

Increasing Understanding of Public Problems and Policies — 1990

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An Evolving Public Policy Education

Safe Food and Water:
Risks and Tradeoffs

Balancing Environmental and Social
Concerns with Economic Interests
in Agriculture

Structural Change in Food Industries
and Public Policy Issues

Toward a New Europe

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Subjects Discussed at Previous Conferences

- 1973** Energy Policy Issues • Policy Education Methods • Land Use Policy • Agricultural and Foreign Trade • New Policy Perspectives and Dimensions
- 1974** State of the Economy • Food Policy • Energy Issues • Land Use Policy and Planning • Improving the Performance of Government
- 1975** The U.S. Economic System • Energy and Transportation • World Food Issues • Domestic Food and Farm Policy • Public Policy Education in Perspective
- 1976** The U.S. Political Economy • Food and Agricultural Policy • Impacts of Judicial and Regulatory Decision Making • Energy Policy
- 1977** Federal Policy Process • U.S. Energy Policy • World Food - U.S. Policy Choices • 1977 Food and Agriculture Legislation • Agent Training and Leadership Development
- 1978** Food and Nutrition Policy • Policy Options for Small Farms • International Agricultural Trade • The Land-Grant System and Public Policy
- 1979** Controlling Inflation: Alternative Approaches, Impacts and Implications • Policy Legislative Process
- 1980** Dispersed vs. Concentrated Agriculture • Ethics of Public Policy • Productivity • Rural Transportation • Energy Policy Issues • Policy Issues and Educational Approaches
- 1981** Government Programs and Individual Decisions • Public Support of Research and Extension • Agriculture in the 1980s • Methodology of Public Policy Education
- 1982** Domestic Economic Policy • Federal Government Role in Resource Management • Trade Policy • Financing Government Under Tight Budgets • Food Policy
- 1983** Economic Transition • Land Ownership Issues and Policy Education Approaches • The U.S. Food and Agricultural System in the International Setting • The Policy Education Process
- 1984** Federal Deficit • Providing Public Services in an Era of Declining Taxpayer Support • Water Policy • Distribution Issues in Food & Agricultural Policy • Methodology Workshops • Emerging Politics of Food & Agriculture
- 1985** The Changing Face of America • The Changing Face of Agriculture • Status of 1985 Agricultural and Food Legislation • Tax Policy Revision • Developing Policy Education Programs on Controversial Issues
- 1986** Balancing the Federal Budget • Effects of Agricultural and Trade Policies on the Competitiveness of the U.S. Agriculture • Human Stress and Adjustment in Agriculture • The Food Security Act of 1985 and Public Policy Education for the Future
- 1987** Socioeconomics of Rural America • Rural Revitalization • U.S. Agriculture in the International Arena • Role of Values, Beliefs and Myths in Establishing Policy • Policy Education and the Policy Process
- 1988** Policy Choices for Revitalizing Rural America • Priority Issues for a New Farm Bill • Opportunities for Joint Public Policy Education • Emerging Issues in Agricultural and Food Policy • Emerging Resource Issues • International Agricultural Relations
- 1989** The Global Environment for the U.S. Economy in the 1990s • Family Policy • Rural Development Policy • Public Policy Education • Water Quality Policy

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**Safe Food and Water:
Risks and Tradeoffs**

**Balancing Environmental and Social
Concerns with Economic Interests
in Agriculture**

**Structural Change in Food Industries
and Public Policy Issues**

Toward a New Europe

Farm Foundation • 1211 West 22nd Street • Oak Brook, Illinois 60521

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FOREWORD

This publication reports the major discussions of the 40th National Public Policy Education Conference held September 17-20, 1990, in Park City, Utah. The 125 participants represented most states, the United States Department of Agriculture and other public agencies.

The conference is held to improve the policy education efforts of those extension workers responsible for public affairs programs. This, in turn, should help citizens faced with solving local and national problems make more intelligent and responsible decisions.

Specific objectives were: 1) to provide timely and useful information on public issues; 2) to explore different approaches to conducting public policy educational programs; and 3) to share ideas and experiences in policy education.

The Farm Foundation, following its policy of close cooperation with the state extension services, financed the instructional staff for, and the transportation of one individual from each extension service to, this conference, which is planned by the National Public Policy Education Committee. The Foundation also financed publication and distribution of these proceedings, which are made available to state and county extension personnel, teachers, students and others interested in increasing understanding of public policy issues.

Roy R. Carriker, Chairman
National Public Policy
Education Committee

R.J. Hildreth, Managing Director
Farm Foundation

January 1991

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ABSTRACTS

AN EVOLVING PUBLIC POLICY EDUCATION

FORTY YEARS OF INCREASING UNDERSTANDING

Wallace Barr
Ohio State University
Barry Flinchbaugh
Kansas State University

The National Committee on Agriculture Policy was formed in 1951 and the first National Policy Conference was held that year in Allerton Park, Illinois. In 1990, we celebrate the fortieth anniversary. This paper highlights the history and development of public policy education and the role of what, in 1971, became the National Public Policy Education Committee. Specific subject matter issues and public policy education methodology have been the two main thrusts of the National Committee and the Policy Conferences. What has been accomplished? Increased understanding!

EMERGING LEADERSHIP MODELS: IMPLICATIONS FOR PUBLIC POLICY EDUCATION

Judy Lawrence Rogers
Miami University

Western society is in the midst of a paradigm shift, moving from a mechanistic to a more contextual, complex and relational view of reality. This shift in the basic assumptions about "how things are" is clearly evidenced in the new conceptualization of leadership which emphasizes shared vision, collaboration, empowerment, process versus task and the ability to employ a multiperspective view. Public policy education espouses many of the values of the emergent paradigm and the new leadership models. Policy educators are thus poised to play a pivotal role in helping citizens embrace the new, heterarchical world view by empowering them to participate in creating a future of their own choosing.

ETHICS, PUBLIC POLICY AND CIVIC EDUCATION

Steven Ballard
Margaret Chase Smith Center for Public Policy
University of Maine

Unethical behavior in public service and in larger society has contributed to widespread disillusionment with our fundamental political institutions and threatens to erode the American spirit. Ethical conflict is likely to increase as ethical dilemmas become more situational and because of a broad range of global, social, organizational and individual factors. There will be no easy solutions to such dilemmas because they reflect our values and the nature of our political processes. However, public servants can begin to take owner-

ship of ethical conflict by being involved in both public education and civic education. Civic education means cognitive and experiential training in effective citizenship in a democratic society. Effective civic education will require attention to both how we learn and emphasis on value expression, public dialogue, accountability and civic justice.

FUTURES: PREPARING TODAY FOR TOMORROW'S ISSUES

*J. David Deshler
Cornell University*

Public policy educators are challenged to encourage their publics to engage in anticipatory learning about major public issues before they reach crisis proportions. Educators can encourage projection and forecasting studies to identify and anticipate major issues. Technological, environmental and social impact studies are key ingredients to future-oriented public policy educational efforts. Invention and creation approaches, including preference surveys, value audits, imaging and scenario creation, are useful to create alternative policies and proposals. These approaches are related to stages of the "Issue Evolution-Educational Intervention Model." A municipal sludge disposal public issue in New York provides an example for considering the relevance of these futures approaches to public policy education.

SAFE FOOD AND WATER: RISKS AND TRADEOFFS

CONSUMER PERCEPTION OF HEALTH RISKS IN FOOD

*Eileen van Ravenswaay
Michigan State University*

During the 1970s and 80s, the food industry experienced episodes of sales losses from consumer reaction to controversies about health risks from certain chemicals and bacteria in food. As a result, the government, food industry and scientific and educational communities are seeking better ways of responding to consumer concerns about food safety. An understanding of how consumers perceive and judge health risks in food is central to these efforts. To increase this understanding, this paper reviews the small but growing body of research on consumers' perceptions of health risks in food and their willingness to pay for risk reduction.

THE SCIENTIST'S PERSPECTIVE ON RISK

*Chris F. Wilkinson
RiskFocus, Versar, Inc.*

A substantial segment of the scientific community is concerned that current procedures employed to assess the potential acute and chronic health risks of chemicals do not adequately reflect the best science available. Risk assessments conducted by federal and state regulatory agencies are often unduly influenced by nonscientific factors such as guidelines and policy decisions as well as by the pressure of public opinion. The results of many risk assessments reflect overly-conservative, worst-case assumptions and scenarios, and frequently have little relevance to risks likely to be encountered in the real world. In part

as a result of this, the public's perception of the magnitude of a particular risk is usually exaggerated relative to the actual risk. There is a need to incorporate better science into the regulatory decision-making process and to raise the level of the public's understanding of toxicologic risk.

SAFE FOOD AND WATER: PRODUCERS LOOK AT RISK

*A. Ann Sorensen
American Farm Bureau Federation*

Agricultural producers are strongly affected by concerns about food safety. The confidence of the American public in its food supply can translate directly into increased or decreased demand for agricultural products. Further, lack of confidence can eventually lead to legislation that directly affects farming practices.

Events may be pushing us headlong into reducing chemical use and using alternatives without the economic data or infrastructure in place that has supported previous technologies. In response, Farm Bureau has developed programs to raise our members' awareness of environmental problems, to encourage the development and use of alternative technologies and to influence public opinion about farming practices.

EFFECTIVE COMMUNICATION ABOUT RISK

*Patricia Kendall
Colorado State University*

Risk communication is any public or private communication that informs individuals about the existence, nature, form, severity or acceptability of risks. It is successful to the extent that it raises the level of understanding of relevant issues or actions for those involved and satisfies them that they are adequately informed within the limits of available knowledge. To be effective, risk communicators must consider not only the science of risk assessment but the quality or "outrage" factors that affect how people consider, accept and manage risk. Public policy educators, helping people assess and make public policy decisions, can benefit from risk communication methodology.

MANAGING FOOD SAFETY RISKS IN THE FOOD SYSTEM: POLICY OPTIONS AND OPPORTUNITIES FOR EXTENSION

*Carol S. Kramer
National Center for Food and Agricultural Policy
Resources for the Future*

Food safety and health risk management issues related to agriculture have grown in prominence and controversy over the past decade. Food safety and health concerns raise many complex management and policy issues for government, agriculture, the food industries and the consuming public. These issues also present challenges for economists and public policy educators. Issues include the social determination of acceptable levels of risk; food safety and public health priorities; decisions about the relative role of government, the private sector, and individuals; and the most appropriate policy tools to be used. This paper presents an overview of risk management issues; distinguishes between risk assessment, risk abatement, risk management, and risk communication; and discusses the roles and relationship of risk assessment, abatement and communication in a management framework. Risk management policy options include regulation, market-based incentives and tort law. In addition, the role of HACCP (hazard analysis critical control point) systems are examined in the context of risk management. Finally, opportunities and challenges for extension are discussed.

BALANCING ENVIRONMENTAL AND SOCIAL CONCERNS WITH ECONOMIC INTERESTS IN AGRICULTURE

ENVIRONMENTAL AND SOCIAL CONCERNS

I. Garth Youngberg
Institute for Alternative Agriculture

The need to balance environmental and social concerns with economic concerns has taken on an increased sense of urgency in U.S. agricultural circles over the past decade. This paper addresses the principal environmental and social concerns germane to the development of a sustainable agriculture; defines who shares these concerns, explores what lies behind the heightened level of concern and the policy implications inherent in these concerns; and, in light of these concerns, focuses on whether and how a greater measure of balance actually can be achieved. Finally, it is pointed out that, if the concept of sustainability is to remain free of politics, policy researchers and educators can and must clarify, not only the concept of sustainability, but also the motivations and goals of those currently engaged in the debate while policy analysts can contribute by guiding the debate toward identification and measurement of objective sustainability criteria.

BALANCING ECONOMIC CONSIDERATIONS IN SUSTAINABILITY OF AGRICULTURE

Thomas J. Gilding
National Agricultural Chemicals Association

Informed and constructive public policy debates on agriculture must address economic considerations as well as environmental and social expectations and values.

In order for discussions on sustainability in agriculture to be meaningful and constructive, a realistic perspective on exactly what is meant by the term "sustainable agriculture" is needed. One realistic definition has three distinct dimensions: (1) economic viability, (2) environmental and natural resources viability, and (3) social viability.

Economic dimensions of sustainable agriculture must consider the various levels of agricultural production: (1) farm level as a production unit, (2) national level with respect to GNP and domestic food costs, and (3) international level competitiveness in markets.

Agricultural pesticides are an important economic factor in sustainable agriculture. The key criteria for selecting current and future pest control strategies, chemical and nonchemical, is to maximize cost effectiveness in controlling pests and minimize environmental risks.

ENVIRONMENTAL AND SOCIAL IMPACTS OF AGRICULTURE: A SPECIAL CHALLENGE IN POLICY EDUCATION

Lawrence W. Libby
University of Florida

Policy specialists are increasingly asked to conduct programs on the social and environmental consequences of production agriculture. Topics include agricultural water pollution, pesticide residues, food safety and quality, farm labor and rural poverty. Several attributes of these topics create special challenges for policy educators. First, the technical dimensions require contributions from other scientists. Second, costs of policies are highly concentrated while benefits are widely spread. Property rights issues are critical. Third, educators may become conflict mediators. Finally, these issues place the land grant universities in a squeeze between their traditional support base and needs of a new clientele.

STRUCTURAL CHANGE IN FOOD INDUSTRIES AND PUBLIC POLICY ISSUES

BEEF PACKING AND ANTITRUST: A CASE STUDY IN PUBLIC POLICY EDUCATION

*Chuck Lambert
National Cattlemen's Association*

Rapid changes in the number, size and make-up of beef industry firms and shifts from traditional ownership and marketing patterns have raised questions about future structure. A National Cattlemen's Association task force addressed producer concerns about ongoing industry changes resulting from economic factors and expected to continue. Concentration has reduced costs via economies of scale. An integrated system lowers cost because fewer middlemen make a margin off the product. Integrated firms that reduce risk, become low cost and access capital will survive. The task force recommendation: The nation and beef industry are best served by the capitalistic, competitive, free market system.

IMPLICATIONS OF GLOBALIZATION FOR INDUSTRIAL STRUCTURE POLICY: LESSONS FROM THE FOOD INDUSTRIES

*Dennis R. Henderson
Ohio State University*

Industrial concentration results in poor economic performance in both domestic and international markets. A strong antitrust policy is called for.

Theory provides an imperfect guide to how economic welfare is affected by industry structures between perfect competition and perfect monopoly. But, most theoretical and empirical evidence shows that more competition is preferable to less. Counterpoint arguments are shown to be without merit.

Integration between international trade and industrial organization theories has generated a postulate that concentration may be welfare-enhancing under specific, but seemingly trivial, circumstances. Global, as does domestic, evidence strongly supports deconcentration policies.

WORKSHOPS

THE IMPACT OF FEDERAL AND STATE MANDATES ON LOCAL GOVERNMENTS

*Gerald A. Doeksen and Claude W. Allen
Oklahoma State University*

The term presently used to describe the current federal policy of reducing a program's funding while continuing its mandates is "fend-for-yourself federalism." Public programs and mandates are theoretically justified in cases of natural monopoly and negative externalities where internalization of external costs are important. Major challenges facing financially-troubled, small local governments include increasingly stringent drinking water and effluent standards, solid waste disposal, and Medicare requirements. In the short run, communities will suffer through many hardships trying to comply with these mandates. But the long-run impacts could actually be quite beneficial as communities adjust to their new powers and responsibilities.

YOUTH AT RISK — POLICY CONSIDERATIONS

*Howard Finck
Friends of Youth*

This country's youth at risk are increasing, while services to support their families, intervene at a point of effectiveness and low cost, and provide treatment that works have actually declined. Poverty correlates with much of the youth alienation and remedies for that condition have also declined in the last decade.

Policy options to provide an effective social service network for these youth must start with a national policy that they are the nation's key resource; states, local governments and service providers must then collaborate to develop funds, minimize categorical barriers to service, and evaluate the most effective intervention options. Rural communities are especially distressed and need specifically-targeted funds to address their special problems.

WASTE MANAGEMENT POLICIES AFFECTING DECISION MAKING AT THE LOCAL LEVEL

*Cynthia Fridgen
Michigan State University*

Public policies that affect waste management are developed and implemented at the federal, state and local level. It has been recognized at the local level for some time that behavioral change is necessary if such goals as reduce, reuse and recycle are going to be met. Boundary requirements for state-mandated plans, taxing structures for revenue generation, and a lack of stated policy support for innovations such as volume-based user fees, make it difficult for local jurisdictions to meet state goals. Due to the reduction in landfill space and the resistance to waste-to-energy plants, many communities are exploring the reduce, reuse and recycle option. This option requires behavioral change on the part of the citizen generator and that change requires public policy support.

POLICY EDUCATION PROGRAMS FOR EXTENSION'S SOLID WASTE INITIATIVE

*David J. Allee
Cornell University*

Policy education for solid waste will be a challenge for the extension system. But it may have more payoff because the problems are more political and institutional than technical. Without a coalition of other providers of information it will be difficult to marshal the information to answer the questions at each stage of the policy cycle. By integrating policy education with the planning process it should be possible to give special attention to alternatives and consequences. But extra effort should go to those alternatives that bring out the value issues needed to develop new institutions. Improving the quality of decisions may require careful exploration of value conflicts.

POLICY EDUCATION AND THE EXTENSION WASTE MANAGEMENT INITIATIVE

*Marvin E. Konyha
Extension Service, USDA*

The Extension National Initiative approach to educational program development, based on critical national issues, has quickly led to the identification of "waste management" as a new Cooperative Extension System national educational initiative. The goals, critical issues and program objectives of the waste management initiative contain numerous opportunities (some would even say requirements) for public policy education in waste management. Who will develop and deliver the waste management policy education program? What will be the community impact if waste management policy education is neglected?

RURAL ECONOMIC DEVELOPMENT FOR COMMUNITY SELF-RELIANCE

*Jamer C. Edwards
Florida A&M University
Ronald L. Williams
Alabama A&M University*

Rural Economic Development for Community Self-Reliance is a joint venture representing a positive and unique programming relationship between two 1890 land grant universities (Alabama A&M University and Florida A&M University) and the United States Department of Agriculture (USDA) Soil Conservation Service, with technical assistance and guidance provided by USDA's Extension Service. This project is the culmination of recognition of the need to tailor economic development educational processes for disempowered, limited resource and minority rural citizens. It is important to note that the intent is not to recreate the substantial economic development programming resources currently available. Rather, in addition to economic development education, this project seeks to provide supplemental knowledge and skills generally assumed to be a prerequisite.

The overall objectives are:

1. Raise the awareness of local leaders and public decision makers in rural communities about economic development conditions and trends;
2. Motivate these decision makers to use their skills and positions to create positive changes in their communities; and,
3. Facilitate their abilities to conduct economic development programs.

Two key products derive from this economic development project: an instructional notebook/manual for use by county Cooperative Extension Agents and Resource Con-

ervation and Development Coordinators and a motivational videotape designed to show leaders what the project entails and what others have done to develop similar communities with comparable resour: .

TOWARD A NEW EUROPE

CHANGES IN EASTERN EUROPE AND THE USSR: IMPLICATIONS FOR AGRICULTURE AND AGRIBUSINESS

*J.B. Penn
Sparks Commodities, Inc.*

Changes on the world political scene during 1990 were truly monumental, with fledgling democracies emerging across Eastern Europe, the crumbling of the Berlin Wall symbolizing the demise of militaristic Communism and the collapse of the socialistic system, and the end of the forty-three-year cold war. Other developments, including Europe 1992, are underway. These changes are so profound we can only begin to comprehend their ultimate significance to world economic and political relationships. This paper reviews the major developments and helps develop a realistic perspective on implications for agriculture and agribusiness.

EC 1992 AND THE IMPLICATIONS FOR THE GLOBAL AGRICULTURAL POLICY PICTURE

*Gerhard V. Gloy
Embassy of the Federal Republic of Germany*

As the European Community's (EC) program to complete the internal market moves towards its scheduled 1992 end, barriers to a fully common agriculture and farm trade are being challenged. The EC 1992 program will greatly facilitate intra-EC commerce, but also offer advantages for countries outside the EC. Short-term impacts should be more prominent for agribusiness, midterm implications should be profound for EC agriculture. Though EC 1992 does not explicitly address external liberalization of farm trade, a significant impact in terms of lower subsidy levels and better market access can be expected from a successful conclusion of the current GATT round at year's end.

**PANEL: TOWARD A NEW EUROPE
U.S. AGRICULTURAL POLICY RESPONSE**

*John C. Dunmore
Economic Research Service, USDA*

OBSERVATIONS ON ECONOMICS AND THE FOOD SECTOR

*Dennis R. Henderson
Ohio State University*

THE LIVESTOCK AND MEAT INDUSTRIES

*Chuck Lambert
National Cattlemen's Association*

Panelists from the federal government, a state university and private industry respectively provided their own perspectives on responses to the many political and economic changes in Europe.

AN EVOLVING PUBLIC POLICY EDUCATION

FORTY YEARS OF INCREASING UNDERSTANDING

Wallace Barr
Ohio State University

Barry Flinchbaugh
Kansas State University

The fortieth anniversary of the first conference on public policy is being observed this year (1990). The program planning committee for the 1990 Public Policy Education Conference thought an understanding of the long and productive history of the National Public Policy Education Committee would be useful. We will place major emphasis on: (1) the origins of the organization — its philosophy and people, (2) the changing structure of the organization and (3) the major programs and some of the impacts.

Origin

In the fall of 1949, the Farm Foundation invited a group of extension directors and agricultural economists from the four major regions of the United States to discuss: (1) the status of educational work among rural groups in the field of public policy and (2) what the Farm Foundation might do to help extension economists prepare themselves to work more effectively in this important field.

In January, 1950, agricultural economists from a large portion of the 48 states attended a meeting in Chicago to discuss the importance of educational work in the field of public policy, problems encountered in connection with carrying on such work and specific public policy issues. The specific issue sessions were designed to deal with presentation methods as well as content.

That fall, four regional work conferences were held to stimulate interest in, and discuss problems relating to, extension work in public policy in the various states. Extension directors were invited as well as representative groups of county agents and others interested in the development of the field.

Organizational Structure

The Farm Foundation, with Managing Director Frank Peck and Associate Managing Director Joseph Ackerman, played a leading role in initiating, organizing and financing the newly-formed National Committee on Agricultural Policy chaired by F.F. Hill, Cornell University.

We would be remiss if we failed to note that Joseph Ackerman, who subsequently became managing director of the Farm Foundation, played a leading role in counseling and guiding the organization for nearly a quarter century.

It is significant that the original National Committee on Agricultural Policy, established in 1951, was composed of twelve people — four extension directors, four department heads and four extension economists representing four U.S. regions. This remained into the mid-1960s when it was changed to four extension directors and eight public policy specialists interested in extension work. The selection process for National Committee members was done within the National Committee until 1964-65. At this time, the four regional committees began electing two representatives while department chairmen were no longer represented as a special group.

The late 1960s and early 1970s can be characterized as a period of discontent and turmoil in the United States. The regional committees and the National Committee were not exempt from the economic and social forces at work in our society. The changing conditions resulted in a name change in 1971, from the National Committee on Agricultural Policy to the current name of National Public Policy Education Committee (NPPEC), thought to be more descriptive of the purposes and functions of the group.

The regional committees expended much time and effort in the early 1970s developing by-laws and operational guidelines for each of the four regions. These were finalized in 1973. At the 1974 conference, the Western Policy Committee proposed by-laws for the National Committee and, in 1975, at a special meeting of all participants of the National Public Policy Education Conference, National Committee by-laws were adopted establishing member election procedures, etc. that helped eliminate some sources of discontent. The membership article established a fifteen-person National Committee consisting of: 1. two representatives each from the North Central, Northeast, Southern and Western Public Policy Extension Education Committees as selected by those committees; 2. the managing director and associate managing director of the Farm Foundation; 3. one representative designated by Extension Service-United States Department of Agriculture (ES-USDA); and 4. the Cooperative Extension Service director serving as administrative advisor to each regional policy committee.

The winds of change began to blow through the extension policy education establishment beginning in 1971 when representatives of the 1890 colleges were invited to participate in the National Conference. Several attended in 1972. Likewise, in 1978, home economists interested in public policy education were invited to attend and a very few did so in 1979. In 1984, the National Committee by-laws were amended. Voting membership on the committee was expanded to nineteen with two members from 1890 land grant institutions selected by the 1890 extension administrators and two members of the home economics pro-

fession selected by the Extension Committee on Organization and Policy's (ECOP) Subcommittee on Home Economics. The National Committee remains at nineteen today as stipulated by the by-laws adopted in 1975 and amended in 1984.

Programming

1951 Conference Program

The subject matter of the 1951 conference, held in Allerton Park, Illinois, included: (1) international affairs, (2) inflation, (3) agricultural production policy and (4) the interrelationships of agriculture and other segments of the economy. The equivalent of a full day was devoted to each of the subjects. The working committee responsible for each subject had complete charge of the program during the time allocated for their presentation.

It is worthy to note that ten out of twelve speakers on the 1951 program were extension economists. Out of curiosity, we checked the attendees at the 1951 and 1970 conferences and found that eleven people had attended both conferences. We determined there were at least twenty-two people that attended over half the conferences in the twenty year period of 1951-70. Likewise, there were at least thirty-nine people that attended over half the conferences in the period from 1971-1989. This continuity of attendance by people with a common purpose and interests contributed greatly to the long-term success of the policy committee.

A major function of the 50s conferences was to prepare teaching materials and to critique presentation methods. Gradually the presentations changed as outside speakers were invited to provide greater in-depth information. The methods portion of the program has been retained with changing formats.

Subject Matter

The 1951 program subject matter was diverse, especially given that the name of the sponsoring organization was the National Committee on Agricultural Policy. A tabulation of major program topics shows that, from 1951 through 1970, commercial agricultural policy was on the program seventeen times, policy education fifteen, international issues fourteen, domestic economic issues fourteen, topics related to resource use nine and low rural income five. Table 1 shows the breakdown into specific issues. There was a concentration in certain broad subject matter areas yet substantial diversity within the major topical areas and a rather broad perspective of the economic and social issues of the times. A similar pattern emerges for the years 1971-1989. Note, however, a decline in the emphasis on commercial agricultural policy and a significant increase in the emphasis on resource policy including human and natural resources. Program topics of the forty-year history of the policy conferences support the observation that public issues are

solved only temporarily. Circumstances change, issues are recycled and new solutions emerge. It is a revolving evolutionary process.

**TABLE I. MAJOR TOPICS ON NATIONAL PUBLIC POLICY EDUCATION
CONFERENCE PROGRAMS**

Topic Heading and Issues	Number of Times	
	1951-70	1971-90
COMMERCIAL AGRICULTURAL POLICY		
Production, Wheat, Cotton, Feed Grains	6	1
Price and Income Support, Effectiveness	6	3
Marketing Systems, Agreements	2	2
Structure of Agriculture	2	4
Research	1	1
Subtotal	17	11
POLICY EDUCATION		
Methods, Effectiveness, Programs	9	11
Role: University, Extension, Land Grant	4	3
Political Process	2	6
Subtotal	15	20
INTERNATIONAL ISSUES		
Agricultural Trade, Aid	6	6
Foreign Policy: Role, Issues, Alternatives	4	2
International Affairs, Food Needs	4	3
Subtotal	14	11
DOMESTIC ECONOMY		
Agriculture and the Economy, Growth, Development	6	4
Taxes: Budget, Services, State and Local	3	3
Inflation	2	1
Social Security	2	1
Emerging Policy Issues for the Next Decade	1	2
Subtotal	14	11
RESOURCES		
Water Problems, Land Use	2	7
Role of Rural Development	2	5
Human Resource Development	2	2
Changing Structure of American Society	2	2
Environment and Quality of Life	1	7
Subtotal	9	23
LOW INCOME ISSUES		
Rural Poverty	3	1
Family Income Support, Maintenance	2	3
Subtotal	5	4
TOTAL	74	80

Educational Programs Initiated by National Committee

The very first effort of the National Committee to prepare a set of educational materials to be used nationwide started in 1959. The thirteen leaflets entitled *The Farm Problem Identified: What Are the Choices?* discussing the pertinent alternatives-consequences was published in early 1960. Agricultural policy was a major issue in the presidential election that year. The publication was well-received and widely-distributed and was used extensively by farm leaders, educators, political candidates and others involved in the issues of the day.

The training and experience of a nucleus of agricultural economists in conducting educational programs on highly controversial subject matter was very fortunate. The very political and hotly contested wheat referendum was held in 1963. Almost all of the participants in the annual conferences were heavily involved in their state educational programs. Most were under much pressure — political and otherwise. The vote was on the adoption or rejection of mandatory supply management. The "no" vote won. As a result, a major turning point in agricultural policy resulted. Voluntary market-oriented programs were initiated and continue with variations to this day.

The major impact of the leaflets and the wheat referendum was that agricultural policy became less political and less controversial. Interest in agricultural production policy and price and income policy by both research and extension economists declined substantially. By the late 1960s, agricultural policy was on the "back burner." The annual program of the National Committee in the late 1960s placed greater emphasis on foreign trade and aid, international relations, low income of rural people and various resource issues.

The long standing interest in foreign affairs and trade on the annual program of the National Committee resulted in study tours in 1959, 1964, 1968 and 1977. The study tours were sponsored by the National Committee on Agricultural Policy (later NPPEC) in cooperation with the ECOP, ES-USDA and the Foreign Agricultural Service. The purpose was to further train ten to twelve participating state extension specialists on each of the three or four study tours to various regions of the world. Upon their return the specialists felt more comfortable in expanding their educational efforts on foreign affairs and trade issues.

In 1962, six leaflets entitled *World Trade: What Are the Issues?* were published. In 1968, six leaflets, *Agricultural Trade Policies: What Are the Choices?* were made available for nationwide use. The 1962 leaflets were largely descriptive with such titles as "Why Trade?", "Balance of Payments," "Reciprocal Trade Agreements," "European Common Market," "Food for Peace" and "Can Exports Solve the Farm Problem?" The second set emphasized various trade alternatives and their consequences. NPPEC Publication #6, *Speaking of Trade: Its Effect on Agriculture*, was published in 1978 after a study team completed its tour. For those of us involved in foreign trade policy education pro-

grams, these leaflets were invaluable tools. The increasing sophistication of our audiences during the 1960s, 70s and 80s has been very noticeable.

In 1969, a series of ten leaflets was released entitled, *People and Income in Rural America: What Are the Choices?* The leaflets identified the rural problems of low-income, nonfarm people as well as the low-resource/low-income people in the farming sector and addressed some of the alternative solutions and their probable consequences.

The next major output was the basebook, *Who Will Control U.S. Agriculture? Policies Affecting the Organizational Structure of U.S. Agriculture*, published in 1972. The North Central Public Policy Education Committee, supported by the ES-USDA, initiated the project. The basebook approach provided in-depth background information useful to people involved in both extension and research. The National Public Policy Education Committee "came on board" for the 1973 publication of the leaflets written for use by extension faculty with lay audiences and in conducting the six conferences held in each of the four regions of the United States. Many states organized extensive educational programs using the six leaflets published under the provocative title *Who Will Control U.S. Agriculture?* The leaflets offered five alternative organizational scenarios of U.S. agriculture.

The "Who Will Control" educational project was influential in triggering much interest in the structure of U.S. agriculture among farm organization leaders, agribusinessmen, farmers and other lay leaders. In particular, the project triggered a substantial amount of both economic and social issue research by personnel in the USDA Economic Research Service and by personnel in universities. The basebook received AAEA's 1973 Quality of Communication Award.

A pioneering multi-disciplinary project on food policy was initiated by the NPPEC in 1974 with the support of the ES-USDA. The publication was entitled *Your Food: A Food Policy Basebook*. The authors included a consumer economics specialist, sociologist, nutritionist, microbiologist, political scientist and agricultural economists interested in marketing, international development and policy. The basebook was written for educators and leaders of lay organizations. A series of six leaflets was prepared for use with local lay audiences. Teaching materials, including overheads with narrative and slide tape sets, were prepared for distribution to states.

One major achievement was the interdisciplinary nature of the program and the state teaching teams. The program was a major attraction to nontraditional extension audiences. Formal and informal evaluations, conducted by many states, were generally very favorable. The 1976 revised edition of the basebook was the recipient of AAEA's 1977 Quality of Communication Award.

Throughout the remaining years of the 70s and the decade of the 80s, the National Committee helped parent numerous projects and publica-

tions. Included (but not inclusive) were (1) *Marketing Alternatives for Agriculture: Is There a Better Way?* (2) *Farm and Food System in Transition*, (3) *Federal Marketing Programs in Agriculture: Issues and Options*, (4) *Policy Choices for a Changing Agriculture*, (5) *Canadian/U.S. Trade Issues*, (6) *Farm Credit Crisis Policy Options and Consequences* and (7) *Vitalizing Rural America*.

Simultaneously the regional committees were undertaking a wealth of projects. The record shows that the project and publication output of the regional committees increased in recent years while that of the National Committee reached a plateau and leveled off. Of course, the work of the National Committee and regional committees has been complimentary and the genesis and production of ideas and projects is blurred.

Throughout the forty-year history, a network of extension specialists in all fifty states has been established. Numerous known and unknown educational projects have spun off from this network. An evolving mentoring process occurs, impossible to measure, but clearly impacting the quantity and quality of extension public policy education.

There is a long history of developing educational materials and surveying farmers as farm bills come up for renewal. Extensive materials were developed in 1977, 1981, 1985 and 1990, for example. The record documents the impact of these efforts on the policy making process, that is, use by farm organizations in position development and by extension educators in policy seminars, Congressional testimony and consultation with farm leaders, Congressional staff, etc.

An activity given close attention by the National Committee from the early days that has had a "foundation building effect" is training in public policy education methodology not only at National Policy Conferences for specialists, but at summer and winter schools for agents. The National Committee, Farm Foundation, ES-USDA and state Cooperative Extension Services have provided guidance and financing for schools over the years at Colorado State, Arizona, Wisconsin, North Carolina State and Minnesota. In 1976, the National Committee appointed an Agent Training Subcommittee which recommended extensive training and support for instructor stipends and scholarships. Training included generic methodology, but also encompassed specific issue training in agriculture policy and later at the Minnesota school a course was designed specifically for home economists interested in public policy education.

Conclusion

What have we accomplished? First, a body of thought, a subsience (perhaps an art form is more accurate terminology) has been developed called public policy education. Second, a tested and accepted methodology has been perfected — the alternatives/consequences approach. In this approach, facts, myths and values are separated and

their roles in the policy making process are more clearly understood. Objectivity is a goal for an extension public policy educator. Third, Jefferson's dream of an educated citizenry governing itself has been enhanced. Fourth, a camaraderie, a spirit of fraternity, has been developed among extension policy educators and broadened from a few agricultural economists at 1862 institutions to include 1890 institutions and home economists. We have learned from each other. But, this still doesn't succinctly answer the question. We are a unique outfit. We thrive primarily because of the wisdom and generosity of the Farm Foundation. And since inception of the National Policy Conference in 1951, the proceedings have been published and distributed to every County Extension Office in the United States under the title *Increasing Understanding of Public Problems and Policies*. What have we accomplished? Increased understanding!

EMERGING LEADERSHIP MODELS: IMPLICATIONS FOR PUBLIC POLICY EDUCATION

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"It's all a question of story. We are in trouble just now because we do not have a good story. We are in-between stories. The Old Story — the account of how the world came to be and how we fit into it — is not functioning properly, and we have not learned the New Story. The Old Story sustained us for long periods of time. It shaped our emotional attitudes, provided us with life purpose, energized action. It consecrated suffering, integrated knowledge, guided education. We awoke in the morning and knew where we were. We could answer the questions of our children. We could identify crime, punish criminals. Everything was taken care of because the story was there. It did not make men good, it did not take away the pains and stupidities of life, or make for unfailing warmth in human association. But it did provide a context in which life could function in a meaningful manner."

(Thomas Berry in Schwartz & Ogilvy, p. v)

Thomas Berry states it very eloquently — Western culture is in the midst of a revolution. It is a revolution of major import because what is in flux is our definition of reality, our understanding of how the world operates. My objectives are to examine the paradigm shift and the changes in our beliefs and assumptions about how things are; to demonstrate how the paradigm shift has influenced the conceptualization of effective leadership; and to draw implications for public policy education from both the paradigm shift and the new definitions of leadership.

Characteristics of the Emergent Paradigm

Assumptions that have dominated our culture for several hundred years are losing credence. Capra states these assumptions as "the belief in the scientific method as the only valid approach to knowledge; the view of the universe as a mechanical system composed of elementary material building blocks; the view of life in society as a competitive struggle for existence; and the belief in unlimited progress to be achieved through economic and technological growth" (Capra, p. 31). In the last

decades, in research conducted in many disciplines, these basic assumptions or paradigms of Western society have been found wanting in their ability to respond to the complex problems of our times (Toffler).

Schwartz and Ogilvy have given further definition to the paradigm shift by identifying seven transitions in the way the world is perceived to operate by Western culture. Table 1 names and defines these shifts.

Table 1. Comparison of Conventional Paradigm and Emergent Paradigm Qualities

Conventional Paradigm	Emergent Paradigm
Objective Events can be studied from the "outside" with value-neutral instruments and mental processes.	Perspectival Events are necessarily viewed in light of the viewer's experience, values, and expectations: "believing is seeing."
Simple and reductionistic Events can be explained, controlled, and predicted by reducing them to their simplest components; complexity requires simplification	Complex and diverse Understanding events requires increasingly complex views of their processes and structures; the whole transcends the parts.
Hierarchical Systems are ordered vertically and control, authority, responsibility, knowledge flow from the top downward.	Heterarchic Order in a system is created by networks of mutual influence and constraints.
Mechanical Events are calculable and sequential; actions result in quick and predictable reactions.	Holonomic Events are dynamic processes of interaction and differentiation in which information about the whole is present in each of the parts.
Determinate Future states follow from present in rational, predictable ways.	Indeterminate Future events are unknowable; ambiguity and disorder are to be expected, valued and exploited.
Linearly Causal Events have finite, identifiable causes.	Mutally Shaping Events are generated by complex reciprocal processes that blur distinctions between cause and effect.
Assembled Change is planned implementation of prescribed processes that create predictable results.	Morphogenetic Change is evolutionary and spontaneous; diverse elements interact with each other and the environment to create new, unanticipated outcomes.

Source: Kuh, George, E. Whitt, and J. Shedd.

Schwartz and Ogilvy recognize that some of the qualities of the paradigm shift, as they have identified them, overlap. They also realize that as the paradigm shift progresses some of these qualities may be refined and replaced with other conceptualizations that more appropriately capture the new view of the world. However the themes that

emerge from these seven qualities are at the heart of the cultural transition. The themes represent a shift from the mechanistic world view in which objectivity, control and linear causality are supreme, to a world view marked by a more contextual, complex and relational paradigm. They also portend the decline of the values of the patriarchal world and the end of the dominance of its values of objectivity, independence and rationality (Kuh, Whitt and Shedd).

The total pattern of change is somewhat like a change in metaphor, from reality as a machine toward reality as a conscious organism. Machines are mechanical and relatively simple. They are organized hierarchically from components and they function linearly and predictably. We can stand outside them and study them. A conscious being — say, a human being — is very complex and unpredictable . . . They are internally interconnected, consisting of many complex subsystems. They are externally interconnected with other people and the world around them . . . Because of this complexity of interaction, people don't always see the same things; they have unique perspectives. In the same way, the emergent paradigm of the actual world is complex, holographic, heterarchical, indeterminate, mutually causal, morphogenetic and perspectival. The shift in metaphor is from the machine to the human being. We are like the world we see. (Schwartz and Ogilvy, p. 15).

Paradigm shifts, such as the one we are now experiencing, have occurred at various times in the history of Western civilization. Sociologist Pitirim Sorokin posits that these cultural evolutions are part of a "strikingly regular fluctuation" of value systems and beliefs that have occurred throughout the history of humankind. However, Sorokin states very strongly that "the crisis we are facing today is no ordinary crisis but among one of the great transition phases that have occurred in all previous cycles of human history" (Capra, p. 32). The transition that we are in calls for a deep reevaluation of the beliefs that we have used to make meaning in our lives. It calls for far-reaching changes in most social relationships and forms of organization and a recognition that the premises upon which many of these relationships were built are now outdated. It is no less than a complete cultural transformation.

Old paradigms die hard. The true believers may never give up their perspective but simply become the minority as the numbers of evangelists for the new paradigm reach a critical mass and the values of the new paradigm become dominant. Capra senses that before the twentieth century is out, the emergent paradigm will have reached that critical mass. It will replace the conventional paradigm as the accepted view of reality. His prediction would seem to hold true for the conceptualization of leadership.

Conventional Leadership

The new definitions and conceptualizations of effective leadership which have proliferated over the past twelve years evidence the paradigm shift. Kuhn tells us that paradigms influence not only what

we see, but what we don't see. In the conventional paradigm, organizations are seen as machines and people as irrational beings who must be molded and shaped into interchangeable parts for the smooth functioning of the works. Through this mechanistic lens, the leader is perceived to operate in a stable organizational environment. The leader's role is to plan, organize, control and make decisions commensurate with his/her position in the hierarchy. The leader sets goals for the organization and his/her subordinates based on data and a rational process of identifying future directions and priorities. Organizations are seen to function in logical predictable ways and the leader's job is to control outcomes. Military metaphors are used to conjure up the tough-minded, decisive, efficient, hard-nosed leader. The leader/subordinate relationship is based on a transaction, an exchange of wants between leader and follower. The leader recognizes what the subordinates want from work and sees they get it if their performance warrants reward. The leader uses power to control other's actions. Vision, the leader's vision, is used to motivate subordinates to accomplish organizational goals. Leadership is viewed as a property of the individual.

The shift to the new paradigm describes a world that is more complex, diverse, ambiguous, constantly changing and unpredictable than the conventional view of a stable, orderly universe. Scholars have begun to explore the implications for leadership and management of operating in a world of "permanent white water" (Vaill, p. 2). Vaill identifies a system of "myths" in the practice of leadership and management, emanating from a conventional view of the world, that have a powerful control over our consciousness and stifle our ability to adapt to constant change. The first is the myth of a single person called "the leader." It is a myth that obscures the reality that all kinds of people, whether or not they have the title or authorized power, have opportunities for leadership in modern organizations.

A second myth is that there is a single, freestanding organization in which the leader or manager carries out his/her role. In a world of "permanent white water," the boundaries between an organization and its increasingly turbulent environment have blurred. "Furthermore, the thorough reification of the idea of 'organization' dulls our sensitivity to all the different ways the organization can appear, depending on the point of view of the observer" (Vaill, p. 12).

A third myth is that of control through a pyramidal chain of command. Hierarchy is deeply embedded in our cultural psyche. We aren't organized unless someone is "in charge" (Peters). Yet modern organizations are composed of networks, cross-functional task groups, matrix structures and numerous informal collectivities that have arisen because of the unworkable notion of the single chain of command.

Another myth is that of the organization as pure instrument for the attainment of official objectives. Even though the human relations school in the 1930s and '40s introduced the existence of the informal organization with its many "unofficial" goals (Roethlisberger and

Dickson), we cling to the idea that organizations are rational instruments designed for specific, agreed upon and identifiable purposes.

Finally, there is the myth of rational analysis as the chief means of understanding and directing the organization. Since the time of the industrial revolution, rationality has been the dominant model. Effectiveness consists of rationally deciding what needs to be done and then rationally doing it (Vaill). However in a world of permanent white water, in complex and diverse systems that interconnect with other complex and diverse systems in unpredictable ways, intuitive wisdom will be needed as much, if not, at times, more, than rational analysis.

What the conventional view of organizations and leadership does not "see" is the turbulence and ambiguity endemic to most organizational processes, the multiple perspectives present regarding organizational goals and purposes and the interconnection and mutual shaping that constrains and influences the relationship between leader and follower. The new research on leadership takes these emergent paradigm assumptions as its premises.

Emergent Leadership

Since 1978, when Burns introduced the concept of transformative leadership, growing numbers of scholars and practitioners have embraced a view of leadership that is less hierarchical, more relational and focuses on making meaning rather than making rules. In contrast to the notion of leadership as transaction, Burns views leadership as transformational. Instead of an exchange of wants, leadership is recognized as a symbiotic relationship between leaders and followers in which the needs, desires and values of both mesh and create meaning in the context of the organization. Transformational leadership is not power "over" but power "to." Transformative leaders empower followers by enlisting them in creating a vision for their lives and for the organization that elevates both followers and leaders to higher levels of productivity, self-actualization and social responsibility. What Burns recognizes in his conceptualization of leadership is that it is not practiced from the "helm" of the ship or from the "top" of the heap, but in context and in collaboration with others. Leadership is a shared act practiced at times by every member of the community.

Taking off from Burns' work, other scholars have focused on the cultural, symbolic and artistic aspects of leadership, issues considered "soft" and "poetic" in the conventional view (Bennis and Nanus). Sergiovanni refers to leadership as "cultural expression." What is important is what the leader stands for, who he or she is. Tactical skills such as conflict management, decision-making, using situational leadership theories, etc., the heart of conventional views of leadership, are considered basic competencies by Sergiovanni. But to go beyond routine competence the leader must make meaning. "Meaning suggests that people believe in what they are doing and appreciate its importance to the organization, to society and to themselves" (Sergiovanni, p. 109).

The leader must first of all recognize the distinction between basic competencies and symbolic leadership. They must stand for certain principles that become the foundation of their actions; they must be able to articulate their principles into an operational framework; they must then persist in these principles and help people interpret contributions and successes in light of the organization's purposes; they must recognize that little can be accomplished without the support and good will of others. With the emphasis on meanings rather than skills, Sergiovanni proffers that "we come to see leadership as less a behavioral style or management technique and as more a cultural expression . . . a set of norms, beliefs and principles emerge to which organizational members give allegiance (p. 111).

Several other scholars have amplified the relational and cultural aspects of new paradigm leadership. Kouzes and Posner, in a study of managers and leaders, uncovered five fundamental practices of exceptional leaders. First, exceptional leaders challenge the status quo by looking for opportunities and taking risks; second, they inspire a shared vision through their ability to envision the future and through their commitment to enlist others in creating the vision; third, they enable others to act by fostering collaboration and by strengthening others; fourth, exceptional leaders model the way by setting an example and by making accomplishments feasible; and fifth, they encourage the heart by recognizing individual contributions and celebrating accomplishments. Similarly, in a study of charismatic leaders, Conger found several behaviors that were common among them. Charismatic leaders have skills in visioning, in communication, in trust-building and in empowerment.

John Gardner examined the tasks performed by leaders and identified what he considered to be the most important functions of leadership. Among those functions were envisioning goals, affirming values, motivating, achieving workable unity through trust, serving as a symbol and renewing — all of which he saw subsuming the leadership tasks of enabling and empowering. Taken together these studies demonstrate that while the conventional paradigm emphasizes the instrumental and behavioral aspects of leadership, the emergent paradigm recognizes the more informal, subtle and symbolic aspect of leadership.

The themes that run through the recent literature on leadership emphasize empowerment, vision, culture, collaboration, complexity, diversity, dynamic environments, nonlinear thinking and an ability to ride the waves of change. Table 2 depicts the leadership models that emerge from a conventional versus an emergent view of the world.

For some, the new image of leadership that has evolved over the past decade suggests that the conventional model has outlived its usefulness and now must be replaced with the emergent view. "The old approach is purposive, static and entropic, while the new one is holistic, dynamic and generative" (Quinn, p. xv). However, Quinn suggests that rather than look at the two perspectives (which he labels as purposive and

Table 2. Models of Conventional and Emergent Leadership

	Conventional Leadership Model	Emergent Leadership Model
Operating Style:	Competitive	Cooperative
Organizational Structure:	Hierarchy	Team (Leadership with, not over)
Basic Objective:	Winning	Quality Output
Problem-Solving Style:	Rational	Intuitive/Rational
Key Characteristics:	High Control, Analytical, Unemotional, Organized, Tactical, Manages Resources, Individual Focus, Reductionistic	Lower Control, Empathic, Empowering, High Performance Standards, Collaborative, Multi-perspectives, Makes Meaning, Focus on the Common Good, Holistic

Adapted from: Loden, Marilyn.

holistic) as an either/or dichotomy (an act which itself is based in the logic of the mechanistic paradigm) we consider the holistic view as *inclusive* of the purposive view. He proposes that exceptional leaders do not achieve excellence in their organizations through using one or the other philosophies but by using both. Exceptional leaders recognize that their environment is turbulent, unpredictable and complex and employ a variety of perspectives in order to cope effectively with it. "As one set of conditions arises, they focus on certain cues that lead them to apply a very analytic and structured approach. As these cues fade, they focus on new cues of emerging importance and apply another frame, perhaps this time an intuitive and flexible one" (Quinn, p. 3-4).

According to Quinn it is this ability to view the world from different perspectives, the ability to frame and reframe a problem or question using different assumptions that is the requirement for exceptional leadership in our modern world. Quinn labels these leaders as strategists and states, "They are not totally focused on goals. They develop a capacity to generate new orders and organizations. In particular, the strategist realizes that all frames through which the world is seen are relative . . . This discovery particularly qualifies the strategist to understand the uniqueness of each individual and situation" (p. 7). It is this kind of thought pattern, this "Janusian thinking" (Quinn, p. 20), that has precipitated the most profound scientific breakthroughs in Western society.

Quinn concludes that moving beyond rational management does not mean moving from the purposive to the holistic frame — it means using both frames. This entails moving through three stages. "The first step is recognizing polarities. The second step is seeing the strength and the weaknesses in each of the polar perspectives. The third, and most challenging, step is not to affix to one or the other but to move to a metalevel that allows one to see the interpenetrations and the in-

separability of the two polarities. The third step takes us to a transformational logic. It allows for simultaneous integration and differentiation. The new vision integrates the previously contradictory elements and results in synergy. It is here that excellence occurs" (p. 164-165).

Quinn's ideas are at the leading edge of the current research on leadership. Effective leaders move beyond rationality and the machine metaphor to a more multiperspective and holistic frame — a frame that is inclusive of both views. If one compares the holistic leadership model with the role of the public policy educator, similar values, beliefs and behaviors are quickly apparent. The final objective of this paper is to examine the implications of the paradigm shift and the new definitions of leadership for public policy education.

Implications of Emergent Leadership for Public Policy Education

It seems clear that the public policy process itself can be described as perspectival, indeterminant, complex, diverse, dynamic and morphogenetic. The act of creating public policy is more aptly captured in a dynamic rather than a mechanistic view of the world. Leadership models that emanate from emergent paradigm assumptions seem to resonate with the objectives of public policy education. The themes that weave through the recent scholarship on leadership, namely, a shared vision, empowerment, shaping a collaborative culture, employing multiple frames and recognizing an environment of continual, complex change are themes also found in the literature on policy education and cooperative extension. I would like to examine some of these parallels more closely.

Hahn identifies the objectives of public policy education as "1) to increase people's understanding of public issues and policy-making processes and improve their ability to participate effectively and 2) to contribute to the resolution of important public issues by helping people and communities move through the policy making process" (p. 1). A value embedded in these objectives is a commitment to focusing on concerns determined by the people themselves. This is also a value inherent in the leadership act of creating a shared vision. In both cases, the question for the leader or the public policy educator is, "Whose vision is it?" Is the vision espoused by the leader representative of only an elite few, or of the total membership of the organization? Are the issues on the public agenda representative of the concerns of a narrow interest group or inclusive of the concerns of most importance to the entire citizenry? Ideally, both leaders and public policy educators recognize that the active involvement and commitment of the members of the community in creating the kind of environment in which they will work and play is, in the long run, better for everyone. A "citizen-generated agenda" is grounded in valuing multiple perspectives and heterarchy. It is a shared act of creating a chosen future.

Empowerment is another theme common to the recent literature on leadership as well as to literature on public policy education. In both

contexts it means helping people recognize the assumptions that render them powerless and then taking action which brings their concerns to the organizational or community agenda. Hahn sees the role of public policy educators as "helping to equalize the ability [of citizens] to participate effectively" (p. 5). He emphasizes that "Helping people cope or adapt is not enough. To have control over their lives, people must be able to understand and participate in decision making at the organizational and governmental levels" (p. 3). The result of empowerment is an organizational or community culture that generates a sense of meaning in people's lives and challenges them to higher levels of self-actualization and social responsibility. It is also an environment in which leadership is dispersed. Public policy education is grounded in democratic principles (Hahn). Empowerment is a means to enact these principles and is based on valuing a heterarchically ordered world.

Empowerment also implies an organizational culture that is collaborative, a third common theme in the literature on leadership and public policy education. The role of Cooperative Extension throughout its history has been to cosponsor activities and cooperate and collaborate with its various constituencies. Its name and its heritage are based on these values. The objectives of enhancing citizen participation in policy making and bringing about greater collaboration between all parties in the policy process operationalizes these values. These attitudes are further manifested in extension's role in community leadership development. For example, at the Institute for Community Leadership and Development (ICLAD) in Orono, Maine, team leadership with its emphasis on collaboration, cooperation and inclusion is central to the leadership education it provides. Additionally, the ICLAD Board "has made a serious commitment to modeling this leadership in its day-to-day operations . . . emphasizing trust, open communication and honest discussion of differences in addition to overseeing the programmatic efforts in its charge" (Kilacky, p. 4).

The policy education model set forth by Hahn also puts an emphasis on process as well as content. Citizens must not only have information about the issues, but they must be able to communicate, form coalitions, lead others, facilitate group actions, network and collaborate, manage conflict and motivate. The focus on process, on working with groups, on teamwork and on teaching these skills to citizens has long been a value of extension education as put forth in *The Ten Guiding Values of Extension Education* (Sanderson). The world of the new paradigm which is marked by continual, complex change and dynamic, interdependent systems requires leadership that emphasizes relationships, groups, networking, process, intuition, perceptions and collaboration. Extension educators, already skilled themselves in these areas, can play an important role in helping develop the capacity of the citizenry to survive and thrive in a world of constant, complex change.

The final theme which is common to both new paradigm leadership and public policy education is the use of multiple frames to examine issues of import to a community. Hahn advocates the "alternatives and

consequences" model as the way to explore policy options. A list of alternatives, including existing and new solutions, for resolving an issue are generated. The alternatives allow one to explore an issue as it might be seen by different professions and disciplines and include the resolutions favored by people on all sides of an issue. The pros and cons of each alternative are identified. Quinn describes this act of framing and reframing as ideally leading to a different kind of comprehension. "The reframing process results in a synergistic integration . . . the integrated functioning of antithetical elements" (Quinn, p. 20-21). Public policy educators who can achieve metalevel analysis, using both the purposive and holistic frames to examine issues and to carry out the process of public policy education will have risen, in Quinn's view, to a "transformational logic . . . a simultaneous integration and differentiation in which two contrasting domains are understood and woven together" (p. 165). Using and teaching this perspective in the public policy process would be a significant contribution to our society.

Finally, it would seem that extension educators, by embracing public policy education as put forth by Hahn, are on the cutting edge in recognizing, applying and teaching the assumptions of the emergent paradigm and the heterarchical world order it represents. Through modeling the new leadership style as well as teaching it, through striving to create a culture of participation and empowerment, through focusing on process as well as content, through demonstrating the worth of collaboration as a means to achieve common purposes and through understanding and using multiple frames to help unify polarities in the policy making process, extension educators will themselves be transformational leaders. They will help raise the citizenry to new levels of self-actualization and social responsibility. Their work also has the potential for helping members of our society come to terms with, and eventually embrace, the radical shifts in individual values and societal conditions that transition to the new world view portends. Public policy education as put forth in this paper brings extension ever closer to achieving the vision of founding father Seaman Knapp "to make a great common people and thus readjust the map of the world" (Sanderson, p. 21).

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ETHICS, PUBLIC POLICY AND CIVIC EDUCATION

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This paper addresses current issues in ethics, public policy and public policy education. I have written about ethical issues in public policy research (Ballard and James) and I have developed codes of ethics in two organizational settings. Yet, this topic is a difficult one. To most public servants, "ethics" is either an abstract topic or one familiar to us only because of highly visible events, such as scandals or obviously immoral behavior. Ethical issues are not, typically, part of our routine professional lives. Yet, it can be argued that unethical behavior, both in larger society and in the public service, has contributed to widespread disillusionment with our fundamental political institutions and threatens to erode the American spirit. One of our greatest challenges of the 1990s and beyond will be to reform our institutions and our own behavior to more closely reflect our fundamental ideals and values.

To better understand the relationship between ethics and public policy, this paper will take a broad approach. It will examine traditional sources of ethical standards and current causes of ethical conflicts. It will be suggested that ethical concerns are inherent in our political processes, which provide easy access to groups reflecting value differences in our society. However, it is also suggested that the causes of ethical problems are primarily situational, making them difficult to resolve by legal or uniform approaches.

What solutions exist to these increasing pressures for unethical behavior? It will be argued that the solution most capable of addressing our institutional decline is "civic education." Civic education is consistent with emerging paradigms of leadership and organizational development that reject the scientific, rational management paradigm. Civic education is, instead, participatory, interactive, nonhierarchical, and long-term.

Definitions and Key Terms

Four concepts are central to this analysis: (1) public policy education; (2) policy issues; (3) ethics and ethical dilemmas; and (4) civic education. It is useful to briefly define each.

We accept Hahn's definition of *public policy education* as "education about public issues, policy-making processes, and opportunities for effective participation" (Hahn). Its objectives are to both increase understanding of public policy and to contribute to the resolution of important issues. *Policy issues* are "questions about the desirability of enacting new public policies or changing existing ones" (Hahn). The critical feature of American policy issues, to be elaborated in this paper, is that they nearly always reflect understandable and recognizable value conflicts in our society. Therefore, a key question is whether such value differences can be resolved or whether our attention should be placed on constructive management of them.

While differences exist in the literature regarding the definition of *ethics*, for our purposes it is useful to think about ethics as the behavioral extension of morals. Morals are beliefs about right versus wrong. Ethics, then, are the behavioral practices which put morals into action. Fundamentally, public policy ethics is the question of how individuals should behave in organizational and social settings.

Since ethics are practices which are related to larger belief systems (morals), education is necessary to learn these practices or behaviors. *Civic education* is learning to think about one's life as a citizen in a community (Strom and Stoskopf). As we will see, civic education is closely related to public policy education and is particularly significant for addressing ethical dilemmas of modern society.

Ethics and Public Policy

Why is ethics an important topic for public policy educators? It is important because the last two decades have seen a continuous decline in the faith of the American public in its fundamental political institutions. The current question of limiting terms of office is just the most recent manifestation of declining trust of our institutions by the public. Undoubtedly, some of this decline has been for "good" or understandable reasons. That is, public institutions have been faced with significant new challenges, in some cases they have been underfunded, and in others they have been unjustly blamed for problems not of their doing. Unfortunately, public distrust and even cynicism is also caused by what might appear to be endemic episodes of scandal, deception, duplicity and hypocrisy in the public sector. For example :

- Electoral campaigns, at virtually all levels of government, challenge even the most generous observer to find civic virtue among the characteristics of elected representatives. We, as a society, spend billions of dollars convincing the public that the other candidate is no good. The evidence is convincing that the public links these negative images to the processes of representative government. Thus, one of the most fundamental elements of our political culture is at risk.
- The "art" of public service now appears to be permeated by and perhaps controlled by professionals skilled in duplicity and obfusca-

tion. We can't even talk about taxes — they are “revenue enhancers.” And, a leading candidate for elected office from the District of Columbia who had failed to file a tax return for seven years explained it was just “one of those things which we intended to get to tomorrow.”

- Corruption and scandal have become commonplace across public institutions, private organizations and religious organizations. From contract researchers for the military to the U.S. Department of Justice to Wall Street, our institutions seem to be easy targets for corruption. An interesting question is, where do we look for models of institutional integrity?
- Scapegoatism and hypocrisy appear to be accepted public behaviors. One of my own professional organizations, the American Society of Public Administration (ASPA), places considerable emphasis on the role of women in public administration. This is entirely appropriate. Yet, over the past fifteen years, the evidence is pervasive that occupational segregation has worsened considerably in the public sector. Professional women trained to be public administrators are highly cynical about their career opportunities or chances of success in the public sector.

These problems will continue to be among the most significant facing our society over the next several decades because they suggest that we, as a society, have lost faith in our problem-solving processes. However, the good news is that such problems have caused a reawakening of interest in ethics in public service, personal integrity and civic education. This reawakening will take time, and the evidence about its initial impacts is very mixed. For example, in a recent national survey of public administrators (Bowman), it was found, on the positive side, that:

- Nearly 70 percent of public administrators think an interest in ethics is steadily growing over time; and
- Two out of three respondents believe ethical concerns to be an “empowering influence” on the public organization.

However, this survey also presents some very disquieting evidence:

- More than 60 percent of public administrators believe society suffers from a “moral numbness”;
- More than half of the administrators are uncertain about whether anything will ever get done about ethical problems; it is like the weather — something to talk about but not actionable;
- Seventy-five percent reject the idea that government or business represent a standard for ethical practices;
- Within public organizations, nearly two-thirds think most organizations have no consistent approach to ethical concerns; and

- Two-thirds of administrators under thirty believe ethics is meaningless because of the Machiavellian culture of public organizations.

Why do we recognize ethical dilemmas, yet believe they may be irresolvable? To understand this better, it is useful to examine sources of ethical behavior and the context of ethical dilemmas.

Joseph Fletcher at Harvard has identified three moral sources of ethical behavior. Legalistic approaches are based on external sources of morality or omnipotent law (e.g., the Bible); such approaches lead to systematic orthodoxy. A second source is called "antinomian" in which ethical behavior is defined by community consensus without explicit moral guidelines. A third approach is situationalist, a pragmatic approach in which laws or moral guidelines must be applied according to the nature of the situation. It is interesting that there appears to have been an erosion in legalistic and even antinomian sources of ethical behavior in our society; indeed, it can be argued that most professional and organizational approaches to ethics are situational. The difficulty with situational ethics is that there are so many sources of variation in each situation, including individual, organizational and societal values. For example, individual belief systems are often in conflict with organizational cultures or the type and structure of the community (e.g., the religious culture, wealth, degree of participation, homogeneity, etc.).

Sources of Ethical Conflicts

What can be said about current and future ethical conflicts? Evidence suggests that *sources* of ethical dilemmas will continue to increase. To understand this assessment, it will be useful to look at four categories of conditions influencing ethical behavior: global, social, organizational and individual.

Global

A variety of global conditions affect our lives and our society; many are well-known to all of us. They include the increasing influence of cultural values substantially different from those of our Anglo-Saxon heritage; impacts of a complex global economy on local economic structures; and our rapidly increasing technological capacity to communicate and interact with the global community. Within the past few years we have watched the beginning of the development of a new world order that will be substantially different from our sense of world order developed over the last half century. Among the implications resulting from this picture, two are especially important: (1) we as a people no longer have a secure sense of our role in the world or our control over it; and (2) it has become increasingly acceptable, and even logical, to admit that we simply "don't know what the appropriate response is." This era of rapid change has an indirect but important influence on our sense of ethical appropriateness.

Social

A more direct source of ethical conflicts is social change. Change has been so rapid that some have argued that we have lost our sense of values or that we must seek better mechanisms to resolve value conflicts. This line of reasoning is incorrect for several reasons. First, value conflicts (and, therefore, ethical dilemmas) reflect our social and cultural fabric. Second, "stakeholders" have a relatively easy time gaining access to our policy making system; therefore, value conflicts are very visible and, frequently, cause our problem-solving process to forge slow, painful compromises. These processes continue to represent one of the great comparative advantages of our society and should not be changed without sober reflection.

Further, we should not assume that value conflicts are inherently resolvable. Rather, we should recognize that several factors help to make value conflicts and differences more visible. Such conditions include:

- *Ideological Pluralism*: The declining influence of traditional belief systems such as liberalism and conservatism and separation of public and private sectors.
- *Continuous decline of behavioral guidelines*: Within one or possibly two generations, two institutions — the church and the school system — have become much less influential in interpreting social conditions and transferring social values.
- *The decline of local (or community) cultures*: Fifty years ago, our standards of behavior were largely influenced by cultural values of our immediate surroundings. Today, local cultures are much more uniform in response to social mobility, more egalitarian educational systems, and the pervasive influence of telecommunications.

Such factors are not inherently good or bad. Rather, they reflect fundamental change and, specifically, a decline (or loss) of authoritative sources of ethical behavior. We have much more complex and contradictory environments for making judgments about right versus wrong. Thus, individual choices within given situations have become mandatory.

Organizational

Thirdly, we are witnessing rapid change in the nature and role of the public organization and concepts about administrative behavior. Organizational values are an important influence on most of us, yet our organizational lives are becoming increasingly participatory, open, communicative and interactive. While I believe that the decline of organization hierarchy is among the more positive aspects of our society, it also signals a decline in another source of behavioral guidelines. Individual judgment, group dynamics and social interactions are replacing traditional rules of behavior dictated by the organization.

We are also facing increasing conflicts between the "bureaucratic ethos" and the "democratic ethos" (Hejka-Ekins, p. 886). The bureaucratic ethos includes such traditional organizational standards as efficiency, competence, loyalty and accountability. The democratic ethos includes ethical standards such as the public interest, social equity, regime values and citizenship. Several healthy tensions can emerge from this conflict, and I am not one who would say that the term "bureaucratic ethics" is one of the great oxymorons of our times. Yet, the democratic ethos must assume an increasingly important role in the future if we are to address declining confidence in the our public institutions.

Individual

Fourthly, ethical concerns are caused by changes at the individual level. Specifically, individualism and materialism are now celebrated within major social institutions and have become a dominate ethos of the "baby bust generation." Self-indulgence, greed, self-interest, and privatism are accepted components of the ethos of this generation (Bailey; Frederickson). Even worse, such values have become pervasive within some of the dominant "educational" systems of our day — i.e., movies, television, video games, etc. In some respects, our schools have divested themselves of the responsibility for transferring a sense of community to our children. So, our children have a declining sense of personal integrity (Dobel), less understanding of "first principles" of ethical behavior and little appreciation for the larger community impacts of individualism and self-indulgence.

Creating Ethical Awareness

What solutions exist to the increasing trends toward ethical conflict? What are the implications for education? First, it should be recognized that some approaches are not likely to help. Returning to the good old days, even if it were possible, would not be appropriate. Hierarchical organizations, uniform community standards and simple value systems are part of our historical perspective. Secondly, our society has a great inclination to try to solve such problems through legal codes. Yet, conceptually, uniform legal approaches ignore the fundamental point about future ethical concerns — they are largely situational or driven by contextual influences. Thirdly, codes of ethics are necessary but not sufficient. Codes of ethics are useful because they help to establish "first principles" or initial standards. But, codes of ethics apply to only a relatively small percentage of situational ethical conflicts and seldom help resolve competing ethical standards, such as those associated with the bureaucratic versus democratic ethos. Further, codes of ethics are easily ignored; forty percent of public administrators admit to having no acquaintance with the ASPA ethics document five years after its passage (Bowman, p. 349).

Primary sources of ethical problems, such as global and social change and the gradual decline of behavioral guidelines from family, church,

school and organization, suggest the answer will be long-term and difficult. Education can and should play a central role in reestablishing ethical practices in public policy. This includes both public education and "civic education," in which this audience can play an important part.

The most important approach to public education is to recognize that we cannot leave ethical education to the primary pedagogues for the baby bust generation — television, advertising and movies. Our society is paying considerable attention to education reform or "restructuring." Yet, for K-12 school, reform is being driven by job market considerations. While this reform movement has important contributions to make, it is also missing a critical component which, if ignored for long, will be much more significant than the emerging demands of the labor market.

The missing component is that of political values and political philosophy. While some significant exceptions can be found, a majority of public school systems pay inadequate attention to our political heritage, how our political institutions work, how to participate effectively in democratic society, or concepts of citizenship. It is a mistake for our children to be computer experts upon graduation from high school, but know virtually nothing about the political values which shape our institutions or how to participate in order to make our institutions responsive. Our news media would have us believe that effective participation is to chain ourselves to the Exxon Valdez. In contrast, I would suggest that effective political participation requires a sense of history, a knowledge of political philosophy, and clinical experiences in which we learn how our participation affects others.

Thus, public education needs to rediscover and redefine our heritage of liberal arts education, rather than emphasize the technocratic imperatives of tomorrow's labor market. The critical element of liberal arts education is to teach students *how to learn*. It is remarkable to consider the number of courses in our public schools which are based on memorization of "facts." It is difficult to conceive of the potential value of this approach for either employment in tomorrow's job market or participation in tomorrow's society.

In addition to addressing how we learn, liberal arts education should address *ideas* about morality and ethics and how to *think critically* about our attitudes and behavior. For example, Rest's (1982) model of moral behavior, which stresses moral sensitivity, reasoning and commitment, is a useful starting point. This type of education will be increasingly important because it allows us to begin to take ownership of our own participation in complex situations characterized by competing value structures.

A broader approach involving more educators and public servants will be required to supplement reform of public education. This approach can be labeled "civic education." This means both cognitive and experiential training in effective citizenship in a democratic society, in-

cluding practice and experience in social relationships. Effective civic education will require attention to both *how we learn* (Duckett, et al.) and the *substantive topics* which will help us to develop a better sense of community.

By discussing "how we learn," two points deserve emphasis: (1) the importance of experience; and (2) broadening our concept of knowledge considerably beyond the scientific positivist paradigm which permeates our society. Thus, civic education should be interactive, participatory and experiential in order to, for example, begin to address the complexities of situational ethics. Secondly, it should improve skills related to critical reflection, listening and thinking. Thirdly, it should recognize the importance of nonscientific forms of knowledge, ranging from case-studies to story-telling, about how individuals have been productive, effective citizens.

As a beginning, civic education should include the following characteristics or components:

- **Rediscovering *accountability*:** This will require the development of a new ethos of shared responsibility and the community ownership of our public decisions, building a spirit of cooperation, and interaction with others of diverse viewpoints;
- **Rediscovering *justice*:** Civic justice will be a different concept than political equity, which tries to impose uniform standards, rewards and punishments. Civic justice means fairness and appropriateness, but it recognizes tremendous variation across given situations;
- **Rediscovering *public dialogue*:** In contrast to our interest-group, advocacy-based political culture, public dialogue stresses the importance of the honest expression of difference as the beginning point in policy formation. It stresses critical review and thinking without demanding absolute adherence to single-issue positions;
- **Promoting *value expression*:** Value differences reflect our society. We must reject the "value neutral" ethos of science and understand the constructive tensions existing within our varied perspectives and beliefs. Conflict resolution will be much less important than conflict management.

Conclusion: The Role of Public Educators

All public policy educators should be challenged to take personal ownership of ethical conflict inherent in our society, but also realize that we can make a difference. Personal accountability, responsibility and integrity will be increasingly needed in the public sector — this is the reality of new organizational forms, the complexity of our world, new leadership paradigms and the demands of situational ethics. Since public life will be characterized by immense personal discretion, our unofficial and informal behavior as well as our formal duties can be critical social influences.

Ethical behavior in complex situations will require an unwillingness to blame our colleagues or our organization. Taking ownership of our situations means that praise, blame, guilt and satisfaction are all common and normal elements of public service. Yet, our reward systems in traditional organizations make it extraordinarily difficult to effectively communicate such evaluative information. Thus, a starting point in developing the capacity for improved ethical behavior will be to recognize and aggressively develop new paradigms for leadership and organizational development. Hierarchy, rational decision making, and the technocratic ethos are fundamentally unable to respond to situational ethics. Decentralization, participation and empowerment will be the models that will be necessary.

Finally, each of us can begin to develop the concepts of civic education. This can be helped by developing expertise in areas related to ethics-philosophy, moral behavior and ethical guidelines. We each need to recognize that personal integrity is the building block for ethics in public policy education. In addition to personal integrity, we must be careful to consider the concept of the public interest as being more important than personal interest. We can each start to build civic education through participatory processes, both within organizations and with citizens and community groups.

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FUTURES: PREPARING TODAY FOR TOMORROW'S ISSUES

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Speaking about legislators and citizens, Harlan Cleveland in *The Futurist* magazine not long ago said, "We know in our hearts that we are in the world for keeps, yet we are still tackling 20 year problems with 5 year plans, staffed by 2 year personnel working with 1 year appropriations. It's simply not good enough" (Cleveland, p. 59). Can the public policy process, with the assistance of education, be more future-oriented rather than crisis- short-term-oriented? In this presentation we want to challenge ourselves as public policy educators to view our work through a futurist perspective, including the use of techniques for generating futures perspectives among public officials, citizens, other stakeholders and experts.

To provide a concrete basis for a discussion of techniques for futures perspectives related to public policy education efforts, I will focus first on a current policy situation in the state of New York: the issue of alternative municipal sewage sludge disposal. After briefly describing this public policy education situation, I will describe how four major approaches for generating futures perspectives are relevant to the case and to the work of public policy educators.

A Public Policy Education Situation

Disposal of municipal sludge is a growing problem in terms of environmental impacts and economic costs for communities of all sizes (Hill, 1990). The volume of sludge will increase as more wastewater treatment plants meet United States Environmental Protection Agency (EPA) guidelines. Ocean-dumping of sludge will terminate by December 31, 1991. Alternatives for disposal are becoming more restricted because existing landfills are being closed and it is becoming more difficult to site and develop new facilities. Energy costs of incineration and the concern for better air quality standards make these facilities problematical. A lack of municipal experience with disposal alternatives contributes to negative public attitudes about and acceptance of alternatives, e.g., agricultural and forest land application (Decker and Donovan).

Southeastern New York, including New York City and Nassau, Suffolk, Westchester, Rockland, Putnam, Orange, Dutchess, Ulster, Sullivan, Columbia, Green and Delaware counties, produces approximately 515 dry tons of municipal sludge per day. Almost 79 percent of this is dumped in the ocean. Since this disposal method can no longer be used after December 31, 1991, even more pressure will be placed on alternatives requiring more economic and environmental resources. New York City and Nassau and Westchester counties will be affected most by the termination of ocean dumping. New York City has entered a consent agreement with the EPA to meet the 1991 deadline. New York City has contracted with consulting engineering firms to develop a sewage disposal plan as an alternative to ocean dumping. While the consulting engineering firms have demonstrated their technical expertise in sludge management, they do not possess the technical expertise or the delivery network necessary to develop and implement an education and citizen participation program. However, without the development and implementation of the education program, it is unlikely that any regional sewage sludge disposal or beneficial-use strategy will be developed for Southeastern New York (Gigliotti and Peyton).

Cornell Cooperative Extension and the Cornell University Center for Environmental Research, along with faculty members from several departments including the Department of Natural Resources, have been requested by New York City's Department of Environmental Protection (NYC DEP) and New York State Department of Environmental Conservation (NYS DEC) to develop a policy education and citizen involvement pilot project to develop a plan for a comprehensive, regional educational program that will meet the need to: (a) increase public awareness of the situation/problem; (b) increase public understanding of available alternatives and their related economic and environmental costs/benefits; (c) improve understanding of technical, economic and environmental aspects of all sewage sludge disposal and beneficial-use alternatives among policy makers, public officials, and interested individuals; and (d) improve understanding of NYS DEC and EPA regulations for all alternatives among policy makers to become effectively involved in the policy making process.

In reflecting on this case, we could focus on this public policy education situation from a political perspective in relationship to power and decision rules that may influence the outcome, for example, governmental bodies that have domain. We would view the case within the context of an historic dispute between New York City and suburban or upstate counties and how that dispute may bias consideration of all alternatives by localities outside the major populated areas. We could analyze the quality of the technical alternatives and the gap that exists between technical planners, experts and scientists, and citizens. All these analyses deserve consideration. However, let us discuss this situation from a futurist point of view, taking into consideration several approaches for generating futures perspectives, opportunities and potential responsibilities for public policy educators.

From a futurist perspective, this case suggests a need for anticipatory learning; forecasting and projection approaches; prevention and adaptation or impact studies; and futures invention and creation efforts as integral to public policy education (Deshler). Each of these four major approaches to generating futures perspective will be described briefly in reference to this sewage sludge management policy education situation.

The Importance of Anticipatory Learning

As a futurist, the first thing I notice about this case is that it is typical of most crisis-oriented public policy decision situations that result from futures thinking avoidance. It is a case of "backing into history" rather than anticipating it. For years, New York City and adjacent counties have been dumping sewage sludge into the ocean. Most citizens have not thought about where it goes, and even if they did know they have not cared much about the long-term damage to the ocean. While municipal planners have been aware that someday it may have to stop, and marine scientists have been gathering evidence of ecological damage, public officials have tended to put out the most troublesome crisis-oriented, mass media-newsworthy public fires. However, they have ignored stories that are not an imminent crisis, sewage sludge having been a low profile item until now. Our election process does not foster long-term planning beyond the next election on the part of public officials. Planners are continuously ignored and frustrated by a political process that responds to popular demands and special interest power. In addition, government, as a type of special interest group itself, tends to protect its own short-term interests. In this case, it has meant continuing to use the cheapest way to get rid of sludge as long as possible. It is typical to allow the status quo to operate until a crisis occurs. The crisis in this case has come in the form of known damages to the environment and a federal mandate. It is interesting to speculate whether, without a federal mandate, New York City, or any other major city for that matter, would ever really consider the termination of ocean dumping of sewage sludge on its own initiative. In this case, we have evidence of futures avoidance. Such avoidance leads to "muddling through" or making decisions according to what is convenient to implement. In a futures avoidance mode, "fast relief" measures are taken easily, with no thought about long-term effects. Failure to consider the future may lead individuals as well as governments to self-serving solutions that ignore the well-being of future generations. In contrast, long-term futures perspectives are more likely to lead to solutions that are sustainable. Dumping sewage sludge into the ocean is no longer viewed as a sustainable solution.

The primary result of futures thinking avoidance is "learning by shock" (Botkin, et al.), that is, waiting until some crisis occurs as a requisite for learning. "Learning by shock" is reactive, rather than proactive. It has been costly throughout human history but, up to now, people could afford to "muddle through," because the consequences generally affected specific places and only the immediate generation

that made those short-sighted choices. With the power of today's technology and the intensity of impact on increased populations, failure to anticipate some irreversible consequences can threaten all people and future generations. We no longer can afford to "learn by shock." Furthermore, relying on the knowledge of the past no longer is sufficient. We must anticipate potential crisis and construct knowledge.

The public policy education task in relationship to New York sewage sludge is enormous due to past avoidance of futures thinking and "muddling through." We public policy educators in New York should be asking why we have waited until this crisis to promote anticipatory learning regarding sewage sludge. Now that little public policy education has been conducted on the issue, a vast pool of ignorance and bias exists among the general public and among local government officials, a climate not very conducive to genuine dialogue between large municipalities, where the bulk of sludge is produced, and local rural government, where the sludge most likely will have to be disposed.

Do we as public policy educators have a responsibility to identify issues prior to their becoming a public crisis? Do the policy education models we assume relegate our work to the reactive mode: finding our role only after a crisis has occurred? In the Issue Evolution-Educational Intervention Model (House and Young) the process begins with *concern*, and suggests that the educators role is to "listen actively, ask clarifying questions, and provide background information based on research" (House and Young, Selected Readings section, pp. 39-40). Is it good enough for us as public policy educators to wait to begin our work until a concern has become a public crisis? Do we have any role in creating the concern, based on our knowledge of potentially destructive or impending trends? Do we have a role in promoting anticipatory learning? How many other issues out there deserve anticipatory learning? Are we to do more than administer education, a "CPR" after local governments or citizen action groups have identified a "learning by shock" situation? Anticipatory learning techniques include games, simulations and futures literature review as well as the use of media to overcome futures avoidance thinking regarding potentially important issues.

Forecasting and Projection Studies

How can we, as public policy educators, take a future-oriented stance toward policy issues? One way is to appreciate the use of forecasting and projection techniques that may alert us, and those with whom we can work, to issues that are likely to emerge so that we can assist groups in their anticipatory learning prior to a crisis period.

All projections and forecasts are based on two major assumptions. The first assumption is that there are known regularities, patterns and cycles in events we are forecasting. The second is that the rate or amount of change in what we are studying can be discerned from careful attention to past records and experiences and then compared to pres-

ent observable indicators; or that we can make estimates based on known causality. In short, forecasting begins with our knowledge of the past or present and extends this knowledge, by inference, into the future. The important aspects of forecasting are identification of historical precedent; established regularities or theories; appropriate leading indicators; and quality information from which implications, trends and projections into the future can be made. The oldest, and perhaps most useful, technique for projection and forecasting, is that of locating historical precedents and making comparisons to one's present situation.

Although some public policy issues today have few historical precedents, we should begin by asking whether there are any historical precedents for considering the emergence of issues, because similar issues have emerged elsewhere. Trend extrapolation techniques help us to observe an increase or decrease in indicators for which we have data. Cross impact analysis is another projection technique that helps us project the positive or negative impact of two or more anticipated events on each other and on other events. It can be used to anticipate the consequences of federal legislation on local policy issues or vice versa. When data are lacking, the judgments of experts regarding forecasting and projections can be used through a series of inquiry and judgment rounds called a Delphi analysis. Many computer on-line data bases and programs are being developed to assist municipalities and even small countries in identifying emerging issues that need to be addressed prior to the emergence of major crises.

When we consider these approaches in regard to our sewage sludge issue, we can, through "Monday morning quarterbacking," appreciate the relevance of (a) projections of sludge production, (b) historical precedents of off-shore pollution conditions from other major cities, (c) land prices for solid waste sites, (d) increase in environmental lobbying on the hill, and (e) increases in environmental legislative proposals elsewhere. Even Delphi panelists would probably have identified sewage sludge disposal as an emerging issue ten years ago.

What responsibility do public policy educators have for assisting their publics in identifying important emergent issues through projection and forecasting approaches? Can public policy educators alert their publics to historical precedents? Should we take the initiative in forming Delphi panels? Should we encourage the use of futures research methods by faculty members in land-grant universities? Again, must we wait for a public policy crisis to develop before we, as policy educators, become activated?

Prevention and Adaptation or Impact Studies

The starting point for projection and forecasting approaches to futures perspectives is in the past, from which implications for the future are drawn. The starting point for prevention and adaptation studies, however, is a proposed course of action or event and its

estimated effect on the future. A proposed course of action could be the construction of a building or a new highway, or a change in public policy that will affect a specific population. Sometimes the event is the introduction of a new technology or treatment, or the discovery that a past event or practice may be placing people or the environment in jeopardy. Prevention and adaptation studies are focused on identifying and interpreting either potential risks, or the undesirable, hazardous and unintended consequences of specific proposals. The assessment is intended to let us know if the innovation or proposed action calls for subsequent adaptation, if proposals should be abandoned, or if we should initiate new precautions. The systematic study of impacts from a wide variety of proposals is now known as "risk assessment." Economic impact assessments have been around for a long time. More recently, we have become concerned about possible unintended effects of our technologies. Society has become more aware of environmental dysfunctions and indirect and delayed impacts of technology on natural resources. This has led to environmental impact assessment. Once the door was opened to environmental impact assessment, researchers took little time to recognize that social impact assessment had been neglected.

Conflicts are inherent to impact assessments. Typical tradeoffs or decision dilemmas associated with most impact assessments include: (a) short-term benefits versus long-term costs; (b) tolerable risks versus benefits and costs; (c) economic benefits versus environmental protection; (d) benefits to some versus burdens to others; and (e) benefits to present generations versus costs to future generations. One purpose of an impact study is to make these choices manifest. The choices obviously are not all technical, but are value-laden and ethical as well. Impact assessments often focus on conflict among special interest groups, organizations, government, the general public and those who are attempting to represent future generations.

Impact assessments, as futures techniques, are key ingredients to the fifth or *consequences* phase of the Issue Evolution-Educational Model (House and Young). During this phase, the task is to "assemble and distribute objective information on consequences of each alternative" and to "help people make their own predictions of alternatives" (House and Young, Selected Readings Section, p. 40). This will be a tall order for the municipal sludge policy issue, given the negative perceptions regarding any alternative and the distrust on the part of rural people toward urban municipalities.

Much of the public controversy and potential learning benefit over the sewage sludge disposal situation in New York will focus around various impact assessments of alternatives. Municipalities and county government will be most interested in economic impact analysis. Each technological disposal alternative must undergo impact analysis for each proposed application site. In addition, the environmental impacts for agricultural or forestry applications must be assessed for each application site. Even if these assessments turn out to be somewhat benign and risk is believed by experts to be technically low, there is

no assurance that the public will politically accept these solutions, given the strength of the "not in my backyard" (NIMBY) phenomenon. Clearly, the familiar "decide - announce - defend" process of planners, engineers and scientists, based on scientific rationality, will be inadequate in regard to municipal sludge policy (O'Hare). Involvement in the impact assessment process appears to be essential.

To some extent, technological, environmental and social impact or risk assessments are attempts to exert democratic control over special interest group benefits that could be implemented at the expense of the public interest or the interests of the less politically or economically powerful. As such, participation in the assessment is as important as its findings. Citizen involvement can assist in bridging the gap between factual technical analysis and value-oriented policy decisions. Several approaches to participation that have been tried include: (a) gathering data from a wide range of parties that are likely to be affected; (b) including interested parties and stakeholders on planning committees to react to the risk assessment done by experts; (c) involving interested parties in working together to create adaptations and alternative plans for innovations once their potential impacts have been assessed; and (d) encouraging and conducting participatory research controlled by interested parties. This last form of involvement can be particularly important in situations in which government agencies are unresponsive; try to minimize or cover up consequences that are embarrassing; or receive limited resources for risk assessments. The influence of many grassroots groups has resulted in government and industry carrying out technological, environmental and social risk assessments. Without involvement of citizens in the sewage sludge application assessments, government will find it difficult to convince citizens who are likely to suspect government of "skimping" on the funding of adequate impact studies of alternatives, "glossing over" risks for the sake of economic solutions, or being partial to the wealthy in the selection of application sites and alternative technologies.

What is the role of public policy educators within the context of conflict over these prevention and adaptation futuring techniques? I suggest that public policy educators have the responsibility to perform the following tasks in relationship to impact assessments: (a) identify conditions and situations that require impact assessments; (b) act as brokers between citizens and organizations that perform impact studies, including land-grant institutions and government agencies; (c) disseminate findings from impact assessments to the general public and assist people in their interpretations; and (d) facilitate dialogue among interested parties concerning the value bases for decisions. Public policy education regarding potential consequences (impact studies) of alternative disposal approaches to sewage sludge will be complex to interpret, value conflicted among interested stakeholders, and not limited to a rational process.

So far we have considered the importance of anticipatory learning, projection and forecasting, and prevention and adaptation approaches

to futures perspectives. Let us now turn to the invention and creation approach.

Invention and Creation Approach

Invention and creation techniques for futures perspectives differ from other techniques in that the future is no longer viewed as a continuity determined by the past or as an unintended consequence to be avoided. Rather, the future is viewed as a creative possibility. The world is viewed as "open" rather than as "closed." The future is not considered something that is already decided and that gradually reveals itself to us, but as something that is to be invented and created. This approach invites us to expand our choices, raise our aspirations, and experience new motivation for positive action that imaginative possibilities can bring. Those who accept the invention and creation way of viewing the future believe that social and cultural change is a product of the interaction of people creating images of the future in contrast to present structures, beliefs and values. The emphasis is upon a guiding vision, directing idea, preferred condition, valued future or impelling goal. What is important to this perspective is that alternative ends become defined and contrasted with existing reality; resources harnessed; and strategies selected in service to the vision (Deshler). Invention and creation techniques for generating futures perspectives include preference surveys, value audits, imaging, scenario building and futures history writing.

Futures invention and creation techniques can be viewed as key ingredients to the fourth or *alternatives* phase of the Issue Evolution-Educational Intervention Model (House and Young). During this phase, the task is "help people generate alternatives, seek objective information on alternatives, and facilitate communication and exchange of viewpoints" (House and Young, Selected Readings section, pp. 39-40).

The sewage sludge policy education case will require the invention of new technology in the processing, application and disposal of sludge. Many experts are engaged in generating technical alternatives through research. There are known alternatives to ocean dumping. However, the center of the sludge policy issue appears not to be technical. What has to be invented and created are new policies and social arrangements and, most difficult, the creation of collaboration between urban and rural areas. This invention process can be informed by preference surveys and value audits. But the most important task, upon which adequate solutions may hinge, will be the creation of processes to bring urban and rural public officials, environmental groups, scientists and policy educators together in a context that can build trust and mutual planning and fair social and political arrangements for the future of sludge management. The imaging of these arrangement will be necessary, as will be scenario creations of alternative proposals to involve communities in the decision process. New state legislation, as well as model local legislation, may have to be invented and enacted. The creation and invention process, anticipatory learning approaches, projection and forecasting efforts, and education that accompanies impact

studies appear, at this time, to be essential elements in public policy education efforts regarding municipal sewage disposal alternatives.

A Critical Theory Framework

In closing, I want to place futurist-oriented public policy education within a larger "critical theory" framework. Habermas (1987, 1984), a German political philosopher, drawing on the work of Durkheim and Mead, suggests that the human species maintains itself through socially coordinated activities of its members and that this coordination is established through communication and, in certain spheres of life, through communication aimed at reaching agreement. Habermas maintains that, in addition to satisfying the conditions for scientific rationality, it is necessary for social communicative action to do the same for moral, aesthetic and explicative rationality. New issues and agreements are constantly emerging by means of opposing forces whose conflict leads to qualitative and relatively rapid social change.

The conflict resolution and creation of future policies regarding sewage sludge in New York, according to the critical theory of Habermas (1987, 1984), may depend upon social communicative competencies that include not only the rational purposive (scientific), but also the moral interpretive, aesthetic expressive, and explicative discourse (communication directed toward language itself). A corollary is that the mechanisms of social integration and system reproduction become dysfunctional when rational-purposive discourse and related instrumental action crowd out moral interpretive discourse, aesthetic-expressive critique, and explicative discourse and related communicative action. In short, I hypothesize, according to this theory, that our public policy efforts regarding sewage sludge disposal will be quite futile if our educational efforts are limited to or dominated by scientific rational knowledge regarding alternative disposal proposals. According to this theory, what we will have to emphasize in order to obtain a more satisfactory, ecologically sound social agreement will be a concern for moral responsibility and economic justice (fairness in cost sharing and risk bearing), sensitivity to aesthetic demands of rural and poor people, and careful attention to language issues. Language issues include attention to urban-rural communication patterns and protocol, minimization of scientific jargon, attention to cultural assumptions, awareness of attitudes embodied in metaphors, and the use of understandable legal language. New terms for alternative applications may have to be invented to encompass new beneficial usages. Negative attitudes and assumptions embodied in the term "sludge" may also need to be examined.

About six months ago while traveling through Minneapolis, I read a curious story in the newspaper about a place called Livingston, Montana, just north of Yellowstone National Park. The story reported that several hundred members of the Church Universal Triumphant were awaiting word from their church leaders to enter their bomb shelters to anticipate the imminent end of the world. The story said that Ken

Anderson, Park County Public Health Officer, and County Commissioners Carlo Cieri and Jim Hunt had just inspected a bomb shelter that did not have proper plumbing and sanitation facilities. They said that they would cite anyone living in the shelters. I have not read any stories about how this all turned out. However, I said to myself that this story is a parable about both a dysfunctional way of viewing the future and the inescapability of sludge management. "If you don't believe there is a positive future, then you will end up living in your own waste." At the macro level we are all likely to be just as foolish if we do not become futurists in our public policy efforts and address the issue of our waste products.

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***SAFE FOOD AND WATER:
RISKS AND TRADEOFFS***

CONSUMER PERCEPTION OF HEALTH RISKS IN FOOD

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During the 1970s and 80s, the food industry experienced episodes of sales losses from consumer reaction to controversies about health risks from certain chemicals and bacteria in food. As a result, the government, food industry and scientific and educational communities are seeking better ways of responding to consumer concerns about food safety. An understanding of how consumers perceive and judge health risks in food is central to these efforts. To help inform this understanding, this paper reviews the small but growing body of research on consumers' perceptions of health risks in food and their willingness to pay for risk reduction.

The Nature of Risk Perception

There are two traditions of research on consumer risk perception. The psychometric paradigm (Slovic, et al.) has focused on understanding how people perceive health risks associated with different types of technologies (e.g., nuclear power) and how these perceptions vary given the different characteristics of each technology. The consumer behavior paradigm (Dunn, et al.; Hawes and Lumpkin) has sought an understanding of how product purchases are affected by consumers' perceptions of the financial, physical, performance, social or other risks associated with the purchase or use of a product.

In both sets of literature, risk is generally conceptualized as the *probability* of a *loss* of something of value to an individual in some *context*. The context may be either some exogenous change in the *environment* in which the individual dwells (e.g., the weather) or some *action* chosen by the individual (e.g., the purchase of a product). Thus, obtaining a valid description of people's risk perceptions with respect to some particular context involves accurately describing individuals' perceptions of the context, the probability of a loss in that context, and the nature of the loss. This is extremely difficult to do.

For example, to elicit consumers' perceptions of the probability that they will experience health problems from consuming food, the context in which exposure to the food hazard occurs and the nature of the health effect that results must be specified. Additionally, respondents must be given some kind of scale for indicating their perception of the pro-

bability of occurrence. The few studies that have attempted to do this use very general descriptions of the context, the nature of the health effect, and the notion of probability. Consequently, it is not always clear what is being measured and great care must be taken in interpreting the data.

Perceptions of Health Risks from Food

Over the last decade the Food Marketing Institute (FMI) has conducted nationwide telephone surveys on food safety attitudes. One of the questions they ask is: "How confident are you that the food in your supermarket is safe?" Thus, the context is any food from supermarkets, and the nature of the food and its preparation is left unspecified. The nature of the health effect is, presumably, the presence or absence of any type of ill health. Respondents are given the opportunity to specify whether they are completely or mostly confident or whether they are somewhat or very doubtful. This is a rough indicator of perceived health risk.

FMI results show a surprising consistency of responses over the years. About 15 percent to 20 percent of respondents say they are completely confident, thus indicating they perceive no food risks. About two-thirds say they are mostly confident, indicating they perceive at least some small risks. About 15 percent say they are somewhat doubtful, and thus probably perceive somewhat more risks. Only 2 percent say they are very doubtful.

A telephone survey of a representative sample of Michigan households conducted for the Michigan Department of Agriculture (MDA) in March, 1990, obtained results similar to the FMI study (Atkin). After informing respondents that food safety meant "anything that affects the safety or wholesomeness of food products or creates health risk," the MDA study asked respondents how confident they were that the food in their store was safe. Thirty-seven percent of respondents said they were very confident, 49 percent were somewhat confident, 9 percent were somewhat doubtful, 3 percent were very doubtful, and 2 percent didn't know if the food was safe.

A similar question was asked in two nationwide telephone polls conducted by the Center for Produce Quality (CPQ) in January and March of 1989 (i.e., before and after Alar and at about the same time as the Chilean grape incident in March). CPQ asked respondents how confident they were that fruits and vegetables available to consumers are safe to eat. In January, 1989, 25 percent of respondents were very confident, 56 percent were somewhat confident, 14 percent were not too confident, and 4 percent were not at all confident. In March, 1989, 21 percent reported they were very confident, 49 percent were somewhat confident, 23 percent were not very confident, and 6 percent were not at all confident.

Special polls conducted by FMI in 1989 indicate that consumers revise their perceptions following a change in information about food

risks. Following significant media coverage of the controversy over Alar, a report by the National Resources Defense Council (NRDC) about pesticide residues in the diet of children, and the FDA announcement of recalls of grapes after the discovery of cyanide tampering in early 1989, FMI conducted four telephone polls during the months of April, June and August, 1989. During this period, they found that respondents saying they were very doubtful about food safety increased 4 to 5 percentage points and respondents saying they were somewhat doubtful increased about 10 percentage points. By January, 1990, six months after Alar had been withdrawn from the market by its manufacturer, the percentages had returned to previous levels.

Overall, these three studies indicate that most consumers perceive at least some risks in the food they buy at the grocery store, but only a minority (about 10% to 20%) apparently perceive some serious risks. However, analysis of differences among demographic groups done by FMI and CPQ do not suggest any clearly systematic differences by income, education, gender or geographic location.

Perceptions of Specific Types of Food Risks

The food safety risk consumers most likely have in mind when they indicate their perception of overall food risks is indicated by a second question on the FMI and MDA surveys.

FMI asks respondents; "What, if anything, do you feel are the greatest threats to the safety of the food you eat?" Spoilage or germs, the most frequently given response to this open-ended question, was mentioned by 29 percent of respondents in 1990. The second most frequent response was "pesticides, residues, insecticides, or herbicides" (19%), followed by "improper packaging or canning" (16%), "chemicals" (16%), "tampering" (14%) and "unsanitary handling by supermarket employees" (11%). All of these responses were among the top six volunteered in 1989 as well, although the order and percentages were somewhat different. Less frequently mentioned threats to food safety in 1990 were preservatives (8%), additives (6%), environmental pollutants (4%), antibiotics (2%), and radiation (1%). Similar results were obtained in the 1989 survey as well.

The MDA survey in March, 1990, obtained similar results, too. That survey asked respondents: "What food safety issue concerns you the most?" followed by "What other food safety issue is a primary concern to you?" Freshness or spoilage was the most frequently mentioned issue (30%), followed by use of pesticides or chemicals (27%), packaging (15%), additives or preservatives (13%), tampering (11%), and cleanliness (6%), and shipping or handling (6%). All other categories were mentioned by less than 6 percent of respondents. Thirteen percent said they had no concerns.

The responses to this open-ended question suggest that no one food risk appears to be uppermost in the minds of all consumers. Rather, several different types of food risks are perceived to pose the greatest

threat. However, spoilage or germs and pesticide or chemical residues appear to be the biggest risks for a significant percentage of consumers.

A different picture of consumer perceptions about what source of food risks is the most serious emerges when the FMI and MDA surveys ask respondents if they believed particular "food items" or "factors" were a "serious health hazard, somewhat of a hazard, or not a hazard at all."

About 80 percent of FMI respondents in 1989 and 1990 reported they thought pesticide residues were a serious health hazard. About 60 percent of respondents rated "antibiotics and hormones in poultry and livestock" as a serious health hazard. Additives and preservatives were rated as a serious health hazard by 26 percent of respondents and as something of a health hazard by 62 percent. FMI has obtained roughly similar results going back to 1984.

Similar results were obtained in the MDA survey. Pesticide residues were rated as a serious hazard by 68 percent of respondents. Antibiotics and hormones in poultry and livestock were rated as a serious hazard by 53 percent. Additives and preservatives were rated as a serious health hazard by 23 percent of respondents and as something of a health hazard by 57 percent.

The MDA study also asked respondents to rate "natural toxins or bacteria" and "product tampering." Fifty percent of respondents rated natural toxins and bacteria as a serious hazard and 36 percent rated them as somewhat of a hazard. Product tampering was rated as a serious hazard by 71 percent of respondents.

Only a small percentage of respondents in either survey rated any substance presented to them as "not at all a health hazard." Only eleven percent or fewer of the respondents rated eight potential food contaminants as not being a health hazard (i.e., product tampering, pesticide residues, poor food handling, improper processing, antibiotics and hormones in poultry and/or livestock, natural toxins and bacteria, nitrites or nitrates, and irradiated food). Additives and preservatives were rated as not being a hazard by 9 percent of the FMI respondents and 18 percent of the MDA respondents. Artificial coloring was rated as not being a hazard by 24 percent of the FMI respondents and 36 percent of the MDA respondents.

The contrast in the responses between the open-ended and close-ended approaches to eliciting risk perception illustrates the importance of context. An essential part of the food safety context is how much *exposure* there is to the substance and how *toxic* or hazardous the substance is. Exposure depends on two factors; how much of the substance is in foods and how much those foods are consumed.

In the open-ended question, the respondent supplies the context, and, thus, makes his or her own assumptions about exposure and toxicity. In the close-ended question the respondent is asked to rate how toxic or hazardous the *substance* is, not the hazard posed by *current levels of the substance* in the food *the respondent eats*. Thus, even though

a respondent may believe that pesticide residues are not present in any significant amounts in food, he or she might rate them as a serious hazard *if they were*.

Unfortunately, there are few studies which have tried to get more specific estimates of consumers' risk perceptions within each of the major food safety policy areas of bacteria, animal drugs, pesticides, environmental contaminants and food additives. The two studies that have been done are both on pesticide residues.

In studying the impact of the Alar controversy on fresh apple demand, van Ravenswaay and Hoehn developed estimates of consumer perceptions of lifetime cancer death risks from Alar in fresh apples. A range of estimates of willingness to pay for risk reduction were taken from the literature (Fisher, et al.). Assuming these estimates were true, the level of risk perception that would explain the observed change in consumer expenditures on fresh apples due to Alar was calculated. For 1989, they estimated that, on average, consumers acted as if they believed the lifetime risks of cancer death from Alar in fresh apples were between 2 in 100,000 and 11 in 100,000. Surprisingly, these risk perceptions are very similar to EPA's 1985 estimate of risk from fresh apples of 1.7 in 100,000 and the NRDC 1989 estimate of 4 in 100,000.

In 1986, Hammitt conducted focus groups with 20 organic food buyers and 23 conventional food buyers to elicit their perceptions of the "risks of eventually dying from cancer or other disease caused by the pesticides and other residues and toxins" contained in the produce they would typically eat in one year. They were asked to rate the risks for conventionally grown fruits and vegetables and organically grown ones.

Large differences in risk perceptions were observed between the two groups of respondents. Most (61%) of the conventional food buyers rated the risks from eating conventional food as being less than 1 in a million and the remainder thought they were less than 5 in 100,000. In contrast only 1 of the organic food buyers thought the risks were less than 1 in a million and only a quarter thought risks were below 5 in a 100,000. One half of the organic food purchasers rated the risks as being between 1 in 1,000 and 3 in 1,000.

Surveys done by *The Packer* (Zind, p. 40), the MDA (Atkin), and Jolly, et al. suggest that less than 10 percent of consumers seek organically grown produce on a regular basis. If these organic food consumers are like the ones in Hammitt's study, they perceive very high risks from pesticide residues in food. Likewise, if Hammitt's findings apply to today's consumer, conventional food consumers may perceive risks to be lower than EPA's own worst case estimate of 6,000 extra cases of cancer per year, or 2 in every 100,000 people.

Willingness to Pay for Food Safety

Surveys by MDA (Atkin); Ott and Maligaya; and Ott, et al. suggest that more than half of consumers are willing to pay more for pesticide

free food, but not much more than 5 percent to 10 percent. Unfortunately, none of these studies simultaneously account for the level of consumer risk perceptions. Thus, the reported willingness to pay for food safety improvements may be due to a perception that risks are very high or to a perception that the risks are very low, but still unacceptable.

The van Ravenswaay and Hoehn study of the impact of Alar on fresh apple demand found that consumers would have been willing to pay over 30 percent (or 21 cents) more for Alar-free fresh apples in 1989. Thus, additional annual per capita expenditures for fresh apples without Alar would have been \$2.35 more that year. Unfortunately, consumers' actual perceptions of the annual cancer death risks avoided from Alar were unknown. However, assuming that consumers believed the risks to be similar to what the NRDC reported them to be in 1989, the resulting estimate of \$4 (in 1983 dollars) for willingness to pay for a one in a million reduction in cancer death risk is very similar to estimates obtained in other studies. Those studies — which examine consumer response to occupational risks, seat belt use, and smoke detectors — estimate that people are willing to pay between \$1.6 and \$8.5 million (in 1986 dollars) to save a statistical life (Fisher, et al.). This implies that annual willingness to pay for a one in a million reduction in the annual risk of death would be between \$1.6 and \$8.5 in 1986 dollars, which is the same as \$1.44 and \$7.65 in 1983 dollars. This similarity in willingness-to-pay estimates suggests that consumers reacted to Alar much as they do to other risks.

Using a random telephone survey, Zellner estimated consumer willingness to pay for reductions in bacteria risks in chicken. He found that survey respondents were willing to pay about 12 cents a pound more for chicken that was described as eliminating a 2 in 100 risk of suffering nonfatal symptoms of food poisoning. Unfortunately, Zellner did not specify to respondents if this level of risk was daily, weekly, monthly or annually. Furthermore, since individual risk depends on individual exposure (i.e., on level of chicken consumption and methods of preparation), we cannot be certain that individuals believed that this risk level applied to *them*. However, if we assume that respondents treated the risk they were given as the true annual risk, and if we assume that those consumers purchased an average of 44.5 pounds of chicken each year (USDA, p. 497), a rough estimate of annual willingness to pay to reduce risks of food poisoning by 2 in 100 per year would be \$5.34. That would mean that average willingness to pay to avoid a case of (nonfatal) food poisoning during the current year would be \$267.

In a telephone survey of the willingness to purchase irradiated foods, Malone estimated consumer willingness to pay for 50 percent and 90 percent reductions in a "food borne disease such as salmonellosis" in beef, chicken, pork and fish. For 50 percent reductions, he found that consumers were willing to pay 20 cents more per pound for beef, 16 cents for chicken, 16 cents for pork, and 18 cents for fish. For 90 percent reductions, he found that consumers were willing to pay 22 cents more per pound for beef, 19 cents more for chicken, 19 cents more for

pork and 21 cents more for fish. However, consumer perceptions of risks from food borne illness were not assessed, so general estimates of willingness to pay for food borne disease cannot be calculated from these findings.

Both the Zellner and Malone studies found that consumers were willing to pay modest amounts for significant food safety improvements. They also found that consumers were sensitive to the method used to achieve the improvements. If consumers perceived risks from the use of chemicals or irradiation to achieve reductions in bacteria risks, they were not willing to pay more for the products.

Consumer Response to Changes in Food Risk Information

The special surveys that FMI and CPQ conducted during 1989 indicate that consumers revise their risk perceptions when given new information about risks. At the same time, the willingness-to-pay studies suggest that consumers are willing to pay a modest amount for improvements in food safety. Thus, we would expect that consumers would curtail their purchases of a food if they learned it posed higher risks than they had previously believed.

The extent to which we would expect consumers to alter their purchases would not only depend on the extent of the risks perceived. It would also depend on the cost of risk avoidance. This cost, in turn, would depend on the availability of close substitutes for the food product and for how long a period the switch would be required. The greater the number of close substitutes, the lower the cost to the consumer of altering purchases. Thus, if one brand of a particular type of food were reported to have higher risks, it would be easy to switch to another brand. If one type of food within a large food category were involved, such as a particular fresh fruit, it would again be easy to switch. It would be much more costly to switch if many foods were involved over a long period of time.

There have been several incidents involving "food scares" in which dramatic sales losses have been observed. In cases involving particular brands of products, such as a particular brand of canned soup contaminated with botulism or particular brand of dairy product contaminated with salmonella or listeria, the product maker may be forced into bankruptcy. Even when risks are perceived to be small, it is still rational for a consumer to switch brands because the cost of doing so is extremely small.

In cases involving all brands of a particular food product, sales losses are not as steep but can be very dramatic. For example, Brown estimated that sales of cranberries fell by 26 percent in 1959 following an announcement prior to Thanksgiving that they were contaminated with the herbicide aminotriazole. Johnson estimated that sales of dessert, bread, and roll mixes fell between 4 percent and 6 percent in the early months of 1984 after the EPA announced that the widely used grain fumigant, EDB, was a carcinogen and should be banned. Smith,

et al. estimated that sales of milk dropped by 29 percent because of consumer reluctance to purchase milk following recalls of milk contaminated with the pesticide heptachlor. The study of Alar described above (van Ravenswaay and Hoehn) estimated that sales of fresh apples in the New York/Newark market fell by 30 percent due to the Alar controversy.

Results of a recent study of the likely impact of BST use on milk consumption (Preston, et al.) are consistent with the finding of the studies of food scares. In a mail survey of Virginia households, it was found that only 20 percent had heard of BST. After being given a description of BST and conclusions of scientists about its safety, respondents were asked if they thought that BST will make milk unsafe to drink. Only 19 percent thought that it would be unsafe, 44 percent thought it would be safe, and 37 percent didn't know. Consistent with this level of risk perception, the study found that most respondents (82%) would not change their purchases of milk if it were produced with BST and the price remained unchanged. However, 85 percent also believed that milk from BST-treated cows should be labeled. Clearly, this would give them option to switch if BST risks were found.

Conclusions About Food Consumers' Perceptions of Risk

While most consumers perceive at least some food risks, most consumers think they are small. However, a sizeable percentage — roughly 10 percent to 20 percent — perceive large risks in food. No one food contaminant is perceived as being the most serious threat to food safety. Different types of contaminants are perceived as posing the greatest threat by different consumers. However, a significant percentage of consumers view spoilage or germs and pesticide or chemical residues as the most serious threats.

There is little data on consumer perception of the current level of risk posed by the particular food contaminants that regulatory programs have traditionally focused on (i.e., bacteria, environmental contaminants, pesticide residues, animal drug residues, and food additives). Unfortunately, most surveys have asked consumers to rate how hazardous a particular *contaminant* is rather than how likely it is that the contaminant is at *hazardous levels* in the food supply. This survey approach has left many observers with the possibly erroneous impression that consumers see huge risks from pesticide residues. What the surveys more likely tell us is that virtually all food contaminants are perceived as *potential* risks to at least some degree by the majority of consumers. Thus, if there were reports in the press of problems concerning any of these items, it is likely that consumers would pay attention.

The data on perceptions of pesticide residues, while still limited, are more detailed than for other food contaminants. They suggest that most consumers perceive the risks from pesticide residues to be fairly low, but consumers who currently purchase organic foods perceive very large

risks from pesticide residues. This may be as much as 10 percent of consumers.

We know very little about why these different perceptions of food risks occur. The marketing literature suggests the individuals' perceptions of risks may vary because of differences in situational or individual characteristics (Blaylock). Situational characteristics could include differences in access to information sources or familiarity with decisions involving food risks and diet. Individuals vary in terms of the types and amounts of foods they consume, where they obtain their food and how that food is prepared. They also vary in terms of personality traits (e.g., risk aversion) and cognitive style. Research on these possible factors affecting perceptions of risks in food does not presently exist.

The data on perceptions of food risks indicate that consumers adjust their perceptions of risks in the face of new information about risks. Given that consumers also perceive most food contaminants as being potentially very hazardous, we should expect that many consumers will pay attention when new risks involving these substances are reported. Likewise, we can also expect that the news media will continue to express keen interest in the new health risk data being generated as old and new technologies for controlling plant and animal growth, pests and diseases are scrutinized by regulators.

Willingness-to-pay studies suggest that consumers are willing to pay modest amounts to reduce currently perceived food risks. It is difficult to judge why consumers are willing to pay the amounts observed because we know little about what consumers perceive the risks to be, and, thus, what it is they are paying for. There is some evidence that consumer willingness to pay for food risk reduction is similar to their willingness to pay for reductions in risks from other hazards. However, the current literature on willingness to pay focuses on mortality risks. Many of the risks posed by food contaminants are nonfatal, so much more research is needed.

It is important to understand that the magnitude of consumer reaction to past food scares (e.g., Alar and EDB) reflects both consumer risk perceptions and the cost of risk avoidance. In most of these cases, the consumer cost of risk avoidance was relatively low because close substitutes to the food perceived to contain new risks almost always existed. Thus, these cases do not necessarily imply that consumers thought the food risks involved were extremely high.

Another lesson to be learned from these cases is that they do not necessarily imply that an increased demand for food safety has suddenly materialized. What they do illustrate is that consumers are willing to incur modest costs in order to avoid small food risks. Thus, future discoveries of new health risks involving particular food products can be expected to be very costly to the food industry and efforts to avoid them are likely to be a good investment.

Knowledge of how and why consumers perceive risks is important in evaluating how well our educational programs are working and for

understanding consumers' policy preferences. If consumers perceive risks to be larger than they actually are, then they must believe that government programs are not working in their interest. If consumers perceive risks to be smaller than they actually are, then they must not be taking prudent actions to reduce those risks. We cannot know which is the case and for whom unless we do the research needed to understand perceptions of food risks.

Consumers could perceive risks accurately, but still believe that government programs are not working in their interest. This would occur if consumers were willing to pay the additional cost required to reduce risks even further than is now being done. In other words, they may believe the current level of risk in some cases is unacceptable.

Estimates of willingness to pay for risk reduction are useful because they help guide judgments on whether consumers would be willing to pay the cost of improved public safety programs or new food products. They are also useful for predicting how much consumers might reduce their purchases of foods if they learn or fear that risks have increased. More research is needed on both risk perception and willingness to pay for risk reduction before we can answer the question of what food safety improvements consumers really want.

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THE SCIENTIST'S PERSPECTIVE ON RISK

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The Socio-Political Climate

Although life expectancy is currently at an all time high and our general health and well-being are better than at any time in our history, we in Western societies, especially in the United States, continue to worry about the risks in our lives. We worry a lot about the quality of our environment and, particularly in recent years, we worry a lot about our health and well-being. A great deal of concern in the last few years has been focused on the potential adverse effects on human health associated with traces of chemicals such as pesticides present in our food and water and, indeed, from time to time the level of concern has reached paranoic proportions. The Alar scare of 1989 was a prime example of this. Throughout the following discussion I will use the pesticide issue as a general case study to illustrate some of the points I wish to make.

As scientist writer Lewis Thomas has said, it sometimes appears that we are in danger of becoming "a nation of healthy hypochondriacs, living gingerly and worrying ourselves half to death."

The fear and worry that exist in a substantial portion of the public are very real. Unfortunately (or perhaps fortunately), most of this is not based on fact and most of it seems quite irrational. As a society we seem to have lost our ability to distinguish between serious threats and those of a quite trivial nature. We smoke billions of cigarettes and yet we worry ourselves ill over pesticide residues in food and water that, at very worst, constitute risks far lower than those most of us face travelling to work each day.

The reasons for all this worry are many and complex. They relate, in part, to the process by which information is communicated to the public (i.e., the media), in part to the characteristics of the receiver of the message (i.e., psychological factors that determine how we, as individuals, perceive and prioritize risks) and, in part, to the nature of the message itself (i.e., complex scientific and technical information often associated with a good deal of genuine uncertainty). These difficulties are exacerbated by the injection of a wide variety of political views and personal biases and, indeed, the issues tend to become so highly charged and the opposing views so polarized that it becomes

increasingly difficult, especially for nonscientists, to distinguish established fact from emotional fancy and political rhetoric.

For quite some time now, the U.S. public has been subjected to a constant barrage of generally bad news on pesticides through the popular written and electronic media. Much of this news is, of course, tailor-made to sell newspapers and TV; it is always bad and often sensational and emotional; there are victims and villains, poignant human interest stories combined with stories of corporate greed and government ineptness.

The only good news is the fact that the bad news is almost always highly exaggerated and frequently completely without foundation. To be sure, it is possible to find examples of situations in which, as a result of accident, gross misuse, or negligence, etc., people have been injured or even killed following excessive exposure to pesticides and other chemicals. Many pesticides are potentially hazardous to humans and they must always be used with caution. On the other hand, there is not one shred of scientific evidence to support claims to the effect that, in the general population, pesticide residues in food and water are responsible for a multitude of ills ranging from cancer, birth defects, reproductive effects and immune dysfunction (often referred to as chemical AIDS) to an increase in teenage suicides.

Quite predictably, this constant negative reinforcement has led to:

1. increased public fear and confusion over the health effects of pesticides and the development of strong antipesticide sentiments;
2. distrust in government regulatory efforts and increasingly strident demands for more protective regulation;
3. increased suspicion of the motives of the agrochemical industry.

This describes the general atmosphere in which many regulatory decisions on pesticides are currently being made at both the federal and state levels. As a result of intense public pressure, regulators continually find themselves "under the gun" to take further action to obviate or minimize the perceived health or environmental threats associated with a pesticide, irrespective of whether action is justified by the scientific evidence available. Care must be taken to avoid taking overly hasty action based on incomplete, misleading or erroneous information. Such actions will not only fail to have the desired health-related effects but may well have serious negative impacts on the agrochemical and agricultural industries.

To the scientists charged with assessing risks and attempting to provide advice and recommendations on regulatory issues, it is saddening to realize that the public's perception of the nature and magnitude of the health risks associated with pesticides and other chemicals is frequently quite at odds with the available facts. It is also frustrating for scientists to see that many important legislative initiatives and regulatory decisions relating to pesticides are based, not on science, but on a variety of political or other nonscientific factors. It often seems

that science is becoming increasingly less important in the regulatory process.

To understand more clearly some of the frustrations of scientists over the use, misuse and abuse of science in the regulatory process, we need to look more carefully at the state-of-the-art of the science of risk assessment and the role of science in the regulatory decision-making process.

The Regulatory Process

According to the National Academy of Sciences (NAS), the regulatory process can be divided into two distinct elements, risk assessment and risk management. Risk assessment is considered to be a scientific process that characterizes the nature of a risk and assesses the probability of its occurrence. Risk management is the process whereby an appropriate regulatory decision is reached on how a given risk can be obviated, minimized or otherwise managed. Risk management per se is not a scientific process. Obviously, it requires science; but it also involves a series of value judgments through which the regulator balances the risks against a variety of other factors (costs, benefits, alternatives, social and political considerations) that depend on the statute under which regulatory action is being contemplated.

Unfortunately, as we will see, there is often a very fuzzy dividing line between the processes of risk assessment and risk management and the policy issues associated with the latter often have a powerful influence over the scientific input into the process.

Toxicologic Risk

Risk is defined simply as the probability that an adverse effect of some kind will occur. In the case of a chemical such as a pesticide, the potential risk to human health is a function of the toxicity of the material (i.e., its intrinsic capacity to cause an adverse effect such as neurotoxicity, cancer, etc.) and the level (intensity and/or duration) of exposure.

$$\text{Risk} = \text{Toxicity} \times \text{Exposure}$$

The importance of the level of exposure cannot be overstated and, of course, the fact that the response to any chemical is always related to the dose, is central to the discipline of toxicology. For many, the very fact that a pesticide (or pesticide metabolite) is present in food or water, at any concentration, is a cause for immediate concern. It must be realized, however, that such pesticide residues are present in extraordinarily low concentrations, usually measured in parts per million (ppm) or parts per billion (ppb).

A few years ago we had great difficulty in measuring 1 ppm of anything. Now we routinely measure ppm and ppb and occasionally we can measure ppt (parts per trillion) and ppq (parts per quadrillion). Our current analytical chemical capabilities are truly amazing and they

allow us to find the smallest traces of almost anything we choose to look for. This has tended to heighten public fears about the risks of pesticides in our food and water because it gives many the impression that we are wallowing in a sea of potentially dangerous chemicals. What we must remember is that we no longer live in a pristine environment. If we choose to use pesticides and release them into our environment and our food supply, we will always be able to measure traces of these materials in our food and water.

The major problem, of course, is not in detecting and measuring pesticide residues in food and water (that's easy and will no doubt get easier) but in determining what, if any, significance such residues might have in terms of adverse effects on human health. We seem to have developed the unfortunate habit of making lists of materials present in food and water without considering the levels. Regulatory action cannot be justified simply on the basis of the presence of a given pesticide in food or water but only after carefully evaluating whether the chemical represents a potential health threat.

A careful exposure assessment is a critical component of any good risk assessment.

Risk Assessment

The assessment of toxicological risk is the concern of the toxicologist. The commonly accepted definition of toxicology — the science that studies the adverse effects of chemicals on living organisms and assesses the probability of their occurrence — clearly indicates risk assessment and prediction as integral components of the discipline.

There are two ways in which we can evaluate the potential adverse effects of chemicals on human health:

1. We can conduct prospective studies on various surrogate species (rabbits, mice, etc.) in the laboratory and hope that we can extrapolate the results to predict the effects likely to occur in man.
2. We can conduct retrospective epidemiological studies in which we compare the health of populations exposed to a given chemical against that of similar unexposed populations.

There are, of course, a great many difficulties associated with both methods and consequently there is always a lot of genuine scientific uncertainty in predicting the effect of chemicals on human health.

Unfortunately, this uncertainty is widely misunderstood. Most non-scientists believe we know a lot more about toxicology than we really do and have very precise and accurate risk assessment capabilities. Consequently, many feel that there is no excuse for not rapidly identifying chemicals that pose a threat to human health. The media and the public are also at a loss to understand why the "experts" frequently disagree over what appear to be relatively straightforward issues and tend to view this dissension with alarm, suspicion and mistrust. These general misperceptions have tended to alienate the public from science and have

led to a good deal of public skepticism with regard to the views expressed by many scientists.

While there is no question that the science of toxicology is rapidly advancing our state of knowledge and understanding of the interactions of chemicals with living organisms, it must be emphasized that evaluating human health risks will always be an uncertain process.

Acute Versus Chronic Effects

Toxic effects are usually described as being either acute or chronic. Acute effects usually occur within a relatively short time (up to 24 hours) after exposure while the onset of chronic effects such as cancer or birth defects may be delayed for years or extend to future generations.

The evaluation of acute toxic effects seldom causes serious problems. The main reason for this is that, for chemicals causing acute toxic effects, it is generally agreed that there exists a threshold dose below which an effect will not occur. Furthermore, this threshold can be determined experimentally in laboratory animals. In practice, a "no observed effect level" (NOEL) can be measured; it is simply the highest dose tested at which no adverse effect was observed. The NOEL is a useful benchmark from which a number of regulatory guidelines, health advisories, etc. can be derived. While there is still some uncertainty associated with the extrapolation of acute animal NOELs to humans, this is usually acceptable to all concerned including the public.

The situation with respect to assessing chronic health effects such as cancer is quite different in all respects and is beset by a good deal more uncertainty and controversy. In evaluating acute toxic effects the objective is to measure the severity of specific adverse effects in individual animals; the emphasis is on effects resulting from high doses for short periods of time. In contrast, cancer risk assessment seeks to measure increases in the frequency of occurrence of a low probability event (formation of a tumor) in a population exposed to low doses of the chemical over a long period of time.

For statistical reasons it is simply not possible to obtain direct laboratory measures of the low levels of cancer resulting from long-term exposure of animals to the traces of pesticides to which humans are typically exposed in the real world. Two ways in which the power of the test can be improved is:

1. to increase the number of animals used in the test and
2. to increase the dose of the test chemical.

There are, of course, limitations to the number of animals that can be used in routine lifetime bioassays. Most tests employ about 600 animals and even with this number the cost is close to \$1 million.

The dose is more amenable to change and, as a result, the doses employed in most animal bioassays for carcinogenicity are high. Indeed,

current EPA testing guidelines require that the high doses used should approach the so-called "maximum tolerated dose" (MTD), the maximum dose the animal can withstand. It is assumed that any effects observed at these high doses can be used to predict those likely to occur at the much lower doses (often ten or one hundred thousand times lower) of interest with respect to human exposure. This assumption is highly questionable as are the mathematical models used in the extrapolation process.

It is important to recognize that the quantitative estimation of human cancer risk of necessity involves the extrapolation of results obtained under one set of conditions in the laboratory (e.g., rodents exposed to very high doses for a lifetime) to predict those likely to occur under another completely different set of conditions in the real world (humans exposed intermittently to very low concentrations).

This extrapolation process across both dose and species is fraught with difficulty and uncertainty and involves many controversial assumptions of very doubtful scientific validity. This is the point at which the policy aspects of regulation impinge directly on the scientific input into the risk assessment process. Thus, many of the steps in cancer risk assessment as practiced by the U.S. Environmental Protection Agency (EPA), for example, are based entirely on assumptions and policy decisions that do not necessarily reflect the best science available. Wherever there exists an area of uncertainty the EPA steps in and establishes a guideline (policy assumption) that essentially says "since we really don't know how to do this we will agree to do it this way"; the guidelines provide convenient bridges by which regulators avoid areas of scientific uncertainty. Since, quite understandably, regulators wish to err only on the side of safety and prudence, the guideline assumptions invariably involve the use of highly conservative procedures. Unfortunately, regulators often try to bend scientific truth to justify and validate such assumptions.

An assumption with far reaching regulatory consequences is the one that holds that, in sharp contrast to the case with acute toxicants, there is no threshold for carcinogens. In other words, the only "safe" dose of a carcinogen is zero. This causes numerous problems, one of which is that, in the United States, carcinogens are regulated differently from chemicals causing other adverse effects. Since, as discussed earlier, modern analytical instrumentation allows us to find traces of any chemical we care to look for, we are constantly finding "carcinogens" that, by definition, constitute a finite level of risk. As a result, we have been trapped into playing a rather futile numbers game in which we are continually trying to decide what constitutes an acceptable level of risk.

The final risk estimates generated from cancer risk assessments usually appear as single very precise values — not, for example, 1 in a million or even 1.5 in a million, but often 1.53 in a million! It must be emphasized that these represent highly theoretical, super conser-

vative, worst case estimates that have little or nothing in common with the real world. Statistically, even the most frightening values might just as easily be zero. Furthermore, these risk estimates may vary by up to a millionfold (or more) depending on the assumptions used in the assessment. As indicated earlier, our obsession with generating what appear to be very precise estimates of cancer risk is unscientific and misleading. It causes the public to believe that we have exquisitely sensitive test methods and places pressure on regulatory agencies to adopt increasingly more stringent standards.

It is now accepted in the scientific community that cancer is a complex multistage disease that can occur through a number of different mechanisms. It is also widely accepted that in most, if not all, cases there are practical thresholds of exposure below which a carcinogenic response will not occur. Consequently, EPA guidelines for assessing carcinogenic risk are currently under review. It is of considerable concern to scientists that the guidelines are overly inflexible and unable to change sufficiently rapidly to accommodate new scientific advances.

It is also of fundamental importance to recognize that the very process we use to classify carcinogens is based almost entirely on the results of tests with laboratory animals. There is little, if any, evidence to suggest that many of the chemicals currently classified as "carcinogens" are likely to be "human carcinogens," particularly under the conditions of human exposure. Here again, our apparent obsession for making lists of various things comes to the fore and our lists of "carcinogens" are always assumed by nonscientists to be lists of "human carcinogens."

Summary and Future Needs

The foregoing discussion indicates just some of the reasons why scientists often take a somewhat jaundiced view of current risk assessment procedures (as employed by regulatory agencies). Also, recognition of the unreasonably high level of conservatism built into the risk estimates explains, in part, why scientists frequently seem to take a somewhat cavalier attitude toward many of the "risky issues" that attain national prominence.

There is also a feeling among many in the scientific community that we are not able to distinguish between serious and trivial risks and that many of our current regulatory priorities are inappropriate. For example, Dr. Bruce Ames of the University of California in Berkeley continues to point out that, of the total human dietary intake of potential carcinogens, only about 0.01 percent are synthetic chemicals like pesticides. The rest are naturally occurring products from plants, fungi, etc. or materials that are formed during cooking (Ames and Gold). If Dr. Ames is correct — and he has widespread support in the scientific community — a large proportion of our current efforts to identify, evaluate and regulate the traces of synthetic "carcinogens" in our food supply will have little, if any, effect in reducing cancer incidence in the United States.

While, clearly, we must continue to be vigilant to identify and obviate situations that represent a significant level of risk, we must clearly recognize that we have limited resources available for this purpose. If these resources are squandered or misdirected along unimportant pathways there will be fewer left to apply to more serious issues. It is important that we direct these precious resources along avenues that provide the biggest return.

Looking into the future there are three major needs that will improve the process by which we identify and regulate toxicologic risk and that, importantly, will provide the public with reassurance that the regulatory system is indeed providing an appropriate level of "safety." These needs are:

- To continue to increase our understanding of the basic mechanisms through which chemicals exert their potentially adverse effects on living organisms;
- To ensure that regulatory decisions are based primarily on the total weight of scientific evidence available and are influenced as little as possible by emotion, sensationalism and media-hype;
- To establish health-based priorities as targets for risk assessment and possible regulatory activity;
- To improve the risk communication process to increase the public's level of understanding of risk and risk assessment.

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SAFE FOOD AND WATER: PRODUCERS LOOK AT RISK

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Agricultural producers have a major stake in keeping our food and water supply safe. They consume the food they and other farmers produce. They drink the water that falls on their fields and filters through the soil into underlying aquifers. The confidence of the American public in its food supply is mirrored by increased or decreased demand for agricultural products. Further, that confidence, if eroded, can eventually lead to the development of legislation that directly affects farming practices. Recently that confidence was shaken by escalating publicity over the possibility of pesticide residues in our food supply.

Public opinion polls of consumers taken during this crisis of confidence indicated they wanted farmers to reduce their chemical use. However, although farmers may be willing to change their practices, not everyone is convinced that alternatives to pesticides are equivalent and therefore acceptable substitutes. In many cases they are either more expensive, less reliable, unavailable, or harder to implement than simply applying a proven pesticide. Alternatives include the use of biological control agents, management practices to enhance build-up of natural enemies, host plant resistance, organically acceptable chemical alternatives such as oils and soaps, and cultural alternatives such as crop rotation, plant density and sanitation.

Alternatives are often characterized as being information-intensive, management-intensive and sometimes labor-intensive. The number of farmers using alternatives is difficult to determine although we know that farmer concerns and attitudes about pesticides are growing and changing (Richardson). In a 1989 Gallup poll, 49 percent of the 1,000 farmers surveyed said their concern about using pesticides had increased over the past three years, almost two-thirds said they would switch to a different crop chemical for environmental considerations, 47 percent had already reduced their use of pesticides, and 64 percent were familiar with biological control agents (Richardson). Familiarity with biologicals was higher in the West, where 84 percent had heard of them. However, a recent review concluded that alternatives to pesticides had not been accepted widely by the agricultural community, particularly in the absence of cost-sharing or a clear economic advantage for the practice (Logan). The author felt that farmers must be motivated through education, technical assistance, cost-sharing where

necessary, and some regulatory sanctions to address environmental problems. The need for a suitable infrastructure that can support the use of alternatives is also critical but often overlooked (Sorensen 1990b). Lack of access to biological control agents, pesticide and nitrate testing kits, biopesticides, training manuals, field scouts, highly trained consultants and marketing advice may limit the number of farmers who can successfully use alternatives.

While debate over the viability of alternatives continues, federal and state legislation may severely limit the options farmers currently have for protecting their crops. Assessing the impacts of pesticide re-registration and state legislation on pesticide use in California, Zalom and Strand looked at whether alternatives existed for targeted pesticides. Over ninety pesticide active ingredients may be removed from California markets. Of the alternatives available, 60 percent are chemicals. For many crops and targeted fungicides, nonchemical alternatives are not available. In many cases, alternatives can only partially substitute for the targeted pesticide. Because of lack of information and the complexity involved, costs or other constraints posed by alternatives were omitted by the authors.

In view of these developments, I will look at how Farm Bureau is helping its members deal with increasing environmental pressures. First, I'll review consumer attitudes toward farmers and toward risk. These attitudes are important to keep in mind because of the increasingly strong role the public plays in shaping agricultural policy. Next, I'll talk about our programs. We have learned a lot in the last few years about designing educational programs for our members. Some of what we have learned has been borrowed from extension. Other elements may be unique to Farm Bureau. We have taken a three prong approach to environmental issues and the public's aversion to risk. I will illustrate each approach in turn: (1) raising awareness of members to environmental problems, (2) encouraging the development and use of alternative technologies and (3) influencing public opinion about farming practices.

Public Attitudes Toward Farmers and Food Safety

Recently, Farm Bureau examined the public's attitudes toward farmers and food safety. Working with the public relations firm of Porter/Novelli, we looked at the consumers' image of farmers, their current awareness of food safety issues, and their perceptions about the involvement of farmers in these issues. A nationwide telephone survey was conducted by National Research, Inc., between January 4-10, 1990. A total of 1,200 interviews were completed. Among our findings:

Farmers and Food Safety

In their attitudes toward farmers, nine out of ten respondents (93%) believed farmers are "trustworthy" and 56 percent felt that farmers are "very trustworthy." The majority (88%) agreed or strongly agreed (45%) that "farmers are doing a good job of producing healthy food." Men (51%) and those over 50 years of age (52%) were more likely than

women (39%) or age groups between 18-49 (40%) to highly praise the efforts of farmers. However, the public was less convinced that farmers are conscientious about protecting food safety and the environment. While four out of five (79%) agreed that "America's farmers are very concerned about the safety of the food they produce," only one third (34%) agreed strongly. Consumers living in the West were less inclined than their counterparts to think farmers were very concerned about food safety.

Family Farms and Corporate Farms

Two out of three respondents (63%) believed that most of our food is produced on large corporate farms. "Corporate farm" believers tended to reside in the West, have incomes over \$50,000, and be somewhat more distrustful of farmers. They were more concerned than other respondents about pesticides and hormones in farm products. In contrast, the third (32%) who believed family farms produce most of the food we eat were more likely to live in the Midwest, have incomes under \$20,000, and consider farmers to be "very trustworthy." The actual structure of agriculture differs from these perceptions (Sorensen 1990a). Only 0.3 percent of our farms are owned and operated by a unit other than a family. Eighty-seven percent are owned and operated by a single family and the remainder as a multi-family partnership.

The public also felt that the "family farmer" (upon which their positive image is based) is rapidly disappearing in favor of large, impersonal "corporate" farms. "Corporate" farmers were characterized as relatively uncaring business executives. Their "intelligence" and sophistication may be greater, but their trustworthiness related to food safety issues is quite suspect. Corporate farms were credited as being chief suppliers of food in large grocery stores and as heavy users of agrichemicals. Conversely, small farmers were described as caring, honest and less likely to use agrichemicals. They were seen chiefly as suppliers of food for local and pick-your-own markets.

Most believed corporate farms were more likely than family farms to "use sophisticated equipment" (90%), "adopt new and improved farming methods (66%), and "be more efficient and productive" (59%). However, though the public acknowledged the sophistication of corporate farms, it doubted their ability to produce safe and wholesome food. Compared to corporate farms, the public was more likely to trust family farms to "produce foods of higher quality" (72%), "use chemicals safely" (70%), and "respond to consumer concerns and desires" (62%). The perceived trustworthiness and caring of the "family" farmer appeared to be more important than the intelligence and sophistication of the corporate farmer when the issue was safe use of farm chemicals.

Food Safety Concerns

Most of the concern over food safety centered around the use of agricultural chemicals. Consumers were more concerned about pesticides (89%) than other food issues such as spoilage (85%), fat and

cholesterol content (82%), additives and preservatives (80%) and hormones (77%). Overall, women were more concerned than men about food issues. Older consumers (60%) expressed more concern about pesticides than their middle (54%) or younger (48%) counterparts. Consumers with a high school education or less (59%) were more concerned than those who had more education (49%). However, consumer concern had minimal impact on consumption. Only one out of three consumers (36%) avoided foods because they thought those foods might be harmful to their health.

In general, the survey found that consumers were "chemophobic." They were fearful, confused and concerned about the use and possible misuse of farm chemicals. Farm chemicals were primarily perceived as harmful tools used for financial gain. This perception is particularly disturbing in view of a recent study which documents how damaging the public's chemophobia could be on the quality and quantity of our food supply if carried to extremes (Knutson, et al.).

Getting Farmers Involved

Finally, our survey showed that the public feels strongly that farmers should tell their side in the food safety issue. Most felt that farmers should speak out more forcibly about their views on food safety issues (94%), provide consumers with information about all the chemicals they are using (93%) and educate consumers about their farming practices (89%).

Farm Bureau Strategies

The survey reviewed above served to confirm what Farm Bureau was already doing. For many years, we have been responding to environmental concerns by raising member awareness and encouraging adoption of environmentally sound technologies. In doing so, we are guided by the policies developed by our members. Three policies, in particular, address our goals. Our policy on Alternative Farming Methods (#39) states: "*We support methods of farming that result in 1) a profit for the farm operator, 2) a clean environment, 3) the production of a safe food, feed and fiber supply, and 4) an adequate supply of high quality food, feed and fiber. We are keenly aware that the means to accomplish these ends may vary from farm operation to farm operation and that no single method of farming will work with every operator. We support: 1) Research aimed at reducing overall inputs needed to sustain a profitable farming operation; and 2) Efforts to provide information to farmers on proven means of improving the efficiency of inputs. We oppose: 1) Any attempt to mandate low input methods of farming and 2) Requiring low input methods as a condition of participation in government farm programs.*" Our policy on Integrated Pest Management (#97) states, in part, that "*We support the widespread promotion and use of integrated pest management (IPM) as a method of reducing costs, risks, liability and total dependence on farm chemicals,*" that we encourage additional research on biological control and IPM-compatible

pesticides, and that "Expanded educational programs are needed to encourage the widespread adoption of IPM." Finally, our policy on Research (#174) concludes with the statement that "*There is a need for increased research for Low Input Sustainable Agriculture (LISA), integrated pest management (IPM), water quality, reduced tillage and biotechnology, but this should be accomplished through increased funding and not by transferring funds from existing productive research programs.*"

The following Farm Bureau programs were designed to carry out our policies. The success of our programs depends largely on whether or not they are instigated from the top down or the bottom up. The latter programs are the most successful.

Raising the Level of Awareness of Environmental Issues

Soil Compaction Workshops: The "Farm Partners: Have you Hugged your Soil Lately?" program was developed in 1984 by the American Farm Bureau Federation (AFBF) which had identified a need to educate farmers about the economic impact of soil compaction. It was a half day workshop. Both a leader's guide and a slide/tape show accompanied the workshop (AFBF 1984).

In retrospect, the workshop was much more successful with the extension service and university researchers than it was with state Farm Bureaus. The state Farm Bureaus apparently felt that education on soil compaction was not their role and that extension should be doing it. The Farm Bureau staff also indicated they did not feel comfortable being leaders for a technical program. However, the program did raise the awareness level of those involved and prodded extension leaders into studying the issue more carefully.

The mixed success of the soil compaction workshops points out the pitfalls of a "top down" program. However, because soil compaction was not readily identified by farmers as a problem back in 1984, the program could only have been initiated by the national leadership.

LISA Tours: In 1989, several state Farm Bureaus, along with some of their state agencies, sponsored tours of sustainable agricultural operations in their states (Porterfield). The idea for the tours came from AFBF. The tours were designed to familiarize key congressional staff, state legislators and regulators and leaders in the farming community with the full spectrum of agricultural practices in their state. For example, the Ohio Farm Bureau scheduled a two day overnight tour in August. It featured stops at a high input farm, farms using low input or Integrated Pest Management programs, and an organic farm. They also visited the Coshocton Hydrological Station to look at conservation tillage and hydrologic studies and the Ohio Agricultural Research and Development Center. Questions and direct observations were encouraged at all stops.

Based on comments afterwards, the tours successfully sparked interest in agricultural practices, promoted a better understanding of the

research necessary for successful programs, and encouraged dialogue between the participants. Again, the limited number of states that sponsored tours was probably due to the fact that the idea did not originate from the local level.

Self-Help Checklist: "Farm Bureau's Water Quality Self-Help Checklist" was first released in 1987. It is a 15-page booklet of questions about pollution problems that could occur around the farm (Porterfield). It walks farmers through potential problems and suggests possible solutions. The checklist was a classic "bottom-up" program. The idea for the checklist came out of a Farm Bureau farmer advisory committee. Over 750,000 copies of the checklist had been distributed to farmers throughout the country as of June, 1990. The checklist is designed to be used in group meetings with time set aside for everyone to fill in their answers to the questions. Because each state has slightly different laws, geology and farming practices, it was difficult to design one publication that would be useful nationwide. To circumvent this, each state received a set of camera-ready "slicks." They were instructed to modify them to reflect their particular state laws and farming practices.

The success of the checklist is related to several factors. First, it was "bottom up," that is, a service demanded by members for members. Second, the state Farm Bureaus were actively involved in its development, giving them a sense of "ownership." They field tested it repeatedly to come up with a format with which farmers would feel comfortable and find useful. Third, it is used in the context of a county meeting, with experts available to answer questions. Fourth, the checklists are given a "state spin," making them relevant to the recipients. And, finally, state Farm Bureaus have involved their state agencies where appropriate to help in distributing the checklist and any further educational efforts that might be needed.

Cooperative Well Water Testing Program: In August, 1989, the AFBF Board of Directors approved a national well water testing program in response to requests by members. The program allows individuals to have their water supplies tested and helps states develop a database to support local programs on ground water education and protection (AFBF 1990).

The Water Quality Laboratory at Heidelberg College in Tiffin, Ohio, offers the tests at a substantial discount to county Farm Bureaus. For \$12, the basic package includes testing for nitrates, nitrites, ammonia-nitrogen, chloride, sulfate, specific conductance, silica, and soluble phosphorous. Results are sent back to the individual and kept confidential. If desired, the lab can computerize a summary and a map of the county results for educational purposes. Optional screening tests for several pesticides are also offered.

Nearly one fifth of the state Farm Bureaus are now enrolled in the program.

Promoting the Use of Alternatives

In addition to raising the awareness of members about environmental issues, Farm Bureau has developed several programs designed specifically to encourage the development and use of alternative technologies.

Adopt-A-Scientist Program: Involving farmers in the early stages of agricultural research gives both researchers and farmers a better idea of what is needed and what to expect. Farm Bureau started the Adopt-a-Scientist program in 1988 to improve communications and the flow of information between researchers and farmers. The exchange program places leading scientists on farms across the United States and provides the host families an opportunity to visit the scientist's lab. More importantly, the program opens a dialogue between scientist and farmer. The scientist visits his or her host family before planting, during the growing season and at harvest. Each visit lasts two to three days. Scientists choose which crops or livestock and which area of the country they want to visit and are then matched with a farm family. In the inaugural year, nine scientists from three companies teamed up with farm families in eight states. In 1989, the program involved eighteen scientists from nine companies. For 1990, there are twenty-seven scientists visiting fourteen states. At present, the program is limited to scientists from private industry. However, several universities have expressed an interest in participating as well.

Self-Help Checklists: Based on the success of the Water Quality Self-Help Checklist, the Farm Bureau is now developing three self-help education checklists on agricultural technologies, proper chemical use and integrated pest management. The checklists have been extensively reviewed and piloted in three states. We are currently exploring ways in which to finance and release the checklists to as wide an audience as possible.

Farmer Idea Exchange Program: The Farmer Idea Exchange is sponsored annually by Farm Bureau and is in its third year. It is designed to encourage Farm Bureau members to share their innovative ideas and help farmers find ways to cut costs and become more efficient. The program is open to all Farm Bureau members. Ideas can be entered in twelve categories: livestock, marketing, pollution prevention, integrated pest management, handicap helpers, computers, systems, crops, energy, equipment, safety and farm shop. Twenty farmers from around the country are selected to display posters of their ideas at the AFBF annual meeting in January. Entries are judged on safety of the idea when in use, environmental impact of the idea, ease of construction and use by other farmers, ease and cost of maintenance, and impact on a farmer's net income. The overall winner receives one year's free use of a Ford Model 9030 bidirectional tractor provided by Ford New Holland.

Encouraging effective information transfer: Although national farm organizations are not well equipped to transfer site-specific information on alternatives, we can assess the success of such programs.

Through national meetings and membership in groups such as the National Coalition on Integrated Pest Management, Farm Bureau is trying to encourage the development of programs that work. Successful programs are built around the following principles (Sorensen 1990b):

1. Alternative agricultural practices such as Integrated Pest Management (IPM), Low Input Sustainable Agriculture (LISA), or Best Management Practices (BMP's) require a higher degree of training and support than conventional practices (National Research Council).

2. The involvement of key credible leaders in the farming community is critical in generating support from farmers.

3. Programs should respond to adoption criteria used by producers. First, producers have to become aware that a new product exists. This leads to an interest in finding out more about it. They then try it out on a small scale to see if it will work on their farm. They evaluate the results and, if they like what they see, they adopt it for the next growing season. A typical early adopter of new technology owns a commercially successful operation, large-scale and more specialized than the normal farming operation; is a sophisticated financial manager, relying on credit; considers farming as a business rather than a way of life; is more educated than the average farmer; is often more capable as a farm and business manager; is highly motivated and willing to take risks; is well connected to communication networks; and is a community opinion leader (Hoban).

In many cases these early adopters are not the "family farmers" the public wants to protect. We can minimize adverse impacts on these "family farmers" by improving their management skills. Most farmers will need better management skills to more easily integrate technological advances in the future (Kalter).

4. The best way to reach farmers is through a variety of sources including the farm and commodity organizations, the extension service, the Soil Conservation Service, professional consultants and farm publications.

5. A reliable nationwide infrastructure to support alternative agricultural practices (such as consultants, beneficial insectaries, ready supplies of biopesticides and pheromones, training manuals, soil, water and plant tissue testing laboratories and marketing advice) must be developed to keep pace with potential demands.

Influencing Public Opinions on Farming Practices

The final component of our three prong approach to environmental issues is the development of programs to increase the public's awareness of how farmers grow their crops.

Agriculture-in-the-Classroom. One of the most successful efforts is Ag-in-the-Classroom, a program developed by the U.S. Department of Agriculture (USDA) to teach children in our schools about agriculture. Farm Bureau has developed a parallel program called Agriculture-in-

the-Classroom that compliments the USDA effort by adding a state perspective to the material. Along with videos, brochures and coloring books designed by state Farm Bureaus, states have developed programs to educate school administrators, state policy decision makers, and others who provide input to the public about agriculture.

Media Training. Developing effective spokespeople for the agricultural community is also considered a priority. Farm Bureau currently offers media training to our volunteer leaders. These workshops include a session on presentation excellence which focuses on how to improve delivery techniques, gain audience attention and use visual aids effectively. Participants also attend a media workshop. Skills learned include an understanding of the print and electronic mass media, how to develop and deliver a message and how to anticipate questions.

Food Safety Leadership Kit. The food safety leadership kit represents months of research work, public opinion surveying and planning. The kit is designed to help farmers reach consumers. The materials were developed by Farm Bureau with help from an outside consulting agency. The leadership kit includes information developed specifically to address the areas of public concern identified in our food safety survey. Included in the kit are a slide and script presentation on modern farming methods, background information on opinions and strategies, discussion sheets on selected issues, and advice on how to hold community forums, how to work with the media and how to give an effective presentation.

Identifying Forums. Identifying appropriate forums for farmers to reach consumers is a bit more difficult. County and state fairs offer an opportunity for farmers to inform consumers in friendly surroundings. Local civic organizations which hold regular meetings are also a good way to exchange information. Some state Farm Bureaus support local Public Television Station programs on agriculture and the environment. Through Agriculture-in-the-Classroom, farmers can adopt a classroom. Writing letters to the editor of the local newspaper is another way of getting a message heard. Developing contacts with the local media and maintaining those contacts by providing reliable and credible information is encouraged.

Conclusions

The above examples represent efforts to deal with environmental constraints that are increasingly changing the ways in which farmers can farm. What the agricultural community is trying hard to avoid are legislative constraints based solely on fears that our food and water supplies may not be safe rather than hard scientific evidence of risk. But, at the same time, farmers need to be aware of public concerns and try, as best they can, to address them. The Farm Bureau is taking steps in that direction and we urge and welcome similar attempts by the academic community.

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EFFECTIVE COMMUNICATION ABOUT RISK

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As extension educators, we often are called upon to discuss and explain those risks related to the quality, healthfulness and/or safety of our food and water. In many cases there are no easy answers. Even when we perceive an answer as clear-cut, getting it across to an American public not trained in science and wary of sweeping statements made by scientists or government bureaucrats is no simple matter.

The need to develop effective and meaningful ways of presenting complex technical material clouded by uncertainty and inherently difficult to understand has led to a growing field of study called "risk communication."

Risk communication has been defined as any public or private communication that informs individuals about the existence, nature, form, severity or acceptability of risks (Plough and Krinsky). It is considered an adjunct to, but by no means replacement of, risk assessment (the characterization of potential adverse health effects of human exposure to hazards) and risk management (the process of evaluating alternative regulatory actions and selecting among them) (Needleman). Risk communication also does not replace risk regulation. All are necessary components in maintaining the healthfulness and quality of any ecosystem.

In its report, *Improving Risk Communication*, the Committee on Risk Perception and Communication of the National Research Council (NRC), stresses the interactive nature of risk communication. The authors distinguish between *risk messages* — one-way written, audio or visual packages developed by experts to present information about risk to nonexperts — and the process of *risk communication* — an interactive exchange of information and opinion among individuals, groups and institutions (National Research Council). They further challenge the view that risk communication is successful only to the extent that recipients accept the views or arguments of the communicators. Rather, they define risk communication as successful when it "raises the level of understanding of relevant issues or actions for those involved and satisfies them that they are adequately informed within the limits of available knowledge (National Research Council, p. 2).

Sandman (1986) refers to the goal of the former as "passive trust" and of the latter as "rational alertness." He stresses that the ultimate goal of risk communication should be the development of a public that is alert to the issues and rational in their approach to facing those issues.

Successful communication about risks surrounding food and water issues poses challenging problems and opportunities. Covello and co-workers have characterized four types of problems that arise in risk communication:

1. Message problems — e.g., limitations of scientific risk assessments;
2. Source problems — e.g., limitations of risk communicators and risk assessment experts in agreeing about the nature of the risk and how to get that message across to the public;
3. Channel problems — e.g., limitations in the means or media by which scientific information about health or environmental risks is transmitted;
4. Receiver problems — e.g., characteristics of the intended recipients of the communication.

Defining Risk

Message and source problems are hampered by the fact that the meaning of "risk" is fraught with confusion and controversy. Two definitions of "risk" seen in the literature highlight the chasm that exists between how experts and consumers define risk.

Risk = Hazard/Safeguards. Risk is commonly defined by experts as "the probability of loss or injury." In assessing such risk, hazard is determined by asking: "What could go wrong?" "How likely is it to happen?" and "If it does, what will be the consequences?" Once defined, hazard is then divided by "safeguards" to arrive at risk (Rogers). Safeguards are those practices that help keep a hazard from becoming a reality. For example, if the potential hazard of getting salmonellosis from eating raw chicken is one in three, cooking is a safeguard that reduces the risk to a much lower figure.

Risk = Hazard + Outrage. The public, however, sees risk as much more than the probability of a loss. Mortality statistics are one factor, but not the only one, nor in some cases, the most important factor. Peter Sandman (1987) describes these other factors as "outrage." He defines risk as the sum of hazard and outrage. When the public pays little attention to hazard and the experts ignore outrage, then it should come as no surprise that the two rate risks very differently.

Paul Slovic (1986) has developed the following list of characteristics or outrage factors that figure into consumers' working definition of risk:

Less Risky	More Risky
Voluntary	Involuntary
Familiar	Unfamiliar
Controllable	Uncontrollable
Controlled by self	Controlled by others
Fair	Unfair
Not memorable	Memorable
Not dread	Dread
Chronic	Acute
Diffuse in time and space	Focused in time and space
Not fatal	Fatal
Immediate	Delayed
Natural	Artificial
Individual mitigation possible	Individual mitigation impossible
Detectable	Undetectable
Old risk	New risk
Known to science	Unknown to science
Easily reduced	Not easily reduced
Individual	Catastrophic
Doesn't affect me	Affects me
Not in my back yard	In my back yard

Using the above lists, one can see why people can become much more concerned about the risks of cancer associated with passive smoking (which are controlled by others) than with the direct risk associated with smoking itself (which is controlled by self). Likewise one can understand why the risk of cancer from natural toxicants such as aflatoxins in peanuts is viewed with far less fear than that from a certain food additive, even though risk of cancer from the latter may be far less. As noted by Sandman (1987), "the risks that kill people often are not the same as the risks that frighten and anger people."

Communicating with and through the Media

Mass media is a powerful force in our society. It is the channel through which much information about risk is conveyed. Sandman (1986) has identified several factors to consider when communicating with the media about a health risk:

The reporter's job is news, not education; events, not issues or principles. The news is the risky thing that has happened, e.g., the discovery that a food additive promotes cancer. It is not the difficult determination of your risk of getting cancer if you consume the additive. If the story is important enough, these technical details may be covered in a sidebar or a follow-up story on the third or fourth day. Few stories, however, merit such attention.

Politics are more newsworthy than science. It is important to understand that the politics of risk (e.g., what officials or advocacy groups say about a risk) sells far more newspapers than the hard science surrounding the risk. This doesn't mean scientists should not try to get

reporters to cover abstract concepts such as the uncertainty of risk assessments or the impossibility of zero risk. These need to be woven into our comments. Sandman stresses, however, that reporters and editors may weed out these comments in an effort to simplify the story.

Reporters cover viewpoints, not "truths." Journalism, like science, attempts to be objective, but the two fields define the term very differently. For science, objectivity is tentativeness and adherence to evidence in the search for truth. For journalism, objectivity is "balance." From the journalistic point of view there is not truth, only conflicting claims, to be covered as fairly as possible, leaving the reader or audience to determine the "truth."

According to Sandman, on a scale of 0 to 10 representing all possible views on an issue, reporters are wary of 0's, 1's, 9's and 10's; these views are seen as too extreme to be credible. They are covered as "oddball," if covered at all. Reporters also pay little attention to 4's, 5's, and 6's. These positions are seen as too wishy-washy to make good copy. What they like to report are 2's and 3's in alternating paragraphs or separate stories with 7's and 8's. Objectivity to the journalist means giving both sides their chance, and reporting accurately what was said.

If a risk story is developing and you have a perspective you want to be covered, don't wait to be called. Instead, call the reporter and tell your side. When at all possible, Sandman recommended you try to be a 3 or a 7 — that is, a credible exponent of an identifiable viewpoint. Don't let yourself be pushed into a position that is not yours, but recognize that journalism doesn't trust 0's and 10's and has little use for 5's.

The media see environmental risk as a dichotomy; either the situation is hazardous or it is safe. Reporters are accustomed to the fact that technical sources invariably hedge, that nothing is ever proven." They see this as a kind of slipperiness and spend a fair amount of time trying to get 5-ish sources to make clear-cut 3 or 7 statements. You can provide such statements and still avoid dichotomizing the issue as "risky" or "safe" by moving into a discussion of "how risky" the situation is. Remember while you may resent the pressure to simplify, you are far more qualified to do it than the reporter is to do it for you. Decide in advance what your main points are, and stress these consistently and repetitively, even if you have to hook them onto answers to irrelevant questions. Also, stay away from jargon and explain any technical terms you must use.

Reporters try to personalize risk. Scientists often are irritated with the media's tendency to personalize a story by such questions as "Would you drink the water?" or "Would you choose surgery or drugs?" Such questions fly in the face of the scientist's training to keep oneself out of one's research and they confuse policy questions with those of personal choice.

Nevertheless, reporters consider those questions that personalize issues as the very best. They bring dead issues to life, make the abstract

concrete, focus on real people facing real decisions, and force technical sources to dichotomize. As was noted in an Environmental Protection Agency (EPA) study on the ethylene dibromide (EDB) controversy, the agency wanted to talk about "macro-risk" (How many deaths will result from EDB contamination?) while reporters kept asking about "micro-risk" (Is it okay to eat the cake mix?). For the individual citizen (faced with a cake mix, not a regulatory proposal), what to do with the cake mix was the issue, not what to do with EDB.

Knowing that reporters will inevitably ask personalizing questions, be prepared with answers. It is often possible to answer both one's personal views and one's policy recommendations, and then to explain the difference if there is one.

Claims of risk usually are more newsworthy than claims of safety. On our scale of 0 to 10, the 3's and 7's share the bulk of the coverage, but not equally. Risk assertions receive considerably more media attention than risk denials. This is not a bias, at least not as journalism understands bias. It is built into the concept of newsworthiness. If there is no allegation of risk, there is no story.

Reporters do their jobs with limited expertise and time. Most reporters are generalists with many stories to cover in a limited time. When working with reporters, it's important to get back to them in a timely fashion with the information needed. Mass media is a powerful tool. It is up to us as scientists and educators to work cooperatively with reporters to get our message across in a clear and meaningful manner.

Understanding and Communicating with the Public

Covello identifies receivers (individual citizens) as the fourth source of problems in risk communication. Researchers who study risk communication make the following observations regarding factors to consider when communicating with the public on risks to health.

People's Perceptions of Risks May Not Agree with Reality. Slovic and coworkers (1980) noted that people tend to overestimate the level of risk from events that are dramatic and memorable (e.g., botulism, cancer). In contrast, they tend to underestimate risk from undramatic causes, such as salmonellosis or diabetes. People also tend to consider themselves personally immune to many hazards they admit pose a serious threat to others. For example, it has been shown that most people rate themselves as among the most skillful and safe drivers in a population.

Moral Issues Have More Meaning than Risk Data. As discussed above, the public views risk as much more than mortality statistics. In many cases morality, not mortality, is seen as the real issue. For example, over the past several decades our society has reached near-consensus that pollution is morally wrong — not just harmful or dangerous, not just worth preventing where practical, but wrong (Sandman, 1986).

As noted by Rayner and Cantor, the critical question facing societal risk managers has become, not "How safe is safe enough?" but, "How fair is safe enough?" Morality issues wreak havoc with cost-benefit analyses. How can one put a cash value on human life? Morality is not an easy issue to deal with, but one that must be considered carefully, both in evaluating and communicating about risks to health.

Strong Beliefs are Hard to Modify. It is well known that people tend to hear what they believe, not the other way around. According to Slovic and associates (1980), initial impressions, once formed, tend to structure the way subsequent evidence is interpreted. New evidence appears reliable and informative if it is consistent with one's initial belief; contrary evidence is dismissed as unreliable, erroneous or unrepresentative.

Trust and Control Issues Underlie Most Risk Controversies. Researchers cite trust as a key problem in risk communication. Few people trust government and industry to protect them from environmental risk. While this is true of both passivists and activists, the former are considered more fatalistic and less likely to take things into their own hands (Sandman, 1986).

While trust may be the issue, Sandman does not feel "passive trust" should be the goal. Translating the question of trust into the underlying issue of control, the question becomes "Who decides what is to be done?" Sandman asserts that an environmental risk controversy has two levels: (1) the substantive issue of *what to do*; and (2) the process issue of *who decides*. So long as people feel disempowered on the process issue (who decides), they are understandably unbending on the substantive issue (what to do).

The situation can be viewed as much like that of a child forced to go to bed who protests the injustice of bedtime coercion without considering whether he or she is sleepy. It is hardly coincidental that risks the public tend to overestimate (e.g. pesticides, food additives) generally raise serious issues of trust and control, while most of the widely underestimated risks (smoking, fat in the diet, insufficient exercise, driving without a seatbelt) are individual choices.

Sandman (1986) stresses that the gravest problems of risk communication arise when citizens determine that the issue is important, that the authorities cannot be trusted, and that they themselves are powerless. Then comes the backlash of outrage.

Improving Risk Communication

Are people educable about risks? Most risk communicators suggest they are. In fact, the NRC committee on Risk Perception and Communication contends that, not only can lay citizens understand risk, but they can make important contributions to discussions and perspectives regarding risk-benefit issues. Below are several suggestions made by researchers on how to improve communication about risk.

Avoid Finger Pointing Comments. Pam Jones of Jones Communications, an environmental issues/public relations firm, warns against the

use of such messages as "The reason we use chemicals is that the public wants good looking food at cheap costs." No one likes to have the finger pointed at himself as the root of a complex problem, especially when he or she has no say in the decision. Besides, who knows, maybe people would be willing to pay more for increased safety if given the choice.

Acknowledge Uncertainties and Limits to Expertise; Accept Emotions as Legitimate. According to Jones, communicators of risk gain support when they acknowledge limitations in knowledge of the effects of x, y and z chemicals, for example, openly discuss trade-offs and alternatives, then explain the reasons for using the chemical and what is being done to protect the consumer. Such an approach admits the uncertain nature of chemical use and forces people to deal with that uncertainty rather than deny it exists. In a similar vein, Sandman (1986) stresses the importance of acknowledging the feelings of people before trying to explain anything substantive about the risk at hand. While this will not eliminate the anger, it will help reduce the outrage and the need to insist on the anger, thereby freeing energy to focus on the issues instead.

Consider Presentation Format Carefully. Since the public responds more to outrage than to hazard, Sandman (1987) recommends that risk managers and communicators work to make serious hazards more outrageous. One way is through presentation format. As an example, motorists in one study expressed greater interest in wearing seatbelts when informed that their risk of a disabling injury over a fifty-year lifetime of driving was 1 in 3 than when told that one in every 100,000 person trips resulted in a disabling injury. Another way to increase outrage is to hit hard on the morality of an issue. Recent campaigns against drunk driving and sidestream cigarette smoke provide two models of successful efforts to increase public concern about serious hazards by feeding the outrage.

Cross-Hazard Comparisons May Be Misleading. One approach sometimes used to "deepen people's perspective" regarding risk is to present quantified risk estimates for a variety of hazards. We have all seen tables such as those developed by Wilson equating the risk of death from smoking 1.4 cigarettes to eating 100 charcoal broiled steaks to living two months in Denver on vacation from New York (all risks which increase the chance of death in any year by one in a million). As interesting as these comparisons may be, they have a number of inherent limitations. For example, although it may be enlightening to know that a single takeoff or landing in a commercial airliner reduces one's life expectancy by 15 minutes, upon landing one will either die prematurely (almost certainly by more than 15 minutes) or one will not. What are missing in these estimates are the outrage factors . . . the voluntariness, controllability and familiarity of the risk, the immediacy of the consequences, and the degree to which benefits are distributed equitably to those who bear the risk. Because of such omissions, Slovic and coworkers (1980) have characterized arithmetic cross-hazard comparisons as "the kindergarten of risk."

Risk Decisions Are Better When the Public Shares the Power. People learn more and assess what they learn more carefully if they exercise some real control over the ultimate decision. While this power-sharing is enormously difficult, it can be well worth the effort.

The goal of power-sharing is to enlist the rationality of the citizenry, so that citizens and experts are working together to figure out how great the risk is and what to do about it. Of course, no responsible agency should go public without any answers. What's important is to propose options x, y and z tentatively, with genuine openness to v and w and to comments that may eliminate z. A list of options and alternatives — and a fair and open procedure for comparing them and adding new ones — is far more conducive to real power-sharing than a "draft" decision.

Public participation on risk decisions is not only the moral right of citizens, but is sound policy. When consumers participate in a risk management decision they are far more likely to accept it, for at least three reasons: (1) They have instituted changes that make it objectively more acceptable; (2) They have gotten past the process issue of control and mastered the technical data on why the experts consider the risk acceptable; and (3) They have been heard and not excluded, and so can appreciate the legitimacy of the decision even if they continue to dislike the decision itself.

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MANAGING FOOD SAFETY RISKS IN THE FOOD SYSTEM: POLICY OPTIONS AND OPPORTUNITIES FOR EXTENSION

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Food safety, public health, and environmental risk management issues related to agriculture have grown in prominence and controversy over the past decade. These issues are personal, local national, even global, in scope. They raise many complex management and policy issues for government, agriculture, the food industries and the consuming public.

Some recent examples illustrate the point. Recently, the U.S. Department of Agriculture (USDA) issued a press advisory about eggs, warning that they should not be consumed without thorough cooking. The Food and Drug Administration (FDA) has developed recommendations for food service establishments that largely counsel eliminating the use of raw eggs. The Centers for Disease Control (CDC) estimates that at least forty-three persons died between 1985-1989 from disease caused by *salmonella enteritidis* with 75 percent attributed to eggs. An additional 6,604 nonfatal cases of this foodborne disease were reported in that period. Of the sixty-five outbreaks of salmonellosis reported since February 1990, twenty-two were linked to eggs (Sugarman).

How should this issue be managed at the policy level and what are the implications of alternative approaches? Should policies focus on changing consumer or food service cooking techniques (equivalent to "blaming the victim" in the eyes of some consumer advocates and restaurateurs), or on cleaning up chicken feeds, chicken production facilities, or processing practices? Each of the options implies different distributional sets of costs and benefits of overall cost-effectiveness.

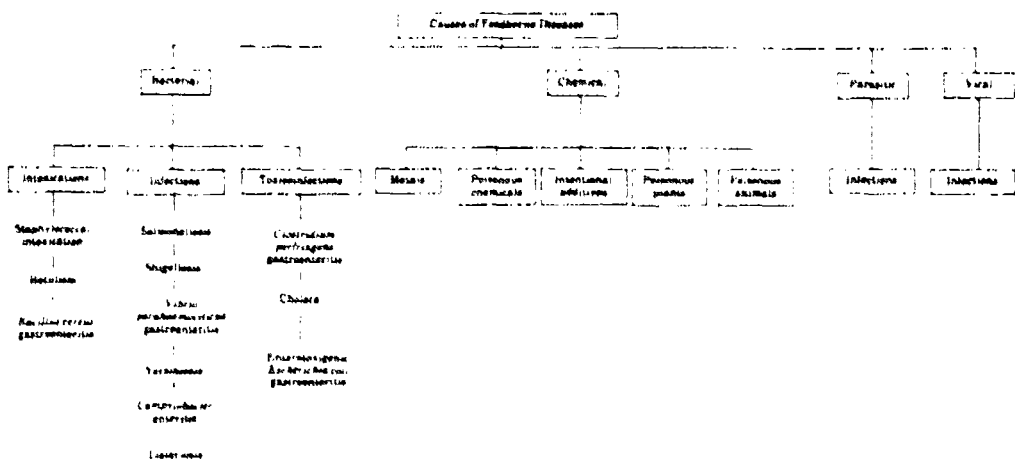
Another recent food safety issue is seafood inspection, championed by Public Voice for Food and Health Policy, a Washington, D.C., advocacy group. Consumer groups have fought for mandatory inspection for the past four years. Action has stalled currently but many consumer groups believe an eventual congressional victory is likely. Whatever the ultimate bill, several significant risk management issues remain to be worked out in implementation including program scope; inspection priorities; allocation of resources between species, agencies, and loca-

tions; and designation and implementation of jurisdictional responsibilities among federal agencies, industry, and other bodies.

Assuring the food safety of internationally traded foods constitutes yet another important set of contemporary risk management issues. Currently the General Agreement on Tariffs and Trade (GATT) negotiating parties in Geneva are attempting to hammer out agreements related to the harmonization of food safety standards (sanitary and phytosanitary standards). Essentially, the harmonization issue is a two-fold problem: how to protect the health and safety of animals, plants and humans living in distinctive environments, cultures and economies around the world; and, at the same time, how to facilitate trade among nations having inconsistent standards and conditions by assuring that food and agricultural standards do not unduly impede trade. Concerns have been expressed by consumer and environmental groups as well as U.S. agencies that U.S. standards should not be weakened. Some indications are that a coalition of consumer groups, environmental groups (and agencies), and commodity interests might combine to torpedo GATT action in this area. Changing the rules will certainly change property rights along with risk configurations.

In the past decade, numerous food safety concerns have emerged including those related to pathogenic microorganisms (or their toxins), poisonous chemicals including pesticide residues, parasites, or viruses (Gravani). Figure 1 provides a classification of foodborne diseases. In addition, new technologies such as food irradiation or various applications of biotechnology are challenged by opponents on safety or socioeconomic grounds just as they appear to offer new policy choices for food safety risk management.

Figure 1. Classification of Foodborne Diseases



Source: Gravani

Finally, scientific consensus has emerged in the last decade that total diet is potentially more important than single-ingredient or single-toxicant foodborne concerns in health promotion and disease avoidance. Important current policy issues related to dietary risk management include regulatory decisions on labeling and, especially, nutrition labeling; decisions on proper regulation of dietary health claims so consumers are not misled or defrauded; policies stipulating the commodity composition of federal or state food assistance programs and its relationship to nutritious diets; and policy defining the appropriate basis for establishing the Recommended Dietary Allowances (RDAs) of various nutrients. RDAs are used in a multitude of public and private dietary recommendations and formulations and, thus, it matters whether they are established for the "average" person or on some other basis. Finally, new food products produced or formulated to conform to altered nutrient profiles — such as substitute ("fake") fats, nonnutritive sweeteners, high fiber cereals, etc. — raise new issues with respect to product approval, labeling and effects on both diet and markets.

Fundamental Public Policy Questions

Public policy questions exist about each of these categories of food safety issues or potential public health hazards and the use of various agrotechnologies, the most fundamental being:

1. How do we determine acceptable levels of safety — in concert with the other goals of society — and what should these levels be?
2. How do we establish food safety and public health priorities?
3. What should be the relative role of governments, the private sector, and individuals in assuring food safety, health, environmental quality and other desired goals of the food system?
4. What is the best combination of policy instruments available to attain both the desired level of food safety and other goals?

Current Policy Environment

Both administrative and Congressional bodies exhibit renewed attention to food safety and the environment. Current expectations are that federal food safety research expenditures are likely to double in FY 1991 in response to public and Congressional pressures to devote more attention to food safety, particularly the control of pesticide residues and microbiological contaminants (*Food Chemical News* 1990A). The 1989-1990 Congressional session has included the introduction of approximately forty food safety bills. In addition to food safety, other concerns include environmental quality, water quality and worker safety associated with agricultural and food processing technologies. Many of these non food safety issues fall outside the jurisdiction of the FDA and can be acted on outside the jurisdiction of the agricultural committees of Congress. Indeed, the states exert increasing control over many environmental quality issues.

Against this backdrop, characterized by widespread interest and participation in food safety, public health and environmental policy making, agriculture in general and the extension service in particular are challenged to articulate a strategy relative to food system risk management that is two-fold: (1) anticipatory and (2) responsive. Obviously, many of the food safety, health and environmental issues — in the form they have arisen in the last decade, characterized by sudden media attention and chaotic public reaction — have been unanticipated. Controversy over Alar used in apple production is perhaps the primary example. This has led to many challenges to be responsive to crisis situations for which neither agriculture and the food industry nor the extension service have been adequately prepared. However, much can and should be learned from the many cases of the last few years and substantial groundwork already exists to better anticipate and manage food safety and associated risks that will arise in the future. This paper will discuss food safety risk management and some policy options in the next section followed by four brief points.

Risk Overview: Assessment, Abatement, Management, Communication

Clear thinking about the necessity for and distinctions between risk assessment, risk abatement, risk management, and risk communication strategies is critical to satisfactory risk management and policy making in both public and private food and agricultural arenas. An example illustrates the frequent confusion between risk assessment and risk management.

A major theme that has emerged in the recent food safety policy literature is the apparent mismatch between the relative concern of the consuming public and food safety experts about pathogenic microorganisms on the one hand and chemical contaminants on the other (Kramer). The majority of food safety experts in and out of government stresses the public health importance of microbiological contamination, pointing to the 6.5 million to 84 million cases of disease and approximately 9,000 deaths annually associated with such diseases as salmonellosis, *campylobacter* enteritis, listeriosis, or congenital toxoplasmosis (Roberts and van Ravenswaay). These are diseases associated with increasingly well-known frequencies of morbidity and mortality. Also increasingly well understood are the etiologies and pathologies involved. Finally, possibilities for management of the conditions leading to contamination and subsequently to exposure are also relatively well understood although the knowledge is continually evolving. On the other hand, most public health risk assessment experts, including cancer risk specialists, believe that pesticide residues in foods are relatively minor contributors to cancer, as an upper bound causing less than 1 percent of cancers in the United States (Gough; Ames; U.S. Environmental Protection Agency). Dr. Richard H. Adamson, director of the National Cancer Institute's Division of Cancer Etiology, has written that he is "unaware of evidence that suggests that regulated and approved pesticide residues in food contribute to the toll of human cancer in the U.S." (*Food Chemical News* 1990B).

Furthermore, neither epidemiology nor toxicology-based risk assessment (animal studies) are likely to definitively prove or disprove what is believed to be the relatively minor contribution of pesticides to the overall cancer burden (485,000 deaths per year). Some of the reasons that definitive conclusions cannot be drawn include the possibility that the substances are not human carcinogens at actual exposure levels; that the contribution of pesticide residues to cancer cannot be distinguished from "background" carcinogens; or that long latency periods for cancer obscure the causal relationships.

For the public, however, chemical threats to food and water safety have assumed increasing importance, seeming to overshadow most other foodborne hazards. The public is frequently perceived as extraordinarily consumed by the threat of cancer which overhangs one in four lives. This threat may attribute, erroneously and disproportionately, cancer causation to pesticide residues in foods. However, it is also possible that consumers and experts, presented with the same numbers, would disagree on the acceptability of the risks and on what to do. In addition to cancer, some consumer representatives and analysts fear that noncancer threats from chemical residues, which may not be thoroughly understood at present, are also relevant and worrisome (van Ravenswaay; U.S. Environmental Protection Agency; U.S. Congress, Office of Technology Assessment).

Thus, discrepancies in judgments about the acceptability or importance of relative health risks or in what to do about them represent differences in risk management preferences. They may or may not represent differences in risk assessments. This is a critical point because it implies that merely comparing probabilities of death or illness or the expected dollar costs associated with death or illness from various health hazards and then allocating resources to risk abatement accordingly may be an inadequate risk management strategy from a sociopolitical perspective. Factors such as the degree of involuntariness of the risk, the nature of symptoms involved, or the effect on children or the aged also influence judgments of acceptability.

Now for a definition of important terms:

Risk assessment refers to techniques for estimating the magnitude of risk people face or, in other words, "the process through which we attempt to determine the likelihood and extent of harm that may result from a health or safety hazard" (Glickman and Gough, xi). Quantitative risk assessment is commonly executed in four stages: hazard identification, estimation of the population exposure to hazard, estimation of dose-response relationships, and characterization of effects.

Risk abatement, by contrast, refers to techniques to control risk from given hazards. For example, alternative risk abatement strategies to control *salmonella* contamination in poultry might include use of irradiation, a chemical rinse or alternative livestock feed or poultry plant processing methods. Risk abatement alternatives are amenable to cost-effectiveness analysis in which strategies are compared and the distributional impacts on different food system participants analyzed.

Risk management involves decision making that integrates knowledge and values from multiple information sources including economics, the physical sciences, epidemiology, toxicology, politics, sociology, ethics, the law, psychology, communications and other fields. Alternatives are discussed below.

Finally, *risk communication* is increasingly understood to involve multidirectional (at least two-way) communication among parties concerned about or involved with health or environmental hazards and risk. Key points in risk communication as the literature is evolving are the importance of iterative two-way flows of information and the criterion that successful risk communication should be measured, not by persuasion to a single point of view, but by the extent to which levels of understanding of all parties are elevated (National Research Council, 1989).

Risk Management Options

In bare-bones fashion, this section lays out a risk management framework with application to controlling food safety risks. Figure 2 presents an overview of the managerial role including some of the most important sequential functions involved. The overall managerial mission (step 1) varies with the type of organization.

FIGURE 2: Risk Management Steps.

1. define problem and/or mission
2. gather information
3. identify alternatives
4. evaluate consequences
5. apply a decision rule
6. take action
7. communicate action
8. bear consequences
9. receive feedback

The mission associated with a public health agency will obviously differ from that of a private sector agricultural or food manufacturing firm which has profit objectives dependent on a host of factors in addition to food safety. Differences in managerial objectives between organizations, then, stem from assorted factors including legislative mandate; agency versus corporate incentives such as optimization of agency budget, votes, profit, or market share for the bureaucracy, political candidates, or private sector actors; administrative requirements; political reality; the scope and magnitude of risks involved; technical know-how; or economic resource availability. Each can constrain the food safety risk management alternatives actually applicable or feasible in any given situation. Similarly, the decision to seek information (based on data) relevant to food safety risk management (step 2) and each of the subsequent steps in the managerial process may be influenced by many of the same factors. Information and abatement costs vary extremely broadly as do the potential benefits.

As one contemplates the steps in the managerial process, it is obvious that risk management integrates risk assessment, risk communication and evaluation of risk abatement strategies in an ongoing process. For example, risk communication is integral to steps 2, 3, 4, 7 and 9 while risk assessment contributes to steps 2, 4 and, eventually, step 10. Risk abatement strategies are considered or relevant in steps 3, 4, 9 and 10.

Public policy options for controlling food safety risk include several distinct options. A primary tool is regulation including establishing standards and carrying out their enforcement. Regulatory authority flows from each of the major federal food safety and marketing laws including the Federal Food, Drug, and Cosmetic Act, administered by the FDA; the Agricultural Marketing Act, the Wholesome Meat Act, the Poultry Products Inspection Act, the U.S. Grain Standards Act, and the Eggs Product Inspection Act, administered by the USDA which shares authority for egg product inspection with the FDA. In addition, the Environmental Protection Agency (EPA) administers the Federal Fungicide, Insecticide, and Rodenticide Act and, through this authority, approves and otherwise regulates pesticides used in agricultural production.

Regulatory standards include some basic alternatives used singly or together: (1) final product standards; (2) production and processing standards; or (3) information standards or requirements. Public requirements for private sector information may include: research and data demands, accounting requirements, records of chemical audits (inflows-outflows), or labeling information. Public agencies may be required to perform formal risk assessments according to established rules or protocols and drawing on private sector laboratory studies.

In addition to these regulatory approaches, increasing consideration is being given to the role of market-based incentives including use of taxes (or fines) or subsidies or disclosure rights (such as health claims) that can discourage or encourage adoption of particular safety-related practices. One major area of public subsidy leading to decreased costs of safety information available to the private sector is publicly supported food safety-related research.

Finally, a classic risk management policy option is reliance on the legal liability system to redress grievances. For a number of reasons, mainly imperfect consumer information and high transactions costs involved in organizing a legal suit, legal redress has been considered largely unsatisfactory for settling many food safety problems. Many foodborne diseases cannot be easily traced back to the originating source. This means that producers or food distributors are frequently unaware of their contribution to foodborne illness.

Important factors in making a risk management determination are the possibility, feasibility and costs of risk reduction. Here an understanding of HACCP or Hazard Analysis Critical Control Point methodology is critical. HACCP methodology was formulated to systematically

integrate an assessment of health hazards associated with the production and processing of food, the identification of critical control points necessary to prevent or control the identified hazards, and the establishment of monitoring procedures.

The HACCP approach emphasizes those aspects of an operation that are critical to ensuring food safety and preventing spoilage; it therefore relates more specifically to health hazards than to other aspects of the total quality control approach, such as aesthetic considerations, quality, or compliance with a set of regulations (National Research Council, 1985, p. 124).

Using this approach, all suspected hazards emanating in the food production, processing and distribution process must be identified and tested for; in addition, those critical points at which hazards may be eliminated through a control procedure (abatement procedure) should be identified and methods devised and tested to assure that control is reliably carried out. Monitoring systems are critical to the successful operation of this approach.

The determination of how important a particular potential risk associated with the production and marketing of food is and how it compared to all other potential risks is a complex and unsure matter. Coupled with the challenge of relative risk assessment is the further challenge of a risk management strategy integrating information about abatement options, their cost-effectiveness and acceptability to consumers, regulators and employees. Finally, as Figure 1 indicates, interactive risk communication that builds in adequate feedback is an essential part of the challenge. A risk communication component of risk management should incorporate both anticipatory and responsive approaches.

In closing, I would like to make, and briefly discuss, four points relevant to public and private sector risk managers:

Uncertainty and Risk Assessment

1. *Risk assessment is a highly imperfect exercise, almost by definition, due to multiple sources of uncertainty and the need to make judgments about the magnitude and importance of the uncertainty.* This is so despite the seeming scientific technicality of the estimates and the "experts" involved (Finkle). Uncertainty surrounding estimates may stem from the fact that values of important variables may not be known with certainty—for example, neither dose-response mechanisms or relationships nor their distributions may be understood—and extrapolations must be made from animal laboratory tests to determine potential human effects.

In most controversies over risk management, disputes over risk assessment plays a role. Experts may disagree over assumptions, over models used and evidence admitted, over decision rules and over interpretation of results. Lay people may discount the entire exercise of

quantitative risk assessment for reasons they view as ethical differences. Yet the controversy over risk management could be considerably eased, if risk assessment itself were better understood and communicated. It is critical that the values, assumptions, purposes, quality of data, levels of uncertainty and models used be described, debated and communicated. It is even more critical that a general understanding be reached that risk assessment is not synonymous with risk management. It is merely one input into what must ultimately be a management and a policy decision.

2. *Risk management inevitably involves making trade-offs. These trade-offs are not only economic, but political and ethical, usually with winners and losers.* Risk management is a relevant concept—because it is an imperative—for all individual and collective entities participating in the food system. Risk management may be executed consciously or by default. It is perhaps most characterized by decision making with respect to alternative allocations of resources in a risky environment. In my opinion, the most critical missing insight in both private and public sector debates about the management of risks from food safety or environmental hazards currently is the lack of consideration of alternatives and of trade-offs associated with alternatives.

Far too often, food safety hazards or particular technologies are denounced as absolute evils which should be eliminated at all costs because of a moral imperative to eliminate a particular risk. Missing is the management framework, including economic analysis, which explicitly admits that there are trade-offs that matter: that information or abatement costs may increase at the margin, sometimes exorbitantly; and that other objectives must also be pursued. Ruckelshaus, two-time EPA administrator, makes the point:

... in confronting any risk there is no way to escape the question "Is controlling it worth it?" We must ask this question not only in terms of the relationship of the risk reduced and the cost to the economy but also as it applies to the resources of the agency involved. Policy attention is the most precious commodity in government, and a regulation that marginally protects only 20 people may take up as much attention as a regulation that surely protects a million (Ruckelshaus).

3. *One of the most difficult present problems is attaining agreement as to who should make risk management decisions.* The jurisdictional boundary issue is particularly problematic in the food safety debate. This is witnessed by conflicts between federal agencies and between state and federal government over management of toxics (Proposition 65 and the "Big Green" initiatives in California are two of the most obvious examples). Jurisdictional disputes are also emerging as a point of debate as the GATT negotiations wind up. Finally, the poultry and egg problems mentioned earlier are yet another manifestation of conflicts in judgments as to who should decide, act and pay to reduce risk of foodborne disease. Economic, legal and political rationales may sup-

port different jurisdictional decisions. It is frequently more cost-effective for particular decisions or actions to be taken at particular points. Ultimately, however, these jurisdictional issues require policy decisions which generally reflect traditions of both representative democracy and the need for delegated authority.

4. *Extension, with its long involvement in public education including public policy education, is uniquely placed to contribute to better risk management—including risk communication—and better policy formation related to food safety, health and environmental risks associated with agriculture in the future.* In order to do so extension must encourage multi- and interdisciplinary collaboration. In addition, new skills of risk communication, risk management, negotiation and conflict resolution must be learned and incorporated in the approach.

Several traditional areas of extension programming are directly pertinent to risk management of the type we have been discussing, including crop and animal science, food science, nutrition, farm management, home economics, etc. In addition, extension has an extensive history in public policy education which is increasingly issues-based.

What has been less frequently done in extension, is positioning and organizing knowledge and insights from these several fields in a risk management or risk policy framework. Too often, each specialist persisted in addressing the technical aspects of particular problems in isolation from complementary expertise or perspectives.

The value of a management or a policy framework in addressing issues associated with technological risk (resulting in food safety, health or environmental hazards) is to explicitly integrate information about trade-offs associated with uses of technology, information about consumers and other segments of the public, agricultural producers, food manufacturers and policy makers. The goal is to be able to generate systematic information about a variety of problems, technologies, abatement strategies, values and impacts (on profitability, on food safety, health, or environmental risk exposure).

My final point for extension is that considerable scope exists for expanding extension effectiveness in dealing with these issues by exploiting and adding to emerging knowledge about risk communication and conflict resolution. In each area, research and experience are accumulating that suggest new ways for extension to facilitate dialogue; help identify, and help participants identify, common ground among disputants; and to educate how policies can be shaped for the future.

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***BALANCING ENVIRONMENTAL
AND SOCIAL CONCERNS WITH
ECONOMIC INTERESTS IN AGRICULTURE***

ENVIRONMENTAL AND SOCIAL CONCERNS

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There is little doubt that the need to balance environmental and social concerns with concerns about economics (i.e., the obvious need for farmers and ranchers to make a reasonable profit) has taken on an increased sense of urgency in U.S. agricultural circles over the past decade. Although agricultural economists and policy makers have long been aware of environmental constraints, even a cursory review of agricultural policy, research priorities and public pronouncements during the early 1980s reveals that, on balance, production outweighed environmental considerations in our national policy priorities. Today, however, virtually all sectors of agriculture seem genuinely concerned about how this nation and, indeed, the world can develop an agriculture that simultaneously addresses these urgent multiple goals.

It is agriculture's preoccupation with these seemingly contradictory objectives that has generated much of the recent discussion about sustainable farming systems. Indeed, the idea that we must develop an agriculture that is at once economically profitable and environmentally sound lies at the heart of the ongoing sustainable agriculture debate. Better documentation of resource depletion and environmental degradation resulting from agricultural production practices, coupled with the mid-1980s economic stresses in agriculture, has led to multiple critiques of the economic, social and environmental sustainability of American agriculture. The decision to devote an entire half-day session at this conference to this general theme highlights the urgency now being attached to the subject of sustainable agriculture.

Some Questions

In order for policy educators and policy advocates to begin balancing environmental and social concerns with economic interests in agriculture, it is essential that these and other decision makers have a clear understanding of the character of these interests. What are the principal environmental and social concerns germane to the development of a sustainable agriculture? Who shares these concerns? What lies behind the heightened level of concern? What are the policy implications inherent in these concerns? In light of these concerns, can a greater measure of balance actually be achieved? How?

Major Concerns

The principal environmental and social concerns raised within the framework of agricultural sustainability have been noted frequently by a wide range of observers in recent years (U.S. Department of Agriculture; Edwards, et al.; National Research Council; Francis, et al.). The most recent articulation of these concerns emerged within the context of the 1990 farm bill debate. The 1990 farm bill itself reflects, in numerous ways, the general thrust of these concerns.

These and other sources reveal increasing concern about:

- Pollution of ground and surface water with agricultural chemicals and sediment.
- Hazards to human and animal health from pesticides and feed additives.
- Adverse effects of agricultural chemicals on food safety and quality.
- Increased pest resistance to agricultural chemicals.
- Increased cost of purchased farm production inputs.
- Reduced soil productivity resulting from soil erosion, soil compaction and loss of soil organic matter.
- Over-reliance of our agricultural production system on nonrenewable resources.
- Destruction of wildlife, bees and beneficial insects by pesticides.
- Continued loss of mid-sized, family farms.
- Continued deterioration of small, rural communities.
- Continued loss of wetlands and prime farmland.
- Social inequities in agricultural production systems and farm structure arrangements.
- Continued increase in capital intensity of our agricultural production systems.
- Farm worker safety.
- Adverse consequences for the environment and farm structure resulting from U.S. agricultural research and education policies and priorities.

Who Shares These Concerns? Why?

Unfortunately, the distribution and intensity of environmental and consumer group attitudes and beliefs regarding these and related issues are very difficult to assess. The fact that major elements of the conventional agricultural science, policy making, and producer communities share these concerns only adds to the difficulty of developing a complete and precise picture of the environmental and social ideological landscape of American agriculture.

Part of the problem stems from the enormous range of issues of interest to environmental groups, as well as those focusing primarily on family farms, rural communities and farm income. Moreover, even within a single organization, individuals may focus on only one or two issues. In this pluralistic organizational environment, there are bound to be specific conflicts between groups and individuals that otherwise

share a broad ideological vision for agriculture. An example of this inherent conflict emerged during the 1990 farm bill process between those advocates whose primary goals revolved around income protection for family farmers (social concerns) and those within the environmental community who tended to view high commodity price supports as contributing to chemical intensive, monocultural production systems with their perceived environmental disadvantages.

While environmentalists and more socially oriented agricultural policy advocates may not always agree on specific policy priorities, there is fairly broad consensus among such groups over the root causes of their principal concerns. For the most part, these organizations believe that past policies, especially commodity and research policy, have focused too heavily on ways to increase production of our major cash export crops. This perceived emphasis on production, it is believed, has led, in turn, to our current system of highly specialized, chemical and capital intensive farming systems. Such groups further believe that current policy inevitably will maintain the present trajectory of ever larger and more specialized and intensified farming systems with their attendant negative consequences for the environment, family farms and small rural communities.

Taking commodity policy as an example, there is widespread agreement that guaranteed target prices and deficiency payments tied to the major cash grain crops have encouraged overplanting and the intensified production of these commodities. The understandable farmer response to such incentives (e.g., the excessive use of purchased fertilizer and pesticides) accounts in large measure for such undesirable consequences or externalities as soil erosion, water contamination and loss of wildlife habitat. Without substantive policy changes, environmentalists and those more socially oriented agricultural policy advocates are convinced such conditions will worsen in the future.

An Altered Policy Environment: Implications for Policy Education

As noted above, agricultural policy today is being framed within the context of a greatly altered policy environment. Both the substance and process of agricultural policy making are in transition. The traditional system is being impacted in unprecedented ways by a host of new issues, perspectives, ideologies, agendas and individual actors. These new players in agricultural policy are rapidly gaining in knowledge, skill and confidence. They are well-schooled in the political process, they are determined, and they are not going to go away.

Some long-time observers of agricultural politics believe these new coalitions now dominate the agricultural policy subsystem. According to Don Paarlberg, for example, "The conclusion is inescapable: farm organizations, the agricultural committees of Congress, the U.S. Department of Agriculture, and the land grant colleges have lost control of the farm policy agenda."

Analysts, of course, disagree over the extent to which these new elements are now influencing the agricultural policy process. In my own

view, for example, Paarlberg underestimates the importance of the changing ideologies and new personalities within the traditional system itself. The fact is that environmental and consumer lobbies now find considerable sympathy within the land grant colleges, the U.S. Department of Agriculture (USDA), and Congressional agricultural committees.

Leaving questions of causality aside, it seems increasingly clear that a host of new agricultural issues are posing substantial intellectual, technical, financial and administrative challenges for the traditional agricultural policy development and delivery system. The issue of agricultural sustainability illustrates the difficulties our agricultural institutions face in addressing this and other new challenges within a greatly altered policy environment.

Agricultural Sustainability

The concept of agricultural sustainability has, by its very nature, brought into question the viability and appropriateness of current production techniques and farm structure trends. Predictably, the ideology of sustainability is disquieting for those policy makers, scientists and industries that share a sense of responsibility and pride for having shaped the character of modern conventional agriculture. There are many within our agricultural system who view the sustainability issue as an indictment of what has come to be known as conventional agriculture. The perception by many within conventional agriculture that these new critics have assembled under the banner of sustainability as a strategy for the promotion of new environmental and consumer agendas, rather than as serious proponents of sustainability, has greatly politicized the sustainability debate. Ambiguities surrounding the definition of sustainability (Lockeretz) have added to the increasingly political nature of current discussions over how best to achieve the goal of long-term sustainability. Presently, for example, proponents of "low-input" versus "high-input" agriculture are locked in an increasingly contentious debate over which kinds of technologies can best contribute to the creation of an agricultural system that can be maintained indefinitely. There is little disagreement over the importance of this goal. The divisions revolve around the means that can best achieve the goal (Schaller).

Conclusion

It is critically important that ways and means be found for achieving sustainability in our agricultural systems. To this end, policy researchers and educators can and must play a central role in clarifying, not only the concept of sustainability, but also the motivations and goals of those who are currently engaged in the sustainability debate. Policy analysts can also contribute positively to this effort by helping to guide the debate more toward the identification and measurement of objective sustainability criteria. Shifting the focus of these discussions to empirical indicators of sustainability would help to rationalize and depoliticize the current debate. Without such efforts by those who

occupy positions that allow for greater objectivity, I fear the concept of sustainability will fall victim to what has been called the symbolic use of politics.

While there are clear limits to the rational model of policy making, in this instance it still would seem to hold out a necessary, if not sufficient, means for making progress toward balancing environmental and economic interests in agriculture. Without greater clarity, it will be virtually impossible for agricultural policy makers to address and develop coherent and comprehensive policies designed to achieve agricultural sustainability.

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BALANCING ECONOMIC CONSIDERATIONS IN SUSTAINABILITY OF AGRICULTURE

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Before discussing the economic considerations in sustainability of agriculture, I must tell you that I am not an economist by any stretch of the imagination. Having exposed what some of you may view as an asset, others a liability, it is important that I clearly identify the intent of my presentation. Since I am not an economist, you can be assured that I will not be throwing economic jargon at you. For what it is worth, "elasticity" to me means how far a rubber band will stretch and return to its original shape. What I would like to accomplish today is to focus your attention on the various dimensions of economics as they relate to the kinds of policy decisions important to the sustainability of agriculture.

I consider myself a generalist and as such can provide a broader perspective on issues critical to informed policy assessment and decision making on the future of our country's food and fiber production system. I recognize that economic considerations are not the only factors on which policy is to be developed and implemented, but rather that the answers lie in a process of balancing complementing, competing and conflicting goals.

Current and forthcoming public policy debates and discussions are important because of their potential impact on the future of agriculture. After all, we are tinkering with one of our basic needs of human survival, our supply of food and fiber, and also an important asset to the economic well-being of our country. Therefore, it is essential that we welcome policy debates as a constructive means for exploring the varied options available to us and fostering informed policy decisions that enable us to improve upon the enviable production capacity of today's agriculture. I compliment the National Public Policy Education Committee and Farm Foundation for sponsoring this National Public Policy Education Conference that provides us this important opportunity for interaction and discussions on agricultural policy.

Defining Sustainable Agriculture

There are no general categories or easy definitions for sustainable agriculture, nor is it possible to use a broad paint brush to generically

classify certain approaches or philosophical views on agriculture as being "sustainable," or for that matter "conventional." In order for discussions on sustainable agriculture to be positive and constructive, a realistic perspective on exactly what is meant by the term "sustainable agriculture" is essential. The many meetings which have been held recently on low-input sustainable agriculture (LISA), alternative agriculture, regenerative agriculture, organic agriculture, sustainable agriculture, etc., have helped form consensus on using the term "sustainable agriculture" around which future goals for agriculture should be crafted. However, our present situation is more appropriately described as "being in search of sustainability," more in definition than perhaps reality. This lack of definition for sustainable agriculture is a serious obstacle if we are to provide realistic goals and direction to the future of agriculture. It is hard for me to imagine that anyone would argue against knowing where we presently are relative to "sustainability," so that we can define strategies for getting there, if we are not already, and correct any deficiencies in our current production system and practices where needed. Yet there are some who argue that we should conduct this dialogue unchartered and open-ended, for reasons I do not understand. Perhaps I could agree with this thinking if it applies only to the approaches for getting to sustainability. It should not apply to defining sustainability in terms of goals which is our current and most challenging task.

Obviously, the policy decision-making process toward establishing goals will cause "change" in agriculture. In talking of "change," the point needs to be recognized that change, per se, is not new to agriculture as evidenced by the normal evolution of technology and practices during the last forty years which has brought us to our current enviable level of efficiency and productivity. There is a different "change," however, that has come on the scene. One resulting from greater interest and involvement on the part of the nonagricultural elements of society, i.e. the general public, in the way agriculture does business. This situation has come about primarily due to increased public awareness and concerns over the possible impacts of agriculture on the environment. The involvement can be characterized by expressed public expectations and demands for accountability in environmental performance.

Another call for "change" in agriculture is in response to the economic hardships experienced by agriculture during the early to mid-1980s. Advocates of LISA and alternative agriculture are using this era, in addition to environmental issues, as the justification for their perspective on agriculture's need to move away from reliance on off-farm inputs, primarily synthetic pesticides and fertilizers, and greater use of crop diversification. I will address the economic considerations of these arguments later in this paper, but before leaving this issue, it is important to point out that the economic downturn during the 80s was more the result of poor national monetary and fiscal policies, rather than the actual agricultural practices themselves. Furthermore, the economic

situation for farmers has been on the upswing for the past three to four years without changes to agricultural practices, just a better external economic environment.

Decisions on the way we raise food and fiber in the future cannot be based on emotion, unfounded statements or certain philosophical beliefs. Rather, it is important that goals, involving society collectively, be defined in search of, or assuring, sustainability in agriculture. I believe that a report prepared by the Council for Agricultural Science and Technology (CAST) provides a realistic perspective from which to define goals for agriculture. This report, titled *Long-Term Viability of U.S. Agriculture*, presents "long-term viability" of agriculture (sustainability) as having three distinct dimensions: (1) economic viability; (2) environmental and natural resources viability; and (3) social viability (Council for Agricultural Science and Technology).

Economic Dimensions

Looking more closely at the economic dimension of sustainable agriculture, one needs to consider the various levels of agricultural production. These being: (1) individual farms as production units; (2) national considerations relating to gross national product (GNP) and domestic food security; and (3) international considerations relating to our ability to compete effectively over the long term in the international market. Let us not forget that even though the economic interests of the individual farmers are and should be paramount, so are the economic consequences on society as a whole should we fail to adequately address all potential impacts of agricultural production policy decisions. These levels of U.S. agriculture are distinct with respect to the degree that the different dimensions of sustainability may apply, yet very much interrelated in the cause and effect category, especially in economic performance. We cannot lose sight that agriculture has made significant contributions to the U.S. economy, both in GNP and as one of the few assets in the U.S. international trade balance.

Much of the current public discussions on sustainable agriculture has focused on the farm level. The arguments being presented by proponents of LISA or alternative agriculture are toward making the farm unit more self-sufficient. From my observation, the goals here are more directed toward the sustainable dimensions of environmental and social viability, with inadequate attention to economic returns on crops produced in response to supply/demand pressures of the "external" markets, domestic and international. There is also a representation presented on behalf of farmers that they are or should be willing to accept a lower threshold of profitability in order to achieve agricultural harmony with nature. This man/environment relations goal is laudable, but approaches for achieving it also must be in harmony with goals of the other dimensions of sustainability.

As stated earlier, I am not presenting economic considerations as the sole dimension of sustainable agriculture. Indeed, environmental pro-

tection, wise use of natural resources, and social values are also important goals for agriculture. I believe these different dimensions can be brought into agriculture in a way that closely maximizes their respective goals. However, we cannot be so naive as to think that during this process of making and implementing policy, conflicts will not exist or trade-offs will not have to be made.

Productivity and efficiency are two measures of agriculture's economic viability. I imagine that well-defined economic definitions exist for both, but from my perspective I look at productivity as the measure of production output, whether it be on the scale of an acre, farm or national level. Efficiency, on the other hand, is the measure of economic performance of the farm as a production unit or the dynamic national production system. These measures, by themselves or together, do not assure long-term economic viability. Both are important indicators, but the availability and values of markets for the crops being produced are the overall factors in achieving economic viability. You can have productivity and production efficiency, yet end up with poor market returns due to market conditions.

Several production agriculture economic issues evolving around productivity and efficiency are worth mentioning in our assessment of future agricultural policy. Most basic are the size of farms and selection of crops. On the size of farms, a very important issue prevails in the current sustainable agriculture debate, that being maintaining small-sized farms. As we all know, the current trend in the size of U.S. farms is toward larger-scale farms with a noticeable loss of smaller farms. The demand for reversing this trend is coming from certain segments within our society driven more by the goals of preserving family farms (a social value) and a general claim of environmental benefit. These goals for smaller farms are based more on noneconomic dimensions of sustainable agriculture, at least in relation to the long-term viability of U.S. domestic and international markets. There is also a definite bias by the proponents of smaller farms against "big," which, in my opinion, is not warranted. Policy should not specify size of farms. That should be left to farmers and the use of economies of scale in our free enterprise system. As environmental performance becomes more of a societal "seal of approval" for agriculture, then the issue should really be whether a farm can meet its environmental responsibilities in the way it conducts business. There should not be an arbitrary assumption that "big" is bad, "small" is good. Since there are obvious productivity and efficiency disadvantages that smaller farms face in contrast to larger farms, a likely policy question is the need for maintaining small family farms through government support, should society decide this traditional value warrants the cost.

Crop selection presents a different perspective on productivity and efficiency. It recognizes, as I said earlier, that economic viability is not measured solely by productivity and production efficiency, but also the economic return on crop yields as dictated by market conditions. Simply put, a farm can choose to rotate crops or diversify crops for whatever reasons; however, the actual economic viability is ultimately determined,

short term and long term, by the amount of revenue generated by crops in the "external" market. If a farm cannot generate sufficient revenue to cover the cost of production plus earn a reasonable profit over the long haul, one can easily see that the farm is not economically viable and therefore not sustainable.

The same conclusions could also apply to agriculture on a national scale when commodity surpluses are created by an artificial market as a result of government subsidies. Of course, participating farms would receive revenue for producing the crop, but U.S. agriculture has created a negative return on the surplus portion of productivity and an uncertain economic viability for that commodity.

Efficiency plays an important role in farmers' selection of crops for production. Costs of producing crops raise interesting issues with respect to economic trade-offs between on-farm and off-farm inputs and different production costs in different cropping regions for the same crop. The issue of on-farm versus off-farm inputs, as you all know, is receiving much attention under LISA and alternative agriculture. I do not plan to get into any detail on this issue other than to say that efficiency in production agriculture is no different than efficiency in any production operation. The common objective being to minimize input costs, as much as feasible in efforts to maximize profit margins. Achieving efficiency requires that *all* production costs, fixed and variable, be fully accounted for and continually assessed for further reduction or elimination.

Industry's Role in Sustainability

I would like to focus now on the role of pesticides in sustainable agriculture. Based on current practices and technology, agricultural pesticides are an important *positive* factor in the economic dimension of a sustainable agriculture. For anyone to say otherwise is ignoring reality. There are obviously those who advocate the use of agricultural pesticides as being unnecessary, costly inputs, while at the same time playing on health emotions and fears of the public. Little credit is given to why farmers, based on *their* experience, use chemicals for the cost effective advantages in weed control and protection of crop yields from risks of loss to insects or disease.

Certainly, future technology will make significant advancements towards minimizing or eliminating pest risks in the first place. This will obviously have economic advantages for the farmer by reducing input costs for pest control strategies. However, when pest threats do exist, then the answer lies, from the aspects of sustainability, in controlling them in the most cost effective way. The key for guiding the selection of current and future pest control strategies (chemical or non-chemical), is in balancing cost effectiveness with environmental risks. The optimum being to *maximize* cost effectiveness and *minimize* environmental risks. Since agriculture is so diverse, applying this criterion will obviously require different levels of trade-offs according to locations and cropping systems and practices.

Achieving the maximum cost effectiveness and minimum environmental risks in the use of agricultural pesticides that is my industry's role and challenge in contributing to the sustainability of agriculture. In order to successfully achieve this role, however, individual companies, and the industry collectively, must be actively involved in the ongoing sustainable agricultural debate. In addition to being an active player, we must also become better informed on the complexities of the issues surrounding sustainable agriculture so that we can: (1) promote realistic perspective on the contributions of agricultural pesticides in sustainable agriculture; (2) foster and defend responsible use of agricultural pesticides; and (3) accept close public scrutiny and strict government requirements on pesticides, but demand the same ground rules for all forms of pest control strategies.

In order to maximize their cost effectiveness and minimize their risks, pesticides must be addressed on a product- and site-specific basis. To do otherwise would only mean sacrificing the quality of effective risk management strategies and the possible removal of pesticides as viable economic tools to agricultural producers in areas in which such action, in reality, is not warranted.

Providing pesticide users with the proper information to assure the safe and beneficial use of pesticides is the overall thrust of pesticide manufacturers' ever-increasing emphasis on product stewardship programs. Although currently driven mostly in response to environmental issues, these programs must also articulate the principles of prudent and judicious use of pesticides — to use pesticides only when needed, in amounts necessary to do what is intended, and in a manner that does not present unacceptable risk to health or the environment. The first two principles relate to maximizing cost effectiveness of pesticides, while the third principle addresses minimizing risk potentials, i.e. managing risks.

Conclusion

The agricultural chemicals industry is committed to its role and responsibilities in the sustainability of agriculture. We recognize that the varied goals involved are complex, yet achievable through informed decision making by society, with commitment and responsible action on the part of all.

A statement in a video program, "Ground Water and Agricultural Chemicals: Understanding the Issues," released by the American Soybean Association and the National Corn Growers Association, although specific to ground water, summarizes what needs to be done in our search for sustainability in agriculture. The statement is, "In balancing the parallel needs for protecting ground water and preserving agricultural productivity, it is important that the agricultural community recognizes that this is simply not a productivity issue. The millions of people that are served by the bounty of America's farms must recognize that it is simply not an environmental issue. The best interests of all

parties are served when ground water is aggressively protected and agricultural productivity is maintained."

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ENVIRONMENTAL AND SOCIAL IMPACTS OF AGRICULTURE: A SPECIAL CHALLENGE IN POLICY EDUCATION

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This is not a policy area for the naive or fainthearted. While the "alternatives and consequences" scripture of policy education is intuitively and intellectually sound, it can be a flimsy shield when the wars start, and they will. It is still the *right* framework, of course, and, as Flinchbaugh frequently reminds us, if we are sought out and then assaulted by interests on both sides of a given issue we must be doing something right. That is comforting to be sure. I recommend a team approach to policy education on the environmental and social consequences of production agriculture. Don't go out there alone!

All policy educators know that conflict is the starting point in policy change. It is a fundamental component of policy, a disruption in the momentum inherent in a given set of rules; *not* an aberration, but an essential element of the process. The alert policy educator will see conflict in the steaming stage, before it is in full boil, and begin to "work the crowd." We have been doing so on the topic of this session for many years, but urgency of the issues has expanded quite suddenly. I really feel that our credibility as policy educators and as land grant social scientists is in for a major test in months ahead.

My purpose in this paper is to clarify the educational challenge, rather than the substance, of the environmental and social impacts of production agriculture. Earlier papers in this session have indicated the roots of the policy conflict; there is an impressive history of contribution on the topic at the National Public Policy Education Conference (for example, Offutt, Batie, Lemley, Carriker, Glover).

Priority for Policy Education

There should be little question about the importance of this topic area. Like most policy topics it has been thrust upon us, demanding attention. We might prefer to do something else, but have little choice in the matter. That is the dilemma in policy education as compared to other extension areas, even within the social sciences. Long-range plans are difficult, particularly if we have to follow them. Information needs can emerge suddenly or gain immediate priority because of a budget

hearing, an unanticipated confrontation or a new law. Two related legislative actions are partially responsible for greater outside scrutiny of farm practices in recent years: (1) The Soil and Water Resources Conservation Act of 1977 (RCA) brought soil and water use issues out of the restricted atmosphere of the agricultural establishment by mandating broad public involvement. (2) The 1985 Food Security Act nailed down some of the specifics, pushing farmers to protect wetlands or highly erosive soils in the broader public interest. That general principle of responsible farming behavior will be refined in other laws and policies.

There are several subject matter foci of particular importance for policy educators. First, effect of agriculture on quality of ground and surface water has been on national and state policy agenda for years. Various incentive and regulatory devices have been introduced to alter the decision environment facing water users. The general policy objective is to raise the cost of actions that cause pollution, subsidize those that reduce it or totally remove certain water use options through regulation. Because of obvious physical differences in the resource, policy experience for groundwater differs from that for surface water. Each policy technique, from tax break to prohibition, imposes cost on someone in the interest of improved water availability for others (Braden and Lovejoy). Environmental impacts of agriculture are more urgent now than a decade ago, not because farmers are more careless or farming more disruptive, but because of basic demographics. There are fewer farmers producing a higher proportion of nearly every commodity. Those are, by definition, more intensive production units, getting more output per farm acre. There are more nonfarmers scattered into rural areas, with more points of impact with farms. As long as our general economic health is measured in housing starts, we can expect more opportunities for conflict. Farmers in most states fight to protect their opportunity to have unhappy neighbors by resisting rural land planning and zoning. Farmers, like most of us, respond to the various signals from markets and other institutions inherent in our economic system. As Creason and Runge point out, those policy signals designed to stabilize production and prices can inflict unintended pain on the environment. Even some environmental rules can have perverse environmental effects, as with costly reregistration of pesticides, discouraging some new product development.

Recent surveys indicate broad public concern about chemical residues on fresh produce yet general confidence in overall quality of the food supply (Cook). This seeming contradiction identified in 1989 may have been the steaming preliminary to full boil on food safety policy. People are uneasy, influenced by a few documented cases of poisoning from agricultural chemicals and an impressive media campaign surrounding the Alar scare in 1988 and '89. The architect of that successful media blitz couldn't resist bragging about it in writing. Copies of the *Wall Street Journal* excerpts (Fenton) are tacked to bulletin boards in commodity group reception rooms all over the country. Differences in quality standards among countries create de facto barriers to trade

(Kramer). It is probably safe to assert that in some instances the limit on trade is *the* reason for the food safety standard. Policy education deals with understanding the context of food safety as an issue, general discussion of consumer risk preference, consequences of specific rules and standards that have emerged, and discussion of other policy options.

Policies focused on agricultural pesticides are a special case within the broader concerns of water quality and food safety. Consumers and voters have expressed their uneasiness about all those "artificial" chemicals being used to control the various pests that destroy, damage or just "mess up" fruit and vegetables. Expressed rationale for limiting pesticide use goes beyond immediate human impacts to include long-term viability of the resource. Much of the vague rhetoric about sustainable agriculture was given further substance and credibility by the timely publication of *Alternative Agriculture* by the National Research Council (1989). This is a high stakes game. Neither users nor prohibitors are inclined to compromise. Chemical companies have simply avoided lengthy and costly battles by taking certain low-pay-off chemicals off the market. Farmers and their spokespeople react with predictable anger, even horror, at the loss of a technology considered fundamental to a certain crop in a certain place. California's "Big Green" initiative is on the November, 1990, ballot. If passed, the law could ban 70 percent of chemicals currently in use because they *might* be carcinogenic or reproductively toxic. The pressure is on in Florida and other fruit and vegetable states. The "so what" of these limitations is generally poorly documented, with a few notable exceptions (Knutson, et al.; Barse, et al.) that focus on particular crops. More policies will be written and need for education is immediate.

There are several topics fitting under the "social" part of this session title. They involve other impacts of economic adjustments within production agriculture. They are also sensitive, difficult, important and under-developed topics for policy education. First is the general topic of rural poverty, best characterized by President Kennedy's commission as "the people left behind." Causes of rural poverty extend beyond structural change in agriculture, but it is certainly true that some people lack the human, financial and natural resources to stay up with agricultural change or to find other jobs. The policy educator interested in options for coping with the glaring human cost associated with rural poverty seldom confronts major conflict. There is no pro-poverty movement within the agricultural establishment. The challenge is to keep up one's spirits in the face of massive indifference. There may be general concern that attention focused on poverty may detract from "more pressing" extension needs on mainstream topics, but seldom active resistance.

Policy education dealing with agricultural labor issues can be more tense. Living conditions for temporary and migrant farm workers have received the same national attention as food safety or environment. Author Alec Wilkenson won a Robert Kennedy Book Award for *Big*

Sugar, focused on the life and hard times of the cane harvester in south Florida. An update of Edward R. Murrow's "Harvest of Shame" aired on public television in early summer, 1990. Farmworker groups argue that growers avoid hiring the more demanding domestic workforce and rely on provisions of the Immigration Control Act that permit hiring temporary workers from the West Indies. These workers come to Florida for cane harvest and for apples from Virginia to Maine at wages substantially higher than available at home (*Farmworker Justice News*). Growers in need of a reliable work force say there is no exploitation, just their legal use of policy options open to them. Migrant or temporary farm labor is important to fruit and vegetable harvesting across the country. Farmers understandably resent being labeled uncaring or manipulative, and seek mechanical substitutes to people in the fields.

Extension is substantially under invested in the human side of agricultural production technology. There are few specialists nationwide focusing on consequences of employment policy. It is a lively pursuit to be sure. Unfortunately, extension scrapped an effective and growing collaboration with the Department of Labor back in the 1970s for reasons that are at best unclear.

These environmental and social consequences of production technology present similar challenges for the policy educator. They are issues that cannot be ignored if we and the land grants in general are to maintain an image of responsiveness and credibility with our benefactors, the taxpayers. Following are the specific aspects of policy education on these topics that I feel are most challenging.

Technical Base

The policy educator dealing with environmental topics is drawn into a complex of physical and biological sciences. *All* policy education must deal with the factual base underlying the options, but environmental problems seem to be particularly demanding. Feasible policy options for protecting groundwater recharge areas or for discouraging farmer actions that may contaminate supplies are tied to hydrologic and chemical properties of the water source and its pollutants. Policy specialists can't be experts, but they must invest in understanding the technical side. Even more importantly, they must collaborate with specialists in those other disciplines in organizing educational programs. Usually it is the policy specialists who must assume the overhead function, identifying the expertise necessary and getting it together. There is the mistaken assumption among many in those other disciplines that good science yields "good" policy just by virtue of its intrinsic elegance. That is nonsense, of course. It is the policy specialist's role to glean the "so what" inference from all of those sophisticated water quality data sets and engineering designs. Programs, published materials and other education outputs must begin with the technical facts on water sources, contaminants and health consequences before considering institutional experience or options for dealing with those problems.

A particular challenge when working with production scientists,

engineers, biologists or ecologists is that few share the "leave it on the stump" ethic of policy education. Most non social scientists prefer normative conclusions. They are also inclined to take sides. I never knew an agronomist who didn't feel strongly that agriculture's needs are more important than those of other folks. I have known few environmental ecologists who believe a farmer deserves an even break. All can accept the notion of unbiased research but the challenge of even-handed policy analysis and education is up to the policy specialist.

Understanding the policy setting for the environmental and social impacts of agriculture may require special expertise as well. The complex state and federal regulatory structure for pesticide registration and use, waste disposal, water protection, or employment may require bringing lawyers or bureaucrats into the education process. Concepts of revealed-risk preference or the ethical roots of environmental protection may be beyond the expertise of the policy educator, particularly the policy economist.

Effective policy work on these topics must be a multi-disciplinary team approach even more than with other policy topics. The risk is that battles within the team may overshadow battles among clients. It is up to the policy educator to cajole, bribe, threaten and referee the process. Scientists from these other disciplines may be our most important and challenging clients. They need to understand the policy process and their role in it. Deans and directors need help as well, though the policy educator should approach with caution. He must be available, helpful, creative and positive with deans and directors, never flippant, patronizing or annoying. A successful policy educator is aware of the group pressures facing *all* policy participants and uses that knowledge in the education process.

Gainers and Losers

The distributional character of environmental policies, and to a lesser extent social policies, are a special challenge for the policy educator. Actions to protect a recharge area or restrict a pesticide can entail major economic costs for a few with benefits widely distributed in small increments. The farmer may face economic and personal ruin for illusive benefits in the form of avoided risk to a large segment of society. In some grand social welfare analysis the net may be positive but that is small comfort for the sawmill operator in Oregon put on the streets by a spotted owl. I imply no judgment on the validity of such risk shifting regulations, but simply assert that the distributional character of those policies creates a special challenge for policy education. Those most adamant about restricting availability of pesticides to avoid the possibility of future health effects obviously suffer great personal anxiety about the risks involved to themselves and others. Further they would feel no personal loss from banning a pesticide or a farm practice. Substitute products are available; there is no personal sacrifice at all. As with many political causes, they accept a moral obligation to act in the interest of others whether or not they are delegated to

do so. In economic jargon there is want or preference but no effective demand in that the "consumer" of protected endangered species habitat confronts a budget constraint in pursuit of that product. Perhaps one could assert that the anti-pesticide advocate "spends" discretionary time and effort with some opportunity cost involved, but I suspect that many such causes generate their own intrinsic utility.

Those whose actions are the object of environmental or labor policies designed to mitigate impacts of agricultural practice experience *major* personal inconvenience. Some landowners, foregoing development potential in the interest of saving rural beauty, groundwater recharge areas or other open land values, have successfully argued that compensation must be paid. Land has essentially been taken for public use and must be paid for. Some variant of this compensation demand comes up in many areas of environmental policy — "If you (society) want to change my way of life, buy me out." If society gains, society should pay. The "regulatee" can feel very strongly about that. Policy educators know, however, that regulations to protect the health, safety and general welfare are an essential part of the institutional fabric of this country. The policy question of who must come to whom or the initial distribution of property rights has no definitive answer but is on the agenda for policy education in this area. People take sides around that question, including other scientists participating in the education effort. Is the right to permit erosion at greater than T or runoff into a neighboring stream a right that must be bought if lost, or is it a right simply reclaimed by society to avoid socially deviant behavior by the individual? One's position on that question is a function of basic ethical precepts, values and the personal economic stake he has in the result.

All policy change in this or any area entails gainers and losers; loss tends to be more concentrated in environmental rule changes than in other policy areas. The educator must deal with these property rights questions and help participants respect the rights of others. It is the height of hypocrisy to demand sacrifice by others and accept no personal responsibility. Few concerned citizens are willing to stop using hydrocarbon fuels to protect the ozone layer or pay extra for biodegradable containers. Good public transportation has not yet supplanted the two or three car family particularly in affluent neighborhoods of highly-educated people who tend to lead the environmental movement. I do not mean to trivialize the valid concerns of American citizens seeking to improve the general quality of life for all. But participation in that system carries responsibilities as well. Until there is this honest mutual respect for rights, needs and obligations of others, the policy battles could be ugly.

Policy Educator as Peace Keeping Force

At some stage in the evolution of a policy issue, direct confrontation is a strong possibility. Here is a *real* challenge for the policy educator dealing with environmental and social impacts of agriculture. Can we help when open political and social conflict has erupted between farmers

and environmentalists, local governments, labor groups or all of the above? Many farmers and ranchers and their organizations feel bombarded from all sides, generally unloved. They are mad about it. Full scale verbal wars have broken out with combatants unwilling or unable to discuss the issues calmly. Both sides have decided that negotiated compromise is impossible and they seek victory. Both sides seek allies and, in their view, if you are not with them you are against them. What if anything can our role be under those circumstances? Can the policy educator be helpful without compromising his or her responsibility to a public institution? What about situations in which extension itself may be perceived as part of the problem? Can we afford to "just say no" and go on to the more manageable issues? The policy economist, schooled in retrospective analysis with tentative suggestions of what *might* happen in the future, is particularly vulnerable in open warfare.

Most policy educators I know would not do particularly well in a peace keeping role. They simply are not trained for it. They (we) talk a good line about hands-on involvement but are very sensitive to pain and likely to find reasons to be elsewhere. Future needs in these policy areas, however, will require that more specialists help resolve conflict after the teachable moment has come and gone. We simply cannot limit ourselves to thoughtful articles and bulletins in the face of direct conflict on issues of the environmental or social consequences of agricultural production. There are counter pressures in academia with greater homage paid to journal articles and more disciplinary research. It is likely that only tenured full professors with a solid self image, well-honed verbal skills and a supportive dean should try peacekeeping. The land grant university should be cautious about refusing involvement, trying to stay above it all. On the other hand, inept peace keeping could be far worse than none at all. Policy educators should get training or find colleagues in industrial and labor relations, community social work, or law. These departments or units of the university tend to cultivate the skill of negotiating on behalf of a client. A participant from those units would need to isolate his or her personal views on the two sides at conflict, and draw on mediation skills. The goal in peacekeeping is not to pick a winner, but to find common ground or at least reluctant acknowledgement of the other side. As we all know, however, education and information are not value-neutral. Any form of intervention by the policy educator, no matter how pristine the motives, will likely help someone at the expense of someone else (Laue).

Land Grants in the Squeeze

The final and perhaps greatest challenge of policy education on environmental and social impacts of agriculture is the vulnerability of the "sustaining source" of all such endeavors, the land grant university. Most policy educators are part of the land grant university and thus sensitive to pressures brought to bear on the role and agenda of that institution. There is more to the "land grant problem" than any pressure that might result from policy education on the issues of this session.

but those pressures constitute part of the challenge of good policy work in this area. With declining federal resources in many urbanizing states, the land grant university is increasingly dependent on state budget support. So who among state groups supports the land grant, and why? Production agriculture remains the most vocal and consistent supporter of land grant research and education in many states. Others give moral support but farmers and their lobby groups are still the most reliable at budget time. There are good reasons for that of course — the land grants have served agriculture well for the past century. The immediate problem for the policy educator focusing on the environmental and social impacts of production is that such efforts can make farmers profoundly unhappy. Failure to conduct solid and substantive work on these topics, on the other hand, further damages the land grant image among other groups. There can be little doubt that the 1862 land grants are considered part of the problem by some groups worried about agricultural pollution (Creason and Runge) or human costs of production technology (Buttel). Jim Bonnen asserted at the centennial conference for the 1890 land grant universities that those institutions are doing a far better job than the 1862's at articulating and measuring the human costs of prevailing production technologies. Policy educators trying to deal at the interface of these issues are clearly caught in the squeeze, giving meaning to the cliché "damned if they do and damned if they don't."

As level of tension increases between farmers and environmental interests, so does pressure on the land grant universities. Our attempt to be genuinely helpful can be interpreted by some agricultural groups as faintheartedness or, worse, as signs of betrayal. When farmers really need us, when their needs are least understood by the broader society, we talk about academic integrity or objective analysis. Many scientists and administrators within the land grant system may join the debate on behalf of agricultural interests. Their arguments are more subtle, but positions are just as clear. Academicians from other parts of campus may assert just as strongly that the aggies are in the hip pocket of the ag industry. Positions of the policy educator, particularly the untenured among us, can be hazardous in that setting.

Conclusions

Yes, policy education on the environmental and social consequence of agriculture is challenging. There are no secret techniques or content that will make it less so. Continued effort on these topics is important primarily *because* of that challenge. A few final conclusions may be helpful.

1. Evidence of educational success is elusive. Policy educators are among the least enthusiastic contributors to extension impact measurement efforts. It is not that we don't care, or consider ourselves above it all, but we understand better than most how tentative any impact conclusions must be. The successful policy educator is, at best, a catalyst, one who assists change without

really being part of it. We seek to help decision makers better anticipate results of their actions. If they make informed choices using information we have provided, the educational effort has been useful. Their memories seem to be incredibly short. We have to start all over again for the next set of choices or the next election. If there is any learning curve at all, it seems to have little slope. In his 1990 Fellows Address for the American Agricultural Economics Association, Cliff Wharton acknowledged the frustration that so much effort by many capable and principled leaders has had so little impact on global or domestic poverty in the past forty years. His frustration is shared by many policy educators. I am amazed, for example, at how little progress we have made with policies to retain strong agriculture in an urbanizing political economy. The policy experience is diverse yet each new case seems to start from scratch, fighting over the meaning of property rights, freedom and the "American Way." Perhaps each crop of landowners and educators has to think of it themselves.

2. Conflict management is a valid role, but we need help. No further elaboration of this conclusion seems necessary.
3. We must recognize extremism on all sides of these policy debates and acknowledge it as such. Overstatement is part of politics, a product of fear, anger, deviousness or some combination. While health consequence of farm chemicals is a valid concern, there is a disturbing tendency toward chemophobia among some people. Biocontrol technologies also can be worrisome, however. Whether the pesticide is "natural" or externally applied may make little difference to the pest, or to the human who inadvertently comes in contact with it. Part of the educator's challenge is to generate respect and general understanding of a spectrum of positions on most issues.
4. We need thoughtful agricultural leaders who understand that land grants are not just technical support units for production agriculture. They also need to understand how their long-term success relates to the broader political economy. In-depth education for selected emerging state leadership can be an essential counterpart for policy education in the environmental and social consequence of agricultural production.
5. Pressures for change on the land grant university are significant and valid (Schuh). We must be responsive and avoid tendencies for self destruction by fighting among ourselves on the balance between disciplinary and problem solving work, relative importance of different parts of our constituency, and relevance of social or biological science in the research mix. There is no doubt that agriculture, forestry, fisheries and natural resource services will be important to the economies of most states and to the United States. We need not turn our backs on traditional support. It is also true, however, that long-term strength within those sectors

requires responsiveness to economic and social change. Part of our challenge is to help agriculture continue its prominence into the next century. That position is by no means assured.

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**STRUCTURAL CHANGE IN FOOD
INDUSTRIES AND PUBLIC POLICY ISSUES**

BEEF PACKING AND ANTITRUST: A CASE STUDY IN PUBLIC POLICY EDUCATION

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National Cattlemen's Association

Challenging times have confronted the beef industry during the past decade. Rapid changes in the number, size and makeup of industry firms and shifts from traditional ownership and marketing patterns have raised questions about its future structure. What will the competitive position of beef be relative to other meat sources domestically and internationally? How will individual producers adapt and fit into the evolving structure?

I will discuss those changes plus some of the basic underlying economic factors. Hopefully, developing a better understanding among producers, educators and policy makers about the economic forces driving industry change will lead to a rational policy response consistent with increased competitiveness for beef relative to the other meats.

Task Force Addresses Producer Concerns

The National Cattlemen's Association (NCA) Beef Industry Concentration/Integration Task Force, appointed October, 1988, addressed producer concerns about ongoing changes in the industry. The fifteen task force members represented all geographic areas, segments of beef cattle production, age groups and degrees of business experience. The task force worked together for thirteen months and solicited input from a wide range of resources. It was my privilege to serve as the primary staff person for the task force during the course of its deliberations.

The task force solicited input in a variety of ways:

1. More than 215 written requests for input were distributed to state and breed organizations; economists in academia, government and industry; feeders; packers; marketing analysts/consultants; leadership of other commodity and general farm organizations; and members of the agricultural press.
2. The task force had the unique opportunity to meet and converse openly and candidly with representatives of the meat industry. More than 150 hours of direct personal interviews were conducted between October, 1988, and October, 1989, with: (a) representatives of all segments of the beef industry — from cow-calf

through retail; (b) policy makers in Congress and the regulatory agencies; (c) representatives of the pork, poultry and sheep industries; and (d) extension and research economists and legal advisors. These hearings were conducted with the full task force and staff present and, in aggregate, accounted for nearly 3,000 manhours.

3. An ongoing literature review of research and agricultural and related publications was conducted by NCA staff. Copies of relevant articles and editorials were distributed to the task force on a regular basis.

In addition to meeting with major players from all sectors of the meat industry, the task force identified the need for an independent, objective analysis by individuals not involved with the industry on a day-to-day basis. Dr. Ed Schuh, Dean, Hubert H. Humphrey Institute of Public Affairs, University of Minnesota, headed the research team that conducted the independent analysis (Johnson, et al.).

Task Force Report

The task force final report (National Cattlemen's Association) has been circulated widely across the industry and the process of discussion and consensus building is currently under way.

Problem Definition

The task force identified eight issue areas for evaluation and analysis: (1) concentration; (2) integration (by contract or ownership); (3) packer control of inventory; (4) price discovery/reporting; (5) competitiveness; (6) availability of credit (including foreign investment); (7) government regulations, and (8) international developments.

Industry Structure

The following snapshot of the industry as of 1989-90 summarizes producer concerns about the cattle industry's changing structure:

The January 1, 1990, U.S. Department of Agriculture (USDA) inventory report estimated approximately 950,000 operations with beef cows. Of those, 92.6 percent have fewer than 100 beef cows (83 percent will have fewer than 50 head and 10 percent have 50-100); 4.7 percent have 100-199 cows; 2.2 percent with 200-499 beef cows and .5 percent of the operations with beef cows (about 4,750 operations) have more than 500 cows. At the large end of the spectrum, the top 20 cow-calf operations listed in the 1990 issue of *Directions* averaged 14,670 cows. That means a national beef herd of 34 million could be managed by 2,300 operations of that size.

On January 1, 1990, the United States had approximately 34 million beef cows. Of those, 52.5 percent were on farms with fewer than 100 cows. (About 35 percent were on farms with fewer than 50 cows and 16.4 percent were on farms with 100 to 199 cows), 16.6 percent were

on farms with 200 to 499 cows, and 14.5 percent of all beef cows were on operations with more than 500 beef cows. Thus, .5 percent of the beef cow operations (4,750) manage 14.5 percent of the beef cows.

Eleven states reported more than 1 million beef cows on January 1, 1990. That's 58 percent of the total beef cows. At the same time, another five states reported between 750,000 and 1 million beef cows. Together these 16 states accounted for over 70 percent of the U.S. beef cow herd.

In fed cattle, thirteen states accounted for about 87.5 percent (or 23 million) of the total 26.2 million fed cattle marketed in 1989. A total of 46,883 feedlots was reported in those thirteen states as of 1989. Of those, 96.5 percent had less than 1,000 head capacity, 3 percent had capacities of 1,000 to 15,999 and .4 percent had more than 16,000 capacity. (79 feedlots, or less than .2 percent of the total, had more than 32,000 capacity).

Of the 23 million fed cattle marketed in the thirteen largest feeding states, 16.4 percent was marketed by feedlots with less than 1,000 capacity, 32.5 percent was marketed by feedlots with 1,000 to 15,999 capacity and 51 percent was marketed by 198 feedlots with over 16,000 capacity. (30.3 percent of the total fed cattle was marketed by 79 feedlots with more than 32,000 capacity).

During the past ten years cattle feeding continued to shift from traditional Corn Belt and Sun Belt states to the Central Plains. The task force predicted that, in the future, cattle feeding will be determined by the availability and cost of water. State regulations (environmental, antitrust, antitechnology, protectionist, etc.) often override the natural competitive position of states as determined by the resource base.

Packer concentration increased dramatically during the 1980s. As recently as 1980 the four largest packers slaughtered 36 percent of the fed cattle and marketed 53 percent of the boxed beef. By 1989 four packers slaughtered and processed approximately 69 percent of the fed cattle and marketed more than 80 percent of the boxed beef. Of those, IBP accounted for about 28.5 percent of the total, ConAgra 21 percent, Excel 14.5 percent and Beef America 5 percent.

These four packers contracted, fed, or formula priced approximately 25 percent of their fed cattle needs on average. However, the percentage ranges to over 50 percent at some times of the year in some regions. (The industry has coined the term "captive supplies" to represent the aggregate of these methods of acquiring supplies by means other than direct cash negotiations).

By comparison the pork industry is less concentrated and less contractually integrated (a four-firm concentration ratio in pork packing of 37 percent and about 11 to 13 percent of the market hogs fed on contract). Recent trends in the pork industry have been to more contract production with Purcell predicting that pork packing will be as concentrated as beef by the end of the decade (Purcell). The broiler industry four-firm concentration ratio stands between the ratios for beef

and pork, but nearly 100 percent are produced either on contract or in integrator owned facilities. The four-firm concentration ratio for lamb packers is nearly 80 percent and the largest lamb packer is the largest lamb feeder. Beef producers are, therefore, competing in an overall animal protein market constituted of relatively large, sophisticated, multispecies firms.

ConAgra's recent acquisition of Beatrice and activities by Tyson and Cargill (Excel) indicate that the traditional meat packers may evolve as full line *food* companies. If this is the case, then beef will be increasingly forced to compete for resources (research and development, marketing, promotion, etc.) within multi-species companies as well as at the retail meat case and food service counter.

Factors Driving Change

The trend toward fewer and larger firms has prevailed throughout agriculture. In the beef industry it has been more obvious at the packer level, but has occurred at all levels. These changes in the industry were largely driven by economic factors and are generally expected to continue.

Overcapacity. Beef cow numbers increased 35 million from 1930 to 1975. Ten year cycles of expansion and liquidation occurred during that time frame, but the general overall trend in cow numbers was increasing. Since 1975 the ten-year cyclical expansion and liquidation of the beef herd has continued. However, the overall trend in beef cow numbers has declined. On January 1, 1990, the beef cow herd was less than 34 million head — about one million more than it was two years ago, but still at approximately 1965 levels.

The decline in numbers at all levels of the industry left excess capacity in the feedlot and packing sectors — a factor closely related to contractual alignment as those sectors attempted to assure supplies and compete for dwindling numbers. Productivity increased while numbers declined largely due to improved management and increased use of new technology (larger breeds with higher yields of lean meat and reduced slaughter of nonfed cattle). Today, approximately 2 percent less beef is produced with 27 percent fewer cattle.

Declining Demand. During the 1970s, beef demand remained relatively stable. As supplies increased, as in 1976-77, price declined. As supplies were reduced, as in 1973 or 1979, price increased. Most price changes during the 1970s were due to shifts in supply rather than shifts in demand. Starting in 1980, however, demand began declining. Consumers would purchase the same quantity only at a lower inflation-adjusted price. This loss of demand continued until 1986. During the 1980 to 1986 period nearly the same quantities were produced and consumed — approximately 75 to 78 pounds per capita. However, consumers would purchase that quantity only at a lower inflation adjusted price.

Beginning in 1986, beef demand started to stabilize. Although consumption declined, prices increased. Price changes were again a reflection of shifts in supply similar to the 1970s.

Relative price increases for beef have contributed to declining demand and lost market shares. In 1970, the price relationship of beef to broilers was 2 to 1. Beef was twice the price of broilers. During the late 1970s the price difference widened to more than 4 to 1 and the relationship between beef and broiler prices has remained at approximately 3 to 1 during most of the 1980s. With the exception of a brief period in 1975 to 1976, pork has generally been priced somewhere midway between beef and broilers, with minor cycling up and down.

In 1970 beef enjoyed a 42 percent market share of 201 pounds per capita total meat consumption. By 1989 consumers purchased a record 220.5 pounds of total meat but the market share for beef declined to 31.2 percent. Projected figures for 1990 indicate a 30.5 percent market share for beef.

Cost Reduction. Much of the changing price relationship between beef and the other meats can be explained by changing costs throughout the production/processing/marketing chain. The competing meats have been more aggressive than beef in reducing production costs and processing/marketing margins. Cost reductions are, in part, related to the natural biological advantages of other species. Shorter generation length and multiple births result in faster genetic change an adaptation to consumer preferences. Concentration at the beef packer/processor level has provided economies of scale and multiplant efficiencies leading to reduced real margins and improved competitiveness in developing international markets.

In a competitive commodity business, low-cost producers have positive cash flows for a longer period of time than higher-cost producers. Consequently low-cost producers are in a healthier financial position to expand during the good times and suffer for a shorter period — or even have financial reserves to expand — during the bad times. Much of the 1980s consolidation came as a result of inefficient, poorly capitalized or negative cash flow operators going out of business or being acquired by financially stronger players. Regardless of size, low-cost producers survive in a competitive open market system.

Reducing production costs was not a popular theme in the industry. However, costs at the cow-calf level vary by as much as 100 percent compared to 45 to 50 percent for all feedlots. Commercial feedlot costs vary approximately 20 to 25 percent from low- to high-cost producers, while pork costs vary by about 30 percent and broiler costs by less than 20 percent.

What most industry media and producers missed was that the task force did not focus only on costs at the producer level. Rather, costs of marketing, transportation, processing, packaging, spoilage, multiple vaccinations — and the list goes on and on — were included.

Some cost differences relate to the makeup or structure of the industries. Beef is produced and consumed in a dispersed and segmented industry consisting of seedstock, cow-calf, stocker/grower, feedlot, packer/fabricator, breaker/distributor, retailer and consumer segments. On the other hand, poultry (and increasingly pork) is produced and consumed in a system with relatively fewer steps — integrator/grower, retailer and consumer segments. An integrated system means lower cost because fewer middlemen make a margin off the product.

Imagine a beef system without stocker/grower operations, no auctions or order buyers, no purveyors/meat brokers, very few feed dealers, only a handful of genetic companies and possibly no futures market. Now the picture is clearer and you can see that a lot of overhead currently paid by someone in the beef industry is eliminated. That is basically the system employed by the integrated poultry industry today and it's increasingly being adopted by the pork industry. It's efficient and low-cost but not real popular with segments or producers that may not have a role (or whose role might be significantly altered) in a functionally integrated beef production system.

Capital Availability. Coordinated production or contractual integration also may be driven by individual producer business decisions to reduce costs or to assure access to capital. While the beef business is still largely a segmented industry, the more integrated competing meats are not so concerned with profitability at each production stage. As long as the bottom line for the entire production/marketing process is in the black, the industry or individual firm will survive. The task force did not advocate integration. Firms that integrate, reduce risk, become low-cost producers and have access to capital, however, will be survivors at the end of the evolution.

Predictable Products. The need for predictable, uniform quality products could continue the contractual alignment trend even if cattle numbers expand. One major packer is testing for residues in feed supplies as well as fed cattle delivered to the plant. Feedlot operators with a history of problems will be crossed off the acceptable supplier list in the future.

The task force determined that cattlemen make individual business decisions to enter into marketing agreements, to contract cattle for future delivery and to feed packer-owned cattle on a contract basis. These decisions reduce risk for both parties by reducing capital requirements for cattlemen, and they increase efficiency by reducing marketing and transportation costs and increasing assurance of predictable, uniform quality supplies. The beef industry in total is competing in a mature market for meat animal protein against poultry and pork producers who have achieved or are achieving greater efficiencies and reduced margins.

Export Demand. Export demand will continue to play an increasing role in the beef industry's overall financial position. Some economists have pointed to the possibility of an 80 yen dollar to achieve the net

trade surplus required to pay interest costs on U.S. debt held by foreign creditors. An 80 yen dollar could substantially increase export demand for U.S. beef.

The flip side of the exchange rate issue is that U.S. production and processing assets also become relatively less costly in terms of foreign currency as the dollar declines in value. Recent media articles have discussed Japanese purchases of some Western ranches and packing facilities. This trend will accelerate if devaluation of the dollar occurs. The task force report reflected the belief that, if packers or cattlemen become noncompetitive, open capital markets and avoidance of protectionist legislation would provide new players and restore competition.

Policy Alternatives

Alternatives evaluated by the task force fall into five general categories: (1) Do nothing. Let economic forces and individual business decisions continue to shape the structure of the industry. (2) Fine tune the present system, primarily by increasing information availability and flow through the industry. (3) Coordinate producer actions, primarily in marketing. Group marketing efforts and pooled auctions are examples of group action that could be pursued. (4) Delegate marketing responsibilities to some type of exclusive exchange — central electronic markets, exclusive bargaining agencies or a marketing board. Or, (5) Request government or legal intervention including increased antitrust enforcement, stronger regulation of livestock procurement practices, or private lawsuits.

Recommendations

The task force made its strongest recommendation after a thorough evaluation of factors driving change in the industry, the competitive position of beef in the overall meat market, and analysis of the policy alternatives — "That the nation and the beef industry are best served by the capitalistic, competitive free market system."

Recommendations specific to the eight issue areas include:

1. *Concentration.* The task force recommends no more mergers or acquisitions of beef slaughter facilities be allowed by the top three packers.
2. *Integration.* The task force recommends that no action be taken to alter or halt current trends toward contractual integration among operators in the beef industry's various sectors.
3. *Pack and Feeder Control of Inventory.* The task force strongly recommends voluntary reporting of controlled or "captive" fed cattle inventories (including numbers and days to delivery) by all packers, for each plant, and by all feedlots to the Market News Service of the Agricultural Marketing Service/USDA and/or cooperating private market reporting services.

4. *Price Discovery and Reporting.*

- a. The task force recommends development of boxed beef and retail price indexes and their use, along with live cattle prices, in developing price indexes for fed cattle and feeder cattle.
- b. The task force strongly encourages voluntary price reporting by all cattle buyers and sellers to the Market News Service of the Agricultural Marketing Service/USDA and/or cooperating private market reporting services.

5. *Competitiveness.*

- a. The task force encourages research to develop new technologies that will lower costs of production, processing and marketing, thus improving overall industry efficiency.
- b. The task force recognizes the need to improve technology transfer systems, and it endorses the Integrated Resource Management concept.
- c. The task force encourages producers — individually and through cooperative efforts — to take advantage of opportunities to increase profits through new marketing strategies, coordination, integration, risk management and retained ownership.
- d. The task force supports check-off and other industry efforts in advertising, research, industry information, new product development, education and information programs.

6. *Credit and Finance.*

The task force encourages development of new credit sources for agriculture.

7. *Government Regulation.*

- a. Because of increased potential for antitrust violations, the task force requests that the federal government more closely monitor mergers and acquisitions in the packing and processing industries.
- b. The task force encourages the government to move toward a market-oriented agriculture rather than programs involving government controls and subsidies.

8. *International Developments.*

- a. The task force recommends that the government continue to pursue a policy of reduced trade barriers and encouragement of fair and open international markets.
- b. The task force supports programs to expand international markets for American beef and beef products.
- c. The task force supports open international capital markets.

The future of the beef industry remains optimistic. Many efficiencies achieved by competing meats lie ahead for the beef industry. Gains

from biotechnology and other emerging technologies can, and will, improve our competitiveness. Innovations in packaging, processing and product development will further beef's gains relative to the competition. And the real plus is that the primary advantage of cattle and other ruminants cannot be duplicated by our main competitors — converting otherwise wasted roughage and forages to high quality protein.

Implications of Beef Industry Structural Change

Agriculture in general is becoming more concentrated. A challenge for extension will be to overcome the mindset that the current institutional structure is sacred. For extension to be an effective information conduit it will have to differentiate the market and provide cutting edge material to sophisticated commercial producers or be faced with servicing part-time producers more reliant on off-farm income than agricultural production.

At the institution and organization level, we'll see increased specialization and consolidation. The industry probably doesn't need an animal science department or livestock marketing specialist at every land grant institution. Witness poultry science departments at institutions in a few key poultry states. At least five national organizations represent different sectors of the beef industry. The role and membership participation of these organizations will change as industry structure continues to evolve.

The Integrated Resource Management (IRM) concept will see increased practical application. An advisory team including a banker, marketing specialist, nutritionist, veterinarian, soil or range scientist and maybe an environmental ecologist will coordinate with the producer to maximize returns. With producers tailoring a team of specialists to fit their individual management situations the role of extension will be redefined. Industry concentration will result in most producers and managers being comparably or better educated than many of those serving them. Institutions must identify their role in the evolving system and provide top notch people for the team. Competition will increase for a declining number of increasingly sophisticated clientele (producers).

A declining population will result in a changing political support base. Instead of serving 950,000 individual producers, can institutions and organizations justify serving or representing 2,300 or 4,750 beef cow companies? How about serving 500 commercial feedlots instead of 46,000?

Statistics show U.S. beef cow numbers at 34 million producing only 2 percent less beef than in 1975 when we had 45.7 million. In the future approximately the same amount of beef will be produced with a national beef cow herd of 20 million. The beef industry will become bimodal (small part-time or large commercial operations) at the cow-calf level. We will see more contractual integration, more retained ownership and cattle sold fewer times during the production cycle. Cow-calf producers will produce specification cattle using genetics with consistent, predictable

end points. Producers not utilizing specification genetics (including cloned embryos) will sell at a deep discount. If producers can retain positive cash flows without specification production (because of off-farm income, inherited land base, etc.) they will remain in business; otherwise the outlook is dim.

Overcapacity will continue at the feedlot and packing sectors and become more prominent at the cow-calf level. More than one-half of all fed cattle were marketed by 200 feedlots with one-time capacities of 16,000 or more in 1989. The trend toward fewer and larger well-capitalized feedlots that can assume and manage risk will continue. Feedlots will feed to designated endpoints consistent with packer or retailer branded beef specifications.

Direct marketing by specification, increased coordination of production and blurring of lines between traditional beef industry sectors will continue. Producers will tend to become contractual input suppliers, with "marketing" in the traditional sense taking place between processors and the end consumers (either at the retail grocery or away-from-home food service store in the domestic market) or between processors and exporters (in the international market). Current extension personnel focusing on traditional "marketing" issues (selling feeder or fed cattle, for example) will need to adapt so they can address issues of importance in the evolving system.

Changing the number and size of producers has implications for rural communities. The rural infrastructure — primarily built in the mid to late 1800s when the Homestead Act and railroads were populating the Great Plains — may have outlived its economic justification. Modern production technologies, communications and transportation have made the existing infrastructure obsolete in some regions. Some communities have lost the critical population mass necessary to sustain services and quality life.

Environmental and water quality issues will remain on the policy agenda and will contribute to regional production shifts. These are emotional, social and political issues with economic implications. Urbanites are willing and able to pay more for water for every day uses than agriculture can pay for irrigation. Erosion of public support and increasing demand for water by the growing urban population make this a difficult issue for agriculture. The task force predicted that water availability and cost will determine the location of cattle feeding in the future. The same will be true for cow-calf production. Marginally productive grazing regions will decline in value or revert to other uses. Institutions depending on defense of water intensive production practices in water deficit regions had better prepare to adjust.

Productivity is geared to technology application. The Catch-22 is that technology application often hastens the trend to fewer and larger firms. Early adopters of technology gain and producers who can't or won't adapt eventually go out of business. Their assets are absorbed by their more efficient neighbors and the "size" of the average operation ex-

pands. If institutions adequately handle technology development (research) and application (extension) they hasten the trend to fewer and larger firms. Cochrane's technological treadmill continues, and technology application forces producers to run faster just to keep up (Cochrane).

Some states have attempted to slow evolution in the structure of agriculture by passing legislation to restrict technology application. The effect of these efforts ultimately will drive production to regions with more friendly regulatory climates. National technology restriction will lead to international production shifts.

Limited resources are a reality with the trend increasing. It is time to see some concentration of effort, integration of resources, and consolidation across traditional turf lines at institutions and organizations. When these changes are happening in the industries serviced by the institutions why should institutions expect to be exempt?

The beef industry asks that as public policy educators you help increase beef producers' understanding about their competitive business. The competition is not the next sector in the production/processing/marketing chain. The competition is producers in highly sophisticated production systems for poultry and, increasingly, pork. The competition is beef producers in other countries with adequate resources to produce beef for the expanding, globalized export market.

The beef industry cannot afford to unilaterally regulate its evolving structure while the competition continues to adapt structures and adopt technology to become increasingly lower cost producers. By increasing producer understanding, you, as public policy educators, can help prevent the beef industry from pursuing policy alternatives that will ultimately place it at a further competitive disadvantage. At a minimum, better understanding of potential consequences will lead to policy decisions based on improved knowledge of the alternatives rather than knee-jerk emotionalism.

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IMPLICATIONS OF GLOBALIZATION FOR INDUSTRIAL STRUCTURE POLICY: LESSONS FROM THE FOOD INDUSTRIES

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Two years ago at this conference I argued that the concentration of market power in the United States was a malignant social problem that was largely ignored by both the policy makers and the policy educators of the day (Henderson). Indeed, since then there have appeared many signs of a growing tolerance for market power. To quote a recent article by Michael Porter, the highly respected professor of international business at Harvard University, "Slowly and almost imperceptibly . . . America has been retreating from one of the most fundamental principles that has distinguished our nation from others; our faith in competition . . . The words of the day are collaboration (and) relaxing anti-trust regulations . . ." (1990A, p.13).

Recently, I have turned my attention to the structure and performance of international markets. One theme that appears with some frequency in the international market literature is, domestic concentration of market power is not necessarily a bad thing; moreover, there is considerable support for the argument that it is a good thing and should be nurtured as a matter of public policy.

My purposes herein are, first, to review the current state of knowledge regarding the impacts of concentration of market power and related dimensions of industrial structure on market performance and social welfare, and second, to explore how these impacts may change when examined in a global market context. I'll draw, in part, on our ongoing analysis of international market performance in the food manufacturing industries. To preempt my analysis, I intend to demonstrate that globalization does *not* allow us to dismiss concentration of market power from our list of legitimate policy concerns. In the end, I hope to provoke the policy education community to deal head-on with the "gold rule" — that is, the principle that those who have the gold, rule.

Industrial Structure and Economic Performance

In brief, economic theory holds that the way in which industries and markets are structured affects the performance of firms in those industries and thus the overall welfare of society. The best understood

structure-performance relationships are at the extremes of market organization, i.e., perfect competition and perfect monopoly. Market power is absent in perfect competition and wholly concentrated in a perfect monopoly.

Microeconomic theory demonstrates that perfect competition, when universally obtained, leads to Pareto optimal social welfare. That is, there is no possible reallocation of goods or resources in the economy that can make one person better off without making someone else worse off. By contrast, with equal certainty, monopoly results in deadweight social loss from reduced production, higher prices and the reallocation of economic surplus from consumers to the monopolist.

In a legal context, it is the role of antitrust policy to limit the concentration of market power in order to assure that firms therein behave more as if they are in a perfectly competitive industry than a monopoly. While there is an argument in economic thought, known as the general theory of second best (Lipsey and Lancaster), as to whether social welfare is unambiguously improved by removing one competitive imperfection from a market if at least one other such imperfection exists, antitrust policy has rested on the principle that high concentrations of market power are not in the best interest of society. Justice William O. Douglas put it well when he wrote: "Industrial power should be decentralized so that the fortunes of the people will not be dependent on the whim or caprice, the political prejudices, the emotional stability of a few self-appointed men. The fact that they are not vicious men but respectable men is irrelevant" (U.S. v. Columbia Steel).

In practice, it is well understood that most of the commercial world is imperfectly competitive. That is, it falls somewhere between the two "perfect" extremes of competition and monopoly. This is where controversy over industrial structure policy is born. As Joseph Schumpeter stated: "The unbroken line from monopoly to competition is a treacherous guide" (p. 981). Indeed, there is no single, generally received explanation of how economic performance and social welfare change as industry structure changes from one extreme of the competitive continuum to the other. In short, there is only one way to be perfect, but many ways to be imperfect.

Microeconomic theory includes numerous models of imperfect competition: duopolies, kinked demand oligopolies, dominant firm oligopolies, monopolistic competition and the like. However, none of these models generate sufficient certainty about how firms behave under imperfectly competitive conditions to allow precise and unassailable predictions of market performance. As a result, proponents of nearly any structural configuration short of monopoly can muster some not entirely irrefutable logic in support of their position.

Industrial organization is the specialized branch of microeconomic theory that has been built up specifically to explain the behavior of imperfectly competitive markets. The old school of industrial organization, prevalent through the 1970s, followed the structure-conduct-

performance paradigm pioneered by Joe Bain (1959). The literature in this school is replete with ad hoc econometric studies showing a variety of statistically significant relationships between various measures of imperfectly competitive market structure, dominated by seller concentration, and various measures of market performance, dominated by price levels and profits.

A new school of industrial organization has been emerging since the early 1980s (Tirole). The literature in this school includes specifications of strategic firm behavior in imperfectly competitive markets, and is replete with such conceptual descriptions of strategic behaviors as non-cooperative games, Cournot competition, Stackelberg leaders, and Bertrand-Nash pricing.

These empirical and theoretical variations are all efforts to develop a deterministic understanding of how the "real world" of imperfect competition relates to economic performance and social welfare. While progress has been made, efforts still fall somewhat short of the deterministic objective. The new industrial economics teaches us that old school ad hoc econometric models of imperfectly competitive markets that do not include structural equations of price and quantity behavior are misspecified and thus may yield unreliable results. Yet, despite advances in the application of game theory to firm behavior, unambiguous specification of changes in a firm's price and output decisions in reaction to strategic moves by its rivals is not yet an accomplished task. Until such behavior can be estimated reliably, obtaining unbiased evidence of the relationship between structural variables — such as market power — and market performance variables — such as price-cost margins — will be elusive.

Nonetheless, many useful insights have been gained. Richard Schmalensee recently assessed more than 250 published results from interindustry (cross sectional) econometric studies that reported empirical findings on structure-performance relationships in imperfectly competitive industries. Based upon this comprehensive review, he concluded that such studies "... rarely if ever yield consistent estimates of structural parameters, but they can produce useful stylized facts..." (p. 952).

Given the potential for econometric misspecification that is inherent in such studies, the lack of consistent parameter estimates is hardly surprising. What is impressive, however, is that the collection of studies persuaded a scholar of Schmalensee's stature that empirical regularities do exist in the relationship between industry structure and economic performance. He states such empirical regularities as stylized facts, e.g., "In cross-section comparisons involving markets in the same industry, seller concentration is positively related to the level of price" (p. 988).

In another exceptionally ambitious empirical analysis, Leonard Weiss and his colleagues reexamined 121 industry data sets that had been used in econometric studies of the concentration-price relationship. Positive correlations between seller concentration and price levels were

found in 106 of these cases; 15 had negative correlations, of which only 4 were statistically significant. Generalizing across all 121 data sets revealed an average price increase of 3.3 percent associated with a 10 percent increase in the three-firm concentration ratio (CR3). In summing up, Weiss states: "... evidence that concentration is correlated with price is overwhelming" (p. 283).

Even so, Weiss was not able to find unambiguous empirical evidence of a generalized functional relationship between concentration and prices, concluding, "Our evidence on functional form is so diverse that we cannot justify any one oligopoly theory over the others" (p. 283). The lack of solid empirical findings on functional form is further evidence of specification problems that result from the absence of a good estimate of imperfectly competitive behavior.

Weiss did observe, however, that concentration seems to make little difference on price levels when the four-firm concentration ratio (CR4) is below 50 percent. From this he suggests that an empirical search for a critical concentration ratio (CCR) might bear fruit in terms of identifying a threshold level of market power below which undesirable performance implications are inconsequential. While no such search has yet been reported, the practical appeal of such a threshold for enforcement of antitrust policy is obvious.

Empirical work following the dictates of the new industrial organization school has also begun to emerge. This is conceptually attractive because data from single industries are used to estimate a system of structural equations that is derived from a clearly specified firm-level optimization problem. That is, this approach includes behavioral equations by which firms determine price and quantity. As such, parameter estimates can be tested against values with explicit economic interpretations, e.g., infinite price elasticity of demand equates with perfect competition. As such, this work represents an important step in removing ambiguity associated with potential specification error. However, in order to confine strategic behavior to that which can be represented in behavioral equations, these tend to be intraindustry studies. While this is an advantage methodologically, it also puts some limits on how broadly the findings can be generalized.

We are indebted to Timothy Bresnahan for a review of new empirical industrial organization research. He found twelve intraindustry studies from which conclusions could be drawn regarding empirical relationships between market power and price-cost margins (PCMs). While concentration ratios were not available because panel data on firms were used as points of observation rather than industry census data, in all cases the industries examined appear to be from the highly concentrated end of the market structure spectrum: food processing, tobacco manufacturing, electrical machinery, automobiles and gasoline retailing as examples. PCMs ranged from 2.5 percent of costs for the second largest coffee roasting firm to 88 percent for large banks prior to deregulation, and averaged 29.5 percent across sixteen observations.

From his review, Bresnahan draws three conclusions: (1) only a little has been learned so far from the new methods about market power and industrial structure, (2) one significant cause of high price-cost margins is collusive market behavior, and (3) some concentrated industries exercise a great deal of market power, resulting in high price-cost margins (pp. 1052-3). Given the relatively recent attention to empirical analysis in the new school, the first conclusion is hardly surprising. The second and third seem to be validations of the general although imprecise conclusions drawn from a couple decades of empirical work in the old school. Furthermore, about the new studies Bresnahan states, "the individual studies of particular industries are specific and detailed enough that alternative explanations of the findings can be rebutted" (p. 1053).

The Anti-Antitrust Movement

Despite convincing theoretical and empirical evidence that concentration of market power works to the detriment of the social good, in the 100 years since the enactment of the Sherman Antitrust Act there have been a number of anti-antitrust movements in the United States. The first concerted attack came in the 1920s when President Coolidge appointed a lobbyist for western lumber interests, William E. Humphrey, as chairman of the Federal Trade Commission (FTC). Under Humphrey's guidance, the FTC changed from a role for "the preservation of fair methods of competition . . . into a device for limiting price competition itself" (Fainsod and Gordon, p. 520).

A resurgence of antitrust policy following World War II began to crumble during the events leading to Watergate. The direction was set by President Nixon's instructions to Deputy Attorney General Richard Kleindienst regarding the Justice Department's challenge to the pending merger between ITT and the Grinnell Corporation. The president's message was recorded by a secretly installed tape recorder, to wit, ". . . my order is to drop the God damn thing. Is that clear?" (as quoted in Mueller, p. 7). The virtual decimation of antitrust enforcement during the 1980s reflected the Reagan administration's views, as succinctly put by OMB Director David Stockman, "I disagree with the whole anti-trust tradition" (*Village Voice*).

Until the recent emergence of literature on industrial organization and international trade, there were two principal attempts to bring intellectual respectability to concentrations of market power — the concept of countervailing power, and the theory of contestable markets. I discussed — and dismissed — both of these concepts in my remarks two years ago, so I will offer only a brief reiteration here. Countervailing power was put forward in 1952 by J. Kenneth Galbraith in his first major book on industrial structure, *American Capitalism*, as an explanation of how the market power of one large corporation may offset that of another. However, by the time Galbraith published his more critical book on the organization of the industrial sector, *The New Industrial State*, in 1967, he had dropped that notion entirely. Indeed, microeconomic theory well demonstrates that about the only industrial

structure guaranteed to produce greater deadweight social loss than a unilateral monopoly is a bilateral monopoly.

The concept of contestable markets was put forward in the early 1980s by William Baumol and his colleagues. The essence of the idea is that firms with concentrated market power will act as if they had none in the absence of barriers to keep potential competitors out of their market. Contestability theory quickly generated a sizeable following, in part because of its obvious appeal to the critics of antitrust policy and in part because it generates specific conclusions that lend themselves to testing. And it is in the testing where the most telling damage to the concept resides. Gilbert recently reviewed a number of experimental studies of contestability from which he concluded that "... prices are controlled by *actual* entry, not by the threat of *potential* entry" (p. 116, emphasis added).

Another defense of concentrated market power has been advanced by the proponents of corporate takeovers. A prominent theory of takeovers is that well-run companies acquire poorly-run companies and improve their performance. Empirical evidence, however, is to the contrary. Michael Salinger has just published a comprehensive review of the merger literature. He found no evidence of improved efficiencies from takeovers and significant evidence that the performance of acquiring firms *declines* in the years following mergers. Salinger concludes, "there should be a strong presumption that mergers violating the concentration standards in the merger guidelines are illegal, and merging parties should bear a strong burden of proof that efficiencies justify overturning that presumption" (p. 320).

Despite my dismissal of attempts to bring respectability to the concept of concentrated markets, and much more eloquent exposé of the anti-antitrust movement by others (see Mueller for example), defenders of market power appear to be unconvinced. Just weeks ago, for example, Jens Knutson, director of economic research for the American Meat Institute, said of the beef processing industry, where the four leading firms have gained more than 80 percent of the market in recent years (Ward, p. 15), there is "solid economic evidence . . . that producers and cattle feeders have received tangible price benefits . . . There is equally compelling evidence that consumers, too, have benefitted . . . from lower prices . . ." (*AMI Newsletter*).

Globalization of Markets

Defenders of concentrated market power have found some new solace in the phenomenon of market globalization. The intuitive appeal of one line of reasoning is straight-forward: given the possibility of international trade we do not need to be concerned about the exercise of market power in concentrated markets because of the competitive threat from foreign firms.

In the absence of actual imports, this argument is no more valid than contestability theory — essentially it is simply an extension of con-

testability to potential entry from foreign firms. But, when imports are present, they do have a procompetitive effect on market performance. Indeed, econometric studies of prices and price-cost margins routinely find that both are negatively related to levels of import penetration, and that the negative effect is more pronounced as domestic seller concentration increases (Esposito and Esposito; Pugel).

Recent years have seen an integration between international trade and industrial organization theories. While this merger of theories had its roots in the desire to explain bilateral international trade in similar goods, or what has come to be known as intra-industry trade (see Dixit and Norman, and Sheldon, for example), it has been extended to the assessment of strategic interdependent behavior in imperfectly competitive international markets. It is this theoretical interface that has also provided the conceptual underpinnings for our current World Food Systems research initiative (organized as regional research project NC-194).

One outcome of the integration between industrial organization and international trade has been the application of considerable intellectual effort to a defense of policies that *enhance* market power. This has come to be referred to as strategic trade policy. In brief, the strategic trade policy argument begins with the observation that, in a world of imperfect competition, a lucky firm can earn excess profits if other firms are dissuaded from entering the market. A country can, accordingly, raise its national income at the expense of other countries if it can somehow ensure that the lucky firm is domestic rather than foreign.

In two highly influential papers, Brander and Spencer demonstrated theoretically that government policies such as export subsidies and import restrictions can preclude foreign firms from competing for lucrative markets in industries that are characterized by significant scale economies and thus increase national income. In essence, these policies are used to enhance the market power of domestic firms, the purpose being to enable them to shift excess profits away from foreign firms.

For sake of clarity regarding a fairly unconventional economic concept, permit me to recreate a stylized example (this draws heavily on Krugman, 1987). Assume there are only two countries, let's call them the United States and Europe, each with one firm, called Boeing and Airbus, that can produce a product, called wide-body passenger aircraft, for sale in the global market. Assume that demand and production costs are such that if either firm produces the product, it will earn profits of 100 (call it millions of dollars). But if both produce and share the market, each will lose 5. Left alone, the firm with a head start would become the sole producer. Assume this is Airbus. Boeing will not produce and U.S. earnings are 0. Now suppose that the U.S. government commits to pay a subsidy of 10 to Boeing regardless of what Airbus does. This means that Boeing will earn profits of 5 even if Airbus also produces, but Airbus will lose 5 for doing so. Thus, Airbus is induced not to produce. The result is, a U.S. subsidy of just 10 raises the pro-

fits of the U.S. firm from 0 to 110.

In this example, 100 represents the transfer of national income from Europe to the United States brought about by a U.S. policy of reducing competition or increasing market power. In part because the idea appeals to the baser instincts of national greed, strategic trade policy has gained a following among many policy makers. In part because the Brander and Spencer proof uses the highly sophisticated mathematics that some economists find erotic, and in part because it has the appearance of being a tractable counterpoint to competition and free trade, it has also gained the interest of many economists.

However, it may be a trivial concept. That is, the circumstances necessary to produce the Brander and Spencer results may so seldom exist in the real world that it has no practical application. Most of the analysis of strategic trade policy to date has been theoretical; a few studies are just now emerging that attempt to produce quantifiable results by calibrating conceptual models to data from actual industries. Krugman (1989) reviewed much of this work and found little support of either a theoretical or quantitative nature, at one point concluding that, "The government would have been better off if it had never heard of Brander and Spencer, or had a constitutional prohibition against listening to them" (p. 1206).

Does this mean, then, that market globalization has nothing to teach us regarding the desirability of concentrated market power, or the lack thereof? To the contrary, a growing body of literature, granted more empirical than theoretical at this point, demonstrates that international market performance is positively related to competition and negatively related to concentrated market power.

In what I believe history will treat as a seminal work on industry structure and international markets, Michael Porter draws on a four-year study of more than one hundred industries in ten industrialized countries to formulate general postulates on factors that influence industrial performance in a global context (1990B). These ten countries — the United States, the United Kingdom, Switzerland, Sweden, Singapore, Korea, Japan, Italy, Germany and Denmark — account for fully 50 percent of all world trade, and the focus of Porter's study was on determinants of international competitive advantage.

The Porter study is too comprehensive to summarize in a few sentences here, and I prescribe the entire 855-page text for the top of your "must read" list. In essence, he found that in every nation, the industries that perform best in international markets are those in which there are a number of able local competitors that pressure one another to advance. That is, domestic industries without highly concentrated market power are the most successful in terms of penetrating global markets — not only in the United States but elsewhere. He concludes, "This study, in a way I could not anticipate, has led me to a conviction that incentives, effort, perseverance, innovation and *especially competition* are the source of economic progress in any nation and the basis

for productive, satisfied citizens" (1990B, p. 736, emphasis added).

In some of the early work done in the World Food Systems research project, Stuart Frank and I have examined how the international market performance of U.S. food manufacturers is affected by industrial organization (Henderson and Frank). With export propensity as our dependent variable, that is, exports as a share of total shipments, ordinary least squares regression was used to estimate the impacts of industry structure on export market performance. We used 1982 cross-sectional data on forty-two food manufacturing industries defined at the 4-digit SIC level, drawn primarily from the U.S. Census of Manufacturers. Our explanatory variables included seller concentration as a measure of market power, and other variables representing product differentiation, scale economies, and entry barriers.

Our findings are consistent with Porter's less quantitative but more extensive analysis. In highly robust regression results that explained more than 85 percent of the interindustry performance variability in the export market for processed food, we found a statistically significant negative relationship between market power in domestic food manufacturing industries and export propensity. Specifically, export propensity declined by 4.9 percent for a 10 percent increase in market power as measured by the Herfindahl-Hirschman (HH150) Index. Using the 4-firm concentration ratio yielded similar but somewhat less robust results.

Conclusions and Implications

The available evidence, both theoretical and empirical, strongly supports the conclusion that seller concentration and market power are negatively related to global, as well as domestic, market performance and economic welfare. That is, competition helps, and more is preferable to less, be the market local, regional, national or global.

The implications are clear. A strong antitrust policy is essential to upgrading the economic welfare of society. Leniency toward mergers is a trap. Leniency toward cartels, alliances and industrial combines is also a trap. The national champion theory, or the idea that domestic firms will be more efficient if they merge into one or two large national competitors, fails the tests of both logic and history. Regulations that protect existing firms and that restrict the entry of new firms into a market must be vigorously resisted. By contrast, policies that encourage active domestic competition should be nurtured and coveted.

Why, then, is the policy battle still joined by proponents of market power? Robert Baldwin, writing on the political economy of trade policy, offers keen insight: "In fact, economic self-interest almost always dominates a person's concern for the welfare of other groups or the nation as a whole, when a significant part of an individual's income is affected by a trade policy" (p. 130) That statement is equally relevant for domestic industrial structure policy, and all other policies in which the income of a few holds hostage the interests of the many.

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WORKSHOPS

IMPACT OF FEDERAL AND STATE MANDATES ON LOCAL GOVERNMENTS

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"Fend-for-yourself federalism" as opposed to "new federalism" is the term now used to more precisely describe the federal government's policies that are presently impacting small local governments. It isn't that rural communities are being ignored; on the contrary, they are recognized as a vital link in carrying out national policy. A third of the nation's population lives in communities with 25,000 or less people, and 80 percent of all incorporated places have less than 2,500 residents. Collectively, the 36,000 rural governments account for about 94 percent of all the nation's local general purpose units. The success of any federal program depends on the cooperation of local governments. Most are financially strapped and many are organizationally poor. Fend-for-yourself federalism, exemplified by reduced program funding and continuing mandates, is having lasting impacts on local governments (Sokolow). States are also issuing mandates and sometimes these are more restrictive than federal mandates.

The purpose of this paper is to examine the impact of federal and state mandates on local governments. First, a brief overview of the basic theory of public involvement is presented. Second, an overview of major federal legislation is discussed. Third, the impact of selected legislation on local governments is presented. The paper will attempt to answer the following four questions:

1. What is the justification for federal involvement?
2. What are the major programs and mandates affecting communities?
3. What are the costs associated with meeting the requirements of these mandates?
4. What are the short- and long-term implications of fend-for-yourself federalism?

The Basic Theory of Public Involvement

Basically, there are two reasons why governments get involved with providing goods and services. These involve the case of natural monopolies or where externalities exist. Natural monopolies are created by governments because economies of scale exist and competition is

impractical, inconvenient or simply unworkable (McConnell). Examples of natural monopolies include electricity, water, sewer and other utilities. Often the local government is given exclusive rights to provide the utility. In addition, the local government regulates the price such that the profits of a natural monopolist are reduced. By reducing price, the quantity provided is increased. (For a complete explanation see McConnell, pp. 538-545).

Externalities exist when costs or benefits affect someone not directly involved in the production or exchange of a good and it is incurred without compensation. Examples include air and water pollution and recreation. Government action might be necessary to make participants in the market consider externalities. There are two methods the government can use to attempt to set private cost equal to social cost: a Pigouvian tax or regulation. The most commonly prescribed policy is the "Pigouvian tax" in which a tax is placed on producers in an effort to internalize the external costs. Government regulation might be the better policy if society's opportunity cost is greater than anyone is willing to pay. (For a more rigorous discussion see Buchanan).

Major Trends in Legislation

Past public investment in rural areas consisted of federal programs administered by special organizations or agencies, such as cooperatives or planning commissions, or directly by federal agencies. Under this system local leaders were largely ignored. More recent trends have focused on rural development and the spread of national programs and mandates using the local government as an instrument of implementation (Sokolow).

The steps or trends in federal programs seem to be that mandates are first created and grant-in-aid programs are established to carry out the mandates. The programs are then consolidated into block grants or some type of revenue sharing system. But, soon these revenue programs are drastically reduced or eliminated, while the mandates remain forcing local government to fend-for-themselves (Esser).

Table 1 highlights a selected number of federal programs and mandates that are significantly impacting local governments. Although this list is by no means all-encompassing, mandates concerning drinking water, effluent standards, solid waste disposal and Medicare consistently appear in the literature as major challenges to financially strapped small local governments.

Impacts on Local Government

The costs associated with meeting the requirements of federal mandates will, of course, vary from community to community depending on the local situation. Nonetheless, some idea of these costs will surface by examining actual case studies performed on communities over each of the major impacting program areas concerning drinking water,

Table 1. Major Programs and Mandates Impacting Local Governments

<u>LEGISLATION</u>	<u>OBLIGATIONS</u>
<u>Ground Water Protection</u>	
Safe Drinking Water Act of 1974, as amended	Local governments required to protect drinking water supplies
<u>Clean Water Requirements</u>	
Federal Water Pollution Control Act of 1972, as amended	Local governments required to meet federal effluent standards
<u>Solid Waste Disposal</u>	
Resource Conservation and Recovery Act of 1976, as amended; Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended	Local governments are strictly liable for the disposal of hazardous and other waste
<u>Medical Care Payments</u>	
1983 Prospective Payment System; Deficit Reduction Act of 1986	Fixed payment system for Medicare costs, and local governments must contribute Medicare payments for employees

Source: Sokolow, p. 7.

sewerage, solid waste and health care. In the case of health care, a simulation model is used to estimate program impacts on a community.

No matter how federal programs and mandates are paid for, ultimately local governments must carry out the programs. This responsibility imposes a significant burden on rural communities faced with the challenge of replacing lost federal funding. Rural areas confront different factors than do their urban neighbors. In this section, case studies are used to illustrate how mandates have and will impact the community's costs of providing services.

To get a better understanding of the dollar impact the Safe Drinking Act might have on local government, a cost comparison was made for the community of Cayuga, New York's (pop. 603 — 1980 est.) water treatment facilities in 1982. The town's system (without federal assistance), had an average cost of water consumed per person per year of \$43 (1982 dollars). A new system designed to meet Environmental Protection Agency (EPA) and New York regulatory agency requirements (without federal assistance), was estimated to cost \$57.30 (1982 dollars) per person per year. So, in this particular case, requirements increased the average cost by \$14.30 (1982 dollars) annually (U.S. Congress).

Handford and Sokolow studied eight small (pop. 981 to 7,540) California communities' attempts to meet the 1972 version of the federal clean water legislation. The construction and engineering costs ranged from

\$1.3 million to \$6.9 million each. The local cost share ranged between \$200,000 to \$900,000 each, and the per capita cost fell between \$26 to \$320 per person. The collective debts of these communities increased from \$1.5 million (1973-74) to \$2.6 million (1982-83). To cover these additional costs, sewer and connection fees increased two- to threefold.

Summary

The impacts of meeting federal mandates will vary from community to community. In the short-run, significant costs and problems will challenge local leaders. In the long-run, impacts are projected to be quite beneficial as local governments adjust to their new responsibilities.

Short-Term Impacts

Handford and Sokolow describe the short-term impacts of federal mandates, specifically the Clean Water Program, as being a part of the "hardship view." This view states that communities will go through a period of hardships, trials and tribulation while attempting to meet federal program requirements. Communities may encounter construction delays, cost controversies and disagreements. They will suffer from financial problems brought on by increased debts and political backlashes from residents angry over increased fees and/or taxes and/or cuts in services. Land acquisition disputes are common as the community attempts to acquire the needed property to contract or rejuvenate their facilities. Relations with state agencies are strained as community leaders become frustrated over reimbursement disputes, technical assistance and what they perceive as arbitrary state regulations. Local leaders will resist regionalization, fearing a loss of local control. In all, this will be a time of struggle for local governments.

Long-Term Impacts

Handford and Sokolow also observed that over the long-term there are benefits. This view holds that the short-term impacts constitute a constructive learning process in which communities are weaned from their dependence on federal funds and learn to fend for themselves.

Local governments will develop a stronger system of public works finances as increased user charges lead to self-sufficiency. Communities will begin to consolidate their services and form interjurisdictional partnerships. Counties will play a more active role in the delivery of services. Regionalization will not be feared as in the earlier stage. Privatization will be more common and public officials will take more risk in the financing and delivering of services. Local officials will improve their general municipal management and grantsmanship skills. The improved capacity of a community's infrastructure will aid local economic development goals. And, finally, leaders will have an increased appreciation of national environmental objectives as water quality improves and they see that local autonomy is not seriously damaged (Handford and Sokolow; Somersan; Dodge; Sokolow and Snavelly).

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YOUTH AT RISK — POLICY CONSIDERATIONS

*Howard Finck
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I bring you greetings from both Washingtons — the one that lives in people's fantasies and the one that is all too real. The all too real Washington is the state I live in, where a crumbling infrastructure of family supports has led to a series of out-of-control crises for the youth on whom we will soon depend. The Washington of your fantasies should be the District that still believes that moral lectures provide answers to the complexities of our times. A wag once said, "There is no problem so complex for which a simple, yet wrong, solution cannot be devised."

My purpose today is to describe the dilemmas facing youth in our country, briefly overview how we got to that point, detail two particular problems that have developed (substance abuse and homelessness), review the special problems for rural areas, and suggest policy implications.

A famous American recently said: "America is in danger of creating a permanent underclass."

Who said that? Saul Alinsky? Jerry Rubin? Alan Ginsberg? Former California Governor Jerry Brown? The Chairman of General Motors?

Yes, that old social activist Roger Smith. And another 239 on the Committee for Economic Development (CED), a national business/educational forum composed of top CEO's and educational leaders who are concerned about the 25 percent drop-out rate from our nation's schools and other signs of youth in crisis that will cost us \$260 billion per year in lost taxes and gross national product. This figure does not include any of the social costs, such as imprisonment, drug abuse, casework, hospitalization, or policing increases. The report issued by the CED was seconded in different forms by both the Carnegie and Ford foundations. They are worried about losing their markets, their work force, their excellence — and about the costs of providing human services on the job in order to remain in a competitive market.

Senator John D. Rockefeller, chairman of the National Commission on Children, in the commission's Interim Report entitled "Opening Doors for America's Children," stated, "The health and vitality of our economy and our democracy are in danger. Too many of our children

and adolescents are reaching adulthood unhealthy, illiterate, unemployable and lacking both moral direction and a vision of a secure future. They are unwilling or unable to carry out the responsibilities or enjoy the privileges of citizenship, employment, or parenthood.

“This is a personal tragedy for the young people involved — and a staggering loss for the nation as a whole.

“Our goal is to place children at the top of the national agenda; children must become our number one priority. Children are our economy, our national defense, our future.”

This country is turning out youth with emotional, educational, motivational, economic and family problems at rates that overwhelm and will progressively overwhelm programs, schools, caseworkers and counselors. Client-by-client work will not dent these trends. The answer, as will be explored, involves an expression of national resolve on the same order that has enabled us to place almost 200,000 equipped troops and support personnel in the Persian Gulf in under two months.

If we do not intervene on that level, the uneducated will become the uncaring, the abused children will become abusive adults, and the poor and dispossessed will become the angry.

The concept of infrastructure is important here. I've learned that infrastructure is that physical underpinning of the society: those things that carry us, warm us, power us, wash us and nurture us (such as roads, bridges, sewers, water systems, power systems and so forth). We've spent outrageous sums on the concrete and related lobbies to keep us moving, comfortable and communicating. I would suggest the real infrastructure, the one that truly carries us, warms us, nurtures us, and powers us, is the family. This infrastructure is falling apart and we simply are not willing to put the same level of effort into repairing it that we have put into the physical infrastructure.

One facet of the alienation our children feel in this country (and a sign of the deteriorating infrastructure of the family) is evident in the area of homelessness: a problem that in any magnitude is less than two decades old and which has seen runaway and street youth populations grow to 1,300,000 annually. Homeless children, still living with parents, are estimated to number between 275,000 and 750,000 at any one time. Hard-to-place youth, those who have failed alternative residential placements (foster care, state facilities) and who are without permanent homes, number perhaps another half million a year. While these numbers have been ballooning, we have chosen to commit our human service funds to the secure facilities of this nation. In Washington state, treatment facilities for youth have been reduced from 1,600 beds to less than 300 beds in a little over a decade. In that same time, four new prisons were acquired or built. Five more are planned for the next decade; the first biennium construction cost carries a \$392,000,000 price tag — for many of the same kids who were in the homeless youth population a few years earlier. We know that early intervention programs work

with children; yet we choose to delay intervention until the problems are virtually unsolvable.

Homeless children, whether children with their parents, runaways, street youth, teen moms, or systems failures, have their whole lifetimes to cost us for a generation of indifference. They are the most at risk — both to themselves and to you. Public policy initiatives, rather than addressing this, have focused narrowly on (1) defined categorical solutions and (2) simplistic answers. In the former instance, each of the problems of at-risk youth (they are often delinquent and dependent, abused and abusive, and multi-symptomatic) are used to disclaim responsibility by the different governmental levels, leaving them in a services limbo. In the latter instance, expensive and long-term treatment alternatives are minimized ("Just Say No").

The categories of homelessness mentioned above are parts of a continuum, a continuum that grows more ineffective and more costly as the earlier intervention possibilities are ignored. Homeless children (those still with their parents), half of whom are under six years of age, can be very responsive to simple interventions focusing on remediating the consequences of poverty. Those remedies include decent housing, nutrition and health services, elimination of barriers to school enrollment and progress (supplies, clothes and transportation) and Head Start (which saves \$4 of later expenditures for every \$1 invested). If the child has witnessed domestic violence, early therapeutic day care can reduce the chances that that child will become an abuser. Providing parents with an opportunity to gain employment skills and providing the day care that enables them to break the public support dependency are all key interventions.

If intervention doesn't occur at the earliest level, that child may well become a runaway youth (one who is gone from home one or more nights). Although these youth are typically adolescent with serious family, personal and community problems, early outreach, crisis intervention and family reconciliation services can keep 75 percent or 90 percent at home with their parents at a cost ranging from under \$100 to about \$2,000.

Street youth are runaway youth who have been away from home more than two weeks. At this level, about 20 percent can be reconciled with their families. The interventions now focus less on family reconciliation and more on survival (health services, living skills, independent living options, food and shelter). These youth have chosen parent substitutes among their peers and the pimps. The success rate is far less and, where it does exist, requires living subsidies in many instances (specialized foster care, residential treatment, independent living).

The country is presently served by over 300 basic runaway shelters with a common funding base of monies provided by Title III of the Juvenile Justice and Delinquency Prevention Act (The Runaway and Homeless Youth Act), administered through the Department of Health and Human Services. The average grant is less than \$90,000; as a con-

sequence, only about one in ten such youth are served.

In the basic centers, 39 percent of the youth served are runaways, 8 percent are throwaways (directed to leave by their parents or leaving by mutual consent), and 48 percent are abused or neglected youth (often systems youth). These categories are extremely fluid; youth frequently fit all three and it's simply a question of emphasis or whether there was a state caseworker at admission. Of the entire population of runaway and street youth, 7 percent are HIV-positive, 12 percent are thinking of or have attempted suicide, 35 percent are physically abused, 21 percent are sexually abused, and a majority are both chemically dependent and clinically depressed.

Other signs of the deteriorating infrastructure include a soaring youth suicide rate, drug and alcohol abuse beginning in primary grades (with about one-third of high school students regularly using drugs or alcohol), and child physical and sexual abuse reports greatly increasing in the last decade (one of ten boys has reportedly been sexually abused, while one in four girls has been traumatized in this fashion).

Recent trends have included a dramatic rise in the number of teenage mothers (of the 16- to 19-year-old homeless female cohort, 31 percent were found, in a recent study, to be pregnant), and an awareness of the plight of rural homeless youth. These youth have the same problems as their urban and suburban counterparts, but suffer even more from the lack of resources, from the consequences of poverty, the lack of transportation and easy services access, and from the stigma more often encountered in small communities. Most effective youth intervention agencies require a broad funding base, including charitable sources and government contracts. Rural agencies do not have the concentration of population and capital to generate donations and their governments do not have the ability to meet funding matches required by many sources. Faced with these dilemmas, such youth mask the symptoms by self medication (alcohol and drug abuse) and frequently migrate to large urban centers. As noted previously, once they are enmeshed in those subcultures, it is difficult to return home.

In terms of public policy responses, there have been several trends in the last two decades:

- Removal of status offenders from the juvenile justice system. Status offenders, or those youth who were prosecuted and sometimes locked up for behaviors that are not illegal for the adult population (e.g., running away, out of parental control), have been largely removed from the juvenile justice system. Services, however, have not been funded to provide alternatives for this population.
- Enactment of Public Law 96-272 (The Adoption Assistance and Child Welfare Act of 1980). This law, in brief, attempts to secure permanent placements for youth by mandating frequent court reviews of foster home placements, by declaring that efforts should be made to keep families intact, and by providing support to find

permanent placements for youth that must be removed from their parents. This law has been interpreted by state officials as a mandate to severely reduce foster and group care placements, and to lean toward keeping families together even if some risk to the child accompanies that decision. An unintended consequence has been to greatly increase the paperwork requirements of both placement agencies and providers, resulting in a large diminution of time available for casework services.

- An increase in class action suits and consent decrees. Perhaps as a result of fewer resources, more children in at-risk situations, and a general tendency of the society to litigate more (a variety of suits have been filed against public entities to ensure that youth receive due process and that the states respond to severe abuse and neglect), Child Protective Services (CPS) agencies (covering abuse, abandonment and neglect investigation and assessments and further action) have increased greatly in size. In fact, they are the predominant organization serving children and families. In some places, there is no other child welfare system. Either as a consequence of their number or social trends, child maltreatment reports have jumped 60 percent since 1980. The system now is organized around investigation (and protection from court suits), and not placement or other forms of aftercare. The response system employed by the CPS's are shaped around the worst five percent of the cases; early intervention cases and efforts are simply prioritized out.

Sheila Kamerman and Alfred Kahn of Columbia University have pointed out the following social services phenomena in the last decade (p. 113):

- An increase in child and family pathologies
- A rise in multi-problem kids and families
- A preference for keeping youth and families together
- A focus on the protection of children
- The fragmentation of the delivery system
- The constraining of funding resources
- The inadequacy of services

In addition, the American Public Welfare Association (Kamerman and Kahn, p. 174) noted that in 1985, expenditures in the nation for child welfare issues were largely concentrated around the CPS function — protective services and substitute care accounted for 78 percent of the total. Preventive services, pregnancy and parenting services accounted for only 16 percent. (The total expenditure was \$4.5 billion.) Caseworkers have been transformed into investigators and paralegals.

These are the ingredients in the stew that will result in the creation of the CED's "permanent underclass."

Kahn and Kamerman go on to suggest that case management, fund blending and structural reorganization of agencies are required to integrate the variety of approaches used, while a focus on home-based

services and the creation of neighborhood-based children and family services within a community development context would result in new, holistic and effective treatment options.

Any analysis of youth-at-risk issues must also consider the children-at-risk issue. The earlier illustration of the movement of homeless children to runaway or street youth is but one example of how the difficulties and costs progress over time. In the 80s, several major themes developed concerning children:

Poverty. Children now head the nation in the incidence of poverty. One in five is poor. In urban areas, the number is one in three and in rural areas, the ratio is one in four. However, there are more poor children in rural areas than in any other area. Poverty is clearly associated with problems that are not easily solved and appear, not only throughout adolescence, but throughout life (such as dropping out of school). Children under six are the poorest group.

Prevention. Services are oriented to the most difficult cases and to providing substitute care in cases of abuse and neglect. Those youth who are at risk and not in trouble are ignored.

Drugs. The spectre of drug addicted children, crack babies, children born with fetal alcohol syndrome and children who live with chemically addicted parents has risen to crisis proportions; abuse begins at that point and continues until it reaches the crescendo of legal intervention.

Ethnic discrimination. All of the problems mentioned above are severely exacerbated for children of color. They are poorer, have more severe health problems, less early childhood education and fewer service options.

A few comments should be made concerning the special problems of rural areas. They include:

Health needs. *The New York Times* reported in February, 1990, that health care in rural areas is expected to worsen with the dismantling of a government program to provide doctors for the nation's neediest areas. In poor rural areas, especially the South, infant mortality can run as high as three times the national average, with most women receiving little if any prenatal care.

Housing needs. A 1985 study by Housing and Urban Development (HUD) and the U.S. Census Bureau indicated the shortage of affordable housing is more acute in rural than urban areas, while housing assistance is usually unavailable to the rural poor (*Community Congress Bulletin*).

Poverty rates. In 1986, for the first time since 1975, nonmetro poverty rates were higher than poverty rates in U.S. central city areas. Between 1979-1986, poverty among young adults and children increased twice as fast in nonmetro areas as it did in metro areas (almost one third of all farm households fell below poverty in 1986).

Homelessness. One of four of the nation's homeless (including children) are found in nonurban areas. This is even more startling when contrasted with the fact that net rural outmigration was nearly one million in 1986-1987.

Family stress. Rural states are showing increased family stress as a result of economic distress. Between 1979-1986, child abuse referrals to Colorado mental health centers increased from 12.2 to 18.3 percent of total referrals while childhood depression rose from 35.6 percent to 54.8 percent. In Minnesota, a study of 3,600 rural adolescents found that a change in parents' finances was commonly associated with the onset of depression, stress and attempted suicide. In Iowa, confirmed cases of child abuse increased by 43.6 percent from 1982-1986; spousal abuse reports increased from 1,620 in 1985 to more than 4,500 in 1987.

Public policy implications for the above problems include the following:

- Prioritize children and youth as a target for funding and service increases, particularly at the early intervention level. The Young Americans Act (S. 1911), introduced by Senator Dodd, (R.-Conn.), would declare children and youth to be a national priority; states would be urged to formulate plans that would bring such a goal to reality, and a White House Conference on Youth would be held to both inspire efforts in this direction as well as develop other specific policy initiatives.
- A coordinated continuum of care, in which funding follows young people in need and not the other way around, must be provided.
 - Prevention and services that strengthen families must be emphasized.
 - Outreach efforts to get young people off the streets must be supported.
 - Specialized-care research and demonstration programs for homeless youth should be provided — e.g., programs for young mothers and their children.
- The federal government needs to support efforts to identify youth at risk, what works, and ensure they receive quality services.
- Affordable housing must be a national priority. It should include rent subsidies for older, homeless youth.
- Universal access to maternal and child health and nutrition services and day care must be provided.
- Protections for low-income and/or out-of-work parents should be put in place (extended unemployment benefits, health insurance, reasonable child support assurance).
- Programs must be better coordinated. For example, unemployment benefits programs should be coordinated with job-retraining and education programs. Income support programs should be coordinated with social service programs. Interagency coordinating

councils should be created on a multi-jurisdictional level and charged with finding ways to blend funds (education, housing, employment, substance abuse).

- Prepare young people for adulthood by focusing on prevention of pregnancy and creating educational and vocational opportunities that are high in quality and lead to promising careers. Sixty-two percent of parents without a high school education had children living in poverty in 1987.
- Include young people in the planning and implementation of policies and programs that affect them.

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WASTE MANAGEMENT POLICIES AFFECTING DECISION MAKING AT THE LOCAL LEVEL

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Local decision makers must have a comprehensive understanding of federal statutes and acts because federal legislation is likely to have a direct impact on local initiatives. There are numerous acts that have at least a peripheral impact on local decision makers as they struggle to reach workable solutions to the solid waste crisis at the local level. Figure 1 shows the chronology of the major federal environmental legislation and some implications of each act as well as subsequent amendments.

Figure 1. Major Federal Environmental Legislation

1965	Solid Waste Disposal Act <ul style="list-style-type: none">● First federal legislation passed to improve solid waste disposal methods● Amended in 1970 by the Resource Recovery Act
1970	Resource Recovery Act <ul style="list-style-type: none">● Focused on recovery processes for materials and energy● Basically nonregulatory
1976	Resource Conservation and Recovery Act (RCRA) <ul style="list-style-type: none">● Required states to develop solid waste management plans● Encouraged reducing and recycling● Prohibited open dumps and established guidelines for sanitary landfills● Began "cradle-to-grave" management of hazardous wastes● Amended in 1984 by the Hazardous and Solid Waste Amendments Act
1976	Toxic Substances Control Act <ul style="list-style-type: none">● Expanded federal regulation of industrial and commercial chemicals● Required premarket testing of potentially dangerous chemicals for toxicity
1980	Comprehensive Environmental Response, Compensation, and Liability Act (Superfund)

The Resource Conservation and Recovery Act (RCRA) probably had the most profound impact on the states. It required states to develop solid waste plans and move toward a more comprehensive treatment of the solid waste problem than had ever been attempted before. The states, in turn, handed down new requirements — often more restrictive than the federal guidelines — to local jurisdictions.

Planners and decision makers at the local level must consider the political, institutional and economic conditions that exist in their community. Many states have state guidelines that direct local communities to meet specific goals and objectives. State legislation, on the other hand, often restricts how local communities can meet the state goals. All of these institutional factors constitute the policy framework within which the local communities must operate. As Charles Abdalla points out, "Public policy is a vehicle that shapes and directs human actions to achieve defined societal goals." If one of those defined societal goals is a quality environment, then waste management becomes a primary focus for institutional decision makers. The challenge becomes particularly acute when state policies conflict with local needs and resources. An example of this type of mismatch is when states require waste management plans to be developed within an inappropriate boundary. For example, requirements for county plans may be problematic for rural areas in which economies of scale are best realized at the regional level.

Regionalization

Regionalization may, for example, be ideally suited for the development and ultimate success of a waste-to-energy facility. Intergovernmental agreements may be necessary to ensure an adequate supply of waste to the plant and to design the most efficient transportation routes throughout the area. Regional planning may also benefit landfills, composting and recycling programs.

Communities pursuing regional waste management approaches need policies that support the creation of regional organizations for financing and managing purposes. Authorities, special districts, nonprofit public corporations, multicomunity cooperatives, and intergovernmental agreements are all different types of structures that may be created to support economies of scale and multijurisdictional cooperation when implementing regional waste management projects. Many government planning books can explain how to set up these structures.

Incentives

Waste management is a problem that involves human behavior. Affecting human behavior in a positive way can have a positive impact on environmental quality. Whether we are talking about litter control, waste volume reduction, or small-quantity generators of hazardous waste, we must look carefully at policies that impact human behavior. As individuals strive to obtain maximum utility from each decision they

make, they need to have incentives to encourage behavioral change. These incentives can be an integral part of the local policy structure. The methods implemented at the local level and supported at the state level can have a profound effect on the volume of waste material that is landfilled as opposed to that which is recovered for energy or remanufacturing. Probably the most satisfactory method, in terms of incentives to change behavior, is a volume-based user fee. Unfortunately, user fees are not widely used when structuring waste management programs. Some other, less satisfactory, options for financing waste management at the local level are analyzed below:

Property Tax

A portion of the property tax revenue is used to cover the cost of waste management at the local level. This method hides the true cost of waste management from the consumer. There is no feedback loop to consumers that they are generating an increasing volume of solid waste and thereby contributing to a problem. This method does nothing to support behavioral change.

Sales Tax

As pointed out in the *Decision-makers Guide to Solid Waste Management*, (United States Environmental Protection Agency), a sales tax is particularly attractive in regions with high recreational and tourist trade. Although the waste stream is at greatest volume when tourist activity is highest, there may be a shortfall at certain times of the year when revenues are needed to support a composting program that operates year round. Again, this type of revenue support does not provide a feedback loop to the waste generator with a signal that more or less waste has an impact on the pocket book.

Municipal Utility Tax

In some cases this may cause a double tax for some large companies that must pay the utility tax and also contract with private haulers due to large volumes of waste material they generate. For smaller generators, including homeowners, this method does not provide information about quantities generated and again does nothing to affect human behavior.

Special Tax Levies

If state statutes give local jurisdictions the power to levy special taxes there may be some flexibility for the local unit of government to adjust revenues in order to build more efficient systems to handle waste in a more environmentally sound manner. However, in some states (Michigan being one of them) a referendum is required before local units of government can be asked to raise revenues for state-mandated programs. Depending on how the special tax is enacted, it may or may not provide a feedback loop to the generator of waste material.

User Fees

There are many ways a user fee can be implemented. A uniform user fee may not have any more impact on generator behavior than a tax-supported program. But a volume-based user fee can indeed have an effective impact on the behavior of the individual generator of solid waste. This type of program provides direct feedback to the generator that more garbage means higher bills and less garbage means lower bills. And if, in addition to increased costs for each container of garbage, there is no charge for bags of clean source separated recyclables, the consumer (i.e., the garbage generator) gets the clear message that it pays to reduce the volume of materials that must be treated as waste.

Some possible negative consequences of this type of program can be the illegal disposal of waste in order to avoid the extra volume charges. In this case, stiff penalties for illegal dumping can deter generators from using this method to avoid waste pickup charges. Another challenge for communities that have many low-income families is a method for providing an essential service at a reasonable cost to all citizens.

Rewards

As reinforcement for the volume-based user fee, a reward system can be enacted to provide a cash reward to families that are discovered to have no garbage in their bag of recyclables and/or not recyclables in their garbage container. In most cases this program runs like a random lottery. The reward needs to be substantial, \$200-\$500 per family, and implemented at least once a month. A method for generating the revenue to support this program can come from a portion of the tipping fees charged at the landfill or at the waste-to-energy plant. In fact, a portion of tipping fees can support various educational and incentive programs focused on behavioral change.

Cooperative State Policies

State policies can either support or undermine local policies and programs. In most cases state policies are strongly affected by local needs and are compatible with the wishes of local decision makers. In those cases in which state policies are incompatible with local programs, a change should take place, particularly if the goal of the local program is to improve environmental quality to a greater degree than the state policy would indicate. In some instances the long-term impact of the state policy is not known and local decision makers must bring the incompatibility issue to the attention of state lawmakers.

Conclusion

There are many state and local policies that affect the state of waste management and the effectiveness of programs needed to maintain and improve environmental quality. A few of those have been mentioned above. In recent years a number of academic scholars have focused their

expertise in economics, financial planning, political science and public policy on the waste management field with positive results. We now realize that waste management is not only an environmental problem and often a great financial burden on communities, but it is also a political and public policy challenge for state and local officials — one that cannot be put on the shelf for later but must be dealt with immediately with a perspective on the future.

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POLICY EDUCATION PROGRAMS FOR EXTENSION'S SOLID WASTE INITIATIVE

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The management of solid waste is generating many policy issues, especially for local governments. An old principle of institutional economics holds part of the explanation: New technology drives institutional change. Thousands of chemicals, particularly chemicals not seen in nature, added to and replacing the materials we use and thus added to our waste stream, mean we have to change many things we do and, thus, the roles and status of those who do them. The double-lined land fill, the separate handling of toxics, the multimillion dollar burn facility, the many parts of the recycling activity, and the like, have changed questions of scale, organization and allocation of cost. Policy education doctrine suggests these issues cannot be settled without conflict. And, further, the energy generated by that conflict will speed the institution building process if the political process is facilitated by informed debate.

With its entry into this field through a national initiative, the Cooperative Extension System faces another opportunity to use the policy education principles developed in part through the activities of the National Public Policy Education Committee. This paper will cover some aspects of using those ideas in typical solid waste issues — siting new facilities and choosing new regulations. I will add several special topics worth more discussion. How do we form the coalitions we need to make up for the limits to our university-oriented knowledge base? What is the role of the planning process in our concept of the policy cycle and how can it provide part of the information needed at each stage? What can we learn from the principles of alternative dispute resolution?

If it ever served that purpose, the scientific base for the information we extend does not now assure a perception of objectivity nor does it assure budget support. This may be particularly true in this issue area. More to the point we do not have assured access to research results that explore this highly complex and quickly changing knowledge base. The doctrine drawn from the requirements of the policy cycle and related principles offers a better possibility of institutional support. And, in the long-run, support should be enhanced by a commitment

to seeking even-handed participation and an understanding of each other's stakes and values by the participants in the policy process.

Decide - Announce - Defend

Hahn has applied some of the literature on the siting process to placing a landfill, transfer station, burn facility, composting site and the like in someone's back yard. His paper also fits, with a little modification, the consideration of new regulations that might require separation of recyclables into as many as five categories, prohibit grass cuttings in the waste stream, require leaves to be only in paper bags sold by the municipality, or require fees of splendid complexity and imagination.

In sum, Hahn paints the picture of the hired and resident experts applying their expertise and rationality to the problem. Criteria are applied to a long list of possible sites. One after another, sites are eliminated for fatal flaws until a short list is left. These are then ranked on the basis of the criteria and the "winner" is ratified by an elected legislative body and leader that represent the constituents of the jurisdiction(s) to be served by this facility. Similarly a new regulation is the result of a problem identified, of alternatives for solution reviewed, and the choice based on technical criteria subject to political review and legitimation.

In the extreme, everyone involved acts as if no information need be provided to any but the experts and officials involved since everyone is just doing their jobs — making the decisions it is their right to make. The defense of the decision then begins. In alternative dispute resolution terms this means bargaining from a well-entrenched position. Of course, further bargaining is exactly what the "decide - announce - defend" approach expects to avoid. What it achieves with growing frequency is at least extensive delay and often permanent stalemate with gross waste of the most limiting factor in local governance — decision making capacity.

This contrasts sharply with the Issue Evolution-Educational Intervention Model, a keystone of CES doctrine for policy education programming. As Hahn puts it, "They have defined the *concern*, involved whoever they want to, underestimated the complexity of the *issue*, considered the *alternatives* and *consequences* that seem important to them and come to the point at which they think it's time to make a *choice*" (p.154). And for most choices made by decision makers this approach works — i.e., it is efficient and the choices proceed to *implementation* and *evaluation* without generating undue *concern* and pushing the policy process back to the earlier stages in the cycle. And that is the point — you do have to start the process all over again.

Building new institutional arrangements means that old relationships and the values they represent cannot be trusted to produce a smooth decision process. Decision makers will meet night after night following the "decide - announce - defend" process largely ignored by their

constituents. Both are usually quite surprised when it blows up in their collective faces. It would seem that we should be able to point out warning signs. But it may be necessary for one or more crisis situations to develop to indicate and legitimize a more comprehensive, education-based approach. Some students of the policy process (Allee and Dworsky) go on to suggest that for major policy shifts the sense of crisis may have to redevelop to fully take advantage of even a more open planning process.

When a new technology requires large shifts in relationships, and thus changes in the values that keep those relationships in place, a fuller development of the issue evolution model is called for in our increasingly litigious society. In particular, new technology generates technical uncertainties. And these combined with the new distribution of benefits and burdens implied by the adoption of the new technology stimulates distrust not only in the technical rationality but particularly in the value weights applied by the experts and decision makers. New value weights need to be developed and legitimized by open recruitment and involvement of stakeholders to the policy process. Equally important, the new technology and the organizational requirements it implies, plus the basis for discrediting the old technology and the organizational arrangements it implied, have to be widely understood. Otherwise legitimacy and stability for the new arrangements is much harder, slower and more costly to achieve. The cost is in what the decision capacity engaged to build this institution could have achieved in turning to some other problem area.

Comprehensive Educational Programs

Often, as Hahn observes, technical experts act as if nothing can be done to deal with the social and political problems involved, so they might as well be ignored. He points out "... it will never be possible for the technicians to come to social scientists or educators with the Best Technical Fix and expect that we can implement it by magically solving the political and social problems" (p. 152). We can do a lot, but it means helping the technicians see the need to reexamine the assumptions they were working from and even trickier to facilitate involving others who were left out of the process. He reviews the problems found in the literature on the politics of the siting process and the recommendations for improvement. These problems and improvements fit the regulatory process quite as well. In substantial part the implementation of the policy education principles provides a way to achieve those improvements.

Audiences need to be addressed at three levels: as individual citizens, as organizations and as public decision makers. Educational activities targeted to each level then take advantage of the natural interaction and reinforcement that takes place between them. Identifying stakes and goals of each level helps facilitate the brainstorming needed to develop educational approaches to each level. Then by marshalling and disseminating the information needed at each stage of the policy cycle

we help communities move through the policy making process to resolution and stability. Different participants will be at different stages in the cycle and educators can help them catch up. Indeed as Hahn observes "... Extension is often asked to become involved precisely when key actors realize that slowing down and helping others catch up is what's needed" (p. 158).

Inserting the Planning Process into the Policy Cycle

The conceptual structure of the two, Decide-Announce-Defend versus Issue Evolution-Educational Intervention, is very similar. Key differences are found in the way the educational function is envisioned and whose values are to be applied in the weighing of technical variables. The rationalist sequence of goals, alternatives, consequences, with choice based on a net contribution to goals, is a very familiar ideal held out by planners to reform the business-as-usual, incrementalist approach to decisions. Where technology and thus values and expected relationships are stable, the process can be carried out with the expectation that education is needed only after the "best solution" is found. Reaffirming the symbols of delegation of authority and the rationality of the process is enough. The values to be applied have been worked out and are well understood. Those to be involved in ratifying that the values have been appropriately applied also are well understood.

The Issue Evolution-Educational Intervention Model developed by Gratto, House, Hahn and others, while sharing a similar sequence of similar activities, grows out of a different intellectual tradition. Jones, for example, uses a stages model to organize an introductory political science text on how policy happens. The tension between the various kinds of believers in a rational analytical approach to public decisions and practitioners in the business of "fragmented, disjointed, incrementalism," to use Lindblom's phrase, becomes just another way of explaining who gets involved and what happens. Lowi argues that who gets involved and how they behave, including the use of analysis and information, depends on the product of the politics. Allocating services, or distributive politics, calls for different participation than rewriting the rules for how services are to be provided or redistributive politics. Wildavsky sees very different relationships between experts and decision makers and the kinds of decisions that should be tolerated depending upon the political validity of the science involved. He also argues that opportunity cost is one of the few powerful analytical elements offered by economists.

The emphasis is on participatory politics to find a new set of relationships and values to deal with a new problem. The planning process becomes a way to generate alternatives and to explore consequences so the new public preferences can be developed and discovered. The value of the Grand Canyon increased as a result of arguing over whether we should build dams in it. The planning process, in other words, shifts from being a way to apply existing public values to activities where we do not trust the market as a valuation mechanism, to a way to ratify

new values generated by the policy process.

The challenges for extension educators are to help planners and other participants see the need for value development and to devise activities to bring it about (Fischer and Forester). This may not come about as easily by arguing directly about the value problem as by bringing to the debate alternatives that highlight the need for value development. Pricing alternatives are one such set of alternatives where economists available to extension educators can serve as legitimate resource people (Allee). The need for new expenditures to provide groundwater and air quality protection and related cost effectiveness analysis are all charged with new value elements that justify the new public income that will be raised. The equity aspects of generating that public income as well as the efficiency effects of a new price applied to the generator of waste in proportion to the waste he/she generates may justify forcing people to buy tags to put on their trash bags. A new relationship supported by values at both ends.

Compensation for "host" communities is another alternative that has inherent capability to facilitate value development around new relationships (Raymond). It implements a principle that those who benefit from an unwanted land use should share the benefits of that use with those who bear the burden. A recent Cornell Waste Management Institute survey in New York found one third of our fifty-eight counties have considered or have in place a host community benefits package. Where separate solid waste authorities have been put in place, fourteen of fifteen feel that the host community approach is beneficial.

Identifying the concerns of the future neighbors of the facility may be easier for educators to carry out effectively and convincingly than the planners. If the bulk of those affected feel the approach was legitimate, perhaps a mail survey based on the deliberations of focus groups, then the conflict may be less charged. If the bargained result seems a fair treatment of the concerns expressed, the community-wide acceptance of the results should be enhanced. One thing that is almost certain is that the concerns of those affected and the accommodations likely to be found acceptable in the new institutional arrangements will not be accurately predicted by the old set of participants without some process that allows an interchange of views. Educational events and value identifying activities such as surveys can serve this purpose.

Incorporation of compensation into siting may provide some of the structure needed to bring the two paradigms of planners and educators together. We need to identify something similar in the development of regulations.

Coalitions Are Needed Both for Information and Participation

Universities don't have all the answers. And the Cooperative Extension System does not have equal access to all the parts of the university. Also technology is built on science by public agencies and many others in addition to universities. For example, can we realistically discuss the

technological options available without including the private firms that are the developers and vendors of those options? This suggests their involvement in a coalition for education on solid waste. But coalition members are also needed for legal and other institutional input. The regulator agency is usually the most authentic and legitimate source of input about what the content and steps in the regulatory process will be.

Coalition members need to see benefits in participating together, that they truly can get what they need to achieve their goals as well as help you achieve yours. Meeting the needs of your respective clients will not be enough. A key may be to not bargain with them from positions but on the basis of interests, stakes and mutual gains, even where it is clear that full agreement, especially on values, may not be possible. A strength of our political system, after all, is that it not only tolerates but encourages differences.

Note that members of this coalition for education can all be thought of as stakeholders in the issue. That need not disqualify them as sources of information and supporters of a policy education program. Indeed it is precisely a better mutual understanding between stakeholders that is what we are trying to achieve. It is tempting for educators to believe that they are stakefree in public issues thus they should be accepted as playing a neutral mediator and facilitator role. And in many issues our stake is certainly distant. But being perceived as handmaidens of the agribusiness interests, whether we are or not, should not get in the way of successfully applying the principles of effective dispute resolution and negotiation.

Alternative Dispute Resolution and Policy Education Principles

The work of Fisher and Ury is a leading example of approaches to conflict resolution that can be loosely grouped under the alternative dispute resolution heading. They argue that there are more productive approaches than the positional bargaining that is implied by the decide - announce - defend sitting approach. They espouse a principled approach, that is, try to agree on principles first, get everyone's objectives out on the table before their positions, separate people from the problem and treat participants as fellow problem-solvers, plan time to invent options for mutual gain, yield to principle not pressure. Good material for policy educators. But objectives, principles, problem-solving suggest dealing with stakes and values in addition to sharing perceptions about the facts of alternatives and consequences.

Examples of stakes in solid waste management are the property value risk of parcels in the neighborhood of a landfill site, the health risk from water- or air-borne pollutants and the damage to visual amenities from escaped materials from the operation itself. But don't people feel quite differently about risks imposed and those freely chosen, between risks to esthetics, property and health? These different feelings represent differences in values. Conflict grows from differences in information

(cognition), stakes and values. Do we handle these differently in policy education?

A recent review of environmental mediation provides some relevant food for thought (Meer). Current approaches to mediation correspond to a highly liberal and pluralist view of society and politics, with atomistic human beings, so self-interested that values can be equated with individual preferences. And the public interest is seen as the equivalent of netting out interest group claims. For example, do benefits exceed the costs to whomsoever they may accrue?

Public debate and deliberation to support public decisions is not adequately recognized for its role in improving the quality of those public decisions, i.e., in identifying the public interest. Society, it is argued, should be seen as being composed of persons who see their self-interest in being "other-regarding citizens" where values are normative statements to be debated on their merits and the public good to be discovered through that improved quality of debate.

Ethics appear then to become policy variables of a special kind. Values, like stakes of other participants, are to be understood and respected by each other under encouragement from policy educators. And we are to point out that, just as decisions may proceed in a way to harm a group's stakes, so decisions may run counter to a group's values. But, like stakes, if they are known by the other participants they are more likely to be taken into account especially in the discovery of alternatives where imagination and flexibility may produce an acceptable alternative that violates those values less or not at all. Finally, the community can develop its collective set of values through debate and thus its weighing of stakes. But an important difference, it would seem, is that while stake losses can be compensated by public action, can values? At the very least, those with offended values can be judged as having been fairly dealt with by others if those values and their treatment is discussed.

How do extension educators identify the value positions that divide participants in the solid waste issue area? And get them out on the table? Is debate of values a realistic goal for policy education? Is there research on ethics that can provide practical support for the policy education process?

Conclusions

Policy education in the solid waste issue area will be a challenge for the Cooperative Extension System but may offer the most potential in its new program initiative. Preparation for this role should emphasize assembling information to answer the questions likely to be raised at each stage of the policy cycle. Special attention, as usual, should be given to the identification of alternatives and consequences. Coalitions with other information providers will be needed to do this. Special attention should be given to integrating policy education with the plan-

ning process used to develop solid waste plans. Alternatives that facilitate the discussion of values needed to develop new institutions to deal with solid waste problems are important. But educational and participation processes to include values may need careful development. Is it clear that we know how?

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POLICY EDUCATION AND THE EXTENSION WASTE MANAGEMENT INITIATIVE

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The Extension National Initiative approach to educational program development, based on critical national issues, has quickly led to the identification of "waste management" as a new Cooperative Extension System national educational initiative. The goals, critical issues and program objectives of the waste management initiative contain numerous opportunities (some would even say requirements) for public policy education in waste management. Who will develop and deliver the waste management policy education program? What will be the community impact if waste management policy education is neglected?

Issues Programming in the CES

The Cooperative Extension System (CES) initiated a new program development approach, National Initiatives, in 1987 (Wadsworth). The Extension National Initiatives are to be developed in response to critical national issues. For extension, issues are defined as "matters of wide public concern arising out of complex human problems" (Extension Service, USDA, et al.).

The CES Waste Management Initiative

With this program development process in place, it was not surprising when the Extension Committee on Organization and Policy (ECOP) formally adopted "waste management" as a new Extension National Initiative in November, 1988, (Extension Service, USDA and ECOP, 1989). Few issues faced today by local communities generate more public concern, or are more complex in their cause and their potential resolution, than solid and hazardous waste management.

It is clear that a national revolution in waste management has begun. If this revolution is to proceed smoothly, the regulatory and enforcement functions of federal and state environmental agencies must be supplemented by waste management education for both consumers and community decision makers. Consumers and community decision makers must be able to make waste management decisions based on informed and unbiased analysis of waste management alternatives, considering the real costs and benefits of each.

The CES Initiative

To address the national waste management initiative, the CES will implement a comprehensive system-wide solid waste management education program. Local extension staff, with state specialist support, will help youth, families, farmers, small business, community leaders and public officials understand the complexities of waste management issues, alternatives for effectively addressing the issues and procedures for implementing local action programs. Educational programs will focus on management of household waste, including household hazardous waste and agricultural chemicals, and waste from other nonhazardous small quantity waste generators such as main street businesses (Extension Service, USDA and ECOP, 1990).

The programs developed within the national initiative will address three critical issues facing rural and urban communities across America. The CES is committed to increasing research-based knowledge, instilling attitudes of environmental responsibility, and stimulating practice change among individuals and communities. Educational programs in each state and territory will adopt a limited number of recommended objectives and related impact indicators and use recommended measures and methodology to assess effectiveness so that results can be aggregated system-wide. Other objectives may be added to address particular state or local concerns.

Initiative Goal

The overall goal of the CES National Initiative on Waste Management is to provide educational programs that enable consumers and communities to successfully change their waste management strategies. Individuals and communities will be able to implement cost-effective, integrated waste management systems based on maximum waste reduction, recycling and processing, and state-of-the-art engineered landfills.

Critical Issues and Program Objectives

Issue: Consumers are uncertain about which goods, services and practices constitute economically and environmentally responsible waste management decisions.

Objectives:

- Consumers will define for themselves specific concerns about the environmental consequences of goods, services and practices.
- Consumers will identify reliable sources of information for evaluating alternative purchases and practices.
- Consumers will make purchasing decisions consistent with environmental responsibility, including increased purchases of recycled materials.
- Consumers will report satisfaction in understanding the environmental impacts of the goods and services they purchase.

- Consumers will increase their use of nonhazardous and less hazardous materials.
- Consumers, as citizens, will be aware of the societal costs/benefits and public policy issues posed by waste management.

Issue: Communities are experiencing significantly increased costs for waste collection, transport, handling and disposal and are seeking unbiased information on alternatives for enhancing the positive environmental impacts of waste management.

Objectives:

- Community decision makers will understand federal and state waste management requirements, and will have information on state-of-the-art waste management technologies and equipment.
- Local officials and community leaders will receive assistance in initiating, supporting and implementing community waste management decisions at each stage of the issue evolution cycle.
- Local officials and community planners will have access to computer-assisted waste management budgeting and decision making aids.
- Community decision makers will increase their capacity for analyzing and implementing solid waste management options, including comparative costs and benefits, giving meaningful attention to disempowered socioeconomic populations.
- Community decision makers will be able to make informed decisions about the economic and environmental tradeoffs in the waste management technologies of waste reduction, collection, transport, processing, reuse, recycling, landfilling and incineration.

Issue: Communities are currently finding that markets for recycling post-consumer materials are very unstable.

Objectives:

- Community leaders will be able to identify market potential before committing resources to recycling programs.
- Community decision makers and consumers will be able to implement strategies that enhance marketing post-consumer materials.
- Community recycling coordinators will know how to find new markets for post-consumer materials.
- Communities will know how to form regional cooperatives or compacts to increase recyclable volumes and improve leverage in contracting to retain market access.
- Business and industries will "think recycling" when they purchase materials and produce goods or service.

Action Plan

The CES waste management initiative action plan includes an assessment of existing waste management education processes and materials; identification of additional materials needed at the county level; and establishment of a clearinghouse for sharing waste management materials to provide useful information and support to each CES office on a timely basis. Additional actions include developing comprehensive waste management education program materials as needs are identified; providing national and/or regional extension waste management staff development inservice training and follow-up support; and establishing effective partnerships and maintaining linkages with governmental, professional and business associations to better integrate CES educational programs into the larger process of comprehensive solid waste management.

Opportunities for Public Policy Education in Waste Management

Each of the three critical issues targeted by the CES contain numerous opportunities for public policy education in waste management:

- **Responsible Consumer Behavior**
 - Paper vs. plastic
 - Lawn and garden care and maintenance
 - Hazardous vs. less-hazardous household products
- **Local Government Decision Making**
 - Landfill or waste-to-energy incineration
 - Siting of landfill, incinerator, etc.
 - Compensation packages for affected communities
- **Recycling Post-Consumer Goods**
 - Mandated vs. volunteer programs
 - Curbside collection or source separation facility
 - Procurement requirements for public and/or private agencies
 - Can and bottle deposit laws

Conclusion

Waste management is clearly an issue whose "teachable moment" has arrived nationally. By their actions, ECOP and the U.S. Department of Agriculture's Extension Service have instructed the Cooperative Extension System to aggressively initiate a waste management education program if one is not already in place. All state extension services have been asked to establish multidisciplinary teams, including public policy education specialists, to develop and conduct these programs.

Will these waste management education programs become a reality? In most states, yes, because of the urgency of the issue at local and state levels. Whether they will include elements of waste management policy

education or not was best expressed by Wadsworth in his discussion of the Extension National Initiatives (Wadsworth, p. 89):

The question we must face is whether faculties can be convinced that they should be involved in such programs. Will faculty (including policy specialists) be willing to work together to develop and conduct a policy program? Do we have faculty with the needed expertise in our colleges of agriculture? If not, do we have flexible resources to get access to the expertise we need?

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RURAL ECONOMIC DEVELOPMENT FOR COMMUNITY SELF-RELIANCE

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It will come as no great surprise that rural communities in the South are experiencing severe economic, social and political crises. Most of this nation's persistently low-income, nonmetropolitan counties are in the South and those counties have a higher proportion of nonwhites, disabled, low-income and female-headed families than the nonmetropolitan average.

It is also true that: there has been an erosion in farmland values; natural resource-based industries continue in a state of decline (mining, timber and petroleum); there has been a loss of light manufacturing industries; the human capital base is shrinking due to the outmigration of talented youth and young adults; and, most of the economic development efforts in these areas, especially those implemented by governmental agencies, have produced inadequate (and often disastrous) results.

In other words, residents in many rural southern communities are experiencing enormous difficulties in maintaining a stable economic base to meet the needs of an increasingly nonagricultural society and economy.

Narrowing the focus to disempowered, limited-resource and, often, minority communities, the effects of economic and social decline are even more obvious. These communities have been inadequately served by traditional economic development programs. And when made available, existing programs and subsequent delivery have often failed to benefit limited-resource populations in those communities. After many years of economic development "attempts" in disempowered communities it is all too often the case that economic development professionals, including Cooperative Extension specialists and agents, develop a prevailing "why try?" attitude.

The frustrations encountered when attempting to work with disempowered and limited-resource communities and the resulting "why try?" mentality are founded in the approach employed when attempting

economic development educational programming. The point is simple: The economic development educational programs developed for use in the "general" public are usually *incomprehensible and acutely uninviting* to disempowered and limited-resource audiences. We may equate American society to the "melting pot" analogy, but current sociological and political thought clearly contradicts this notion.

The reality is that we are probably more correctly analogous to a set of islands, each with differing characteristics, resources, abilities and opportunities. Our standard economic development educational programs frequently assume that communities are somehow "alike" and that what will work in one will work in another. The communities in question would be better served by greater emphasis on economic development strategies that recognize and accept the current community base (education, income and resources) and focus initially on community self-reliant activities. Inherent in this approach is an awareness that what worked in another community may be uninviting and out of reach for others.

Background

The beginnings of Rural Economic Development for Community Self-Reliance were founded in informal discussions by 1890 Cooperative Extension Program Community Resource Development Specialists. These discussions centered on the severe economic conditions in the South and the inability of traditional "canned" economic development strategies to adequately serve the needs of severely economically disadvantaged, disempowered and minority communities. A component was missing in the program delivery process; our task was to identify the critical elements necessary for successful economic development education within those communities.

The expressed needs of the 1890 Cooperative Extension Program CRD Specialists for innovative economic development programming methodologies for disempowered, low-income and minority audiences triggered an enthusiastic response from Beth Walter-Honadle, then National Program Leader for Economic Development, who entered into the discussions, and became a key catalyst in the evolution of this project. Greater project specificity was generated, including: audience analysis, community profiles, current economic environment and future prospects, racial-ethnic composition, and the applicability of such an educational package for the total Cooperative Extension System.

The premise behind "Rural Economic Development for Community Self-Reliance" was a consensus that current economic development programming efforts assumed the existence of a critical knowledge base inherent in the affected communities. To point, most, if not all, traditional economic development programs assumed that the community leaders (and most of the residents) had at least a working knowledge of:

1. how their community fits into and is affected by county, state, regional, national and world economic and political environments;

2. community analysis skills;
3. community leadership and community power;
4. concepts of cooperation and intergovernmental relations;
5. existing and needed resources;
6. community planning;
7. community change and mobilizing for action; and,
8. evaluation of community programs and projects.

It should be further noted that audiences in these communities are different in certain other respects from mainstream America. First, these residents are encased in a perspective that dictates that they lack power to affect changes in their lives and communities. They are used to being acted upon by others outside the community; the notion of participatory democracy is largely nonexistent. Second, the educational attainment of residents is far below the national average. The assumption that people can read and write is often in error, and is a key factor in the failure of other attempts at economic development (and other types) of educational programs. Third, recruitment of disempowered, low-income, minority and female head of household audiences is a vastly different experience from that of recruitment of mainstream populations. Posting a notice in the courthouse or in the newspaper will not achieve the desired end, and factors of transportation to meeting sites, child care, work schedules, and local norms all contribute to poor success in recruitment.

I would like to point out one other salient factor associated with this audience. Contrary to what is often heard, the residents in our most disadvantaged communities are not stupid or disinterested. They may be ignorant of some facets of life and lacking in educational attainment, but I assure you that, given the opportunity to express their ideas to a willing listener, residents of the communities in question would astound you with their knowledge and insights. They often cannot express their thoughts in the precise language of academia, but the thoughts are just as good, and frankly, often less confusing. We should note that these audiences are, perhaps, the greatest survivors in our nation, and they could not survive if they were as stupid or disinterested as some assume.

Following a working meeting with selected Staff of the U.S. Department of Agriculture's Extension Service (ES-USDA), the need to develop an educational package which would provide low income, disempowered and minority communities the educational infrastructure necessary to engage economic development activities was solidified, with an additional observation. Our original emphasis was on communities in the South, yet it was apparent that other regions had similar communities with like audiences and conditions. Discussion was transformed into a concrete and pragmatic proposal to assist in the acquisition of the necessary funds to make this project a reality.

We must, at this point, acknowledge the tireless efforts of Beth Walter-Honadle and Curt De Ville for their counsel and in "walking"

our proposal to potential funding sources. Their efforts identified the USDA Soil Conservation Service Resource Conservation and Development Program as an appropriate actor in the process of providing economic development assistance to disempowered and limited-resource clientele. The Resource Conservation and Development Program offers technical and financial assistance (including loans to rural communities) for measures that conserve and improve the use of land, develop natural resources and enhance social, economic and environmental conditions in rural America.

Ron Page, of the Resource Conservation and Development Program, USDA Soil Conservation Service, expressed an interest in the proposed training project. His primary motivation was a concern that state Resource Conservation and Development Coordinators faced a similar plight in working with low-income, disempowered and minority communities. The Soil Conservation Service had very limited funds to assist our efforts, but did agree to provide a small funding base to foster project development and testing. The Southern Regional Development Center, under the direction of Doss Brodnax, provided additional funding support.

Project Overview

"Rural Economic Development for Community Self-Reliance" is a joint venture representing a positive and unique programming relationship between two 1890 land grant universities, Alabama A&M University and Florida A&M University, and USDA Soil Conservation Service, with technical assistance and guidance provided by ES-USDA. This project is the culmination of a shared recognition of the need to tailor economic development educational processes for disempowered, limited resource and minority rural citizens. It is important to note that the intent is *not* to recreate the substantial economic development programming resources currently available. Rather, this project seeks to provide supplemental knowledge and skills generally assumed as a prerequisite to economic development education.

The purpose of "Rural Economic Development for Community Self-Reliance" is to empower limited-resource audiences in rural communities to fully realize economic development opportunities. This will be accomplished through an educational effort which will provide local community leaders, county agents and Resource Conservation and Development Coordinators with information and skills needed to generate employment opportunities, improve services and facilities, improve leadership skills, improve the natural resource base, interact with local governments and make use of resources readily available in the community. The overall objectives of this effort are to:

1. Raise the awareness of local leaders and public decision makers in rural communities about economic development conditions and trends;
2. Motivate these decision makers to use their skills and positions

- to create positive changes in their communities; and,
3. Facilitate their abilities to conduct economic development programs.

Two key products derive from this economic development project. First is an instructional notebook/manual for use by County Cooperative Extension Agents and Resource Conservation and Development Coordinators in facilitation of the project. The instructional notebook/manual is designed as a self-contained instructional package, divided into comprehensive subject-matter units. Each unit focuses on a specific topic and provides reference materials, educational activities and related handouts. The eight modules allow participants to generate a world view of their community, explore their community, seek out community leadership and power, plan for change, locate and utilize resources and cooperative strategies, explore comprehensive community planning, and learn and apply rural economic development strategies. Second is a motivational videotape designed to show leaders what the project entails and what others have done to develop similar communities with comparable resources.

We sincerely invite you to renew your interest in working with some of our communities most in need. We think this project will provide a workable methodology for assisting disempowered communities achieve economic development successes. Our model, when the testing and refinement stages are complete, will be available for your use in whole or in part. We will be more than happy to assist you in any way we can, for we are firmly committed to the notion that it is our responsibility and consistent with our Cooperative Extension System mission to help those most in need. Clearly, the total of this nation will gain if disempowered and low-income communities begin to generate positive contributions to American society, and together we can assist them in this process.

TOWARD A NEW EUROPE

CHANGES IN EASTERN EUROPE AND THE USSR: IMPLICATIONS FOR AGRICULTURE AND AGRIBUSINESS

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The changes we have witnessed on the world political scene over the past several months are truly monumental. They promise irrevocable changes in political and economic relationships, in place for almost a half a century, which many people had come to regard as permanent.

Fledgling democracies have emerged across Eastern Europe, beginning last May with Poland and then extending throughout the region, peacefully for the most part. The crumbling of the Berlin Wall symbolized the demise of militaristic Communism and the collapse of the socialistic system as nothing else could. The summer summit between Presidents Bush and Gorbachev merely formalized the cold war's end.

The end of that forty-three-year conflict has proven to signal only the beginning of changes for the region. We now are watching a new political drama unfold daily in the Soviet Union as President Gorbachev struggles to hold that nation together while it transforms itself into a more market-oriented economy with greater political pluralism, a process even more difficult after more than seventy years of authoritarian socialist rule.

Other developments of enormous importance are underway. The complete economic unification of the twelve-member European Community (EC) is entering its final stages, a process begun in 1958 with only six nations. Widely heralded as "Europe 1992," the result will be a truly common market with 324 million customers in twelve very different countries.

Taken together, the changes which are still unfolding are so profound that we can only begin to comprehend their ultimate significance to world economic and political relationships. My purpose is to review the major developments and help develop a realistic perspective on implications for agriculture and agribusiness. To that end, I want to review three major topics:

1. The reasons for the intense interest in the socialist revolution in Eastern Europe.

2. The difficulties the formerly socialist countries face in converting to democratic markets and how likely they are to succeed.
3. The short- and longer-run implications for U.S. agriculture and agribusiness, including sales outlook and investment opportunities.

Why the Intense Interest in the Socialist World?

It is hardly possible to overstate the importance of post World War II East-West ideological differences. On at least one occasion they brought the world to the brink of a nuclear war which could have ended modern civilization. The conflict consumed enormous shares of world wealth and polarized commerce and industry. The collapse of socialism and the attendant reduced global influence of Communism are of immense importance to the world's people, and hold some rather clear implications beyond even the reduced threat of nuclear annihilation and major reductions in world political tensions. The change almost certainly will mean economic restructuring, initially in Eastern Europe, but in many other regions as well. It could mean a "peace dividend" if some of the vast sums now spent for armaments find their way into more productive uses. For example, of the more than \$300 billion U.S. defense budget, \$160 billion are NATO-related, primarily spent for the defense of Western Europe against the Soviet and Eastern European threat. As that threat declines, some of these monies can be redirected to other purposes — to reduce budget deficits, rebuild decaying rural infrastructure, or in other ways that improve the efficiency and competitiveness of our economy.

But, beyond these fundamental concerns, there are other reasons why the European developments are watched so keenly. One simple reason is the *potential* importance of these countries as a *major* new market. The six Eastern European countries (five following German reunification) are important new markets by themselves. With the addition of Albania, Yugoslavia and (ultimately) the USSR, a market of truly monumental size will be created. At the same time, these countries have abundant resources and, with development, will become significant producers (and perhaps even formidable competitors) in many areas.

Some characteristics of these nations are noted below:

Table 1. Eastern European/USSR Market Characteristics.

	Population (millions)	1988 Gross Domestic Total (billions)	Product (1986\$) Per Capita (thousands)
Bulgaria	8.9	64	7.1
Czechoslovakia	15.6	109	7.0
German Dem. Rep.	16.6	114	6.9
Hungary	10.6	50	4.7
Poland	38.0	145	3.8
Romania	23.0	67	2.9
	112.7	550	4.9
USSR	289.0	1.36 trillion	4.9

- The six Eastern European countries have a land mass one-fifth the size of the United States.
- Their population (113 million) plus that of the USSR means a potential market of more than 400 million people, a potential market 60 percent larger than the United States, almost 25 percent larger than the EC, and more than double the size of the Pacific Rim. (A market is people *with* purchasing power, hence the continued reference to *potential* markets.)
- Official statistics show the Eastern European economies to be \$550 billion gross domestic product (GDP), only one-eighth as large as the United States. The USSR economy (\$1.36 trillion) is about one-third that of the United States. The combined economies are about 45 percent the size of the United States.¹
- Per capita income in Eastern Europe and the USSR is well below the developed countries (United States, Federal Republic of Germany, Japan) which are in the \$17,000 to \$20,000 range, but above the developing countries of Latin American and Africa (\$2,000 to \$3,000). Official statistics show Eastern Europe and the USSR to be approaching \$5,000, on average, with Bulgaria highest at \$7,100 and Romania lowest at \$2,900.

Keen worldwide interest focuses on the enormous pent-up demand of this very large market. The growth potential can be seen simply by comparisons with the high consumption levels of adjacent Western Europe. In addition, by reason of their location, these countries hold the added promise of access to Western European markets. The long-term strategy of many companies includes "positioning," development of a presence in Eastern Europe now to facilitate advantageous access to the entire European market, "the new Europe."

Difficulties in Transformation: Common Characteristics

The economic transformations of these former centrally planned economies are both unprecedented and formidable. The problems of most are similar (with important exceptions). If the economic reforms are to succeed, solutions must be found that take account of:

- High inflation rates, which must be tamed. The rate in Poland (more than 1,000 percent by late 1989) now is down to 50 to 60 percent. Double-digit rates are common in the other countries.
- Nonconvertible currencies. Eastern European currencies are virtually worthless except in the issuing country. This, along with mandatory conversion of foreign earnings and inability to repatriate profits, severely reduces the attractiveness of foreign investment.
- Multiple exchange rates (official, parallel, black market) and various lists and categories of goods which can be traded only at differing rates.
- Internal policies that favor basic goods and heavy industries — little consumer goods industry, and no notion of consumer demand or customer service.

- State ownership of physical assets (except agriculture in Poland which is 75 percent private and a small private sector in Hungary). The absence of any legal framework for private ownership, functioning capital markets, accounting systems, etc. makes privatization a formidable task.
- Huge, inefficient bureaucracies. Government previously served as a major employer and the bureaucracy is very resistant to change.
- Wage and price controls were a basic tenet of central planning. Market forces were little reflected for most goods and services.
- No labor markets — guaranteed jobs, labor stagnation — underemployment, little worker mobility. Economic reforms obviously produce rising unemployment and require adjustment in the labor markets.
- Large fiscal deficits — printing money to finance subsidies, fueling the inflation. Taxes aimed at enterprises, not individuals — new structures required.
- Large subsidies for food, medicine, housing, other basic tenets of socialism. Food subsidies constitute large shares of national budgets throughout the region. Their elimination means higher food prices, reduced living standards.
- Large external debt (except Romania), mostly in arrears. \$91 billion total debt, two-thirds held by Poland and Hungary (\$1,200 per capita).
- Little comprehensive understanding of private enterprise, market economics or of the institutions required to support markets (legal framework supporting private property rights, accounting systems, market news and price reporting systems, etc.)
- Woefully little practical private enterprise talent in areas vital to an efficient market system — legal, accounting, managerial, marketing, customer service, etc.

All of the Eastern European countries now have economic reforms underway, but their goals and pace vary widely. The most ambitious of the reform programs is the "shock therapy" approach undertaken by Poland, which aims for a full market economy. On January 1, 1990, Poland freed retail prices, abolished monopolies and began development of the framework required to undergird the system. The subsequent problems were not unexpected, and most observers agree that progress has been substantial. However, the burden is proving particularly great for some groups, with the worst to come. Unemployment is growing rapidly as inefficient enterprises close, and the social fabric may be beginning to fray. Ironically, however, the pace of the reform is an issue in the upcoming presidential election, with government critics urging even faster reform.

The other countries are taking a more piecemeal approach and may be headed for different outcomes such as "market socialism," mixed systems modeled after other Western European countries. Hungary had begun incremental reforms in the early 1980s and made some progress but is not moving as rapidly as Poland in some essential areas such

as privatization. In Romania and Bulgaria, for example, the socialist mentality has been slow to fade and the political revolutions there have not yet demonstrated the capacity for serious economic reforms. Many leaders are reluctant to move quickly, opting for a more conservative approach than in Poland and perhaps alternative models, as well.

East Germany is a special case. Although its economy is near collapse, its transition to a market economy is assured because it will be financed largely by West Germany. It has a convertible currency, a strong legal framework and other institutions necessary to facilitate the transition. In many ways, its transition may prove the easiest of all.

The situation in the USSR has parallels to Eastern Europe, but also is very distinct in important respects. It is unlikely to achieve much tangible economic improvement until it frees prices and allows private property, at the very least. President Gorbachev still seems unable to muster the domestic political support to implement tough measures with any strong chance of success.

The reforms being undertaken in these countries also involve food and agricultural policy adjustments which are creating a new environment for agriculture. Most are freeing food prices. This results in big initial price hikes; ending both producer input and consumer food subsidies; outlawing input and processing monopolies; reforming cooperatives; and initiating privatization programs to shift more of the production and processing capacity into private hands. But, despite reform *announcements*, long periods are required for the new environment to develop. The processing monopolies persist, for example, and create price transmission problems, with newly unregulated retail prices not being reflected at the farm gate. The emergence of competitors and competition for the farmers' product requires capital (both local and hard currency), but the lack of capital markets poses a very serious impediment. The development of numerous (smaller scale, better located) meat processors, flour millers, fruit processors, etc. to compete with the huge monopolies requires capital, organizational and managerial skills and other ingredients that take time to develop.

It will require years to build in Eastern Europe a market infrastructure such as we have in the West — efficient farm supply networks, market news systems, consumer service organizations and the like. In the meantime, progress in these countries will be slow until more of that facilitating infrastructure is in place.

The Short-Run Implications for U.S. Agriculture

What will all these changes mean for U.S. agriculture in the next few years? Are there opportunities emerging for U.S. producers and agribusinesses in these unfolding events?

The first possibility concerns expanding sales of agricultural products. These countries have not been major agricultural trading partners for the United States over the past decade. In FY 1989, U.S. agricultural export sales in Eastern Europe amounted to only \$320

million, less than 1 percent of total U.S. sales. At the time, U.S. imports were even less (\$245 million) for a net trade surplus of \$75 million. Our exports are primarily grains (feed grains and wheat) and soybean meal, while the imports are meats, cheeses, tobacco and other specialty products.

Over the short term, these countries will have considerably greater purchasing power than they did in the past decade, largely from external debt relief, foreign economic assistance, and from improving economies in which reforms prove successful. Also, their convertible currency earnings will grow as sales in the West expand. The EC already has concluded Preferential Trade Agreements with Poland and Hungary.

Proponents of reform argue that debt relief is essential. Poland is an example. To service its \$40 billion debt requires several billion dollars each year, an important share of total foreign exchange earnings. Roughly two-thirds of this is owed to other governments and one-third to commercial banks. Substantial forgiveness by the former and liberal restructuring by the latter could free \$2 billion or more annually for critical needs. Hungary, with a \$20 billion debt, would benefit in much the same way.

The magnitude of economic assistance flowing to the region is substantial. For example, the World Bank and IMF will disburse \$2.25 billion there in 1990 and have pledged \$7.5 to \$8.5 billion for the six countries next year. The newly-established European Bank for Reconstruction and Development, with an initial capitalization of \$12 billion, will loan throughout the region and the USSR. The European Investment Bank offers credit guarantees. In addition, there is the substantial bilateral assistance: almost \$1 billion over three years from the United States; over \$400 billion from the EC in 1990; and large amounts from the Federal Republic of Germany (including \$1 billion in debt forgiveness alone), Japan and several other countries.

Overall, it is clear that these countries' purchasing power will grow substantially in the next few years. This then raises the question of what they are likely to buy.

Food and agriculture will figure prominently, because of their special political significance in all these economies. Food availability and price are barometers of government economic progress. The economic reforms that freed food prices and ended subsidies raised consumer prices and increased the income share required for food (already one-half or more of the disposable income in most of these countries). For reasons closely related to political stability, purchases in these areas will receive high priority.

These countries, especially the USSR, are starved for consumer goods and the technologies used to produce them in the West. They likely will purchase farm production inputs to get the technology to boost output so as to reduce (or at least stabilize) food prices and to improve food quality and variety. These include fertilizers, pesticides (all types), specialized machinery and livestock feed (especially proteins, but also

feed grains). With a tradition of animal agriculture, these countries are interested especially in livestock production technology — new breeding and husbandry techniques, including artificial insemination and embryo transplants. They also can be expected to purchase some food grains (bread quality wheat for blending), perhaps some meat products and other incidental food products.

These countries likely will consider the maintenance and improvement of their livestock sectors very important. Greater efficiency and expansion are associated with improved animal nutrition, which depends upon protein feed supplements. The region is deficit in protein production, largely owing to climatic reasons. Thus, it is reasonable to expect increased protein imports, at least in the short run.

Beyond this, another high priority area is food processing machinery and equipment and improved packaging materials. The centrally planned systems are notorious for post-harvest losses, commonly 30 percent or more. Most processing technology is antiquated, of types long discarded by the West. Even the newer facilities have had little maintenance or upgrading for a decade or so. Improved processing capacity and more modern packaging not only will reduce losses and increase the quantity of food available, but also should improve quality and presentation to consumers.

To summarize, the Eastern European countries can expect increased purchasing power in the next few years and likely will increase their purchases of farm inputs, feedstuffs (including feed grains and soybean meal), food processing machinery and technology.

Implications for the Longer Run

But, what about the longer term? What kind of trading partners will these countries be in five or ten years? Since the changes have only begun, it is much too early to tell. Much depends on how productive they become and what they can afford. After decades of mismanagement, administered prices and artificially determined resource allocation, production and consumption patterns that exist today may bear little relation to those patterns market forces will dictate. Substantial production adjustments will occur in the next few years, and will be accompanied by expansions in output because of greater access to improved inputs. (Much of the assistance planned by the Organization for Economic and Cooperative Development will be production sector oriented, i.e., intended to promote expanded output). But these are unlikely to alter trade patterns fundamentally.

The longer run may prove to be a much different matter. How will Eastern Europe and the USSR develop as trading partners? Will they be self sufficient in grains and meats? Will they be growing protein importers? Will they prove larger or smaller markets for U.S. farm products? It is simply too early to tell. The outcome depends on capital availability and investment patterns as well as policy decisions. The mismanagement, distortions and misallocation of resources were enor-

mous. Prices were set and resources allocated administratively and investments often reflected political more than economic objectives.

Now that internal prices will reflect world market prices (to varying extents, certainly more than previously) and allocate resources, the emerging production and investment patterns will prove far different from those under central planning. These patterns also will be influenced by nonagricultural factors, such as labor costs, which will be relatively cheap, at least for a while. This might suggest a focus on relatively labor intensive production for an improved competitive position, such as fruits and vegetables, livestock and meat, and value-added products (if enough hard currency capital is available to upgrade production facilities to enable export of quality products). Exports will be of special interest because of the proximity to Western European markets. Other export opportunities may arise as well. For example, meat exports to the USSR for hard currency will be of interest since trade among the COMECON countries will shift quickly to a convertible currency basis.

What about the USSR over the long term? The political situation now is so fluid that economic conjecture is not very meaningful. The political situation will determine long-run economic development progress. The USSR is now a big U.S. market (\$3.4 billion in U.S. imports against only \$20 million in sales). Substantial development over the next decade (implying a tranquil political evolution) means greater opportunity to develop its agricultural infrastructure and to invest in agribusinesses of all kinds. This could reduce total import needs, especially for feed grains, but still could involve substantial trade in both finished goods and inputs (for example, protein feed concentrates). In any event, improvement in the Soviet food situation will require substantial external assistance, whether in raw materials or processing technology. The implications obviously are far different for different subsectors of U.S. agriculture and agribusiness.

Beyond product sales, U.S. agribusinesses have critical interests in unfolding potential opportunities across the European continent. While opportunities vary depending upon strategic interests, many U.S. agribusinesses are contemplating investment in the region. The motivations are varied. Some wish to establish operating entities that can take full advantage of the relatively inexpensive assets to combine them with their modern technology and management to create highly efficient and competitive businesses for the *entire* European market. Others are more interested in sourcing raw material for key market opportunities, while still others simply position themselves for access to the enlarged European market — Eastern Europe and the USSR, but certainly the Western European market as well — a response in part to "Europe 1992."

Eastern Europe and the USSR are the new business frontiers of today. The first investors and operating firms to become established likely will be the most advantageously situated. But, while the region holds enormous potential, it also involves enormous risks suggesting it be

approached with realistic caution and careful assessment of the opportunities.

NOTES

1. GDP estimates for Eastern Europe and the USSR may be greatly overstated. The USSR presents a clear example. The spread between the official and unofficial value of the currency is a factor of more than 25: 1 ruble equals \$1.82 (official) or 7 cents (black market). Thus, the average per capita GDP of \$4,900 at the official rate would be only a few hundred dollars at the black market rate.

EC 1992 AND THE IMPLICATIONS FOR THE GLOBAL AGRICULTURAL POLICY PICTURE

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It is a pleasure to be here to discuss with you the European Single Market, or what is mostly referred to as European Community 1992 (EC 1992). This issue has been and certainly will continue to be of great importance to the European Community as well as to the United States and other nations. In these remarks the EC 1992 program is being assessed with regard to farm policy and trade developments within the EC and to the effects the EC 1992 program will have on farm trade with nations outside of the EC and on global agricultural policy. The interrelation between the EC 1992 program and the Multilateral Trade Negotiations (MTN) of the current Uruguay Round of the General Agreement on Tariffs and Trade (GATT) will also be considered.

The Importance of EC 1992

The Meaning of EC 1992

The European Community is in its fifth year of an ambitious legislative program to remove existing internal obstacles for the free movement of people, goods, services and capital by eliminating physical, technical and tax barriers. The EC Commission — introducing legislation in the EC — has issued many directives and more than 40 percent of them have been accepted by now. There are about one hundred EC directives that are aimed at agriculture, mostly concerning plant and animal health regulations and food safety. The EC 1992 program has generated considerable debate and caused concern that liberalization between EC countries might be accompanied by restricted market access in some areas for countries outside the EC. Another concern is that, as a European trade block emerges, competing blocks of trading nations will emerge, undermining the GATT efforts to maintain and improve the global trading system. Thus, earlier the question was raised, does EC 1992 mean internal harmony versus external conflict? And the label "Fortress Europe" has been used to describe the potential market and investment environment that could emerge from EC 1992 if other countries are not vigilant in monitoring the progress of all directives comprising the EC 1992 program.

There are three major points at hand to meet these concerns:

1. Economic history of the last thirty years shows that economic prosperity is contagious due to globalized markets. Having integrated its economies, the EC will be stronger and a better customer on world markets. On the other hand, a more prosperous community will also be a more efficient competitor. European leaders have reiterated their commitment to GATT, the Organization for Economic Cooperation and Development (OECD) and international regulatory bodies, underlining that EC 1992 will benefit Community and Noncommunity countries as well and will improve the global trading system.

2. Some economic facts have to be considered, specifically the economic U.S.-EC relationships: The United States and the EC account for almost 40 percent of global GNP and 35 percent of world trade; both-way-trade adds up to nearly \$180 billion per year; the EC purchases 24 percent of U.S. exports and imports 18 percent from the EC; 10 percent of EC's GNP depends on foreign trade compared to 5 percent in the United States; each year \$200 billion of capital passes through the transatlantic network and the EC has an estimated \$400 billion invested in the United States. These U.S.-EC economic relationships are too valuable to be allowed to deteriorate.

3. Actually there are specific trade issues between the United States and the EC, i.e., EC automobile imports, Common Agricultural Policy (CAP), U.S. steel quotas, the U.S. textile bill and others that deserve special attention. However, with the responsibilities of the United States and the EC for world trade, the forum for settling such concerns is the GATT, and the EC 1992 preparations coincide with the Uruguay Round of the GATT. The two sets of trade changes are complimentary

Thus, the question — EC 1992, internal harmony versus external conflict? — presumes a wrong approach. Apparently the U.S. perception is no longer fluid as earlier. It has become more rational and is turning positive. The U.S. business community and government officials are discussing more specifically EC 1992 issues, such as company law, merger and acquirement regimes, standards, environment, public procurement, etc. that indeed provide opportunities and challenges for the United States. This has been largely supported by the International Trade Commission, by the U.S. Chamber of Commerce and by the U.S. business community itself. Both the United States and the EC have yet to be cautious not to give way to domestic protectionist pressures on specific trade issues.

EC 1992 and Agriculture

Obstacles for Intra-EC Trade

The idea of achieving a "common market" in intra-community trade is not new to those involved in EC agricultural affairs. In many respects, the Common Agricultural Policy (CAP) was the original internal market experiment and, even today, is the only regime which most closely represents "common policy" within the community.

Like the current internal market exercise, the CAP was hailed at the time as an important experiment to bind the agricultural economies of diverse countries. In fact, the CAP played an important role in enhancing the unity of the original community of six. Consistent with the U.S. efforts to strengthen European economies after the war, the United States encouraged Europe's steps toward economic integration. Despite some U.S. concerns about protectionist measures, the United States noticed that the elimination of import tariffs and direct trade barriers among member states would mean a stronger Europe and, thus, a stronger ally.

Despite the CAP's role in European integration, agriculture has a great number of restrictions regarding the movement of goods between member states. Obstacles currently impeding competition in the farm and agribusiness sector of the EC include:

- different value added taxes
- the EC's agrimonetary system which includes special exchange rates for agriculture ("green rates") for converting EC-support prices into national currencies and a system of order taxes (MCA's) to prevent trade distortions caused by the green rates mechanism
- national quotas related to production and trade of certain commodities (dairy, sugar)
- a wide range of technical, health and sanitary regulations including food labeling and ingredients.

These obstacles have to be eliminated if the EC is to create a Europe without internal barriers.

Removal of Internal Barriers

What would be the internal and external impact on agriculture and farm trade of the removal of internal barriers?

The effect on internal trade should greatly facilitate intra-EC commerce. Virtually there should be no custom posts and no physical checks for the movement of people or goods. Consequently, physical movement throughout the community should be simpler and faster. This development should also lead to financial savings for companies trading between member states, as well as for governments.

Although benefits to internal trade appear clear enough, the possible effects for external trade sometimes seem less clear.

The likely impact shall be demonstrated for two of the mentioned barriers.

Border Taxes. The elimination of farm-border taxes and subsidies will certainly present the EC with the need to resolve difficult pricing systems, the setting of common prices in a monetary system that does not actually have a common currency. The common EC farm prices are actually expressed in a basket of currencies called ECU. In order to offset price differences — due to exchange rate fluctuations — the complex system of MCA's and the artificial green rates were created. With the elimination of border controls, this system will have to be removed.

However, some mechanism will be needed if differences in the common prices are not to cause a flow of commodities into high price countries from low price countries.

It is yet unclear how the EC will assure a common price system without either a common currency or the use of MCA's. The MCA-system has increased the costs of CAP and subverts the intention of a real common EC farm market. It has been responsible for an upward bias in farm pricing, when CAP-common prices, denominated in MCA's, were converted into national prices. Reform-minded EC officials have been concerned about the upward bias. Eliminating MCA's provides an opportunity to propose changes that would reduce EC prices. Additionally, important steps have been taken recently in terms of subsidy cuts by the EC.

Health Regulations and Food Standards. The EC Commission estimates that nontariff barriers cost the EC food industry from \$600 million to \$1.2 billion annually. Most of the costs result from national labeling, packaging and ingredient requirements that prevent internal EC trade.

To dissolve these kinds of barriers, there must be Community-wide agreement on at least minimum standards and regulations.

The EC is setting such standards and has agreed on the principle of mutual recognition of each member's regulation. In general, the extension of common minimum standards to twelve markets will help farm trade and make it easier to import from outside. Once an imported commodity meets minimum EC standards, it would have access to all member states without having to adhere to different rules across internal EC borders. However, while there is agreement on mutual recognition, the question remains, how restrictive will the minimum standards be and will foreign standards be accepted on an equivalent base. Certainly, the EC's 1985 ban on hormones has left room for some doubt on the equivalency issue. However, all GATT members have agreed to move forward to use international standards for food safety and plant and animal health regulations. A GATT agreement would go a long way toward ensuring that the EC 1992 program's progress keeps on track with international concerns — accepting international scientific bodies settling disputes, accepting international organization standards of identity for food product content, etc.

Short- and Mid-Term Implications

Short-term impacts on agriculture should be more indirect, benefiting food industries. Mergers and acquisitions to prepare for a large EC market of 325 million people are predominant: EC and internationally operating food companies need to become EC companies increasing their size of operations and locating in the most profitable regions of the Community. There will be increased opportunities for those able to compete in a deregulated EC economy, especially for companies doing business in the EC and making changes necessary to respond to a Pan-European market. Basically short-term effects to a more com-

petitive environment in the agribusiness sector could result in lower farm costs.

In the mid-term the impacts on agriculture should be more prominent.

The abolition of national border taxes and subsidies within the EC will lead to a concentration of farming in areas with lower production costs. Elimination of MCA's particularly means common prices in the EC that favor more efficient uses. Consequences on world farm trade should be positive: lower intervention prices and reduced EC surpluses because of fewer EC farms, particularly those needing high prices to survive. A fully integrated EC would reduce the power of farm lobbies towards maintaining high protection levels and cause tougher competition for EC budget outlays by different sectors. Finally, the CAP expenditures would certainly face more public scrutiny, since agriculture would no longer be "the only kid of Europe."

However, since complimentary GATT negotiations are underway addressing major reforms of farm policy and trade, the Uruguay Round will have more direct and immediate implication for the global agricultural and food policy.

The EC 1992 GATT Connection

The Uruguay Round is certainly the most ambitious undertaking in GATT history, meaning comprehensive negotiations in fifteen different trade areas. The UR's outcome will significantly impact the global trading system, because GATT's credibility and efficiency are being increasingly challenged today. The fact that trade in farm products is largely conducted outside of GATT rules and disciplines makes agricultural reforms a particularly important part.

The agricultural negotiations turned out to be one of the most contentious sectors and, as the Uruguay Round moves toward the December date set for finalizing the agreement in Brussels, many officials express concern that there is yet no certainty for success. The perspective very much depends on what is going to be defined as success, and a lot of people just refer to maximalistic/minimalistic proposals so far tabled in Geneva.

What would a successful outcome mean?

At issue today is not a perfect solution, it is not, whether the UR reforms will completely liberalize world agriculture or force open markets totally on most competitive producers. Yet, the UR can produce policies that are much more responsive to world market fundamentals and that better use agricultural resources.

The basic questions today regarding the UR are:

- whether farm trade accounts for a larger share of increasing food consumption;
- whether agricultural resources would be used more efficiently; and
- whether agriculture will contribute to the positive growth of global GNP.

The recent Houston summit of the heads of governments (G7) put these ideas into a very cautious language, also reflecting opportunities for compromise, mainly between the United States and the EC. There is momentum for a positive outcome of the UR in a sense of a "balanced approach," as U.S Secretary of Agriculture Clayton Yeutter recently put it.

Factors providing momentum are for instance: (1) Both the United States and the EC face tremendous pressure on government budgets due to the East European (German) developments and the current Gulf crisis; program outlays are publicly under much more scrutiny. (2) The shape of world markets again is going to deteriorate, providing additional pressure for trade disciplines. (3) Farm trade, accounting for less than 14 percent of global trade, though being a contentious sector, would not be allowed to make the entire UR fail. (4) The current Gulf crisis causes tremendous political and economic stress, in particular, for developing countries, and may force major players to take a more flexible and comprehensive approach for concessions. (5) Failure of the UR certainly would mean more and stronger preferential trade agreements with adverse effects of the global trading system. Almost all preferential trade arrangements encounter difficulties when incorporating farm products.

A positive outcome of the UR would have a permanent impact on the EC 1992 standardization program as mentioned earlier, but also on further CAP reforms in terms of more liberalization. It would undermine any imminent temptation of maintaining high levels of farm production and, ultimately, it would send a clear signal to East European countries for their progress towards market driven economies and farm sectors, in which the EC claims a leading role.

Recent Challenges for EC 1992

Some final remarks with respect to recent challenges resulting from East European transition from plan to market and the current Gulf crisis.

Since East Europe's pace of reforms will be determined substantially by massive transfers of capital and know-how; the availability of hard currency; the utilization of the potential of the respective food and fiber sectors; and certainly rising domestic production and consumption patterns, the East European countries will claim more open EC markets for their commodities and ask for preferential trade agreements or an associated member status to the EC. The EC's deciding to take a leadership role in supporting the economic development of its East European neighbor states does not mean restructuring priorities in the EC 1992 process. However, completion of EC 1992 program could eventually slow down. On the other hand, keeping the EC 1992 program on track could mean even more pressure on CAP reforms, shifting substantial parts of the EC budget to other sectors within the EC or toward supporting East European developments.

The current Persian Gulf crisis raises even more questions for global economic perspectives and also perhaps for the EC 1992 program. The perspective for the EC is still positive. However, the EC must demonstrate more strength and potential under conditions of economic and political stress than before.

TOWARD A NEW EUROPE: U.S. AGRICULTURAL POLICY RESPONSE

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The U.S. agricultural policy response to a New Europe can be considered in two dimensions or time frames:

- the current (short-term) agricultural policy response, and
- a future (medium/longer-term) policy response.

In both the current and future policy response dimensions, the intent of the response is to *strongly* support and encourage the market-oriented economic reforms in Eastern Europe and the Soviet Union. The U.S. agricultural sector has strong economic interest in the reforms underway, particularly in terms of the potential for expanded and growing markets, not only for selected food and agricultural products, but for agricultural inputs and processing technology as well.

With respect to the further integration of the twelve-member countries in the European Community, called EC 1992, the U.S. agricultural policy response in the current, as well as the future dimension, might be characterized as one of *guarded* support. Supportive in the sense that the deregulation and liberalization among the twelve European Community (EC) markets implies a more competitive internal market and, perhaps, an expanded opportunity for U.S. firms wishing to do, or already doing, business in the EC.

Current U.S. Agricultural Policy Response

In Eastern Europe, the current U.S. agricultural policy response has three components — food assistance and credit programs, technical assistance, and encouragement of private sector investment. As privatization and economic reforms move ahead, U.S. government programs have been used to make agricultural commodities available to Poland and Romania. Emergency food assistance was focused on the two most populous East European countries, Poland and Romania, since it was those two which faced potential shortages of food supplies as economic reform moved ahead. Title I Food Aid Programs and Food Aid Grants under the Commodity Credit Corporation for fiscal year 1990 totaled \$130 million and \$65 million for Poland and Romania,

respectively. Commodities provided under the two programs included wheat, vegetable oil, cotton, corn, soybean meal and pork bellies for Poland, and corn and butter for Romania. The food assistance programs, as well as other export credit programs, serve a dual function. Not only does food assistance help satisfy an immediate short-term need for foodstuffs, but they also have a longer-term market building component — by making U.S. goods more familiar to East European consumers.

Since last November, when Secretary Clayton Yeutter led a presidential delegation to Poland, the U.S. Department of Agriculture (USDA) has significantly expanded its activities in Eastern Europe. In the 1990 fiscal year, the United States offered \$40 million in export credit guarantees to Yugoslavia and \$26 million in guarantees to Hungary to help them obtain commercial credit for the purchase of U.S. agricultural products.

Programs like the Export Enhancement Program and the Targeted Export Assistance, or TEA Program, are also available. These programs help counter subsidized competition from the EC. USDA recently announced a 100,000-ton rice initiative for the East European region under the Export Enhancement Program.

The second component of the current agricultural policy response toward reforms in Eastern Europe is technical assistance. In the transition from planned to market economies, many of the Eastern European countries, as well as the Soviet Union, face similar problems:

- Heavy consumer food subsidies which much be removed;
- Lack of a clear understanding of markets and how they operate;
- Lack of an effective/efficient marketing infrastructure;
- Lack of an effective extension/outreach system; and
- Lack of an effective rural/farm credit system.

The USDA, as part of a broader plan for providing assistance to reform-minded East European economies, has attempted to provide a package of technical assistance that would address some of the issues and constraints facing economic reform in the food and agricultural sectors. As a result of the presidential delegation to Poland, a program of technical assistance has been put in place which calls for expertise from all parts of USDA, including the Extension Service, Farmers Home Administration, Agricultural Marketing Service, and the Economic Research Service.

In the economics area, much of the technical assistance will focus on developing, within appropriate government organizations, an understanding of the functions of various economic institutions. In many countries there is only a limited understanding of competitive markets and the nature of the price discovery mechanism. The concept of a "market-orientation" in the agricultural sector must be broadened from a notion of simply removing constraints to the marketing and price-

ing of agricultural output, to the need for open and functioning factor input markets and an efficient (privatized) marketing infrastructure.

This technical assistance component of the current agricultural policy response should not be underrated. While much attention is focused on the dollar amounts of food and credit assistance being provided, technical assistance, in terms of developing a technical knowledge base, is critical to the long-run success of the economic reforms.

The private sector and private investment must play a key role in our three-tiered policy response as a nation. East Europeans are unfamiliar with concepts such as profit margin, return on investment and Western-style management. Governments and technical assistance can provide only a certain degree of basic economic and management training. The rest must come from the private sector.

Moreover, Eastern Europe desperately needs foreign investment to improve its manufacturing and processing capabilities in order to produce quality goods for export and to meet the expectations of its own consumers. In agriculture and agribusiness, there are a number of opportunities for investment and joint ventures. Some of the most promising seem to be in the areas of: food processing, flour milling and bakeries; feedlots, feed compounding, and pork and poultry production facilities; health foods and other high-value foodstuffs; and refrigeration and storage equipment.

Like technical assistance, investment of foreign capital is critical to the long-run success of economic reforms in Eastern Europe. Within the Foreign Agricultural Service, the Department has established a new office — the Eastern Europe and Soviet Secretariat — to coordinate activities within USDA and to provide information to U.S. businesses exploring agricultural trade or investment opportunities in Eastern Europe. In early September, an Agricultural Trade and Development Mission spent two weeks visiting Czechoslovakia, Yugoslavia and Bulgaria. This combined U.S. government-private sector mission investigated opportunities for joint ventures, investment and trade in such areas as food processing, food marketing, feed manufacturing and livestock production.

Under the 1989 Support for East European Democracies (SEED) act, Congress made \$300 million available over three years to support Polish-American and Hungarian-American Enterprise Funds. Among other activities to promote U.S. trade and investment, the funds provide loans and grants to U.S. companies that want to do business in those two countries.

Through these and other activities, the U.S. government is helping to pave the way for business ventures and closer commercial ties. Providing opportunities for private sector investment in agriculture and agribusiness is very much a part of the current U.S. agricultural policy response.

The current policy response with respect to EC 1992 is to closely monitor progress on integration and internal liberalization of markets

within the EC. Of the 279 directives which comprise the EC's legislative program to unify all markets, more than 100 deal with plant and animal health and food safety. Elimination of frontier controls and regulations will require an enormously complex effort at harmonization in these areas.

Much of the outcome will depend on the level at which the EC decides to harmonize its product and commodity standards and regulations. For companies that now face twelve different regulations, requiring adjustments to labeling and processing lines, the prospect of gaining access to twelve markets by meeting just one standard is viewed as a welcome development. But, as of now, there are still no clear answers to the question: Will the EC enact harmonized standards and regulations that prove to be, overall, more restrictive than those currently in place?

Support for EC 1992 is guarded in the sense that the U.S. policy response is to be vigilant, to monitor progress toward harmonization and to challenge the EC in areas in which harmonization is likely to substantially increase or heighten technical barriers to trade and market access. With the exception of the hormone ban and the third country meat directive (these are quite *major* exceptions), the harmonization process does not yet appear to present an explicit raising of technical barriers to EC imports. But, the process of harmonization of the various border regulations on plant and animal health and food safety is far from complete and the USDA continues its vigilance.

The Future/Long-Run U.S. Agricultural Policy Response

The longer-run agricultural policy response to a "New Europe" will be shaped not so much by unilateral U.S. farm policy decisions (1990 farm legislation, for example) as by decisions within the context of the current multilateral trade talks that will end in December, 1990. The nature of the U.S. agricultural policy response will be strongly influenced by the success or failure of these trade talks, particularly on agriculture.

Status of the Agricultural Negotiations

Where do we now stand in the negotiations? Progress has been slow and painstaking. In 1989, the member countries of the General Agreement on Tariffs and Trade (GATT) agreed to "substantial and progressive reductions in protection and support of agriculture," and this was taken earlier this summer by the GATT Secretariat as the basis for a proposed framework for the final form of the agreement. The framework paper, offered by Aart de Zeeuw, chairman of the Agricultural Negotiating Group, was accepted by all GATT participants as a "means to intensify" the talks.

The chairman's paper calls for separate rules and disciplines in three areas: market access, internal support programs and export competition. But the paper also adopts the idea of using an aggregate measure of support (AMS) to determine commitments to reduce support. The framework paper is consistent with the U.S. view that an AMS is useful

for identifying protectionism, but that it must be used with commitments on specific policies themselves in order to achieve meaningful reform. The paper is also consistent with the U.S. view on tariffication and the reduction of export subsidies at a faster rate than the reduction in border protection and internal support.

The U.S. proposal, in keeping with the de Zeeuw framework, requests that, in order to open markets, nontariff barriers such as import quotas and variable levies be converted to tariffs. These tariffs would be bound and then substantially reduced over time. Thus, tariffication would allow world market prices to be transmitted to domestic markets. Where initial import access is very small, such as for Japanese rice, immediate market access would be assured by tariff quotas. What's a tariff quota? It's an initial quantity (quota) of rice, for example, which can be imported into Japan at a low or negligible tariff. Imports above the quota level would be allowed but only under a substantially higher tariff. The quota would be increased and the over-quota tariff reduced substantially over time. For countries concerned about the domestic effects of import surges, the U.S. has proposed safeguards that would allow a temporary "snapback" to a higher level of tariff protection.

The U.S. proposal calls for a reduction in subsidized exports by commodity — both in quantity and total expenditures. Export subsidies would be reduced at a faster rate than tariffs or internal support because export subsidies have the most distorting effects on world trade and are the least defensible of any policy. Nations should not be allowed to simply buy export markets. For example, the EC's dominant position in world trade for beef, dairy products, poultry, pork, sugar and, to a lesser extent, grains is only possible because of their \$10 billion annual expenditure for export subsidies.

These market-oriented actions at the borders must be matched by reductions in internal support programs that distort farm production. Administered prices that act to keep prices to producers above those prevailing in world markets; direct payments tied to current production of specific commodities; and specific input subsidies such as fertilizer or transportation are examples of internal support programs that distort production and trade. The key issue is how to reduce such support policies. The U.S. proposal calls for the use of commodity-specific AMS's to determine the level of support that will be cut. Countries would then indicate in their country plans the commitment for a change in policies to meet their AMS reductions.

While it is most important to cut support provided by distorting policies, it is also necessary to allow countries to support farmers in other ways. Thus, the United States proposes the development of criteria to define "permitted" policies countries can use that will not be subject to support reductions. These could include environmental and conservation programs, bona fide disaster assistance and income safety net programs.

The U.S. proposal is comprehensive: it calls for actions in three areas — market access, export subsidies and internal support. In October,

member countries are to present detailed proposals which, hopefully, will add specifics to Chairman de Zeeuw's negotiating framework.

The other part of the agricultural negotiations deals with the harmonization/standardization for plant and animal health and food safety. There the negotiations focus on the development of a common international standard for sanitary and phytosanitary measures and for a scientific-based dispute settlement arrangement.

The Eastern Europe-GATT Connection

Again, the nature of the U.S. agricultural policy response to a New Europe over the long term will be strongly influenced by the outcome of the deliberations of the agricultural negotiating group. For Eastern Europe, it is important that they face a more market-oriented world agricultural trade environment as their transitioning economies become full participants in the international economic system. Over the long term, the prosperity of these East European economies will depend not so much on the short-term assistance provided by the developed countries, but will be closely tied to the continued liberalization and growth in world trade. In essence, the prosperity that we expect to find over the longer term in Eastern Europe, as well as the anticipated markets for food and agricultural products and processing technologies, will be tied to the ability of these countries to export. An increasingly protectionist world agricultural trade system, the likely result of a failed GATT Round, would most certainly slow (perhaps even prevent) economic growth and thus the basis for expectations of larger markets for food and agricultural products in Eastern Europe.

The EC 1992-GATT Connection

Two issues on which the United States is seeking an agreement from the EC with respect to the harmonization of sanitary and phytosanitary standards and regulations are:

- The use of international scientific bodies to settle sanitary and phytosanitary trade disputes, and
- Acceptance of a common international standard for harmonization purposes, such as the already existing Codex Alimentarius.

A GATT agreement in the area of harmonization of sanitary and phytosanitary standards would go a long way toward ensuring that internal harmonization under EC 1992 keeps "on track" with international standards and concerns. Lack of an agreement would allow the EC to "go its own way." A way that is likely to be even more difficult to step back from in five or ten years when, no doubt, another multilateral effort to harmonize animal and plant health and food safety regulations will take place.

An Unsuccessful GATT Round?

An unsuccessful GATT round may mean a continuation, perhaps a quickening, of the pace and the trend toward trade blocs — a polariza-

tion of trade into large, highly protected economic blocs. In Europe several things have happened: first, an enlargement of the EC to twelve countries; then, a move toward tighter integration — a true common market; and now, reform-minded East European countries which already are pushing for stronger economic ties to Western Europe. It doesn't take much imagination to see the potential for development of a huge European trade bloc, potentially including the Soviet Union and the growing market economies in the North Africa/Middle East region.

In North America, the United States has completed a free trade agreement with Canada and will begin earnest negotiation on a like agreement with Mexico in 1991. Additionally, President Bush, as part of a broader package to address the debt burden of the Latin American countries by enhancing foreign exchange earning capabilities, has opened the door to discussion of trade agreements with other Latin American countries.

If Japan and other East Asian countries find their products walled off from European and American markets, an Asia trade bloc may emerge by default. A bloc to include Japan, the 4 Tigers (Korea, Taiwan, Hong Kong and Singapore), Australia, New Zealand, and "New Tigers" like Thailand and Indonesia, holds the economic and trade potential to be a strong integrated trade bloc.

Bilateral or preferential trade arrangements, lets say between the United States and Western Hemisphere countries, would likely provide net economic and trade benefits to all participants. But, if at the same time the United States is walled off from other trade blocs — say, a "New Europe" — the trade and income benefits of a bilateral liberalization approach would likely be smaller than the potential benefits associated with multilateral reform. Trade blocs, coming on the heels of a breakdown in multilateral talks would be a poor second best solution to trade liberalization.

U.S. Farm Policy — 1990 Farm Bill

The 1990 farm bill contains little in the way of a direct/explicit response to a New Europe. The "Food for Progress" component directs an increase in the use of export program and food assistance funds for the newly emerging democracies in Eastern Europe. Other than that, the interesting aspect of the new farm legislation is what it implies about market-orientation.

The administration suggested a highly market-oriented approach to the development of 1990 farm legislation. The "1990 Farm Bill, Proposal of the Administration" (the so called "Green Book"), essentially would have attempted to keep program prices in line with the movement in market prices. Additionally, it would have given producers a high degree of flexibility in production/planting decisions — decisions that would be made increasingly on the basis of market prices, not policy prices.

What emerged from the House and Senate versions was something that offered much less of a market orientation than that contained in the administration's proposal. In fact, given the legislative proposals to freeze target prices, freeze the support prices for dairy and provide only token flexibility in planting decisions, the administration expressed strong concerns about back sliding from the market-oriented path begun with the 1985 farm legislation.

It's ironic. Just as countries in Eastern Europe are moving full steam ahead on developing a market-oriented economy, where signals on what to produce, how much to produce and how to produce it are provided increasingly by the market place — not by central planners; and just when Congress is attempting to find ingenious ways to facilitate that process in Eastern Europe, we seem to be, at least in American farm legislation, attempting to swim against the tide for a more market-oriented agriculture. (In October, 1990, farm legislation was passed that did take account of several of the administration's concerns.)

Final Note on U.S. Agricultural Policy Response

The U.S. agricultural policy response, as discussed to this point, has had to do with direct and indirect, current and future policy responses directed at a New Europe. However, the likelihood of several East European countries developing export surpluses in feed grains and livestock products could put them in direct competition with U.S. agricultural producers over the longer term. Those adjustments in Eastern Europe along with adjustments within the EC could force U.S. agricultural policy/program changes in response to those new competitive forces. Likely increased competitive forces within the EC as a result of the 1992 initiative, and the likely emergence of a stronger, more efficient and competitive agricultural sector in many of the East European countries mean that the U.S. agricultural sector must be more responsive to changing global forces if American agriculture is to remain competitive. That, in turn, means U.S. farm policy must be flexible.

TOWARD A NEW EUROPE: OBSERVATIONS ON ECONOMICS AND THE FOOD SECTOR

*Dennis R. Henderson
Ohio State University*

My brief comments draw on recent experiences at Ohio State University (OSU) as some of my colleagues have prepared to conduct economic and commercial business education in Eastern Europe, specifically Czechoslovakia, and observations by the World Food Systems research group's task force on EC 1992 regarding implications of completion of the EC single market initiative for U.S. food industries.

Economic Education in Eastern Europe

An initiative has been mounted by OSU to assist Eastern European universities with the development of courses and faculty expertise relevant to the evolution of those countries from centrally planned to market economies. The Department of Agricultural Economics, the College of Business, and the Center for Slavic and East European Studies have provided leadership, and advance teams of faculty and administrators were in the region during the spring and summer, 1990. The most extensive initiatives to date have been in Czechoslovakia, where, beginning in late September, members of the OSU faculty are lecturing and conducting university short courses.

It is instructive to examine the subjects in which lessons were being put together as faculty prepared to go to Czechoslovakia this fall. This gives us some insight into the perceived needs for economic and business education.

Much emphasis has been on basic economic principles — concepts such as supply, demand, how prices are determined and discovered, and the functions of organized commodity exchanges. A major concern appears to center on developing both conceptual and operational understandings of how firms treat price and output as strategic decisions. Related to this are the selling functions — how firms go about identifying potential buyers, determining what and how much they will purchase, and at what prices. Logistics of product distribution and traffic management are also prime subjects. By contrast, relatively little attention has been given to production economics or plant management.

Implicitly, this subject matter emphasis suggests that Eastern Europeans have a pretty good grasp of optimization and management principles regarding how to utilize available resources to meet known output goals. But, they less well understand the processes of determining what should be produced and how to get it to buyers. In short, a principal need seems to be to develop a working understanding of how enterprises function within the discipline of market demand and supply costs. As every economics instructor knows, these are concepts that even many Western students, who have functioned as part of a market system as a birth right, have a difficult time grasping.

We need to be cautious, therefore, in projecting the speed with which such concepts will be understood, much less operationalized, by the many Eastern Europeans whose entrepreneurial drive must be harnessed in order for these countries to emerge as full-fledged competitors in the global world of commerce.

Food Industry Implications of EC 1992

A task force of the World Food Systems Research project, NC-194, has been examining the implications of market unification in the European Community countries for the food manufacturing industries and other parts of the agricultural and food sector. Analysis is in early stages and no definitive answers are yet in hand. Nonetheless, a sense of the nature of some more likely impacts is beginning to emerge.

Our assessment rests in part on an assumption that the Uruguay Round of the General Agreement on Tariffs and Trade (GATT) negotiations will be successful in terms of furthering the development of a global market. This is not to assume that barriers to international trade will fall away entirely; more that national boundaries will continue to become incrementally smaller restraints on the movement of goods and services.

Macroeconomic analysis done for the EC Commission indicates that the combination of market rationalization and economies of scale and size brought about by the merging of twelve separate national economies into a single market will result in an appreciable increase in national or Community-wide income. The value of aggregate EC gross domestic product has been projected to show a one-time increase of 5 to 7 percent. However, primarily because of the low income elasticity of demand for food relative to other goods and services in high-income countries such as those in the EC, the aggregate increase in demand for food is expected to be much smaller — perhaps more in the range of 1 to 2 percent. Thus, for the food sector, the growth impacts of completing the single EC market initiative look to be minor.

Much of our assessment, therefore, has focused at the microeconomic level, with particular attention to the organization of firms and industries. As a general observation, there appear to be two major categories of food manufacturing firms: (1) dominant global firms and (2) a localized fringe. The former are large entities that tend to operate simultaneously in a number of geographic and product markets, with numer-

ous transnational commercial ties such as wholly or partially owned foreign subsidiaries, licensing arrangements and joint ventures, as well as product sales across national boundaries. Examples of such firms include the Philip Morris/Kraft General Foods/Suchard combine, Unilever, Nestle and Kellogg. These firms view their theater of operation in a global context, with national boundaries little more than convenient definitions of managerial territories and sometimes-troublesome barriers to the smooth flow of capital, labor, inputs and/or products. They benefit from economies of size, scale and scope, and typically hold dominant market shares in several product lines in different local, regional or national areas, although in any given market they may not own the leading brand.

Many of the dominant global firms are U.S.-based. Indeed, twelve of the twenty largest food manufacturers operating in the EC are so-called U.S. firms — Pepsico, Heinz, Sara Lee, Campbell Soup, and CPC International to mention a few. However, nationality doesn't have much practical meaning. Their stockholders can be found around the world and they are involved in a seemingly endless process of acquiring, investing in, merging with and/or divesting operations in virtually any country where such behavior fits into their global strategy.

On the other hand, the localized fringe is made up of somewhat smaller firms that operate primarily within a specific product and/or geographic market. Often these firms make across-border sales, but as an adjunct to domestic operations. That is, their strategies tend to be oriented to local, regional or national markets. In many cases, these firms hold leading brand positions in their specific product and/or geographic market. Frequently these are niche or specialty markets, but sometimes regional markets for highly perishable products such as milk and baked goods.

We expect that the process of creating a single EC market through the removal of internal border restrictions such as different standards of product identity and harmonization of product testing and inspection procedures will allow, indeed encourage, some of the larger and more aggressively managed food manufacturing firms in EC countries to expand their operating theater from a national to a Community-wide basis. That is, more European firms will become pan-EC operations, competing with existing dominant firms. The share of leading EC food manufacturers with a U.S. "home" will decline, and the ranks of globally oriented firms will increase. The number of firms in the localized fringe, whether in the EC, the United States, or third countries, will inevitably decline as the competitive pressure and acquisition activity of the larger, global-directed firms intensify.

In the end, both the national interests and national orientation of the prevailing food manufacturing firms will diminish. Thus, the EC 1992 process looks to enhance the global characterization of the food manufacturing industries. This means that our foundation for economic analysis, and indeed for public policy toward the food sector, must also shift from a parochial, national orientation to a truly global perspective.

TOWARD A NEW EUROPE: THE LIVESTOCK AND MEAT INDUSTRIES

*Chuck Lambert
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The European Community (EC) has done about all to the U.S. beef industry that can be done. For some time we have lived with the Third Country Directive which mandated that U.S. packing and processing plants exporting to the EC meet specifications beyond U.S. requirements. On January 1, 1989, the EC essentially banned beef imports from countries using growth promotants. The U.S. Department of Agriculture would not meet EC demands since it is not possible to test or differentiate product produced with growth promotants from product produced without. The National Cattlemen's Association believes the ban is a blatant nontariff barrier not justified by scientific evidence.

Regulation of live animal movement from hoof-and-mouth countries to non hoof-and-mouth countries after implementation of EC 1992 is of special interest to the U.S. cattle industry. Currently, live animals imported from hoof-and-mouth countries must pass a lengthy quarantine process while live animal imports from non hoof-and-mouth countries are much less restricted.

U.S. ability to ship beef to Eastern Europe will be constrained by beef's relatively high price and the availability of hard currency in Eastern Europe. Export of relatively low-priced competing products — pork bellies and chicken dark meat, for example — will reduce price competition for beef in the domestic market. Some relatively low-priced beef products — variety and organ meats and specialty sausages made from low-priced cuts — may also be exported in the short term.

Eastern Europe may become a competitor in the meat export market in the longer term as pork and poultry production expand. Eastern Europe is generally considered to be self-sufficient in feed grains but more deficient in protein feeds. Some increased demand for feed grains in Eastern Europe could increase prices paid by U.S. beef producers. Increased demand for protein feeds would impact U.S. pork and poultry costs more than beef — given the relatively small amount of protein feeds in beef rations — ultimately improving the competitive position for beef in the domestic market.

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