



AgEcon SEARCH
RESEARCH IN AGRICULTURAL & APPLIED ECONOMICS

The World's Largest Open Access Agricultural & Applied Economics Digital Library

This document is discoverable and free to researchers across the globe due to the work of AgEcon Search.

Help ensure our sustainability.

Give to AgEcon Search

AgEcon Search
<http://ageconsearch.umn.edu>
aesearch@umn.edu

*Papers downloaded from **AgEcon Search** may be used for non-commercial purposes and personal study only. No other use, including posting to another Internet site, is permitted without permission from the copyright owner (not AgEcon Search), or as allowed under the provisions of Fair Use, U.S. Copyright Act, Title 17 U.S.C.*

Australian Agricultural and Resource Economics Society
Annual Conference 2000, Sydney

Invited paper session on
Agri-environmental policies around the world: past trends and prospects

**First or Second Best Solutions?
Looking back on
Australian Agri-Environmental Policy
from 2020**

Mike Young

Policy and Economic Research Unit

CSIRO Land and Water

PMB 2, Glen Osmond, SA 5064

FIRST OR SECOND BEST SOLUTIONS? LOOKING BACK ON AUSTRALASIAN AGRI-ENVIRONMENTAL POLICY FROM 2020¹

**M.D. Young, Policy and Economic Research Unit, CSIRO Land and Water,
PMB 2, Glen Osmond, SA 5064**

Abstract

Drawing on statements emerging from Europe and North America, what might an economic historian write about agri-environmental policy in 2020? Reflecting on the last 20 years, the historian might report

- The emergence of environmental assurance systems as a way to gain access to international markets;
- The emergence of environmental NGOs as sought-after drivers of agricultural - not environmental - policy;
- The major international debate about the extent of Australian agricultural subsidies and European insistence that Australian agricultural externalities, because of failure to internalise environmental externalities, was one of the most subsidised agricultural industries in the world;
- The embarrassing flaw that emerged in national “cost-sharing” and “investment-sharing” policies;
- The impact of a series of AARES papers that led to the introduction of rural landscape stewardship payments and the removal of 50% of the Australian agricultural and pastoral landscape from production;
- A change in COAG focus from water allocation to water quality and the impact of agriculture practices on other sectors;
- The mess we ended up in because we granted the environment an absolute rather than prior right in the definition of water rights, fishing rights and pollution rights;
- The huge “Kyoto” debates we had when NFF suddenly realised that greenhouse gas emissions from agriculture were greater than those from the transport industry;
- The rediscovery of regulation as the most cost-effective way to manage catchment scale problems not efficiently internalised through paddock scale farm management;
- The impacts of the national attempt to define duty of care for each industry and each region which emerged from the National Land and Water Resources Audit’s findings; and
- The re-emergence of tax policy as a vehicle for delivery of incentives to the farm industry.

In short, the two decades from 2000 to 2020 were the decades when agri-politicians became environmental spokespeople. A footnote on page 10 of the economic historian’s paper observed some new institutional and academic arrangements. In the “now” leading universities, faculties were organised along trans-disciplinary lines. AARES had merged with several other societies. In 2020, it was no longer possible to obtain a B. Ag. Ec. from an Australasian University.

¹ I am indebted to Doug Young, Stefan Hajkowicz, Uwe Lohman, Laura McCann, Dave Pannell, Paul Trevethan and Andrew Campbell for comments on some of the ideas developed in this paper.

FIRST OR SECOND BEST SOLUTIONS? LOOKING BACK ON AUSTRALIAN AGRI-ENVIRONMENTAL POLICY FROM 2020

**M.D. Young, CSIRO Land and Water, Policy and Economic Research Unit
PMB 2, Glen Osmond, SA 5064**

Introduction

In agricultural economics, a little bit over 20 years ago, I recall being taught to recite the theory which argued that Australian farmers would be better off chasing the oligopoly rents available from strategic market intervention in the wool market. Centralised interventionist wool selling - it was explained in elegant diagrams – made my wheat-sheep-farming father richer. Our farm had a wheat quota! If I dared to write an essay arguing that this was all wrong, I might not be standing here today. The point is, that the things that we are all so sure are right today may, in fact, be wrong. What issues will dominate thinking in environmental economics, ecological economics, resource economics and agricultural economics in 2020? I have been asked to write about the future.

Caveats

Writing about the future direction of agricultural or environmental policy is a risky game. What ever one writes, it must be wrong. My approach is to imagine what an economic historian might write, in 2020, about agricultural and environmental policy on the period between now and 2020. The paper is intentionally written in a controversial style. My aim is to force people to think outside the square. All the statements made are fictional. Some have a very low probability of occurrence. With political and administrative change, plus a longer timeframe, however, most are plausible. As they are not critical to the points that I want to make, I put price changes to one side. My baseline price/technology scenario is a simple trend extrapolation of that which is occurring today.

The source of my ideas is a mix of the two previous papers on agricultural and environmental policies in the United States and in the European Community, experience working in the OECD on the integration of agricultural and environmental policies in the late 1980s, and a few of the ideas that run through my head when I wake up at night.

Australia in 2020

In 2020, Australia looked quite different to the Australia of 2000. The world did too. The introduction to the economic historian's paper observed that

- Australia's population had continued to rise – we were now the most urbanised nation in the world - over 98% of people live in towns of more than 5,000 people;
- The farm population – unlike the urban population - had reduced to less than 100,000 enterprises, as the ABS likes to call them, 20,000 produced 80% of the value added by agriculture;
- As in Victoria and Queensland today, no State Department had the word "agriculture" in its title;
- Australia's allowable emissions under the Kyoto Protocol were 103% of 2008 emissions.

Economics

The economic historian looking at events emerging around 2000, noted the emergence of several new trends early in the millennium

- Economists in ABARE were starting to build simulation models that incorporated expert judgements of biophysical scientists;
- Using GIS, spatial analysis was creeping into resource and environmental economics;
- Sophisticated rather than simple models of behaviour were being used to make policy recommendations – economic psychology was in;
- Experimental economic techniques were being used to test and significantly revise the policy recommendations that had driven water reform in the 1990s; and
- Analysis was shifting from a focus on simplistic recommendations to one where the focus was on the mix of policies – elegant design was to be encouraged.

Our profession

In 2020, no university still taught agricultural economics. Indeed, as with the Departments, no University offered a degree in Agricultural Economics. The degree that people interested in the issues before this conference took was either

- Policy development (Environmental Resources); or
- Business management (Ecosystem).

Whatever degree you took, it was now compulsory to take several law subjects and social psychology. A badged degree in Policy Development (Environmental Resources) required the candidate to take a year of environmental science subjects.

Administrative reforms

In the early 2000s, State criticisms of Commonwealth failure to adopt the purchaser-provider model for the provision of services changed the scene in Canberra. Following the elections in 2002, ABARE and BRS were sold off via an employee buy-back scheme. All the GIS functions in these organisations were moved to the ABS. ABS took over the farm surveys that had always been done by ABARE. Data held by the ABS was, once again, offered to the public at the marginal cost of supply. Data is a pure public good whose value did not diminish with use. “The more data is used, the better off the nation will be” was the economic explanation.

In 2004, ABARE Pty Ltd and BRS Pty Ltd amalgamated. To compete with established consulting firms, they had to be trans-disciplinary.

In the States, the most striking reform was the massive change in catchment management arrangements. By 2010, every State had catchment management Boards with collective budgets bigger than those allocated in 2000 to Natural Resource Management Departments. All Boards had regulatory powers and used them. By 2010, regulation of land-use was deemed necessary to protect the community's considerable investment in each landscape.

In 2008, there was an interesting paper on the need for crop area quotas in dryland salinity catchments. Wheat area quotas were introduced in the Dongolocking Catchment in

2012. Additional crop-area credits could be got by planting oil mallee.

Environmental Assurance

In late 1990s, Europeans began to become interested in environmental assurance and environmental accreditation schemes. There was emerging consumer preference for products that do not produce negative environmental externalities. The first signal came from Sainsbury's – a UK supermarket chain whose customer base is bigger than all Australian supermarkets combined. In 1999, Sainsbury's began setting up arrangements to assure their customers that they would buy food *only* from regions where farmers looked after the environment. Farmers in countries like Kenya changed practice quickly to gain early first mover advantage. Others followed quickly. In 2003, Sainsbury's claimed that 80% of their food was “QA plus EA guaranteed”.

Sainsbury's stopped buying many Australian product. It was interesting that the first signal that market interest was changing was missed. In 1999, British Rail cancelled its standing order for jarrah rail sleepers from Western Australia because WA CALM did not have Forest Stewardship Council Certification. In 1999, recognising this new market opportunity, RIRDC sponsored a conference organised by NSW Agriculture at Ballina, NSW and set up an agricultural product accreditation research program. At the same time, the cotton industry began to go for ISO 14000 and the Murray Darling Basin Commission began to pursue opportunities for irrigators.

The wine industry struck over-supply problems in 2004. Globally, wine was in surplus.

Inspired by a paper presented to the AARES Conference presented at Adelaide in 2001, the Australian Wine and Brandy Corporation argued that restrictions should be placed on uncertified exports. “All externalities,” they said, “should be internalised. Regions that do not look after the environment should not be allowed to destroy Australia's reputation as a high quality and green wine producer. Aspiring exporters should only be able to export if and only if their costs of production include the costs of losses imposed on others.”

The Corporation's export strategy was appropriately modified and they decided to add environmental planks to the quality assurance

platform it had been building under Commonwealth export control legislation set up in 1980. The Act gave them self-regulatory powers and they decided to restrict exports to Europe and North America to that from regions with environmental assurance accreditation. Regional certification was easy for all areas outside the Murray Darling Basin but impossible for wine producers inside the Basin. Grape growers in the Murray Darling Basin could not escape from the fact that the Basin did not have dryland salinity under control. They lost their export market.

Not to be outdone, the rice industry at Griffith, Leeton and Coleambally in NSW identified a new market niche in Japan. They negotiated a deal where they would

- pay for the rehabilitation of a large area of dryland salinity near Yass;
- provide wetland habitat for an endangered migratory bird that spends our winter in Japan; and
- donated 10% per year of their Snowy River diminished irrigation water rights to the WWF for environmental protection.

Local grape and horticultural producers co-operated, so regional a regional environmental assurance was obtainable. In return, WWF let these rice growers put a Panda label on all rice produced. "Panda Rice" was born. The price received by Panda Rice Producers, was 60% above that received by rice producers in the Deniliquin area. Deniliquin producers could not get WWF accreditation as they could not get the local Dairy industry, who had little interest in exports, to co-operate with them. Environmental Management Systems were introducing a new form of competition! NFF environment committee meetings became ugly. The following year Japan announced that it would give tariff free access to any Environmentally-Assured products endorsed by the WWF. They argued that they were interested in improving the environment. Trade should be restricted to countries that looked after water quality, land quality and biodiversity. Japan wanted environmental opportunity to drive the global search for free trading arrangements.

In 2006, conference papers focused on the issue of whether or not this was a first-

best or second-best solution. The textbooks said that trade was most efficient, if and only if, all externalities were internalised. The argument, in the 1990s, was that environment and trade policy should use separate instruments. The ecological economists smiled and replied "That's fine, we will use the economic instruments, you use the regulatory ones."

In 2008, a fascinating conference paper argued that the first best solution for dryland salinity control was to subsidise each tonne of mallee oil produced by 40%. The more oil harvested, the more water tables drop. Violating WTO trade rules, a production subsidy was identified as most cost-efficient means to control dryland salinity.

Environment and Trade

In 2001, the National Land and Water Resources Audit delivered its final report. The story was bleak. Accrual accounting techniques were used. These accounts assumed that today's land-users had a duty of care to pay for all land degradation. An inter-generational equity compensation discounting factor developed in Harvard was used instead of the standard discount rate. This made the expected impact of dryland salinity on urban areas a major cost. The best-guess estimate for off-site costs of land and water degradation from agriculture was reported to be 20 times the on-site costs. For wheat, the cost of degradation was greater than market value added. But this estimate was only took account of the direct market costs. The Audit had also funded choice modelling of the non-market dimensions of land and water degradation. Moreover, Western Australia's dryland salinity plan reported that they expected dryland salinity to make over 400 species extinct. This number was duly multiplied by the value of each species. The resultant number shocked every one. Crude cost-benefit analysis suggested that sustainable agriculture was a myth. Australia – the only developed and mega-diverse country in the world – was running an agri-mining industry.

About the same time, our international negotiators were trying to start the next round of trade negotiations. They went to the OECD and convinced all delegates that it was time to re-estimate Producer Subsidy Equivalents. Australia then proposed a new methodology and put its draft estimates on the table. France

responded first. The delegate from France argued that the warnings from Seattle should be taken seriously they said. “It is time to pursue first not second best solutions.” She went on to explain that using Australian data it was clear that Australian agriculture was the most subsidised in the OECD. “You have to add in all the costs of land and water degradation and then add back the value of all the landscape stewardship payments. Yes, France, Germany, the United Kingdom and the United States had water pollution problems, but the stewardship payments and various environmental protection schemes they had meant that they had biodiversity loss under control. Moreover, on a per capita basis, water treatment costs were not high. Salt affects ecosystems and destroys infrastructure; nitrate and phosphate pollution not.”

When this debate got really hot in 2005, the National Environment Minister looked again at Senator Hill’s Environmental Protection Biodiversity Conservation Act. The first administrative steps were cautious but with agriculture at less than 2% of GDP and a booming economy, it seemed time to act. Agriculture was listed as a form of development which fell under the Environmental Protection Biodiversity Security Act, 1999.

To be accredited to manage agriculture, States had to have in place independent catchment or regional management boards with full, unconstrained funding and regulatory powers putting them on par with local government. The scale of national landscape and water quality management issues was becoming so great that local government was only to be responsible for roads and bridges in rural areas. As is the case for rice today, most Boards introduced cropping licences said that no more than 30% of a farm may be cropped at any one time. Quite a few linked cropping rights to the area within the upper catchment that was under trees and made these rights tradeable. Agricultural land-use control became the norm as they each tried to get their catchments accredited.

Two types of paper could be seen at the society conference in 2010. The first set questioned the logic of the national commitment to Ecologically Sustainable Development. The second set argued that large areas should be taken totally out of agricultural and livestock production.

Assessment methodologies

There was an interesting paper at the 2007 conference on the question of benefit estimation. It argued that global resources should be valued taking account of all the people interested in them. The proposal was that the value of a global resource should be multiplied by the population of all countries that were a party to the international agreement that defines the resource as a resource of global importance. The value of all others should be based on a local assessment.

Off-reserve biodiversity conservation

One early innovation that the Economic Historian draws attention to in her paper is the emerging Australian interest in off-reserve conservation of biodiversity. Once again, Senator Hill seemed to be the big player. In the late 1990s, the National Heritage Trust was used to provide a platform for the provision of incentives to landholders, local governments, etc. interested in conserving biodiversity. Much of the work was out-sourced to non-government organisations via a series of devolved grant schemes. Organisations, like Greening Australia, took off during this period. Copying Victoria, nearly every State in Australia set up a Trust for Nature in 2001. All States, except the Northern Territory had clearing controls in place. The policy approach was a mixed one, combining market, financial, motivational, institutional and regulatory incentives. NGOs were making progress in an area that no government thought possible.

A huge policy shift took place in 2001. Income tax reform proposals passed in February 2000 made the donation of land and/or covenants to accredited Non-Government Organisations tax deductible. Significantly, donations of land were not subject to capital gains tax. Philanthropic organisations brought in people from the United States to show them how to build organisations like the Audubon Society, the Nature Conservancy, etc. Progress was stunning. By 2010, Australia had 50 reserves modelled on the Bookmark

Biosphere Reserve. Ahead of schedule, these philanthropists had achieved the goal they set themselves in 1999. Their prospectus shown to John Howard, in 1999, proposed a strategy that would result in a situation where private sector contributions 'exceed public expenditure for nature conservation by the year 2020'.

Landscape renewal

In 2011, a major landscape renewal program was introduced. Farmers and pastoralists could sell their land to an accredited NGO but retain their homestead. As is already happening on a big scale in the United States and Europe, many city people bought a rural retreat as an alternative to a beach house. A beach house cost \$250,000, a farm house retreat cost \$10,000. Some farmers stayed on as landscape stewards. Between 2012 and 2016, sixty per cent of the rangelands were taken out of production and fifty per cent of the 500 – 800 mm rainfall zone was taken out of production. Building upon experience with outsourcing biodiversity conservation, most of the Landscape Renewal Program was implemented by Non-Government Organisations. NGOs selected the land in consultation with empowered catchment boards. Land reform schemes were quite common. In catchments where structural adjustment had been frozen, all non-homestead land was compulsorily acquired and reallocated. A key driver for this successful program was a LWRRDC-funded project near Armidale in NSW which commencing in July 2000 proved that local communities could implement land reform. Indeed, the farmers involved realised that this was the best option they had. To all but one of the 10 involved, rural areas were a place to live and work from. They wanted to live in a farming community, not farm.

In an invited conference paper in 2013, a sociologist argued that our view of the farm had to change. It was time to stop thinking about farms as places that produced food and fibre. "Farms are places where people live. The value of income earned off the farm now accounted for over 70% of the value added by the people living in farm homesteads," he said. People lived on

the farm for recreational and amenity purposes, not to make money.

By 2015, 20% of CSIRO Inc. staff and 30% of ABARE & BRS staff worked from home using high tech video links to stay in touch with one another. Society conferences operated in a similar way. Travel was a rare event.

Carbon equivalents

One of the reasons for successful landscape renewal was the impact of the renegotiated Kyoto Protocol. Getting back to the 1990 baseline proved too difficult for most countries. Yes, the Protocol was ratified but compliance was lacking. With climate change a commercial reality - insurance costs had quadrupled – the Protocol was renegotiated. In 2011, Warwick McGibbon's permit system was combined with a share-based system similar to the one that I have been promoting. A new 2008 baseline was set. Carbon-sequestration was retained. Much of the landscape renewal project was funded by the sale of carbon permits from tree planting and the increase in carbon stocks. Another driver was the money to be made by selling shares in rights to use fertilisers and run livestock. In 2004, agri-environmental politicians and commentators realised that CO₂-e emissions from Australian agriculture were larger than all those produced by the transport industry. Australia shut down much of its agriculture and began producing carbon.

An important institutional contribution came from a young graduate with a degree in economics and law presenting a paper to the conference in 2008. That paper proposed a simple, elegant way to assign carbon credits to small areas of trees by amending the way property was defined on freehold titles.

Tradeable property rights

By 2015, Australia had tradeable property rights in cropping, in carbon, in water-use and in emissions to water. Learning from New Zealand's fishing right allocation experience around 1990. All volumetric rights were compulsorily acquired and re-issued as proportional shares. The right was a periodic right to a share of the resources available for consumptive use. Adaptively managed and

periodically reissued. The environment was treated as a prior right. All right holders have a duty of care towards the environment. Like drought and climate change it was something to be internalised in costs of production not something that others had to pay for.

Reinforced by periodic statements from the Productivity Commission's Environment Commissioner, Margaret Thatcher's statement about a "Fully repairing lease" – just would not go away.

A driving force for this property right reform was a COAG statement of principles for the design of tradeable property-right instruments. It was signed by all Premiers, the Head of Local Government, *the Head of the Catchment Board Council* and the Prime Minister in 2014.

Supported by Treasury, these COAG tradeable-right guidelines recommended introduction of a "return to the community". The tax base was shifting. By 2020, Treasury expected that

- 40% of their income would come from the GST;
- 30% from resource scarcity rent charges on radio bands, environmental bad taxes, etc; and
- 30% from income tax.

Catchment Boards and Local Government would get less than 20% of their revenue from non-regional sources. Building on the Productivity Commission's report on the transaction costs of government, the Treasurer was arguing that "Local problems should be solved using local money." "Tax the bads, tax wealth but don't tax jobs and fair opportunity," he said.

A big shift had emerged in the literature around 2010. The old model of papers advocating a single instrument-based solution had been replaced by an emphasis on elegance in design, sophistication and instrument mix.

Behavioural economists had become to map out behavioural response styles against policy instruments. Regulations, for example, affect different people differently.

Catchment Boards began to commission surveys to find out what styles of people they were trying to influence. **A brilliant piece of work by an economic psychologist analysing European community experiences with a stratified sample of environmentally sensitive areas showed the way. This conference paper pointed out that the most appropriate instrument mix to influence any**

individual would change through time.

Nothing was static. Moreover, where landscape issues are involved, it made sense to design instruments that changed the type of people likely to be interested in managing an area of land.

This, by the way, was the rationale behind Victoria's Trust for Nature introduction of a revolving fund in the mid-1990s. They argued that the highest probability of land-use change occurs soon after an area of land valued for biodiversity changes hands. The most cost-effective program they could develop was one where the Trust bought properties of high biodiversity value on the open market, placed a conservation covenant on the property and then resold it. By 2005, revolving funds of this form operated in every State of Australia. In 2000, Senator Hill diverted all the remaining NHT funds he could get his hands on into this new initiative.

Who should pay?

In the late 1990's, the NHT and efforts to engage the community "rationally" produced a suite of cost-sharing policies. Interestingly, there were few papers on this issue presented at AARES conferences. The economic historian writing, in 2020, attributed this to "Coasian indoctrination". The paradigm in the 1990s seemed to say that "If property rights were fully specified and transaction costs low, the theory said, you did not have to worry about allocation issues. Questions about who should pay – beneficiaries, polluters, users, etc. were political issues that would not change the expected long-run outcome." Institutional economists began to address allocational issues in 2002.

In 2003, a clever paper by an institutional conference was written arguing that the issue was not about "cost sharing" but about "investment sharing". The essence of the argument was that the "Republic" owned the rights to native flora and fauna and to catchment processes and, hence, had to invest in the maintenance of its asset. As often happens, these concepts were developed by a two people who wrote a paper to ARMCANZ and ANZECC on this topic in 1999. The paper died, as many papers do, but recycled through the 2003 conference, it had a huge impact.

Water quality

Much of Australia's landscape is characterised by slow moving, leaky processes that are poorly understood. Looking back on the period between 2010 and 2020 the most striking change was the frequency of water quality crises. In the last decade, the 2020 State of Environment Report observed that regular algal blooms were a regular event in the River Murray, the Darling River, Port Phillip Bay, the Swan River, the Hawkesbury River, Spencers Gulf, etc. Scientific modelling was indicating that much of the source was from rural areas. The solution, so the models said, was to control land-use in specific locations. Geographic information systems and monitoring techniques had got to the stage that precision control of landscapes was possible. All non-point sources of pollution could be identified. As a result, regulation became fashionable again. Onus of proof was shifted to landholders. Regulation was seen as the most cost-effective way to manage catchment-scale problems. Each individual's actions in the paddock had to be constrained so as not to compromise the interests of others – today and in the future. Once a year, all land-users in a catchment were charged in accordance with an estimate of the load they had put on their catchment. Satellite and GIS technology made this a routine matter.

A major new issue in the late 1990's was the question of how to provide the correct set of price signals to water users. The COAG water reform agenda envisaged a theoretically elegant reform process. COAG committed Australia to a process that will "Get the rights fully specified and get the price signals right." Associated statements suggested that this should include an appropriate set of signals that account for the presence of externalities – negative and positive.

Externality water pricing guidelines were adopted by all States and Territories in 2000. Left open was the question of who should pay for the sunk costs. Giving people a signal to not clear trees in 1980 seemed pointless. In many areas, groundwater rise is a slow process that once started can not be stopped.

In 2002, there was an interesting paper presented to the Conference on whether or not liability for pollution should remain with the land. At that point in time and in most States, liability for environmental contamination of urban land remained with the land owner. Rural landholders, however, refused to accept responsibility for aquifer contamination. They had acted in good faith. The paper argued that the same could be said of petrol station owners and the directors of industrial companies. "They have to pay, so why shouldn't rural landholders? Their impacts cost society more!" said one angry industrialist.

By 2015, the issue of who should pay for pollution had really come to a head. In cities, like Adelaide, the real impacts of rural land use on a daily basis. The vector was water quality. They called for a common set of policies for all people. COAG sat down to write a new set of principles on liability for non-point and point sources of pollution. The principles were common among all industries.

In 2018, there was a fascinating conference paper presented by the owner of a food factory producing genetically improved low fat pork. He proposed introduction of a tradeable nitrate pollution system so that he could double production by shutting down 5 neighbouring dairies that he had owned an interest in since 2010. He won the prize for the best paper by a first-time presenter.

Concluding comments

Remembering that my baseline price/technology scenario is a simple trend extrapolation of that which is occurring today, what stands out from this hypothetical history of agri-environmental policies? What are the big issues? What were the big drivers of change in the millennium's first two decades? My guess is that they will involve many new ways of thinking about existing problems. The biggest issue will be the question of how – in a sophisticated and elegant way – can community servants influence behaviour? This will be coupled with a rich and informative debate about who should do the

influencing. New sophisticated, incentive driven administrative systems can be expected. The first-best second-best trade-off question will be redefined as one that is multi-dimensional in character. Driven by the massive landscape and population changes, the guiding principle may be one of equity and avoidance of uncertain outcomes. Equity may be defined as much by the processes followed not theory.

Who will have the competitive edge? It is my guess, that it will those who sit in a multi-disciplinary environment and are directed by people from a different discipline will make the most progress. Directors who don't have a background in theory force their colleagues to focus on questions of importance to community and have little respect for precedent. New precedents are waiting to be born.

\\LISTER-GW\PERU\$\aares\young paper jan 00e.doc