different place, suited to the times." Several were concerned that the new "opera house" should never host such lowbrow events as rock or jazz concerts. One thought it important for the hall to be the largest in the country.

Bill Royce drew the assignment to tour existing facilities around the country to obtain data on dimensions and capacities, utilization, costs and revenues, and, especially, the recommendations of experienced auditorium managers. The first shock to conventional wisdom came from Raymond Allen, then General Manager of the Metropolitan Opera, who showed Royce all the faults of this aging facility and urged: "Whatever you do, don't build it like the Met!" Next, the manager of Carnegie Hall disclosed that its only real moneymakers were the Friday evening jazz or pop concerts; the symphony and other classical shows depended on contributions to break even. "Besides," he said, "Our Board members think we're closed on Friday evenings."

Both managers cautioned against making the hall too large, because of potential problems with acoustics and the difficulty of filling it often enough. All respondents agreed it would be a mistake to try accommodating dissimilar events in a "one size fits all" facility.

Armed with such input, SRI's recommended a multiple-unit facility, and the unit capacities were close to those finally adopted.

SRI studied seven proposed sites, each of which had advantages and disadvantages. The most available, accessible, and least expensive site was on Theodore Roosevelt Island in the Potomac River. But it was in a nature reserve and, even in 1955, environmental concerns won out. Other sites were in congested areas, very expensive, or claimed by other federal agencies. Ultimately, SRI recommended the present site in the Watergate area.

When time came to present recommendations to the Commission, Charles Luckman, the architect known as "the world's greatest soap salesman" (he had briefly headed the Lever Brothers soap company), eloquently reviewed a series of alternative designs, each more dramatic than the last. The Commission members were charmed. Then Royce had to get up and run through several charts of dry statistics to establish the economic parameters and financial feasibility of the project. What a contrast! But based on the Luckman designs and SRI's recommendations, the Commission set out to raise more than $7 million to build the center. Times were tough, money was tight, and the government held to its insistence on private financing. The project languished.

Then John F. Kennedy was elected president, his wife Jackie established a new level of culture in the Capital, and the *Camelot* aura attracted more big money. So, the project proceeded and the new D.C. auditorium complex was well under way when the President was assassinated. It seemed most fitting that the new center be named the Kennedy Center for the Performing Arts. (Maybe more for Jackie than for Jack?)

Seattle's Century 21—The First Financially Successful World Fair

For more than a century, communities that wanted to celebrate their accomplishments would sponsor "world fairs" or exhibitions. They always attracted much attention, often more from their own people than from

[25] This is the same Luckman noted earlier regarding SRI's introduction to Disney.

moneyed tourists. And they always lost money, costing more than their promoters' estimates. In addition, they usually left behind a group of unsightly "white elephant" facilities. Local leaders regularly hoped to recoup the losses through tourist receipts, new business investments, or less tangible prestige.

In the late 1950s, a group of Seattle business and civic leaders got the urge for a world fair. They could raise the initial investment money, but they needed help selecting a site, choosing a "theme" to attract visitors, and setting financial limits on their exposure. To stage the fair the State of Washington created a Commission that included representatives of the City of Seattle, King County, business, labor, and other civic groups. A representative of the State Attorney General's office was designated as its legal advisor.

Edward Carlson, then CEO of the Western Hotels chain and later of United Airlines, was the Commission chairman, a fortunate choice. He insisted on running the fair in a clean, businesslike manner. To hold costs down, he extracted a "no graft, no strike" pledge from the central labor council and Chamber of Commerce. He held weekly breakfast meetings at which every item of planning and implementation would be openly discussed. And he made all participants stick to their budgets. Sven Eckdahl became general manager of the Fair corporation. He was experienced in such activities, paid close attention to detail, and later went on to help stage similar events in other cities.

In 1957, SRI's Pacific Northwest Office (SRI-PNW), based in Portland, won the contract to perform preliminary studies of the economic feasibility, site location, and theme development for the fair. Royce, then director of SRI-PNW, worked with the site selection and economic factors team of the Commission. SRI's Richard Raymond performed the "theme" research.

The Commission had chosen "Century 21"—more than 40 years before its arrival—as the general theme. Raymond toured the country to gather opinions about what features would attract tourists and have a lasting impact. Many opinion leaders agreed with him that, in the age of Sputnik and concern over the United States' eroding position in science, the nation was ready for a "serious" theme, not merely a "fun" fair.

From Raymond's work came the emphasis on science, space, and the environment, to be presented in interesting and participative exhibits. The federal government agreed to sponsor the Pacific Science Center as a focal point; it continues today as a venue for both professional and public science activities. Countries that sponsored exhibits were encouraged to stress similar themes, with many "hands-on" displays.

The two main economic problems were: (1) choosing a site that would be convenient for visitors to reach, but not too expensive to develop, and (2) limiting the basic investment to what could be amortized within the 2-year limit imposed by the International Commission on World Fair Exhibitions, which sanctioned such events, to prevent undue competition. As it turned out, the chosen approach solved both problems. The leading initial candidate site was a large field near the Seattle-Tacoma airport, which its owner wished to develop and which would be convenient for air travelers but distant from the city. All other available sites were too small.

Then, at one of the breakfast meetings, someone mentioned that an area just northwest of downtown might be made available. The old National Guard armory needed to be replaced; the city auditorium, equally aged, needed modernizing; an athletic field owned by the Seattle School District might be used for outdoor events. These were separated from an open space and some dilapidated houses by a cluster of religious and civic buildings, including the Catholic chancery, a Masonic temple, a Protestant church, and a Jewish synagogue.

"Could we possibly incorporate all these facilities into our World Fair, if we assure each of their owners of having better facilities when all is over?" "No way," some members answered at first. "You'll never get all those folks to cooperate."

But Carlson and Eckdahl began to see the possibilities. Royce suggested they try a "McGoozle" on the various organizations involved. (McGoozle is known among lobbyists as the fine art of getting another person to do what you want him to do but to make him think it was his own idea.) Each member of the group was assigned one or more organizations to contact and sell them on the idea of becoming part of the World Fair. One by one, the organizations fell into line. Finally, none

could be the one who blocked the plan, although the school district was the last holdout. Each became a proud sponsor of an exhibit in the fair, thereby reaping its own public relations rewards.

Thus, the Commission gained a most desirable site at the modest cost of helping to refurbish several existing facilities, plus a modern opera house to replace the old auditorium. Only one new building had to be built, in addition to the Pacific Science Center, which was federally sponsored. The armory became the international food court, with the replacement armory sited elsewhere.

Two more investments contributed to the success of the fair. A monorail line was built from downtown to the fair site, using transportation system bonds. It still carries commuters and tourists back and forth on schedule. A group of private investors' idea for a landmark tower with a revolving restaurant on top became the Space Needle, still a profitable landmark on the Seattle skyline.

The Century 21 Exhibition was the first world fair ever to be financially successful, at the same time leaving Seattle with an improved infrastructure—several buildings that enhanced the city, rather than deteriorating into eyesores as happened in so many other locales. And SRI helped show the way. The group at SRI would go on to assist in the planning of large fairs in New York (1964), Montreal (1967), Japan (1970), Melbourne (1973), and Philadelphia (1976).

Athletics[cc]

Over several decades, SRI's Recreation and Tourism Economics program worked on a number of projects involving athletic facilities. Until his untimely death in the mid-1980s, Eric Duckstad headed most of this work. One of the earliest was a new arena for basketball and hockey in Portland, Oregon, built in the late 1950s. Another was the Superdome in New Orleans. Unfortunately, the Superdome became a case where implementation departed grossly from plans. All observers agreed that SRI's work was well done and that the facility was fine when built. However, the endemic corruption in New Orleans resulted in large cost over-runs and political scandals. A more satisfactory result of SRI's work was a stadium for football and other outdoor events in Edmonton, Alberta, Canada

SRI's work on athletic facilities brought contacts with leaders of the National Football League (NFL), who had growing concerns over players' injuries. SRI was hired in the mid-1980s for a multidisciplinary study of measures to reduce the number and severity of injuries from professional football.

The study began with analysis of the numbers, types, and causes of injuries to players. SRI proposed, for the first time, a gradation in the severity of injuries. This system gave the NFL a way to quantitatively assess which injuries needed the most attention and the causes that led to the prevalence of each. From the analysis of such a spectrum of injuries came proposed changes that ranged over a wide field: better conditioning of players, improvements in the various types of playing surfaces, better equipment (especially the design of helmets), and rule changes. To gauge the effects of various artificial turfs, SRI proposed a "punishment index"—an approach that factored in the effect of cleat size and length on injuries on various surfaces. SRI also noted that some players' failure to wear the normally prescribed equipment contributed to injuries as well.

On the management and financial sides of the NFL, SRI was involved in League expansion and movement. In specific studies for Commissioner Pete Rozelle, SRI recommended expansions for Seattle and Tampa Bay in 1976 and for the transfer of the Baltimore Colts to Indianapolis in 1984.

Reno Gambling

Finally, a study that got SRI into a controversy: In the mid-1950s, William Harrah, owner of a major gambling casino in Reno, became interested in ways to make commuting from the Bay Area to Nevada easier for potential customers. He asked SRI to study the feasibility of chartered bus service at favorable prices, rather than having customers drive their own cars. Without addressing the economic or moral aspects of gambling, the SRI team looked at possible origin-destination routes, comparative transport costs, days and times that people might want to go, and other factors for a chartered bus system, and submitted the results to Harrah.

Somehow, the word got out to the public. Self-appointed critics complained to the powers at Stanford University that "SRI was doing

research to help gamblers." The newspapers editorialized; radio commentators commented. Pastors in some churches fulminated. SRI's nonprofit tax-exempt status was questioned. Ultimately, SRI executives had to explain to Stanford and the public that we had not "done research on gambling" but only on a transportation economics question, that the client's business was legitimate in Nevada, and that SRI did pay taxes on work for commercial clients. In the end, Harrah and other casino operators helped set up a charter bus service to Reno, but kept the operations at arm's length. SRI maintained its policy of being available to work for any legitimate client, but also strengthened its procedures for careful screening of potentially controversial projects.

The Birth of SWIFT—The Interbank Network

SWIFT, an acronym for the Society for Worldwide Interbank Financial Telecommunication, is the organization whose facilities communicate virtually all financial transactions among international banks. Its role has become essential to international banking, and in 2000 it accommodated some 7,000 users in 192 countries, transmitting more than 1.2 billion messages involving value in excess of US$5 trillion.[DD] SWIFT was founded in 1973 by nearly 240 banks, mostly in Europe. SRI's role in SWIFT began as its founding members, struggling with both concepts and national differences, recognized the need for help in converging on both functional and organizational design. SRI's principal entrée into SWIFT came from its work for Midland Bank in England, but also linked to SRI relationships in Scandinavia and even reached back to its creation of automatic check processing for the Bank of America (BofA) in the 1950s. [EE,FF]

The idea for an international interbank financial transaction network began in England in the deliberations of a domestic bank cooperative called the Interbank Research Organisation, located in London. The spearhead for the concept that became SWIFT was Charles Reed of that group. SWIFT was to be a neutral, somewhat autonomous organization with oversight by representatives of its member banks. But when the organizational and functional design effort broadened to involve banks from the European Community, the group encountered difficulties not unlike the United Nations. It was then that the members recognized the need for a separate party to guide the deliberations and help resolve their differences. Thus, Reed asked Don Fiske of SRI whether it could take on roles such as offering advice, facilitating discussions, helping resolve differences, and ultimately gaining consensus among the participating member banks. Though the initiative was clearly European, the United States, in the party of the American Banking Association (ABA) and banks like City Bank, BofA, and Chase Manhattan, also participated, one of which led to another SRI linkage.

On BofA's side of the pioneering ERMA project was Al Zipf, whom the bank hired in the early 1950s to guide its movement into automatic check and data processing. Zipf ultimately became BofA's most knowledgeable person in that area and its Chief Technical Officer. Later in his career, as one of BofA's representatives to the technical committees of the ABA, he became aware of the growing volume of international checks and other financial instruments. It was the early 1970s and yet the conveyance system of the day, incredibly, consisted of couriers who filled the skies moving paper from one bank to another. So, while U.S. banks may have had some reluctance about European leadership in this area, to those like Zipf, it was eminently clear that a worldwide network was needed to handle the relentless increase in international financial transactions. In his ABA role, Zipf sought to identify a consultant to facilitate the emergence of SWIFT.

Recalling the good work that SRI had done on ERMA and perhaps because of our independent status, Zipf called SRI's Dennis Finnigan to see if SRI might be interested in helping create such a capability. Finnigan promised to look into it and immediately got in touch with Fiske who, coincidentally as mentioned above, was already in discussions with the SWIFT leadership. SRI reacted quickly to this opportunity, winning a project to help create SWIFT.

When SRI arrived on the scene, the basic functional and organizational concepts were being explored, albeit by a somewhat

dysfunctional working group. As mentioned, the organization sponsoring the initiative was the Interbank Research Organisation, in London, and its internal name for the project was simply the Message Switching Project (MSP), governed by a steering committee. Under this rubric, several design subcommittees were created. One was The Organisation and Legal Sub-Committee of which Fiske became a member. Under the auspices of the MSP and with participation of its members, SRI prepared the major founding documents for SWIFT, its organizational structure, and its by-laws.[GG] These documents, in the form of SRI reports, established the basis for operation, financial arrangements including SWIFT's nonprofit status, and the roles of the member banks. Because of legal considerations, the organization was located in Belgium, which gave rise to calling the organization a "Society," a nontaxed class of organization under Belgian law. Interestingly, and relevant to the power of acronyms, the early name for the new organization was the Society for International Financial Telecommunication.[HH] Within a month, and presumably for its nice connotation, the acronym became SWIFT. Finnigan indicated that SRI originated the name as part of its authoring role.[II]

A good example of SRI's involvement in the genesis of SWIFT was its helping to find a founding president for the organization. Fiske was visiting Menlo Park and was having dinner at Finnigan's home in the spring of 1973. When Fiske noted that SWIFT was looking for a person who could aggressively launch the company, Finnigan immediately thought of someone he had mentored and knew well who had been in charge of data processing at Scandinavian Airline System (SAS) and had come to the United States to avoid Sweden's onerous tax situation. His name was Carl Reuterskiold, and he was living at that time in New York but was homesick for Europe. Finnigan called him that same evening and learned that Reuterskiold was interested, but lamented that he couldn't be available until October. As fate sometimes plays out, that's exactly when SWIFT was scheduled to get off the ground, so Fiske nominated him for the job and he got it. SRI also helped identify and recruit the chief financial officer, as well as individuals for several other key roles.

As the SWIFT system was beginning to take shape, member banks were still worried about how secure the system would be. SRI was asked to examine and review both this issue and other aspects of its technical design.

In October 1976, SRI conducted a study that was intended to be an operational audit; that is, until the initial system operation was delayed. That delay meant that SRI was forced to examine the security of the SWIFT system *design* rather than operation.[JJ] The report made extensive recommendations on procedures, access, physical, and network security for both SWIFT and its member banks. Examples and summaries of the SRI recommendations follow:

- In the absence of written security procedures, SWIFT should develop a written security policy governing external banks or public disclosures to be issued by the Director General and maintained by an information control officer for the entire SWIFT organization. Specific actions were cited.
- Given the size of the financial stakes involved, SWIFT should examine its need for insurance to cover the loss of information.
- Member banks should take a number of actions (spelled out) to give physical protection to its terminals and logical protection to its SWIFT access positions to protect against unauthorized entrance into the SWIFT system.
- The link between the member bank and each country's (or region's) terminal concentrator should be encrypted, and all uses of the public switched network for such linkage should be logged.
- Extensive recommendations, ranging from security to operational effectiveness, were made for the operation of the regional concentrators and the switching centers.

After the SWIFT system went online, SRI continued to examine its operations. A study for an information management system was completed in 1983, the usefulness of expert systems for SWIFT was examined in 1985, the qualifications of cryptographic algorithms for the User Security Enhancement Project were reviewed in 1991, and other more sensitive security work followed.

Thus, SRI was a party to the establishment and ongoing success of SWIFT. Reuterskiold would lead the organization through its first 17 years, and for over 25 years SWIFT has operated successfully, expanding to become the cornerstone of international banking transactions that involve trillions of dollars each year.

Changing America's Investment Habits—
The Merrill Lynch CMA

Background

In the opinion of many, a financial revolution occurred in the United States over the decade between 1965 and1975.[26] It was a time when average citizens saw a significant increase in their discretionary income and when a new financial world opened to help them manage or invest it. At the beginning of the period, there were myriad but separate places one could go for investment, such as banks, savings and loans, brokers, and the government. These were the traditional institutions, and they seemed as permanent and unchanging to consumers as the earth beneath their feet. Each of these areas was isolated from the others and everybody, including the leaders in each sector, was ignorant of other options. More importantly, each sector worked to keep it that way. That ignorance was fortified by barriers placed around the various financial sectors, particularly the banks. Many of the restrictions arose from laws or conventions that were traceable to the Depression of the 1930s and were intended to protect investors by barring their banks from making speculative investments. These restrictions, then, were invoked on behalf of depositors…or so it seemed.[KK]

To this backdrop we also add the environment that SRI offered in the early 1970s. It was, to be sure, one of the most enabling of times for inquisitive financial analysts willing to invest in the promise of discovery; that is, looking beyond the obvious or the incremental. Such people enthusiastically embrace latitude in their research pursuits and in this case the right people and circumstance came together to make something important happen.

Getting Started in the Financial Industries Sector

The year was 1974, and an SRI Board member had casually inquired of President Charles Anderson whether the Institute was working in the area of financial services. His premise was that it might be a fruitful area of business for SRI. Well, SRI wasn't in that field and, more than likely because Anderson shared the Board member's opinion, he asked a senior member of the Decision Analysis Department, Carl Spetzler, to set up a group in financial services. By September of that year, Spetzler had established a group he called Financial Planning and Management in Al Lee's Management Systems Division. As mentioned earlier, Spetzler was a practitioner in the new, mathematical, and arcane field of decision analysis, and he professed to know nothing about financial services. The new organizational name probably reflected Spetzler's bias and the slant he wanted taken in the area he was asked to start.

Getting at the Fundamentals

As with many SRI staff, Spetzler was a brilliant analyst. His lack of familiarity with the business of financial services served as an invitation, perhaps incentive, for him to ask fundamental questions rather than to cower behind unfamiliarity or ignorance. So, from his own curiosity and a few projects he was able to wrangle, he began to get a picture of a very fragmented industry. As is frequently the case, basic questions from good analysts often lead to new insights. The strong compartmentalization he and his colleagues saw seemed both unwise and arbitrary—perhaps conditions that everyone had simply grown used to. Some of the fragmentation could be attributed to (mis)interpretations in what the law permitted[27] and some simply to choices by each fragment's leaders. By count there were 22 kinds of

[26] The discretionary per capita income as tabulated in the *U.S. Statistical Abstracts* shows a marked increase from 1965 to 1980. The inflation-fed increase of over three and a half times during that period probably at least made people *think* they had more money, and even with inflation subtracted, it was still a real increase of more than 40%.

[27] The Banking Act of 1933 laid the groundwork that tried to keep banks, in particular Federal Reserve Banks, from indirectly placing their depositors at risk through a bank's own speculative investments. Hence, there were limits on a bank's right to purchase stocks. Most people didn't bother to recognize, however, that banks were not prohibited from purchasing securities and stocks on behalf of their customers, especially through subsidiaries.

financial institutions, including banks, savings and loans (S&Ls), brokerages, insurance companies, and the like. This complicated array of investment options, they surmised, would naturally baffle most mainstream households, leaving them susceptible to high-powered investment salesmen who were by design usually myopic.

On the investment-provider front things were also undergoing change. New concepts in financial services were slowly emerging around what most thought were Gibraltar-like laws and stipulations left over from the Great Depression. S&Ls were offering Negotiable Order of Withdrawal Accounts that seemed for all the world like checking accounts but were offering greater interest. Discount brokerages appeared. And feeding these innovations was the dramatic, if inflation-driven, increase in Americans' financial assets.

Quite naturally then, SRI's preliminary assessment of the situation found it to be mainly one of opportunity. In the normal SRI mode, Spetzler and his cohorts plied the waters of the financial institutions looking for an opening for their new concepts about the emerging investor. They won a number of contracts, one with Merrill Lynch that will be returned to later, but they believed they needed a lot more information to confirm their suspicions and to provide a better basis for proposing any changes to potential clients.

But getting such authentic information for SRI usually meant finding a sponsor, and the job loomed large enough that they chose to fund it through a multiclient effort. Armed with some intuitions, the Financial Services Group launched what would eventually become a $1.5 million survey/study. As with many multiclient projects, sponsorship solicitation continued over the course of the work. They called the project "Consumer Financial Decisions" (CFD), and its objective was "to provide a unique, comprehensive overview of consumer financial requirements, behavior, attitudes, and decision processes in the total financial services marketplace." Barbara Casey was project leader with Spetzler as supervisor.[28]

The survey ultimately involved 6,000 households from all levels of the income ladder and produced revealing information about how Americans behaved financially, at least as of May-July of 1978. The survey instrument covered 5,000 items in 200 pages, but even so the response was exceptional.[29] It gave SRI a unique view of the marketplace in which all of the various financial institutions were working, one way or another. A few of the many important findings in 1978 were:

- Of their total expenditures for financial services, households spent a whopping 84% on insurance and liability (mostly mortgage) payments.
- Households were highly risk-averse, with the less affluent ones being 60% (male) to 72% (female) percent willing to assume only a minimum risk.
- Many households, particularly the nonaffluent,[30] used low-interest-bearing passbook savings accounts for a wide range of financial objectives and, remarkably, 26% mistakenly used them as a hedge against inflation.
- Households displayed a lot of inertia regarding financial decisions, ultimately moving mainly to external stimulation. Much of this was due to ignorance.
- 93% of households had a checking account, with median balances of $500 for household with incomes below $15,000 and of $2,500 for those with incomes above $50,000. Sixty percent of the affluent had multiple checking accounts.
- The revolving feature of credit cards was indicated as "very" or "extremely" important by 50% of nonaffluent and 30% of the affluent, and most people didn't see their credit card balance as a loan.
- The average number of financial vendors the nonaffluent dealt with was 12, with 20 the average for the affluent (see Figure 14-9).
- Savings account balances were relatively high as shown in Figure 14-10.

The newly acquired information revealed something very important to those who conducted the project and derived its findings. They saw a time coming soon when

[28] Major SRI contributors were: Barbara Casey, project leader, Carl Spetzler, supervisor, and Catherine Chavez, Tom Goodrich, Tom Horan, Dustin MacGregor, Mary Schuelke, Harry Solberg, Michelle Swenson, Ken Frantz, Louise Herndon, Andrew Kahr (consultant), Mike Pralle, Robert Shullman, Robert Stambaugh, and Gary Tuckman.

[29] The surveys were conducted by well-known pollsters like Gallup, who paid participants from $10 to $20 to complete the voluminous poll. Most of the retrospective survey was written by Andrew Kahr.

[30] The threshold for affluence was set at $30,000.

tremendous flexibility would be offered to the typical investor either by new or existing financial institutions that would break out of their narrow range of investment services. No small part of that perception were the insights of the consultant Andrew Kahr whom SRI had brought on board. Through his decision analysis connections at Harvard, Spetzler had heard of Kahr's brilliance in interpreting copious amounts of data. Kahr was good not only at spotting patterns and trends and deducing customer behavior, but at finding or manipulating legal ways around existing regulations.

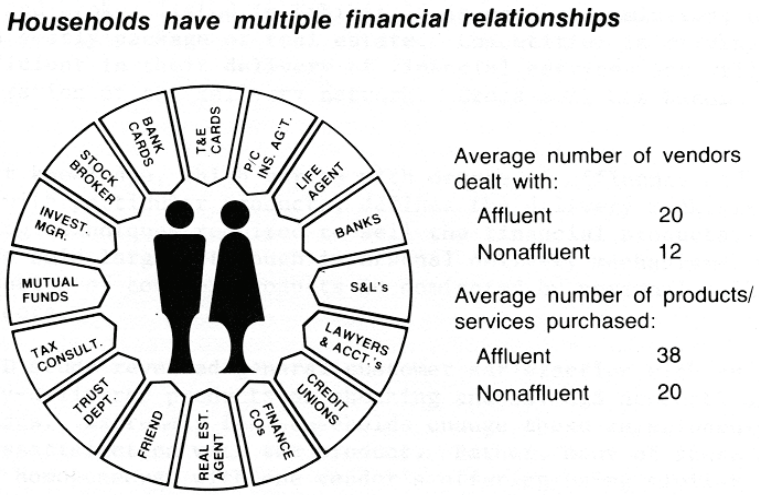

Figure 14-9. Financial connections in the average household (*Consumer Financial Decisions*, © SRI International, 1979).

The Effect of Insight on Marketing—the Power of New Information

Even at the outset, some implications of the public's investment habits were clear:

- The banks were enjoying large and easy profits on their reinvestment of passbook deposits, and these passbook accounts would become the vendors' battleground.
- The old adage in the brokerage houses that 10% of the customers provided 90% of the revenue was actually overstated.
- Since the average individual saw nearly all financial decisions as both important and complex, his governing financial characteristic was simply inertia, and it was the vendor who had to overcome that tendency.
- No vendor was moving toward revolutionary shifts in product delivery that would increase the convenience and value for the customer.
- An integrated delivery system would have major impacts on financial firms.

To SRI, these insights looked more like opportunities than threats. They knew that the inertia of a potential investor could yield to a more personal and individualized relationship with a vendor. An awakened investor might yield his fear of complexity to a professional who could simplify his financial decision space without destroying the diversity of products available.

Merrill Lynch and the Cash Management Account

While these insights were being conveyed to the 50 or so sponsors of the multiclient study, SRI returned to the companies it had been pursuing, anticipating applications for many of the concepts and opportunities CFD revealed. One of these that had already made leanings toward new financial offerings was Merrill Lynch. Its President, Donald Regan, was among those who also saw the revolution in financial services coming. He was looking for growth and had a vision of a multiple-product company that was not only a brokerage house but also offered real estate and insurance services, as

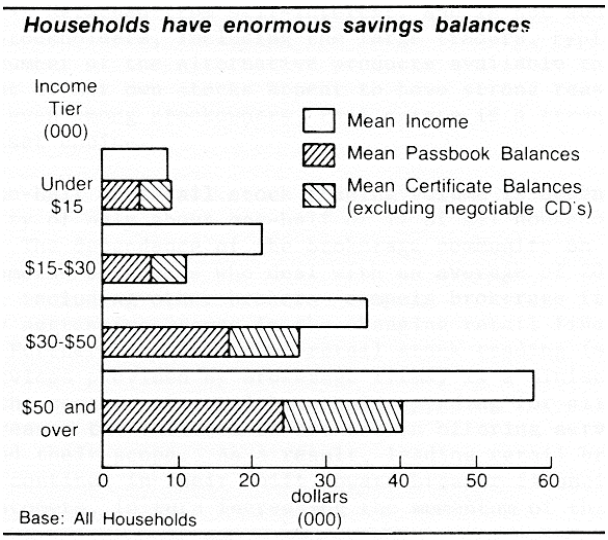

Figure 14-10. Average American household savings balances (*Consumer Financial Decisions*, © SRI International, 1979).

well as a much leaner, much less regulated form of conventional banking.

To see the evolution of these ideas inside Merrill Lynch, let's return to SRI's early interactions with them. In December 1975, one of Regan's lieutenants, Chief Financial Officer Tom Chrystie, spent a day in Menlo Park brainstorming with a number of the SRI people who had participated in the earlier mentioned CFD survey. According to author Joseph Nocera, Chrystie had already received a bunch of SRI proposals, but had called Spetzler to tell him, "no thanks."[LL] But Spetzler persuaded him to come and spend a day at SRI, which he grudgingly did. It was a long day, and the SRI staff had plenty of ideas. It was toward the end of the day that the notion of a cash management account (CMA) began to unfold. This concept permitted a single investor to access a wide variety of investment options under not only one investment company, but one investment account! Among other things, this meant that there was no idle money. Even that portion upon which checks could be drawn, a money market account, would have higher returns than conventional checking accounts at a bank. Kahr was probably the person most responsible for the new concept.

The tangible result of that day at SRI was that Merrill Lynch entered into a contract with SRI to identify new financial service opportunities. A phased approach began with SRI's first making a comprehensive profile of Merrill Lynch's existing financial services compared to those of its competitors and then working with the firm's staff to rank-order new opportunities. The ranking was based on two criteria: Merrill Lynch's projected 1981 market size and its profit potential. Later phases went on to develop the specifications for diversification alternatives. Some of the issues SRI examined are indicated by this example from its proposal:

"In order to anticipate the future role of branch locations, it is necessary to understand what values are being served by visits to branches. Why, for example, are so many checks deposited at bank branches rather through the mail? And, on the other hand, why have experiments at bill payment by telephone been failures? It is also necessary to understand why residential mortgage debt has risen far more rapidly than the value of the housing stock, and why bankcard debt has expanded at an even faster pace. At the same time, the fact that many individuals have had immense quantities of collateral, which they could have used for secured borrowing at more favorable rates, but did not, remains unexplained. To what extent are consumers aware of and sensitive to the costs of their borrowings? On what bases do they decide how much to borrow, on what terms, and from whom?"

James Fuller was project leader, with Kahr as a principal consultant. The questions posed by this study no doubt led to the need for the more complete, multiclient survey, and it would feed new and relevant information into this work.

An Uphill Fight at Merrill Lynch

Since Chrystie was a lieutenant of Regan's, he was the natural person to whom to propose CMA. But he had two helpers, both consultants. One was a long-time high-level advisor to Merrill Lynch and the other was Kahr, who had, with others, broached the CMA notion to Chrystie at SRI. In April 1976, after substantial secret preparation time within Merrill Lynch, the proposal was presented to Regan and his management team. The postpresentation discussion was full of the most negative rancor: The scheme was too complicated. The money made on the free balance would disappear. The scheme was illegal. Regan listened quietly to these objections and, leader that he was, opted to do it.

The obstacles, both inside the company and out, were substantial. Inside, there was foot-dragging from the commission-compensated account managers who didn't understand the new system and saw it as an expensive diversion. Outside, Merrill Lynch's legal staff had to spend 3 years meeting challenges to the new services as they entered many states. State bank boards and commissions, congressmen, and state legislatures were trying their best to protect local banking institutions from this threat. State by state, however, the Merrill Lynch lawyers won.

Back inside Merrill Lynch, for the first time the true assets of those customers who chose to use a CMA were revealed. It showed just how small a role the skeptics inside Merrill Lynch had been playing. After some learning time by Merrill Lynch sales staff, they began to embrace CMA's flexibility. Chrystie had assumed that perhaps 100,000 customers might opt for the CMA, but by the mid-1980s that number was

well over a million. As to the loss of income from the free balance, it was more than made up for by the annual fee itself. And, when inflation continued into the 1980s, the CMA's success became particularly evident. The banks with their regulated interest accounts started to look as out of date as their columnar entrances. SRI had been the seedbed for an offering that truly changed the financial landscape for both the vendors and the average investor.

There is an interesting footnote to this story, keyed by the single Merrill Lynch bull shown in the logo at the beginning of this section. Maybe as many as 25 years ago, Merrill Lynch had chosen bulls as its company logo to associate itself with a growing bull market. Its television commercials showed a herd of bulls wandering around Wall Street and in various other unnatural settings. The advertising campaign hadn't done much to increase business, so the firm put its advertising account up for competition. Merrill Lynch still wanted to be known as "bullish on America," however, and so this was the challenge it gave to the competing agencies: Keep the bull as our corporate symbol but give us something that works better. Two giant advertising firms emerged as leaders in the competition, Young & Rubicam and Ogilvy & Mather. Young & Rubicam was aware of SRI's new framework for market portrayal called Values and Life Styles (VALS™) (see earlier section in this Chapter) and visited SRI for help. To Arnold Mitchell, the leader of the SRI group they visited, the answer was obvious: Investors are, to be sure, herd animals, but that's not the image they have of themselves—they see themselves as solitary. So simply use one bull! The individual investor was, after all, what Merrill Lynch was trying to attract. Young & Rubicam won the competition, and Ogilvy & Mather signed up with VALS™ the next day. Merrill Lynch adopted the single, confident-looking bull as symbolic of the single, confident investor, and that icon presents the firm's public image to this day. Following introduction of the new logo, by Merrill Lynch measure, the ability of people to recall the Merrill Lynch icon shot up from 8 to 55%, and the firm's share of New York Stock Exchange business rose 2%. [MM]

This work for Merrill Lynch spawned similar groundbreaking SRI projects for American Express and Sears.

Facing the Oil Shortage of the 1970s—Whose Dipstick Do You Believe?

In October 1973, the Arab oil ministers met in Kuwait and agreed to an oil embargo against Western countries. Though this was clearly a political or ideological decision precipitated by the Yom Kippur War, it has been taken as a watershed moment in the availability of energy for the industrialized world. For over 20 years an increasing fraction of U.S. oil had been coming from foreign sources, so this action obviously raised the specter of dependency. Because the availability and price of oil are governed by economics, politics, and the notion of finite reserves, all abetted by emotions surrounding oil dependence, the subject is both complex and prone to exaggeration.[31] Both operationally and psychologically, the embargo had hit the United States in one of its most sensitive and vulnerable spots, the gas tank.

If you were driving in the mid-1970s, you were undoubtedly affected by or at the very least remember the gas lines. If you could find those stations that had gas available, you were faced with long lines and sometimes the wait for service was a half-hour or more. Probably the greatest realization this automobile-centric population faced was just how easy it was for someone on the other side of the planet to curtail, with impunity, what was at the same time one of our most coveted freedoms and one of our indulgences—going where we wanted, when we wanted. As a result of this inconvenience, the consuming public, driven by various combinations of fear and opportunism, concluded that we would face starkly higher gasoline prices, perhaps forever. The vast majority of industry analysts and even the federal government were proclaiming that higher oil prices were simply inevitable (see box). The situation was viewed as so dire that the government printed almost 5 billion

[31] The growing U.S. dependence on foreign oil was real. In 1972, about 25% of oil was imported, and that fraction would peak at over 46% in 1977. (Source: "Annual Energy Review-1997." Energy Information Administration, Department of Energy; found at www.eia.doe.gov/emeu/25opec/sld002.htm)

An April 25, 1977, article in the *San Jose Mercury News* quoted a Midwest Research Institute multiclient report that saw oil prices continuing to rise sharply. By 1985, the study said, foreign oil would be $26 a barrel and by 1990 it would exceed $37. More importantly, it stated that "world demand for oil will begin to outstrip supply by 1985." Perhaps not coincidentally, the CIA was also advising President Carter that the same crossover between supply and demand would occur in 1985.

In an article in the November 1973 issue of the *Annals of the American Academy of Political and Social Science*, S. David Freeman, director of the Ford Foundation's Energy Policy Project, stated on page 5: "If energy growth goes on at something near present rates, it will take a combination of all our current supply sources, going in high gear to feed demand. Imports alone cannot do it." According to SRI's Pat Henry, $100-per-barrel oil was a "point of recognized discussion in communities such as the World Energy Conference."

gasoline-rationing coupons, which it did not destroy until 1984.[NN]

But at SRI another viewpoint was emerging. SRI had been working on a variety of energy-related topics since about 1966.[32] The SRI perspective on the future price points of oil began to form in about 1967 when Marathon Oil came to SRI wanting to learn about the technology and costs of producing oil from coal.[OO] This brief study suggested to Pat Henry (see Figure 14-11) and Russ Phillips that much was to be learned about the role of synthetic fuels and their impact on the future price of oil. As though to verify that assumption, three separate multiclient projects were soon started in this area. These enabled SRI not only to design a framework or model for gauging the price of oil in the context of all energy sources, but also to gain a unique and confident understanding of the world's oil, gas, and coal reserves themselves. Then came the 1973 embargo, and suddenly the quest for a better understanding of where the future price of oil was headed became intense. As a result, the client base and scope of the existing multiclient projects were enlarged.

Figure 14-11. Sr. energy economist, Tom Boyce, (left) and Energy Center director, Pat Henry.

Thus, through its own initiative and in response to client need, SRI's Energy Practice acquired an industry-government mission to evaluate the trends in not just oil but energy supply, demand, and cost in their broadest senses. How did the world's known oil reserves appear when examined and measured as a function of recovery cost rather than using the flat, per-barrel cost assumption common at the time? Using their individual recovery and production costs and the quantity of their reserves, what role did energy alternatives to crude oil play in energy forecasts? Alternatives ranging from natural gas to uranium were examined in detail. Intuitively, any comprehensive study of the demand-price elasticity of crude oil should contain all such energy sources but, surprisingly, such a perspective had not been developed.

So, from a newly compiled database on the world's oil and natural gas reserves, basin by basin, through a careful examination of crude oil alternatives and their competing costs, and through the experience and thoughtful reasoning of the staff, SRI arrived at a very different position.[33] It was one of continued oil

[32] An Energy Department was founded at SRI in 1966 under Sherman Clark. This unit concentrated more on subjects like energy rate bases and regulatory matters. According to Pat Henry, SRI Vice President Ken Beggs gave the subject of oil futures a push in the late 1960s that spawned departments in Energy Economics and Energy Technology. By September 1974, these departments had consolidated under Pat Henry as the SRI Center for Energy Studies. It was in this Center that SRI's position on future oil pricing developed and was then spread around the world.

[33] Former Exxon geologist Joseph Pelline, through countless informed inquiries to oil companies and oil-producing

availability and with only a modest increase in price over the long term! I clearly remember hearing at the time that SRI's appraisal was out of step with the conventional wisdom. That conventional position was clearly driven by the gas lines and the expected aggressive pricing policies of the oil-producing nations, all further exaggerated in the media by notions of the limited size of domestic and world reserves. Many saw the fuel "shortages" as portending a permanent reduction in our standard of living.

As a result of the Arab oil embargo, SRI began a range of multiclient studies to predict the parameters of the world's energy situation in the last quarter of the century.[34] To determine the future supply and demand of energy, and forecast the price of crude oil itself over the long term, SRI had to examine all competing sources of energy. Beyond this general, recovery-cost expression of supply, it was also necessary, of course, to estimate future demand on a worldwide basis. Because of a number of factors such as more gas-efficient automobiles, demand forecasts were actually decreasing over time.[35] One metric in an SRI article written for the *Harvard Business Review* showed that in 1970 a barrel of oil contributed $140 to U.S. GDP.[PP] To illustrate an increased efficiency in the use of oil, that contribution was predicted to increase to $191 by 2000. To show the validity of the SRI concern about how demand might change, the actual number for 1999, the last year available, shows an even greater contribution to the GDP of $223 per barrel of oil consumed. (All these figures are in 1978 dollars.)

Thus, the SRI assessment had a grounding that other analyses either didn't have or chose to ignore. Given that oil is a depletable resource, here were some other SRI perceptions:

- The position that would best serve the needs of most OPEC nations, especially those such as Saudi Arabia and Kuwait with large reserves and relatively small populations, would be to maximize their oil revenues in the long-term sense. Driving oil prices inordinately high would unleash a host of what for them would be undesirable responses, including:
  - The development of new oil reserves in other countries, reserves that had not previously been economical to develop (e.g., reserves in remote and hostile environments such as deep offshore or the Arctic)
  - Expansion of the development and use of new technologies to enhance the recovery of oil from known reservoirs or to produce oil from solid fuels such as coal and oil shale and even solid wastes
  - Government policies (e.g., automobile and appliance efficiency standards, energy-efficient building codes, energy taxes) to reduce energy and oil consumption
  - The substitution of other fuels (e.g., coal, natural gas) for oil
  - The development of new energy technologies (e.g., nuclear, solar, wind, methane) to reduce the demand for oil
  - Slower global economic growth to reduce the demand for imported oil.
- Some U.S. politicians seized on the occasion to advocate oil or energy independence. They sought a wide range of initiatives that would bring the money to pursue new energy sources to their constituencies. Most of these proposals, however, looked promising only if the cost of oil were to increase dramatically.

These perceptions, then, suggested that the best strategy for oil-producing nations was not to escalate oil prices, but to pursue policies that would promote the long-term dependence of oil-consuming nations such as the United States on imported oil. This meant setting the price low enough to block the development of new oil reserves, energy conservation, and alternative energy sources. If prices were to rise to the then often-mentioned $100 per barrel, future revenue streams—on which many if not all OPEC members depended for their major source of national income—would be reduced.

One of the first revelations of this ongoing analysis and its clear consequences for a more

countries, meticulously compiled the SRI database on world oil and natural gas reserves as a function of recovery cost.

[34] The SRI studies from which this insight came served a broad community of oil users and producers: those who sold into either of those markets, or to government. Many SRI professionals participated in what turned out to be an important series of large multiclient and single-client projects. Among them were Pat Henry, Joseph Pelline (formerly of Exxon), Bill Schumacher, Jay Kopelman, Gene Harless (formerly of Texaco), Arvind Jain, Bert Louks, Tom Boyce, Stan Field, Ed Kinderman, Carl Trexel, and Jeff Witwer.

[35] Demand itself was, of course, increasing. The forecasts were showing a decline in the increase in demand.

moderate future price of oil came at a 1975 SRI Board/Council Meeting. With such oil notables in the audience as Fred Hartley, Chairman and President of Union Oil of California, and H. J. Haynes, Chairman of the Board of Standard Oil of California, Pat Henry related the growing SRI position and some of the reasoning behind it. The responses of oil industry leaders at the meeting and subsequent written statements showed that they disagreed, at the time, with the optimistic tone of the analyses. The demand for such information, however, remained intense and pervasive. SRI people like Henry and others were presenting, both in the United States and abroad, the message of the collective SRI team.[36] Henry was interviewed on the CBS Walter Cronkite program about SRI's position, which was running counter to the advice the CIA was giving President Carter. Many were skeptical about a future unburdened by skyrocketing oil costs. By early 1979, however, SRI President Charles Anderson was so comfortable and familiar with the SRI position that he gave the keynote address to the Sixth Annual Energy Technology Conference in Washington, D.C.[37]

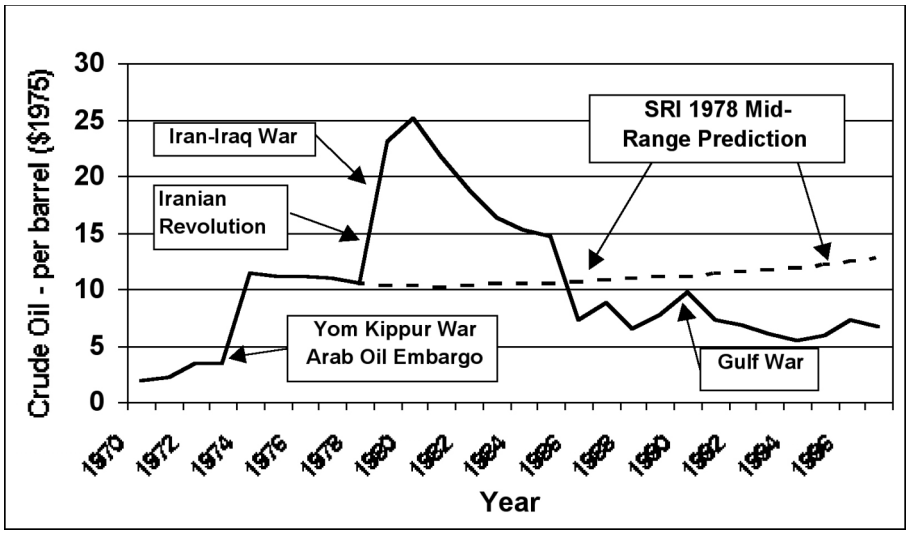

Figure 14-12. The 1978 SRI projected price of crude oil overlaid on actual price (all in 1975 dollars).

In May 1979, SRI issued a seven-volume report to its private clients. Included was the prediction of the price of crude oil shown in Figure 14-12.[QQ] Given the then $10 a barrel price, the SRI team predicted the relatively modest growth shown. Only an expected average increase in recovery costs on some reserves pushed the price upward.

With some notable exceptions, the SRI predictions occurred. SRI's 1978 predicted price for crude oil, as it turns out, was too high over the long term. The actual price increases from 1978 to 1986 were the result of the unpredicted conditions of Middle East conflict. Production increases and falling demand caused prices to decline after 1981. Repeated attempts by OPEC to control its production after 1985 failed, non-OPEC production rose, and the real price of oil continued to fall. Since then, upward pressures have largely failed to materialize because the per-barrel cost to pump Middle East crude still sits at about $2–3.[38] In retrospect, then, SRI provided those who listened a long-term perspective that was based on solid data and sensible reasoning. The world's oil supply is inarguably finite, but care must be used in invoking that fact when the marketplace really isn't ready to acknowledge it. Because of the large reserves of low-cost oil from developing countries, the price of oil remains elastic. Such a market can respond to initiatives such as conservation and efficiency. SRI's message through the early 1980s was that the world would find a buyer's market in energy at least until the end of the century.[39] While the SRI estimate was lower than any of the day, as Figure 14-12 shows, it was still higher than the

[36] From an account by Henry's secretary, in the 6 years from 1973 to 1978 he had given over 40 presentations in settings that varied from U.S. organizations such as oil companies, schools and academe, industry, the Congress, and the CIA, and to foreign institutions as well. The SRI story became so prominent that by the mid-1980s nearly 100 government and commercial organizations were participating in the multiclient work.

[37] Given that all this work was sponsored under a proprietary multiclient study, how could the conclusions be broadcast so widely? The answer is that in such studies, SRI normally issues summary documents or papers on findings if they are deemed to be in the common good.

[38] So-called lifting costs can run as low as $1–2 in new oil fields such as Kazakhstan. (SRI's Tom Boyce, personal communication, April 2001.) Given such low costs, the price of oil on the world market is clearly defined by everything but cost.

[39] Tom Boyce, Energy Buyer's Market Throughout the '80s, *SRI Journal*, 2 (10), December 1982. At the time, Boyce was Director of the SRI Energy Center.

BRINGING THE SRI POSITION TO SAUDI ARABIA

As a part of SRI's support in creating a series of 5-year plans for the government of Saudi Arabia, one of that country's ministers came to SRI for talks. It was in May 1982, and SRI was still engaged in its ongoing multiclient projects to forecast the worldwide supply and cost of energy. Since Saudi Arabia was also among the sponsors of the project, SRI chose to give the minister a preview of its emerging conclusions, one of which proved to be of great interest to him: In your forecast use of available funds, they told him, it would be a mistake to plan on oil maintaining its then high price of around $50 per barrel (in present dollars). Instead, plan on no more than $20–25. Given Saudi Arabia's copious exports, this difference would greatly affect its ongoing planning. (The basis for the advice is that outlined in the main text.) The minister found the message so important that he invited the discussion leader, Tom Boyce, to come to Saudi Arabia to convey the advice first hand.

As a result, Boyce and Charles Greene flew to Riyadh and gave an expanded pitch in a 2-day workshop to government functionaries. Among other things, they reviewed the influx of alternative energy sources such as natural gas and nuclear plants that would find a ready market if oil costs were to remain high. That done, they were then invited to fly to the Saudi king's summer palace in Ta'if. It was Ramadan and the royal family and Council of Ministers were there, and they too needed to hear SRI's reasoning. Thus, Tom Boyce went to Ta'if for a midnight meeting. There, in the center of the Council, including the Oil Minister Sheikh Yamani, all seated in a circle on the floor, he repeated the SRI strategy. Rather than making any recommendations, in his 2-hour tutorial he explained SRI's reasons behind the projections, leaving them to their own conclusions. None of them uttered a word, and there were no questions at the end, but the 1985–1989 plan wisely reflected SRI's advice.

For better or worse, that same philosophy holds today. In many of the oil-rich countries like Saudi Arabia, the cost of getting oil out of the ground is very low, perhaps less than $2–3 a barrel. That low cost, together with setting the price at $25–30, gives them both an extraordinary return and plenty of margin that can be used to prevent higher cost alternatives from entering the energy market. To the bigger oil-consuming nations like the United States, that strategy is both good and bad news.

actual trend if we ignore the conflict-centered peaks.

As a footnote to this run of prescient insight, in 1975 SRI's Decision Analysis Department was helping Gulf Oil Corporation build a national energy model and gladly used the developing supply/demand data mentioned above. SRI ultimately developed the model on a global scale in one of its multiclient projects. The model built for Gulf was eventually passed to the U.S. government's Energy Research and Development Administration where, as a National Energy Model, it helped that agency develop its own energy data analysis system. The uniqueness of the SRI data compilation and insights began to erode when the U.S. Department of Energy established its own capabilities as the Energy Information Administration in 1977.

To close this account of SRI's assessment of oil availability and price in the last quarter of the 21st century, a cautionary note must be made. While SRI correctly showed how important it was to gauge our oil and gas reserves, and their energy alternatives, in terms of their cost of recovery, there is no avoiding the ultimate limits to our hydrocarbon reserves under any meaningful cost structure. Whether we look at our consumption versus discovery rates or ultimately at our consumption versus production capacity, such thresholds will ultimately be crossed, barring revolutionary alternatives to hydrocarbon-based energy. As this story goes to print in late 2004, because of worldwide demand and Middle East conflict, crude oil exceeds $50 per barrel. As a matter of some coincidence, in 1975 dollars this equates to about $14 per barrel, about equal to SRI's 1978 projections.

Thus, SRI was able to show that it is in the best interest of consumers, producers, and their governments to try to get the metrics and the equations as right as humanly possible. Otherwise, energy forecasts, inherently emotion-laden, will careen out of rational perspective with conflict and other unacceptable consequences.

Endnotes

[A] This history of planning development at SRI came from the individual writings of or discussions with Robert Smith, Bill Guns, Bill Ralston, Bill Royce, Al Humphrey, and Finn Birger Lie.

[B] From a memo in SRI Archives by Robert W. Smith and a 1956 SRI report by N. R. Maines, *Why Companies Grow,* of which over 500 copies were requested and distributed. An excerpt is given in *SRI Journal*, 2(1), 18-23, 1958.

[C] William S. Royce, "A History of Strategic Management and Planning at SRI," March 31, 1985 (an internal, informal paper but quite a comprehensive one).

[D] William S. Royce, "Origin and Evolution of the Stakeholder Concept," personal correspondence, January 31, 1998.

[E] Gibson, Chapter 13, op. cit.

[F] J. Knight Allen, The Rising Acceptance of Corporate Strategy, *SRI Journal*, Feature Issue 1, 9-13, 1965.

[G] William S. Royce, *Flexible Planning: SRI Approaches and Issues,* Business Intelligence Program Report D94-1803, January 1994.

[H] Milton Friedman, The Social Responsibility of Business Is to Increase Profits, *New York Times Magazine*, 122-126, September 13, 1970.

[I] R. Edward Freeman, *Strategic Management: A Stakeholder Approach*, Pitman, 1984.

[J] Royce, "A History of Strategic Management and Planning at SRI," op. cit.

[K] Albert Humphrey, personal communication, June 23, 2001.

[L] From communications with Albert Humphrey and Finn Birger Lie, son of SRI's Birger Lie (June-September 2001)

[M] Thomas F. Mandel and Ian Wilson, *How Companies Use Scenarios: Practices and Prescriptions,* Business Intelligence Program, Report 822, SRI International, Spring 1993.

[N] Taken from Art Kleiner, *The Age of Heretics*, Doubleday, New York, 1996.

[O] Kleiner, op. cit., page 290.

[P] Stanford Research Institute, *SRI's Investments in Tomorrow*, No. 8, Summer 1973.

[Q] From SRIC-BI's VALS web page, www.sric-bi.com/vals, August 20, 2004.

[R] Quote attributed to Dr. Herbert Krugman, a noted market researcher and former head of marketing at GE, on a University of Georgia web site, //parallel.park.uga.edu/~jpwilson/courses/fall98/VALS.html.

[S] Fred Weil, personal communication, July 26, 2001.

[T] Gordon H. Parker, SRI International Project History, (internal paper) March 1987.

[U] Dennis Finnigan, personal communication, February 2, 2000.

[V] SRI memo from Gordon Parker to SRI Management Council, January 8, 1982.

[W] C.V. Wood, Jr. and Harrison A. Price, "Disneyland—Cost and Planning Data," SRI Report to Disneyland, Inc. January 1954. Curiously, according to "Buzz" Price, this report was never formally submitted to the client, but the information must have been conveyed, at least in part through Wood's transition to Disneyland.

[X] SRI's, *Research for Industry*, VI (6), July 1954.

[Y] Randy Bright, *Disneyland—Inside Story*, Abrams Publishers, 1987.

[Z] "American Profile, West Edition," August 12, 2001. (a broadly syndicated newspaper supplement)

[AA] H.A. Price, personal communication, October 15, 1999.

[BB] SRI's Bill Royce provided much of the information and some of the writing for this and the following subsection.

[CC] Phone conversation with Joe Grippo (May 2003) who led much of the SRI work for the NFL.

[DD] Taken from www.swift.com on February 22, 2001.

[EE] This account of SWIFT draws on personal communications from Dennis Finnigan, January 19, 2001, and Don Fiske, February 9, 2001. In the period of the account, Finnigan was one of three vice presidents that headed SRI operations, and Fiske was head of the Management Systems Division for Europe.

[FF] See Chapter 2 about ERMA, the world's first automatic check processing machine.

[GG] *Organisation Recommendations for Proposed Society for Worldwide Interbank Financial Telecommunication (SWIFT*), SRI Project 1570-2, March 20, 1972; and *Organisation Bylaws for SWIFT*, SRI Project 1570-2, July 14, 1972.

[HH] As found in the title of an SRI project report dated February 14, 1972.

[II] Dennis Finnigan, personal communication, January 19, 2001.

[JJ] J.M. FitzGerald, K. Drexage, and G.W. Boyce, *Society for Worldwide Interbank Financial Telecommunication,* Interim Report II, February 1977, SRI Project 5885, entitled "An EDP Security Audit," from October 25, 1976 to February 16, 1977.

[KK] Some of the information used here was learned from the following account of the dramatic change in investing habits of the U.S. middle class: Joseph Nocera's *A Piece of the Action—How the Middle Class Joined the Money Class*, Simon & Schuster, 1994.

[LL] Nocera, op. cit.

[MM] Thomas J. Murray, "SRI Charts An Ambitious Course," *Dun's Business Month*, February1985 reprinted with permission in *SRI Journal*, 5(2), 3, April 1985.

[NN] Franklin Tugwell, The Energy Crisis and the American Political Economy: Politics and Markets in the Management of Natural Resources, Stanford University Press, 1988, p. 1.

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[QQ] From Jay B. Kopelman and William J. Schumacher, *World Energy Stud, Vol. 1, Summary and Conclusions,* a Private Multiclient Study, SRI International, May 1979, p. 81.