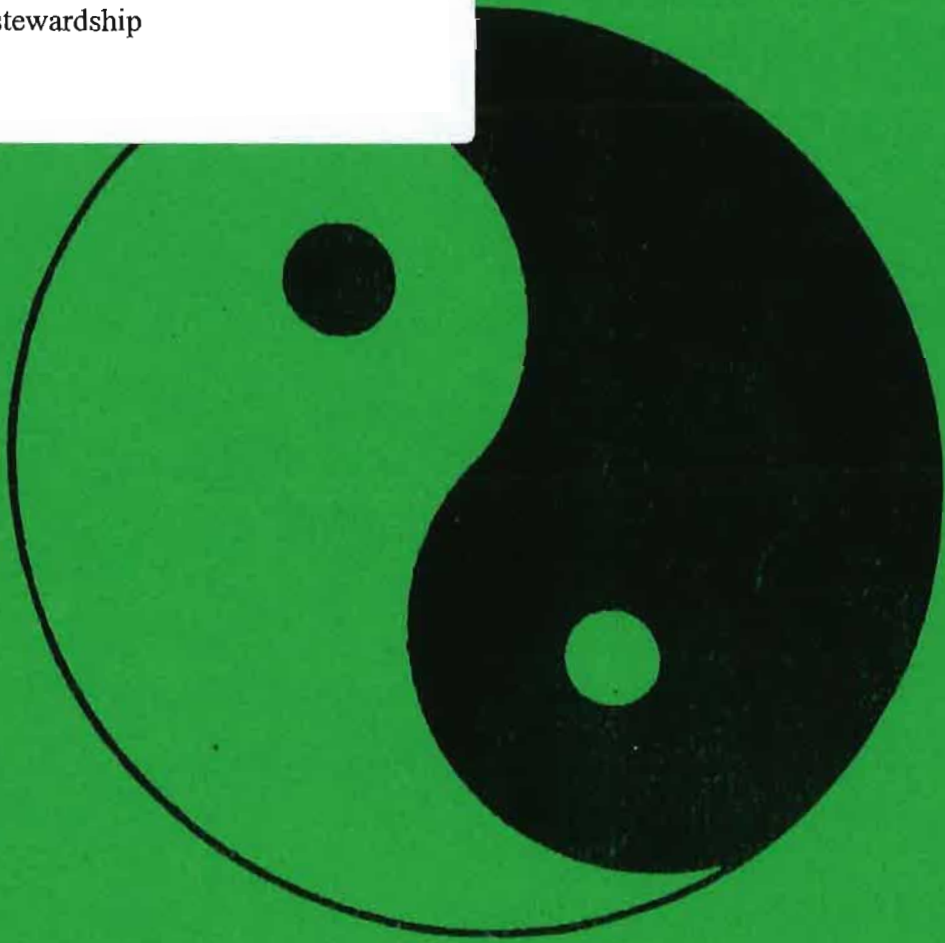


Sustainability and Stewardship

Andrews, Judi (1989)

Sustainability and stewardship



By: Judy Andrew

'Te Whenua te waiu whakatipua nga tamariki!
Land is the nourishment for future generations.

Sustainable agriculture will look at the soils, climate, human and natural communities - the whole environment - of a place and then go to work with them to produce food. The soil needs will be what matters; economics and markets and all the rest will properly meet the expectations of the land or else pass away.

Bruce Colman

We should be on our guard not to over-estimate science and scientific methods when it is a question of human problems; and we should not assume that experts are the only ones who have a right to express themselves on questions affecting the organisation of society.

Albert Einstein

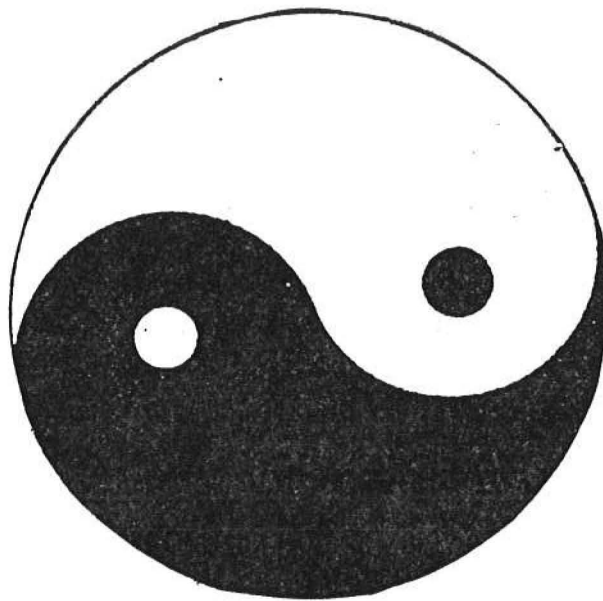
Women are not altogether in the wrong when they refuse the rules of life set down in this world, for it is men who have established those rules without their consent.

Michel Montaigne

Prepared for the 1989 New Zealand Rural Leadership Programme by:

Judy Andrew
'Tiroiti' Hyde,
R.D.3.
RANFURLY

SUSTAINABILITY AND STEWARDSHIP



Cover: This diagram is a symmetric arrangement of the dark yin (female) and the bright (yang). It is a rotational symmetry; a continuous cyclic movement. The two dots in the diagram symbolize the idea that each time one of the two forces reaches its extreme, it contains in itself already the seed of its opposite.

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INTRODUCTION

By words the mind is excited and the spirit elated.

Aristophanes

Know yourself

My Mother

The process that started this project was an outcome of numerous factors.

Firstly my interest in non-formal learning in rural areas, and experiences at Stage I of the N.Z. Rural Leadership Programme.

My selected topic initially was Tuberculosis and I started looking through some old books written in the 1930 - 40's to put some of the aspects in a historical context.

What transpired was my growing awareness of the fact that nothing much had changed. The books I found, written by farmers and people involved with farming, outlined their very real concern for farming, the way it was heading and its industrialisation. Mainly based on English experience, their feelings created enough interest for me to follow through their concerns. Adrian Mack's session on Evolutionary shift, Jenny Shipley's comment "get your philosophies right", Gerry McSweeney's "all farmers are conservationists", all added to my need to have a closer

look at changes that were taking place globally and locally. Also a comment that Derek Quigley made in 1985 which I have found hard to forget. "Changes that ~~are~~ required are more concerned with attitudes and states of mind than how we are to proceed". And more recently a comment from a speaker at the N.Z.I.A. Conference - "We don't learn from experience, but react to imposed conditions".

My reading continued into more recent publications and a pattern emerged. We are seeing some of this pattern shift in New Zealand already; local body reorganisation, education and environmental issues. The overwhelming picture that emerged however, was how all things are inter-related. So this became a theme which I have continued in my project.

I would have liked to have included comments on Pesticides and Biodynamic Farming in New Zealand, and many other topics that are all part of the holistic concept. So while the major part of this project was being printed, some new material was introduced that I couldn't ignore.

Mary Walker 1983 Kellogs had returned from Australia in mid-August after studying the Office of Rural Affairs in Victoria. The concept I believe is an excellent one, and see it eminently adaptable to New Zealand conditions. I

decided that "all is relevant" and have included aspects of the idea in the project.

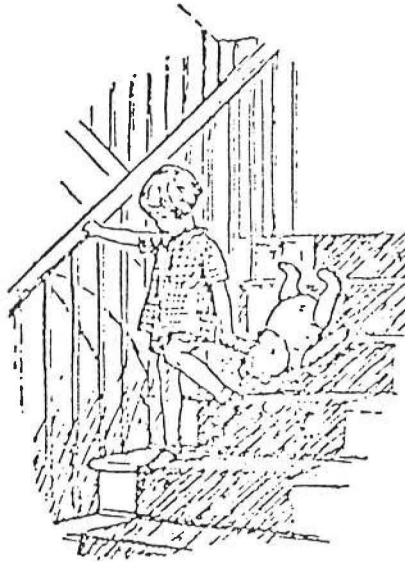
Although it could be true that it is not exclusively 'agricultural', I hope that I have been clear enough in my endeavour.

Remember in the words of Jim Hopkins, "Culture is growth not assimilation".

WHAT IS REAL?

The Skin Horse had lived longer in the nursery than any of the others. He was so old that his brown coat was bald in patches and showed the seams underneath, and most of the hairs in his tail had been pulled out to string bead necklaces. He was wise, for he had seen a long succession of mechanical toys arrive to boast and swagger, and by-and-by break their mainsprings and pass away, and he knew that they were only toys, and would never turn into anything else. For nursery magic is very strange and wonderful, and only those playthings that are old and wise and experienced like the Skin Horse understand all about it.

"What is REAL?" asked the Rabbit one day, when they were lying side by side near the nursery fender, before Nana came to tidy the room. "Does it mean having things that buzz inside you and a stick-out handle?"



"Real isn't how you are made," said the Skin Horse, "it's a thing that happens to you. When a child loves you for a long, long time, not just to play with, but REALLY loves you, then you become Real."

"Does it hurt?" asked the Rabbit.

"Sometimes," said the Skin Horse, for he was always truthful. "When you are Real you don't mind being hurt."

"Does it happen all at once, like being wound up," he asked. "or bit by bit?"

"It doesn't happen all at once," said the Skin Horse. "You become. It takes a long time. That's why it doesn't often happen to people who break easily, or have sharp edges, or who have to be carefully kept. Generally, by the time you are Real, most of your hair has been loved off, and your eyes drop out and you get loose in the joints and very shabby. But these things don't matter at all, because once you are real you can't be ugly, except to people who don't understand."

"I suppose you are Real?" said the Rabbit. And then he wished he had not said it, for he thought the Skin Horse might be sensitive. But the Skin Horse only smiled.

"The Boy's Uncle made me Real," he said. "That was a great many years ago; but once you are Real you can't become unreal again. It lasts for always."

Margery Williams, *The Velveteen Rabbit*

PARADIGM SHIFT

After a time of decay comes the Turning Point. The powerful light that has been banished returns. There is movement, but it is not brought about by force. The movement is natural, arising spontaneously. For this reason the transformation of the old becomes easy. The old is discarded and the new is introduced. Both measures accord with the time; therefore no harm results.

I Ching

Because of the interest raised by Adrian Mack's session, and the movement of evolutionary shift from Gemeinschaft to Gesellschaft, I felt it required further study.

Through further reading I decided that the Gemeinschaft was more feminine, and the Gesellschaft was essentially masculine in character.

The new perspective of an evolutionary shift is based on a fundamental change in our thoughts, perceptions and values. A concept of a globally interconnected world in which biological, psychological, social and environmental phenomena are all interdependent.

"A paradigm or pattern is a framework of thought. A scheme for understanding and explaining certain aspects of

reality. A paradigm shift is a distinctly new way of thinking about old problems".

For an example, for more than two centuries the leading thinkers assumed that Newton's paradigm, and his view of predictable mechanical forces would explain all, in terms of gravity and force. As scientists worked towards the answers, data here and there did not fit Newton's scheme. The old framework became strained and at the point of crisis a powerful new insight explained the contradictions. A new principle, a new perspective emerged and thereby forced a comprehensive theory which was not destructive, but instructive.

Einstein's Special Theory of Relativity and the new Science of Quantum Physics formed the new Paradigm. "A new Paradigm therefore involves a principle that was present all along, but unknown to us and includes the old as a partial truth, an aspect of How Things Work, while allowing for things to work in other ways as well".

The Paradigm Shift which we will see and are seeing now is a crisis which undeniably has evolved from the global awareness of our fragile environment.

"Commit a crime, and the earth is made of glass. Some damning circumstance always transpires" R W Emmerson, 1841

Pitirium Sorokin wrote between 1937-41 of the fluctuating changes of values and their effects on all aspects of society. He charted fluctuations of style in architecture, art, sculpture and literature and produced identifiable cycles on charts of belief systems, wars and internal conflict, and scientific and technological development. He predicted at that time the paradigm shift and social upheavals we are witnessing today.

These transformations have not taken place very often according to Lewis Mumford. Among them the rise of civilisation with the invention of agriculture, the rise of Christianity, the fall of the Roman Empire and the transition of the Scientific from the Middle Ages. Peter Russell suggests "When we look at organisms that work and just about every organism apart from human society does work - we find that there is one particular quality which they all share; the many components naturally and spontaneously function together in harmony with the whole. It is usually described as synergy derived from the Greek syn-ergos meaning 'to work together'".

I take from his comments that he believes human society today would appear to be in a state of low synergy.

"The amount he says of synergy in society is a reflection of the way in which we perceive ourselves in relation to

the world around us". This change will not come simply through desire or argument or coercion, but the catalyst for evolution will be self reflective consciousness. Therefore we could assume that there needs to be a fundamental change in our values and behaviour and a self realisation of what we consider important.

"People travel to wonder at the height of mountains, at the huge waves of the sea, at the long courses of rivers, at the vast compass of the ocean, at the circular motion of the stars; and they pass by themselves without wondering"

St Augustine 399AD.

PARADIGM SHIFT IN POWER/POLITICS

OLD PARADIGM

Emphasis on programmes, issues, platform, goals.

Change is imposed by authority.

Institutionalises help, services.

Impetus towards strong central government.

Power for others or against them. Win/Lose

Vested interest manipulation.

Solely masculine, rational orientation, linear model.

Aggressive leaders, passive followers.

Party or issue orientated.

Either pragmatic or visionary.

Emphasis on freedom from certain types of interference.

Government to keep people in line/parent role.

Left versus right.

Emphasis on external imposed reform.

Quick fix or pay later programmes.

NEW PARADIGM

Emphasis on new schedule. resistance to rigid programmes.

Change grows out of consensus and/or is inspired by leadership.

Encourages individual help. Mutual help networks.

Decentralising govt. Horizontal distribution of power.

Power with others. Win/win.

Respect for autonomy of others.

Both rational and intuitive principles.

Leaders and followers engaged in dynamic relationship. Paradigm oriented, determined by world view.

Pragmatic and visionary.

Emphasis on freedom for positive, creative action, self expression and knowledge.

Government to foster growth co-operation, synergy.

'Radical Centre' a synthesis of conservative and liberal traditions.

Emphasis on transformation in individuals as essential to successful reform.

Emphasis on foresight, long range repercussions, ethics.

Compartmentalises aspects
of human experience.

Humankind as conqueror of
nature; exploitive view
of resources.

Attempts to be inter-discip-
linary, holistic.

Humankind in partnership with
nature.
Emphasis on ecological
sanity.

Source: The Aquarian Conspiracy
by Marilyn Ferguson.

PARADIGM SHIFT IN ECONOMICS

OLD PARADIGM

Promotes consumption at all costs, creation of artificial needs.

People to fit jobs.

Hierarchy, bureaucracy

Fragmentation, emphasis on specialised tasks.

Clockwork model of economy, based on Newtonian Physics.

Aggression, competition. Business is business.

Work as means to end.

Manipulation and dominance of nature.

Quantitative; profits, G.N.P. tangible assets.

Material values
Process judged by product.

Short-sighted exploitation of limited resources.

Rational, trusting only data.

Centralised operations

Runaway technology.
Subservience to technology.

NEW PARADIGM

Appropriate consumption.
Conserving, recycling.
Authentic needs.

Jobs to fit people.

Autonomy encouraged
shared goals, consensus.

Cross-fertilisation by specialists seeing wider relevance of their expertise.

Recognition of uncertainty in economics.

Co-operation. Human values transcends 'winning'.

Work rewarding in itself.

Co-operation with nature.
Organic view of work and wealth.

Qualitative/quantitative
Tangible/intangible.

Material sufficiency
Context of work as important as content.

Ecologically sensitive to ultimate costs.
Stewardship.

Rational and intuitive.

Decentralised wherever possible. Human scale.

Appropriate technology.
Used as a tool, not a tyrant.

Source: The Aquarian Conspiracy
by Marilyn Ferguson

BIO-REGIONAL PARADIGM

	<u>INDUSTRO-SCIENTIFIC</u>	<u>BIO-REGIONAL</u>
SCALE	State Nation World	Region Community
ECONOMY	Exploitation Change/Progress World economy	Conservation Stability Self-Sufficiency
POLITY	Centralisation Hierarchy Uniformity	Decentralisation Complementarity Diversity
SOCIETY	Polarisation Growth/violence Monoculture	Symbiosis Evolution Division

from Dwellers in the land
by Kirkpatrick Sale

PATRIARCHY

In the dark womb where I began
My mother's life made me a man
Through all the months of human birth
Her beauty fed my common earth.
I cannot see, nor breathe, nor stir
But through the death of some of her.

What have I done, or tried, or said
In thanks to that dear woman dead?
Men triumph over woman still,
Men trample womens' rights at will,
And mens' lust moves the world unformed.

O grave, keep shut lest I be shamed.

John Masefield

Biologically, most women in the world do still vividly experience their embeddedness in nature and can harbour few illusions concerning their freedom and separateness from the cycles of birth and death. Mens' experiences may give them a sense of having somewhat more freedom and individualism and for the past 6,000 years this sense, together with the alienation it brings has been amplified. All patriarchal culture, scholarship, institutions and history have reflected male experiencing and then universalised it as if it were human experience.

The core of society that is universal to all mammals and other animal life is, mother and child. Such a social organisation is called matrifocal. Not matriarchy which would assume some form of domination. This core was also matrilineal; young animals knowing their mothers but having no idea of who their fathers were.

Among humans matrilineality is the reckoning of descent through the female line.

As the population increased, dwellings were built around land cultivated by the women. Although there was no sense of possession or ownership of land this was passed in a female line.

As these early humans evolved and population grew they became dissatisfied with what nature supplied. Horticulture became established, fire permitted cooking of food, animals skins provided warm clothes and water carriers enable better mobility. These things empowered humans from a state of participation in nature to one of control.

As development progressed, increasing controls over nature led to a distancing and alienation from it. Once people planted their crops a drought or storm could undo weeks of work. So an element of fear emerged and with this over a

period of time, ideas lead to a new value "the idea of control".

Because of their reproductive capabilities, women were seen to be closer to nature than men. There is a possibility therefore that men assuming that all it took was the male seed, women were a mere receptacle for new growth like the soil.

Marilyn French writing in *Beyond Power* states "the essential question about the origin of Patriarchy is why people should have altered an ancient and revered way of life. Patriarchy did not arise after three million years of peaceful life because men suddenly became more aggressive or suddenly decided to oppress women. Changed behaviour or some change in the human situation seemed to require a new adaptation, which was available in a moral change that had to have occurred earlier: the posting of control as a value superior to the old values of fertility, continuation and sharing. The fundamental nature of this new morality is explicit in the Old Testament in Genesis which propounds the principles of Patriarchy."

The gift of the male god to man is dominion over nature. The old values are still present. Humans.....are to replenish as well as subdue the earth. But man is to have dominion also over women.

Genesis Ch. I, V.26 "And now we will make human beings.....they will have power over the fish, birds and all animals, domestic and wild, large and small.

V.28 "Have many children so that your descendants will live all over the earth and bring it under your control.

Ch. III, V.16 And he said to the women "I will increase your trouble in pregnancy and your pain in giving birth. In spite of this you will desire your husband yet you will be subject to him".

Frederick Engels states in his essay on the Origin of the Family, "the overthrow of 'mother right' was the world historic defeat of the female sex". He suggests that the patriarchal family was derived from the Romans. Families or familia signified the number of slaves belonging to one individual. Further he suggests the expression was invented by the Romans to describe a new social order. The head of which had power of life and death over his wife, children and slaves.

So with this new morality or value system, we saw women and nature being controlled.

"Nature has given women so much power that the law has very wisely given them little.

Samuel Johnson

TAOISM

He who conforms to the course of the Tao, following the natural processes of Heaven and Earth, finds it easy to manage the whole world.

Hua Nan TZU. 2nd Cent. B.C.

"It's a Man's World, Womens Place is in the home"

Old Saying

If women have only a place clearly the rest of the world must belong to someone else, and therefore in default of God, to men.

Elizabeth Joneway

In her book she describes her writing as a Social Mythology - an exploration of our society, its beliefs and its dynamics. "Mans world and womens place make up the human experience and what we learn about the first two help us deal with the last".

Our society continues to give different attributes to each sex and to assign different duties and ways of living to men and women because of the assumption that they have differing capabilities - moral, social, intellectual as well as physical.

Are the assumptions correct or myth? It is the nature of myth to be true or false in fact; but true to human yearnings and human fears. Myth is born from psychological drives so we can never assume that the differences are innate. The workings of our society and culture are quite capable of producing these differences.

In the ideology of Taoism, yin the female principle and yang the male principle are given equal weight 'the opposition, alteration and interaction of these two forces give rise to all phenomenon of the Universe'.

Taoism advances many themes which conflict with many entrenched Western standards, strength and power, for example, are devalued, whilst characteristically feminine and childlike attributes are held up as important to living well and achieving self realisation.

Tao is a process of continual flow and change. The principle character of the Tao is the cyclical nature of its ceaseless motion; all developments in nature - those in the physical world as well as those in the psychological and social realms show cyclical patterns. The Chinese believe that whenever a situation develops to its extreme, it is bound to turn around and become its opposite. It is better to have too little than too much, and better to leave things undone than to overdo them. Just as the man

who wants to go further and further East will end up in the West, those who accumulate more and more money will end by being poor. Modern industrial society which is continuously trying to increase the "standard of living" and thereby decreases the quality of life is a good example.

The idea of cyclic patterns in the motion of the Tao was given a definite structure by the introduction of the polar opposites yin and yang, the two poles that set the limits for the cycles of change. The yang having reached its climax retreats in favour of the yin, the yin having reached its climax retreats in favour of the yang.

All manifestations of the Tao are generated by the dynamic interplay of these two archetypal poles. These opposites do not belong to different categories, but are extreme poles of a single whole.

The male and female sides of human nature are seen as one of the principle polarities of life. The terms yin and yang have become quite popular in the West, but are often distorted in their meaning by our Patriarchal culture.

As with the polarity of good and bad, life and death, we tend to feel uncomfortable with male/female polarity, and therefore we bring one of the other side into prominence.

Instead of recognising that the personality of each man and of each women is the result of an interplay between male and female elements, it has established a static order where all men are supposed to be masculine and all women feminine. This attitude has resulted in an over emphasis of the yang - or male aspects of human nature: activity, competition, rational, aggressiveness and so on. The yin- or female, modes of consciousness, described as intuition, mysticism and religion have constantly been suppressed.

A Framework for Exploration of Cultural Values and Attitudes

Yin	Yang
Feminine	Masculine
Contractive	Demanding
Responsive	Aggressive
Co-operative	Competitive
Intuitive	Rational
Synthesizing	Analytic

The rational and the intuitive are complementary modes of functioning of the human mind. Rational thinking is linear, focused and analytic. It belongs to the realm of the intellect whose function it is to discriminate, measure and categorise. This rational knowledge tends to be fragmented. Intuitive knowledge is based on a direct non-intellectual experience of reality arising in an expanded state of awareness. It tends to be holistic and non-linear.

It becomes apparent that rational knowledge is likely to generate self centered, or yang activity, whereas intuitive wisdom is the basis of ecological or yin activity. Our society has consistently favoured the yang over the yin-rational knowledge over intuitive wisdom, science over religion, competition over co-operation, exploitation over conservation.

This has led to a profound cultural imbalance which lies at the very root of our current crisis in the environment.

"The undiscovered vein within us is a living part of the psyche; classical Chinese philosophy names this interior way 'Tao', and likens it to a flow of water that moves irresistibly towards its goal. To rest in Tao means fulfillment, wholeness, one's destination reached, one's mission done; the beginning, end, and perfect realisation of the meaning of existence innate in all things. Personality is Tao".

Carl Jung 'The Development of Personality'

GAEA

The Maori called her Papa tua Nuku, Mother earth, the Greeks Gaea.

Plato remarked "a living creature, one and invisible containing within itself all living creatures".

Xenophen wrote in the 4th Century B.C. "Earth is a goddess and teaches justice to those who can learn. The better she is served, the more good things she gives in return".

We derive such English words as geography in Greek Gaea or Ge meaning Earth, and Graphian to write. Gaea also came to symbolise life itself, birth and origin - genesis, genetics and generation.

In those early times there was no separation of the self from the world such has happened; no division between the human (willed, thinking, superior) and the non-human (conditional, insensate, inferior.)

The Gaeian hypothesis as portrayed by James Lovelock is an holistic one. "The entire range of living matter on earth from whales to viruses and from oaks to algae could be regarded as constituting a single living entity capable of manipulating the earth's atmosphere to suit its overall needs and endowed with faculties and powers for beyond

those of its constituent parts". "It includes the earth's biosphere, atmosphere, oceans and soils, the total constituting a feedback of cybernetic system which seeks an optimal physical and chemical environment of life on this planet".

Ecology is an academic discipline developed towards the end of the last Century. Biologists recognised that biological organisms and populations which they studied were not arranged at random, but were organised to form communities whose structure and function could not be understood by examining their parts in isolation from each other.

From this early approach there was a move to a reductionist and mechanistic view. From 'the whole is more than a sum of its parts' to 'study of the parts themselves'.

Some suggest that this move was to conform to the example of modernism in our industrial society. As systems become more and more complex the academic and scientific disciplines become more specialised.

The new ecologists James Lovelock with his cybernetic system and the Gaean hypothesis and Lynne Margolis with her work with symbiosis have made the full circle to the early theories.

J H Woodger, a member of the early Theoretical Biology Club in the 1940's said that what was needed 'a most general science, but dealing with the relationship between various special sciences, and trying to synthesise their most general results'.

Cybernetics describes the study which is concerned with self regulating systems of communication and control of living organisms and machines. The American mathematician Norbert Wiener gave common use to the word from the Greek 'kubernetics' meaning steersman.

The primary function of many cybernetic systems is to steer an optimal course through changing conditions towards a predetermined goal. For example we can stand upright on a ship that's rolling after practice. We have a variety of sensory nerves buried in our muscles, joints and skin. They provide a constant flow of information to the brain about the movements and location in space of various parts of our bodies and the environmental forces acting on them. The balance organs in our ears are like spirit levels. All this information is processed at the unconscious level and is compared with our conscious position. The messages are then sent down to our motor nerves and then to muscles. This process of comparing wish with actuality of sensing error and then correcting it by the precise application of an opposing force enables us to stand erect.

"One of the most characteristic properties of all living organisms, from the smallest to the largest, is the capacity to develop, operate and maintain systems which set a goal and then strive to achieve it through cybernetic process of trial and error".

"Cybernetic systems" James Lovelock says "employ a circular logic rather than the traditional linear logic of cause and effect".

To Edgar Mitchell, the sixth man to stand on the moon, was a deeply moving experience. "It was a beautiful, harmonious, peaceful looking planet, blue with white clouds, and one that gave you a deep sense of home, of being, of identity. It is what I prefer to call instant global consciousness".

ECONOMIC DETERMINISM

"A businessman would not consider a firm to have solved its problems of production and to have achieved viability if he saw that it was rapidly consuming its capital".

E F Schumaker

What changes might occur in global economic policy and practice, if the worth of the planet itself, as well as that of the majority of its human population, were valued?

Marilyn Waring

Economic determination as defined by Olaf Stapledon states "that the whole course of history including the evolution of institutions and ideas is determined by the economic environment on man's economic needs".

Economic determination therefore works only because men spontaneously desire certain things. Obviously any social change must spring from some factor which is incompatible with the maintenance of the status quo and may be said to be its opposite. At any particular stage of history a struggle is going on between the old customs, which are out of gear with new economic facts and the influence of new facts themselves. These influences tend to produce a new social order, including new institutions, new cultural forms and a new morality.

The more firmly established the old order, the greater the time-lag before the new order can appear. Not only do institutions and ideas survive the conditions which produce them, but also once they come into existence they manifest a very vigorous life of their own. They also cease to be appropriate to anything in the environment when handed on from individual to individual and from generation to generation.

The new economic facts emerging may well be the catalyst for a change in the status quo.

"Today our planetary environment is threatened on a scale unprecedented in human history. We have witnessed the extinction of various species and loss of genetic diversity, the build-up of toxic wastes, deforestation, desertification and massive alteration of the global climate".

Hazel Henderson

Bruce Smart of the Continental Group, USA "Businessmen need to concede that the guiding hand of the marketplace doesn't always consider the impact of its actions on third parties or future generations. Nature can't correct toxic wastes, destruction of agricultural land and species extinction".

The social costs that have been externalised to the people and the environment have to be faced up to.

Some History

To understand the principles of Modern Economics we must look at its origins based on scientific principles.

Renee Descartes (17th Century) is usually regarded as the founder of modern philosophy. He did not accept any traditional knowledge, but set out to build a whole new system of thought. He acquired the firm belief in the certainty of scientific knowledge. He wrote "We reject all knowledge which is merely probable and judge that only those things that are perfectly known and about which there can be no doubts". He located existence itself in the mind alone, announcing that being meant the ability to think, hence "Cognito ergo sum". I think therefore I am.

To Descartes the material universe was a machine and nothing but a machine. There was no purpose, life or spirituality in matter. Nature worked according to mechanical laws and everything in the material world could be explained in terms of the arrangement and movement of the parts.

This dualism and reductionist philosophy was continued by Isaac Newton. He developed a complete mathematical formula

of the mechanistic view of nature which remained the solid foundation of scientific thought well into the 20th Century.

If the original need of Patriarchy had been to split the human from nature (using women as the link between them) Cartesian splitting of the mind from the body refined and reinforced the original division.

The major 20th Century British economist, John Maynard Keynes called economics "a method rather than a doctrine; an apparatus of the mind, a technique of thinking which helps its possessor to draw correct conclusions".

Forty years ago he wrote "For at least another 100 years we must pretend to ourselves and to everyone that fair is foul, and foul is fair; for foul is useful and fair is not. Avarice and usury and precaution must be our gods for a little longer still". The Keynesian message was clear enough. Ethical considerations were not merely irrelevant, they were an actual hindrance.

UNITED NATIONS SYSTEMS OF NATIONAL ACCOUNTS UNSNA

Sir Richard Stone, a 1984 Nobel prize winner, played the pivotal role in creating the UNSNA. The Statistical Office of the United Nations published a System of National Accounts and supporting tables in 1953.

The report sought to give a 'coherent picture of economic structure' from economic statistics. The reason given was the practical need for information about the working of the economic system as a whole and the way in which its various parts are related to each other. The aim to offer economic explanations of the way the world worked.

The report explained "While national accounting information is useful in all fields of economic decision making because of the factual background it provides, its outstanding use has been in connection with public policy".

Marilyn Waring chaired the Public Expenditure Select Committee in her time in Parliament. In her term, New Zealand revised its System of National Accounts in accordance with changes suggested by the United Nations. It's there she realised the importance of the UNSNA.

"The things that I valued about life in my country, its pollution free environment, its mountain streams with safe drinking water, the accessibility of National Parks, walkways, beaches, lakes and Kauri forests, the absence of nuclear power all counted for nothing".

They were not accounted for in private consumption expenditure, general government expenditure or gross domestic capital formation. With the dismissal of the

environment also came evidence of the invisibility of women and children. 'Non producing' housewives, non-paid family workers, 'non-working' mothers were all disregarded in these accounting systems supposedly used to determine public policy.

Despite a later acknowledgement of the importance of environmental considerations, the UNSNA still records no costs of poisoning the population of the earth.

Indirectly they are visible in the national accounts as consumption of medical and other professional services and are seen as growth.

Johnathan Porritt, director of the Friends of the Earth in the United Kingdom suggests "politicians feel pathetically insecure when they cannot promise growth".

Marilyn Waring again "National income provides for deficit in money but not deficits in natural resources".

The New Theory

These theories have developed from Einstein's Special Theory of Relativity. The Universe is no longer seen as a machine made up of a multitude of objects, but has to be pictured as one indivisible dynamic whole, whose parts are essential and interrelated.

Fritjof Capra, a physicist, views it a General Systems Theory.

"The social and economic anomalies that can no longer address global inflation, unemployment, maldistribution of wealth and energy shortages are now clearly visible. The failure of the economic profession to come to terms with these problems is recognised by an increasingly sceptical public, by scientists from other disciplines and by economists themselves. It is within the scope of economic theories to include qualitative distinctions which are crucial to the understanding of our lives and planet. In contrast to the mechanistic Cartesian view of the world, the world view emerging from modern physics can be characterised by words like holistic, organic and ecological."

Definition of Terms

The unfortunate use of words used by the economists has undoubtedly distorted their true meanings when seen in non-monetarist terms. For example consider value. The Latin derivation is from 'valere' to be strong or worthy. The Oxford dictionary 'that amount of some commodity, medium of exchange which is considered to be an equivalent for something else'.

Consider Capital viewed by E F Schumaker "The illusion of

unlimited powers, nourished by astonishing scientific and technological achievements has produced the concurrent illusion of having solved the problems of production. The latter illusion is based on the failure to distinguish between income and capital where this distinction matters most. Every economist and businessman is familiar with the distinction and applies it conscientiously and with considerable subtlety to all economic affairs - except where it really matters, namely the irreplaceable capital which man has not made, but simply found, and without which he can do nothing".

Consider profit. Corporate efficiency is usually measured in terms of corporate profits, but these may be made increasingly at public cost, reaped at the expense of social and environmental exploitation. These costs must be taken into account, so that the notion of profit becomes associated with the creation of 'real' wealth. Many of the goods produced and sold 'profitably' today, will then be recognised as wasteful. e.g. plastic milk containers.

Consider wealth. Fernando de Rojos said "The use of riches is better than their possession". The Middle English period 1150 - 1500 AD perception of wealth was well and health, something we seem to have overlooked.

Consider property. Wendell Berry "Our present definition

of property is grossly inadequate. If we define a farm as property, and property as a commodity that one owns, and may therefore sell (that is if we equate with its monetary value) then we are dividing the farmers mind from it. We have placed the 'economy' between the mind and its work because we have placed it between the mind and its workplace. And so it becomes possible to consider farming as a kind of economics".

"Property belongs to a family of words that governs our connections with the world and with one another; property, proper, appropriate and propriety.

If we use the word property in the proper respect for its pattern of meaning, it will always imply the intricate involvement of a proprietary mind, not the mind of ownership, as the term is defined by the industrial economy, but a mind possessed of knowledge, affection and skill appropriate to the keeping and the use of its property".

Perhaps the economists use of words goes like this: "When I use a word" Humpty Dumpty said scornfully, "it means just what I choose it to mean, neither more nor less".

Lewis Carroll

And finally from E F Schumaker "If we could return to a

generous recognition or meta-economic values, our landscapes would become healthy and beautiful again and our people would regain the dignity of man who never forgets the noblesse oblige (privilege entails responsibility.)"

TRUE ECONOMY OF FARMING

RULE OF RETURN

"He that counts all costs will never put plough in the earth"

English Proverb

One of the early ecologists was Lord Northbourne, a landowner in Kent, who ran a large mixed farm, and was actively involved in local Government and public education, especially agricultural education. In his book "Look to the Land", 1940, I found a wonderful example of a man who understood the cyclical flow in which animal, vegetable and mineral are inter-dependent; and that its natural rhythm is disturbed by the excessive importance attached to financial, mechanical and chemical considerations. He discusses the soil as a living entity "a whole world in itself."

The top layer of soil is alive and may vary in depth and is darker than the sub-soil. This is because of the presence of humus.

The Indo-European word for earth (dhghem) is the root of the Latin (humanu), the old German (guman), the Old English guman, all of which mean "human".

Humus is a product of the decay of once living material. Decay is a biological process and humus itself exhibits varying degrees of biological activity. It is essential to soil fertility.

Sir Albert Howard in his book "Agricultural Testament" outlines the part played by soil fertility in agriculture.

He writes "the nature of soil fertility can only be understood if it is considered in relation to nature's round."

He suggests "We must at the outset emancipate ourselves from the conventional approach to agricultural problems by means of the separate sciences. Instead of breaking up the subject into fragments and studying agriculture in piecemeal fashion by the analytical methods of science, appropriate only to the discovery of new facts, we must adopt a synthetic approach and look at the "wheel of life", as one great subject and not as if it were a patchwork of unrelated things."

His book was first published in 1940 and I understand has become a textbook for study on the Indore Process. This process was devised at the Institute of Plant Industry, Indore, Central India in 1924 and 1931.

It was observed in the course of these studies that the maintenance of soil fertility is the real basis of health and of resistance to disease.

Sir Albert Howard outlines the agricultural practises of the Orient and how they have followed nature's method of the Rule of Return.

For a fine example of this I turn to a picture of words in an essay by John Todd "The Practise of Stewardship." He describes a farm near Bandung in Java.

"On one small landscape cultivated continuously for centuries, was a farm that reflected in miniature the major restorative processes in nature. Here I was looking at a farm where the fertility was probably increasing each year and had for hundreds of years. It was an example of a true partnership between people and the land.

What I discovered is a delicate balance among the kinds of agricultures; all the major types are inter-woven on one piece of land. Trees, livestock, grains, grasses, vegetables and fish, are all present and no one of these is allowed to dominate.

The farm on Java is hilly, and although the native forest is gone, it has been replaced by a domestic forest of trees

with economic food value. This forest first and foremost protects the hillsides, the farm houses and buildings, and the agriculture and fish culture below.

Water enters the farm in a relatively pure state via an aquaduct or ditch on the contour of the land. To charge it with nutrients so it can fertilise as well as irrigate the crops, the aquaduct is passed directly under the animal sheds and the household latrine. The manure enriches the water, which is subsequently aerated by passing over a small waterfall. At this point the enriched water flows between deep channels among raised-bed crops. The water does not splash directly onto the crops, but seeps laterally into the raised beds. In this ingenious way, animal and human wastes are used while minimising contamination of crops by pathogens harmful to animals or humans.

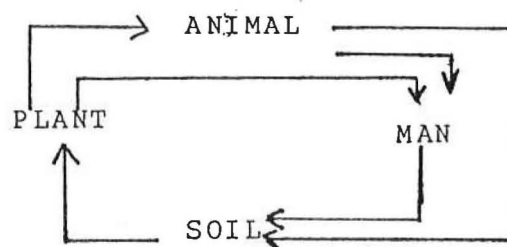
The gardens filter and to a degree purify the water. Water not absorbed, or lost to the garden joins in a channel and flows into small ponds where fish are hatched and raised. The banks of the aqua culture ponds are planted with a variety of tuberous plants; the leaves are fed to the fish and the tubers go to the livestock.

The presence of fish in the ponds causes the water to become loaded with fish wastes, so it is enriched for a

second time, and flows into rice paddies that it both floods and fertilises. Again the nutrient and purification cycle is repeated. The rice filters out the nutrients and organic materials and water leaving the paddy is again in a somewhat purer state.

Finally the water flows to the bottom reaches of the farm where it enters a communal and partially managed large pond. From time to time organic matter, including sediments, is taken from the pond and added to the soils on the higher reaches of the landscape.

The Rule of Return



One of the other fine examples of the "Rule of Return" is "An Introduction to Natural Farming" by Masanobu Fukuoka. After training as a laboratory technician in plant breeding, and like Sir Albert Howard saw the limitations of the laboratory. He advocates a "do-nothing" farming. The argument not against work, but unnecessary work. He suggests that people work more for the things that they desire rather than need, and some things they do desire

they don't need. Also he takes the common sense approach to expert authority, How about not doing this? or that?

He is also suspicious of science and condemns the fragmentation of knowledge by specialisation and wishes to pursue topics in their wholeness, recognising that its wholeness includes both what he knows and what he doesn't know.

Benjamin Franklyn said something similar. "What's now discovered, only serves to show that nothing's known, to what is yet to know". Fukuoka speaks of agriculture as a "way". "To be here caring for a small field, in full possession of the freedom and plentitude of each day, everyday".

The preface of his book written by Wendell Berry says "Humans work best when they work for human good, not for the higher production or increased efficiency, which have been the nearly exclusive goals of industrial agriculture".

"The ultimate goal of farming" Mr Fukuoka says "Is not the growing of crops, but the cultivation and perfection of human beings".

The reason that man's improved techniques seem to be

necessary, is that the natural balance has been so badly upset beforehand by those same techniques that the land has become dependant on them. This line of reasoning not only applies to agriculture, but to other aspects of society as well. For instance doctors and medicines become necessary when people create a sickly environment. Formal schooling has no intrinsic value, but becomes necessary when society creates a condition in which one must become "educated" to get along.

Wendell Berry "Fukuokas science that begins and ends in reverence....in awareness that the human grasp necessarily diminishes whatever it holds. It is not knowledge, he seems to say, that gives us the sense of the whole, but joy, which we may have, only by not grasping.

N.B. It is pointed out that it is a common teaching device among oriental philosophers to use paradox, illogic and apparent contradiction to help break habitual patterns of thought. These are not necessarily to be taken either literally or figuratively, but rather as exercises to open the consciousness to perception beyond the reach of the intellect.

Ecologist warns of neglect caused by user pays

ODT August/89

WELLINGTON (PA). — Economic reforms and unparalleled retrenchment in public science are giving people confusing signals about the Government's commitment to conservation, the retiring president of the Ecological Society says.

A Conservation Department scientist, Dr Murray Williams, said user-pays had hit agricultural science particularly hard.

"Despite this nation's wealth and future well-being being derived almost exclusively from its thin soil mantle retrenchment has reached deep into the soil sciences," he told the ecological and soil sciences societies' conference which ended in Upper Hutt on Friday.

Agricultural science, much of it very ecological in direction, had been battered on almost every front.

ALARMING

Especially alarming was the demise of the farm advisory service, "that brilliant and functional conduit of knowledge and innovation between the researcher and the owner of the farm gate", Dr Williams said.

It had been replaced by a system only available to

those prepared to pay its inflated charge-out rates.

While he thought there was strong public support for the conservation ethic, the message the public was getting was that research into the kiwi, was not even a modest priority, though it was a declining species.

The issues of the past 20 years, like natural resource use and management, human impact on biological systems and the carving up of the national estate had intensified.

"The present very public rape of our marine resources stands as stark testimony to the fact that we apparently know very little about sustainable resource use," Dr Williams said.

FRUSTRATED

Science needed an effective and articulate advocate but its present premier body, the Royal Society, gave little confidence that it was forceful enough for the job.

Many affiliates were

frustrated at their limited influence and objected to the society being controlled by an elitist group of fellows, many of whom were no longer in close contact with the scientific workplace or aware of the main issues facing science, he said.

The Royal Society did function as an effective respected adviser to Government on scientific matters and its influence had been usurped by various departments. Working groups provided specialist advice, Williams said.

Scientist says soils taken for granted

By Nicola Topliss

No-one sees soil as a thing of beauty. It is taken for granted, a Wellington Department of Conservation soil scientist, Dr Les Molloy, believes.

"Very few people actually go and dig a hole and say 'hey, that's an interesting soil' like they might say, 'hey, that's an interesting tree'" he said.

Dr Molloy is the senior officer co-ordinating conservation appreciation at the Department of Conservation, and was in Dunedin last week to give a lecture at the University of Otago on soil as a basis for land use in New Zealand.

He would like to see more people observe different soils and land contours when driving around.

"If they see something interesting, they could read and find out about it."

He said it was sad that children in the education system did not have their eyes open to the "sort of stuff that's around us".

He said very few people made the effort to learn about soils, and why soils should determine how the land should be used.

"Soils are a natural entity, which should be used within their natural limits."

So much of the New Zealand economy was production based, it could be much more efficient if we farmed within the ecological limits of the soil, he said.

"We should ask, if farmers are really going to get a higher return from their land if money has to be constantly poured into irrigation

schemes in areas which always experience drought."

Government-subsidised water schemes created an unnatural environment, Dr Molloy said.

"If you artificially prop up the land with subsidised schemes, you are dealing with an artificial situation which will not continue to take the punishment."

"There are soggy sports grounds throughout the country which were laid out by engineers who knew nothing about soils," he said.

"People try to take short-cuts. They take for granted the grass will continue to grow, and that the soil will take all sorts of punishment."

It was up to city councils and catchment boards to supervise soil management.

GREEN POLITICS

"Nothing can be more absurd than the practise which prevails in our country of men and women not following the same pursuits with all their strengths and with one mind for thus the state, instead of being whole is reduced to half".

Plato. The Laws. 300 B.C.

Eco Feminism

Hazel Henderson writes, "Today's ecofeminism is restoring earlier pre-history in celebrating nature. It understands the heuristic value of uncertainty which allows each generation to reformulate its experiences, cognition, epistemology and value systems in light of new conditions.

Uncertainty is valuable because it keeps us awake and aware, whereas certainty and exactitude allows us to hand-programme our responses to the environment".

She suggests that motherhood, parenting and raising of children and maintaining comfortable habitats and cohesive communities is valued by ecofeminists as the most highly productive work of society. Under patriarchal values and economics, these have been the most devalued tasks, ignored or unpaid.

The new male scholarship that is emerging. Eco-philosophy, though evolving separately from Eco-feminism now seems to be flowing with it.

One of these new scholars Fritjof Capra (already mentioned) discusses Green Politics as a "radical revision to a new vision of reality".

Green Politics is an ecological holistic and feminist movement which emphasises the embeddedness of individuals and societies in the cyclical processes of nature.

Green Politics recognises that we are in a global crisis that touches every aspect of our lives, our health and livelihood, the quality of our environment, and social relationships. They are systemic problems which have inter-connectedness and are inter-dependant.

Though taking no seats in the European Parliament the Green Party accounted for 15% of the vote.

Capra identifies the Values Party of New Zealand as the first Green Party. It presented itself from the very beginning in the late 1960's as a Green Party before the ideas were fashionable.

Their manifesto for the 1970 election entitled "Beyond

Tomorrow" stated the need for a steady state economy, ecological thinking, human centred technology, decentralisation of Government, equality for women as well as valuing the traits traditionally considered feminine.

In 1975 they captured 5% of the vote, but because of internal arguments and dispute the party virtually self-destructed.

Capra writes "Perhaps the Values Party arrived on the political scene before its time, unable to sustain its critical momentum without the support of a Global Green Movement".

The Labour Party is now calling itself a green party. I have deliberately not capitalised, as although there is important environmental legislation on the agenda of the Labour Party, I very much doubt whether they would change their name. Much of this legislation we will be made more aware of as Regional Government changes, and the implementation of Resource Management Law Reform.

West Germany and Belgium are the two European countries which have been most successful. The European Green Movement has developed networks and political organisations to facilitate networking and flow of information.

One organisation Ecoropa, acts as a European think tank, promoting ways of living and political institutions consistent with ecological principles. It also maintains links with like-minded individuals and grassroots organisations in the U.S.A.

"The co-ordinating efforts of the European Green Movement together with those of other ecological networks such as Ecoropa, Friends of the Earth, are beginning to transcend the boundaries of Europe and to result in contacts with Green movements at the global level. Thus Green politics, a politics of thinking globally and acting locally, is slowly becoming a political reality for the entire human family".

Fritjof Capra

BIOREGIONALISM AND/OR LOCAL GOVERNMENT
REFORM/AND/OR OFFICE OF RURAL AFFAIRS

When commenting on the Green Movement in the U.S.A., Capra suggests a 5 Strata organisation for the movement; local, bioregion, state, macro regional and national.

Peter Berg, director of the Planet Drum Corporation defines a bio-region as both a geographical terrain and a terrain of consciousness, both a place and the ideas that have developed about how to live in that place.

In his book "Dwellers in the Land", Kirkpatrick Sale outlines some principles of Bioregionalism. He envisions a world based not on arbitrary political boundaries, but on national geographic boundaries, defined by their particular flora, fauna, land forms and waterways.

1. Knowing the land, not just rurally, including the natural potentials on which the cities rest.
2. Learning the Lore - exploration of the ways and widsoms of the ancients, value of herbal medicines, siting and building houses for maximum passive solar effect.
3. Developing the potential - the task to see how the potential can best be realised within the

boundaries of the region. Allows a full development of the people and communities within it and self reliance of the region.

4. Liberating the self - the development of the individual potential within the development of the region.

Knowing, learning, developing and liberating are some of the processes most central to the bioregional idea.

LOCAL GOVERNMENT REFORM

"We have become involved in a range of entrepreneurial activities and community development projects. in our natural preoccupation with system solutions we have neglected to pay similar attention to the structures. I am not suggesting that we should abandon one for the other, quite the opposite - I am suggesting that we consider the two in tandem, for this is how they exist".

Heather Little, Local Government Commission.

Having followed the Local Government Reform process, especially in our area, I don't feel at all inhibited about commenting on what has happened.

The reform which also involves Resource Management at the regional level, will have a great effect on the rural areas.

Because of population based voting systems the rural areas will have reduced representation.

There is quite a large majority of voters who don't realise the implications of the reforms. Most comments I have had are that people are more worried about having a sealed road and what there rating bill will be.

New Zealand exporters get the 'green' light

By Mike Moore

WELLINGTON. — European researchers are dubbing the "green" consumer revolution the most significant change in consumer goods marketing and retailing in 20 years.

They believe it will be even bigger — and more lucrative — than the nutrition craze. In fact, they are linked.

The last two decades have seen unprecedented growth and prosperity in Western Europe. Growth in discretionary spending power has been spectacular. Between 1976 and 1986 household incomes for the top fifth of the population rose by more than 40%.

Affluence has become a mass market phenomenon. Green concerns have moved from the lunatic fringe to the mainstream of consumer consideration.

British manufacturers have seized new opportunities, arising out of the green movement, to market ozone-friendly products. They realise that big money exists in telling customers a product is green. Some companies are putting "ozone-friendly" stickers on products that have been around for years and have never contained CFCs.

A "greener-than-thou" attitude has surfaced as each supermarket group announces its latest moves against the ozone-threatening gas. A growing number of European shoppers are willing to pay more for products they believe will help save the planet.

Examples abound. Throughout northern Europe, green issues such as acid rain have helped to create a strong market for eco-friendly consumer goods. Shoppers are changing their habits to reflect their concern for the environment.

Publicity about the dangers of using chlorine to bleach paper products has promoted a German company to introduce light-brown unbleached coffee filter bags. British manufacturers of disposable nappies have announced that they will use only unbleached wood pulp because dioxins are produced as a byproduct in the chlorine bleaching process.

Britain's first green mail order catalogue, advertising more than 150 life-enriching products, has just been launched. A recent issue of the *BBC Wildlife* magazine contains shopping coupons offering discounts on ecologically sound goods. Britain's first *Green Consumer Guide* became an instant bestseller, and is now being translated into eight foreign editions.

The Minister of External Relations and Trade, Mr Moore, returned last week from a round of trade access talks in Europe. In this abridged article, he reports on the "green" revolution sweeping Europe, and its implications for New Zealand exporters.

Across the Irish Sea, tourist authorities are vigorously using the promise of organically grown fruit and vegetables to promote Irish hotels.

A NEW CONSTITUENCY

A new constituency is emerging throughout Europe and the Western world. It is concerned with a range of issues, including the environment, peace, social justice and the arms race. All these issues are linked by a common moral concern.

The Greens are just one version of the emotion. But they are rapidly becoming a global force. Conventional political parties are leaving a gap because of their reluctance to reform. This gap is being taken up by the Greens, with the potential of destabilising traditional political alliances or creating new coalitions. Any politician who ignores these issues does so at great risk.

The greening of George Bush was signalled by the introduction of a clean air bill in June. Mikhail Gorbachev's recent speeches have put almost as much stress on environmental issues as *perestroika*.

In the recent elections for the European Parliament, Britain's small Green Party won 15% of the vote. The Greens nearly doubled the number of seats they held in the Europe-wide Parliament. The result means that without doubt there will be a greater emphasis on the environment and food quality.

Part of the marketing strategy in Europe is based on promoting the image of New Zealand as a green and wholesome place far away from the pollution of industrial Europe. We must ensure that we maintain our clean, green, nuclear-free image, and that our food exports meet the required standards.

There is money to be made from the environment. Making and selling anti-pollution equipment has become big business. The world

market for pollution control technology is estimated to be worth up to \$400 billion a year. An estimated \$230 billion worth of CFC-based equipment will have to be scrapped or modified in the United States alone.

New Zealand industry should make maximum use of its expertise in small-scale, low-cost technology to help clean up the world and earn vital foreign exchange at the same time. Some New Zealand firms are already making significant inroads in the international pollution control business.

A bonus awaits green countries such as New Zealand. Because our companies are being forced to measure up to tough environment standards at home, they will be well positioned to profit from the sale of technology and equipment when other countries see the green light.

TIMBER AND FISH

New Zealand is also poised to play a significant part in the battle against two of today's most controversial environmental issues: logging of the world's rainforests and depletion of marine fish stocks. Our role in both battles offers the incentive of potentially lucrative foreign exchange earnings.

Half the world's rainforests have disappeared in the past four decades. They now cover only 7% of Earth's surface. It is estimated that every minute about 40 hectares is destroyed by the twin threats of loggers and settlers.

In North America, efforts to halt the logging of old-growth forests and to protect the spotted owl could result in withdrawal of up to one-quarter of the United States west coast's available timber harvest.

Wood is becoming a diminishing resource in most areas of the world at a time when New Zealand's forest industry is on the verge of becoming a wood-fibre super-



power. With our guaranteed availability of plantation lum and wood fibre, we are well placed to supply overseas needs in foreseeable future.

New Zealand's campaign promotes the use of pinus radiata contains a strong environmental message. The more we can encourage others to use plantation wood, the less the pressure on the world's natural forests, the less the risk of changes to biodegradable substitutes.

As many countries come realise they have overused their own natural forests, it is a reasonable assumption that they and their customers will come to rely on more and more.

The watery holocaust of drift fishing has become a serious threat to the economies of some of South Pacific neighbours. One way to ease the pressure on marine stocks is to develop fish farming. The United Nations Food Agriculture Organisation estimates that farmed fish products will account for one-fifth of total world demand for fish by the end of the century.

It has been estimated that tens of millions of new jobs and hundreds of millions of dollars in export earnings could result from development of New Zealand's fish farming industry. The preservation of clean-green image is a vital component of the aquaculture industry's international marketing strategy.

All Government policy is checked for environmental implications.

The Ministry for the Environment has been co-ordinating a comprehensive review of all resource management laws. Outcome will be a set of streamlined processes for development, adequate regard for the environment.

I do not accept that development is a dirty word. Neither is conservation. We must have them both to sustain the special quality of New Zealanders deserve and to come to expect.

A fresh Green tinge to Europe's research

Politicians across Europe are wondering how important the Green parties will become. But laboratories and institutes throughout the Community are already feeling the influence

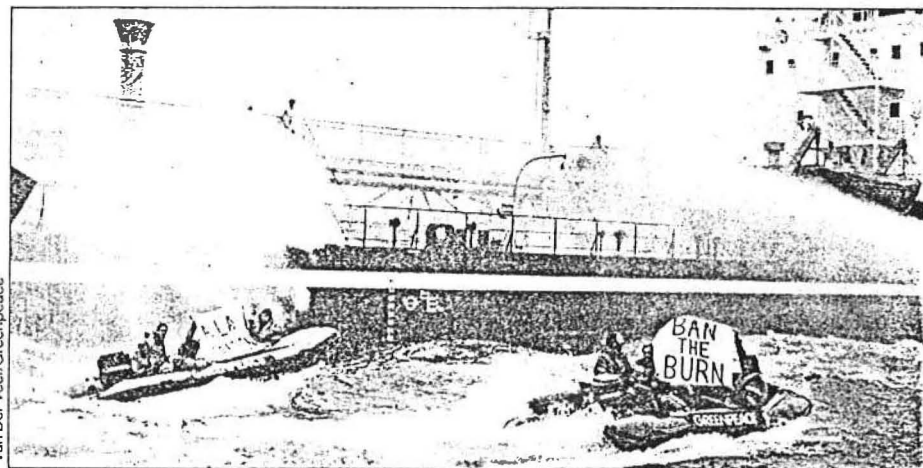
Debora MacKenzie and Roger Milne

PUBLIC concern about the environment has risen steadily throughout Europe since the 1970s. In Britain, the environment has hit the front pages regularly only since the Prime Minister, Margaret Thatcher, publicly converted to the green cause late last year. Constant pressure from governments in the rest of the European Community to conform to tighter standards on the environment may have assisted the conversion.

Several European governments have been turning greener over the years, because they know that the voters are watching them. Thatcher now has to contend with the 15 per cent of the British electorate who voted "Green" in last June's European elections. In other European countries, too, such swings towards the Greens have led governments to change their policies.

The results of the European elections provide a guide to sentiment, if not power, in Europe. Greece, Spain and Portugal fielded no Green parties. Neither did Denmark, where the Greens are against the European Community—small wonder, since its government is often the most environmentally conscious of the 12 and often forced to compromise in Brussels.

In the Netherlands and West Germany, the overall vote for Greens was 7 per cent and 8.4 per cent respectively. Ministers of both countries, whether at home or in Brussels, give consistently green performances. If there is a correlation between the size of the Green vote and the green hue of the policies, then greener policies may be



The pressure of publicity: Greenpeace challenges an incineration ship

forthcoming from France and Belgium. In these two countries, the Green vote last June shot from about 3.5 per cent in each, to 11 per cent and 14 per cent respectively. Italy weighed in with 6.2 per cent support; it fielded no Green candidates in 1984. British Greens won 14.5 per cent this time, up from 0.55 per cent in 1984, but gained no seats under the British voting system. Their colleagues in Strasbourg will allow them to take courtesy seats.

Greens already sit in the national parliaments of West Germany, Belgium, Holland, Denmark and Italy. They have stolen enough voters from mainstream parties, especially third parties essential to some

coalitions, that ministers from countries where Greens are strong want very much to look green themselves. This desire has repercussions on science and technology.

There are few better indicators of this trend than the way in which a growing Green vote has concentrated the minds of ministers on environmental research. Gerrit Vonkeman, of the Institute for European Environmental Policy in Brussels, is gathering statistics on the funding of environmental research in Europe.

In 1986, the 12 member states of the Community spent more than 533 million European Currency Units (ECU), or about £370 million, on environmental research

Chemicals industry: guilty until proven innocent

TO JUDGE from what some activists say, the chemicals industry could suffer severely if Greens make significant political gains. The Greens would scrutinise all products, processes and wastes associated with the industry. The only ones to survive the purge would be those that the party considers to be necessary, harmless to the environment and harmless to people. Sara Parkin, the co-secretary of the European Green Party, based in Lyons, France, says the burden of proof would fall upon manufacturers to show that their activities were sound.

"Talking about the industry in detail is irrelevant," maintains Parkin. She says the industry grows uncontrollably, which contravenes the green philosophy of minimum growth. The Greens believe that minimising growth will restrict the impact of industry, and its waste, on the environment and on human health. Another Green goal is for industry to reduce the amount of energy it consumes. The aim is to force companies to minimise their input per unit of production.

The input would encompass costs, including effects that might be felt at a distance, such as air pollution that blows to other countries. The Greens would encourage companies to recycle as much material as possible, to use and produce as many natural products as possible and to deploy energy as efficiently as possible. An example would be to use bacteria instead of chemicals to clean waste.

Parkin does not foresee huge problems with unemployment if chemicals plants close down throughout Europe. "Job losses are a red herring," she says. Mixed organic farming could provide employment for people who once made artificial fertilisers and pesticides, she claims.

Jim Berreen, a lecturer in ecology at the University of Birmingham, is the British Green Party's specialist on the chemicals industry. He plans to propose a revised policy to limit pollution from industry at the party's annual conference in Wolverhampton in September.

Berreen believes that "economic growth should be limited and that the

health and safety of the planet should become the chief criteria by which to judge the worth of any activity". The Green Party would judge chemicals companies on the basis of "safety before profit" and "local production for local needs", he says. Local representatives would be responsible for all decisions. An Environmental Protection Commission would operate at national level to draw up legislation and conduct research into ways of controlling and reducing pollution.

Berreen was unclear about penalties for those who might violate the party's rulings. For instance, if production of a product were banned, would people be allowed to import it? "Only if it comes from an ecologically sound source. We would impose import bans or tariffs on unsafe or unsound products," he said.

Would this mean that some products that people regard as essential would become unavailable? "Yes. But people now think differently about things. No one will want to buy ecologically unsound products anyway." **Andy Coghlan**

What interested me the most was the philosophy behind the actual reform and whether Derek Quigley's comment on change that it was a matter of attitude and state of mind.

Of course new information comes to light all the time and fortunately I left this last section of the project to put together until now.

My original idea was to look at the paradigm shift in local government and make a comparison with the bio-regional concept. There are definite similarities in philosophy. The new information that I acquired was about the Office of Rural Affairs in Victoria, Australia.

Before commencing an explanation of the O.R.A., I think it would be appropriate to outline some of the philosophy of the Local Government Commission. This is quoted from a speech by Brian Elwood to Regional Territorial and Special Purpose Authority representatives in September 1988.

"Communities of interest will be recognised in a way which will enhance the citizens involvement in the process of local government.

To the extent that there is a collective interest in seeing the affairs of the community efficiently and effectively administered, the Commission believes that the basic system

of local government should be multi-functional in nature. Most authorities will be district authorities representing a combination of rural and urban interests. The major change associated with that approach will impact upon the rural communities. The new system of local government will enable rural people to participate in the development and administration of their wider community. The new system will enable urban people to understand and help address the challenges of rural New Zealand. In an historical sense New Zealand has depended upon its rural based economy and society, and is likely to continue to do so for the foreseeable future.

The reality is that as a country New Zealand stands or falls by the extent to which it collectively achieves its national objective of a fair society where the individual has an opportunity to achieve his or her own goals whilst caring for others. The improvement of local government must therefore emphasise the extent to which individual New Zealanders are inter-dependent, not emphasise the extent to which they are different. To divide town from country in the structures of local government creates a division which is not only unnecessary, it clouds the objective and its achievement."

"The water catchment will be fundamental in dividing New Zealand into identifiable regions to allow for important

decision-making in respect to the natural resources of land, sea, air, water and what may be extracted from or added to those resources."

The regions will therefore play a pivotal role in the management of natural resources. The Resource Management Law legislation is supposed to be completed by the local government elections. The Consultative document on RMLR discussed the difficulties and controversy surrounding the use of artificial fertilisers and agricultural chemicals. They also realised the need to consider agricultural interests in their assessment.

Another problem was the overlap with animal remedies and the debate whether agricultural interests such as efficacy and international trade requirements should be considered at the stage of assessing pesticides etc. for health, safety and environmental effects.

One of the options is simple, or simply awful "acknowledges that there be no good reason why the agricultural business sector should be treated differently from any other business sector. The assessment of other toxic substances does not include consideration of efficacy and impact on trade."

Another option recognises the international implications of

current controls exercised by M.A.F. over export quality assurances and the significance of this to our agriculture trade.

On August 4th 1989, Geoffrey Palmer announced the establishment of an Environmental Protection Agency to be set up as part of the resource management law reform.

In brief, it will combine functions currently undertaken by the Pesticides Board, Annual Remedies Board, Radiation Protection Advisory Council and the Toxic Substances Board. It will work closely with regional and territorial government and investigate the links between the agency and the functions of the Department of Health and Ministry of Agriculture and Fisheries.

"Resource management is a regulatory function. It involves making decisions on the desirability of particular outcomes, having regard to all perspectives or values. The results of resource management decisions have direct financial and other effects on people. It is important therefore that those who take such decisions are seen to be neutral and not to predetermine outcomes. Local authorities should be able to listen to all views and evaluate them fairly." Discussion Document on RMLR, 1988.

One of my concerns is the intrusion of Party Politics in

local government. Historically given opposites we revert to an either/or, them/us urban/rural situation. What I would like to see is a unity/diversity both/and logic developed.

I have no doubts that the Commission's philosophy is a correct one, but whether it will be apparent or understood by those standing for election is doubtful.

Every regional council will be required to establish a rural services committee. The objective will be to emphasise the importance of rural servicing issues and allow extensive involvement by rural people in the provision of rural services.

One of the early books I read at the beginning of my study I have kept referring to frequently. Sir George Stapledon in the Way of Land outlines issues and problems of Rural England. An ardent advocate for preserving the rural areas of England, he writes about rural psychology and the Spirit of Place - a place where we belong.

"The whole trouble" he suggests "is that it has been nobody's business in the administrative sphere to endeavour to hold the balance between what I would describe as rural necessity and urban need, and in a very real sense rural necessity is absolute, and urban need relative.

I believe it to be of supreme importance that nothing should be done in Rural England that reacts indiviously against the rural interests and exaggerates in any way the presumed-to-be-superior claims of the urban over the rural. Almost everything that has been officially done, or at all events officially sanctioned might, it seems, have been designed for the express purpose of exaggerating to the maximum, this indiviousness".

"I am being perhaps outrageously presumptuous when I would suggest that our greater concern should be rather for the country man than for the townsman. I have an uneasy feeling that those of us who are half-country, half-town, in our love of the country think too much of its beauties for our own quasi-urban sakes, and are liable to forget the true country people who are an integral part of the beauty and harmony we wish to perpetuate."

And so in my wish to keep up-to-date I've included an article written this year in a rural newspaper, "Softness remains in the heart of rural New Zealand".

In an essay written for Rural New Zealand What Next, Tim Wallace asks "Do we need a Rural Policy?" I think the question is answered very effectively in the last paragraph.

"Whether or not there should be a separate rural policy for New Zealand is really up to the rural residents. However, if rural people cannot make up their minds about how they want to develop their areas, it is quite clear that urbanites will assume that responsibility for them. And while urban voters may have the best of intentions, they do not live in the areas about whose future they are quite willing to make decisions".

Softness remains in the heart of rural NZ

Otago
Southland
Farmer
March 3/89.

**By Jack
Bradshaw**
**How well does
the average
New Zealander
appreciate his
native land?**

There has probably never been a survey which would supply the answer to this question. And more than likely a real answer would not be forthcoming.

If the question was asked about farmers then the answer would undoubtedly be — "most of them." Not many write poetry or paint pictures of the countryside around them. Few would wax

enthusiastic about the beauty of it all, but a gentle prodding reveals a deep seated love for the soil and all it produces.

Not far below the surface also lurks a spirituality which the city dweller could never imagine; not with his visualisation of gumboots, black singlets and buxom work-worn women.

Nevertheless, it is there, to emerge on a twilight evening when the shadows are long from shelterbelt, and rows of baled hay, or early on a golden morning from the top of a mustered hill or peak. That is a time for reflection,

a time of renewing resources to face dry dusty days in the yards, or cold hours on a lambing beat.

Your average cement jungle dweller would be surprised were he privileged to visit a country home, whether cottage in the backblocks or architect designed home on the flat, at the artistic appreciation of country folk. In many cases their refinement exceeds that of the high powered executive.

Sometimes the home reflects hard times. But worn lino and faded wallpaper is compensated for by the atmosphere of warmth and genuine friendship. However hard the rest of the world has become a softness remains in the heart of rural New Zealand. And it is here that sincerity is valued and respected, not the fast buck and rip-off.

Sensitive

The popular impression of clodjopping rustics will never be dispelled, no doubt. The wonder of it is that is not anywhere near true. It could be when the type of work is considered — dagging, dipping, ploughing...the list goes on. The reality is, however, that the ploughman and the shepherd clean up at the end of a wearying day into gentle people with sensitive souls.

In the city the hardening drive tends to permeate deep and be-

come a way of life, difficult to shake off at day end. Motives are questioned at every turn of the way, and there is good reason. Respect is earned here by a shrewd deal and a high dividend.

Respect in the country is not sought, but it is gained by well husbanded stock, neat fences and the hundred and one ways which proclaim a good farm. It is also gained by the help extended to others in times of need without seeking publicity for the act, and the quality of support for the local community.

Business lunches are all very well if all that is required at the end of it is a fat contract. The people involved are not really important, amounting in many cases to being mere pawns in an involved game.

A meals which follows a shared day in the shearing shed or out mustering is a different matter. The piled dishes of chops and potatoes are eaten with sharp appetites and followed with deep satisfaction. A hard day, a good meal and companionship which goes deep and endures.

Gulf

A gulf exists between the country hick and the city slicker which may never be bridged. There have been few attempts to do so. But in the final analysis both species are people and if either are to be pitied it is the urbanite who deserves pity most.

Both lifestyles leave their mark indelibly. Of the two the one which is more gently etched is that pursued near hill, forest and stream.

Sounds romantic, country folk don't regard it that way — it's simply a way of life, largely uncomplicated, that gave this country its image and its former wealth.

OFFICE OF RURAL AFFAIRS

Earlier this year I met with Mary Walker, 1983 Kellogg scholar. Mary in mid 1988 had undertaken a study of the Women in Agriculture movement in Australia. One of the most important contacts for Mary was the Head of the Office of Rural Affairs in Melbourne, Jenni Mitchell.

Spurred by enthusiasm for the concept Mary returned to Victoria this year for further study. So my many thanks to Mary for the information she has given, for I too am very enthusiastic.

Announced by the Victorian government in 1985, the Office of Rural Affairs (O.R.A.), was attached to the Department of Agriculture (similar to our M.A.F.) to become cumulatively titled the Department of Agriculture and Rural Affairs (D.A.R.A.) .

Its objective:

To identify the priority needs of country Victorians, especially those whose needs are greatest, and to assist the development and co-ordination and promotion of policies and initiatives which equitably meet these needs.

The Government proposed three changes:

1. A strong focus implementing the Victorian Economic Strategy.
2. A wide view of what "agriculture" entails.
3. Attention to the whole way of life of people.

The terms "agriculture" and "rural", though not redefined, have been given a wider and fuller sense. "Agriculture" includes farm inputs, transport, handling, initial processing, marketing and related services. "Rural" refers to all those people living outside the metropolitan areas and major regional centres and to the activities in which they are involved.

One of the major components of the O.R.A., and I think a key to its success, is the direct two-way communication between the head officers of the O.R.A. and State Government.

A once monthly meeting is held with the Ministers of the D.A.R.A., Education, Conservation, Forests and Lands, Community Services, Water Resources, Treasurer and any other Minister when appropriate.

This allows for a greater understanding of rural affairs by government, a greater understanding by country people of government policy, and enables more country people having a say, rather than just a powerful lobby group.

The office covered all of Victoria, apart from the two largest cities, Melbourne and Geelong, with the Head Office in Horsham, not much bigger than Gore.

The administration is provided by the Department of Agriculture and the \$1 million budget provides for 22 staff, transport and a rural womens network.

So the O.R.A. is a state initiative, the personnel are state employees rather than local body employees, and though this may make them vulnerable, there is strong commitment beyond political beliefs. An acknowledgement by the Victorian Government of the considerable input of rural women to their communities, has placed a priority on Womens Issues. Jenni Mitchell is also the editor of "Network", a quarterly rural womens magazine. This linking of many rural womens groups allows autonomy to be maintained, while co-ordinating facts and communicating with the different groups.

The Victoria Farmers Federation is supportive of the O.R.A. and sees it as "a positive acknowledgement of the different requirements of rural communities when distributing government services".

New Zealand Perspective

In accepting the concept of the O.R.A., it is important to decide where it will fit for our greatest advantage and the strongest position to influence change.

Keeping in mind the philosophy of the Local Body Commission "Dividing town from country creates a division it clouds the objective and its achievement" and the fact that the newspapers of a few months ago suggest that "the government rediscovers farming". Where to from here?

The restructuring of local government could perhaps provide for the establishment of the O.R.A.. The intrusion of party politics in local government could well be the catalyst for change in the future.

In the report of the Local Government Commission to the House of Representatives, March 1989, it states "future policy determinations by the government and subsequent legislation can add to the functions performed by either regional councils or territorial authorities".

The O.R.A. I believe, should be established with direct links to government ministers, as in the Victorian system. Whether it would assume the same links with M.A.F., or whether it would be administered by local authorities, is

debateable. Vulnerable as it might seem, attached to Central Government, I would like to quote from an article by Colin James in the National Business Review, June 1986. "The argument is a constitutional case that one government in its dealings with its citizens, cannot ignore the trust the citizens were entitled to put in the government that preceded it. There is a sense in which a government is the government in the same way that its predecessor was also the government. The government may radically change its policies just because its membership has changed, but is in some way responsible for avoiding undue dislocation because of the change".

How we might have avoided Post Office, Bank closures, lowered representation on Health Boards and Local Authorities if we had been able to empower all those people we have traditionally considered urban, and communicated our combined displeasure to an uninformed government.

The recent advocacy for a combined Land-User Body may well be enough for some, but an Office of Rural Affairs that combines rural/urban in the widest view will have a far greater strength to implement policy and decision making, and hopefully a cure for our ailing rural communities.

"What Is Wrong With Us?"

A Senator's impassioned call for action

If the steps needed to save the environment are well known and feasible, then why are they not taken? In a speech at the TIME conference, Senator Albert Gore of Tennessee, one of the most ardent environmentalists in Congress, explored this crucial question. Excerpts from his remarks:

When I announced I was running for President, I said the greenhouse effect, the depletion of the ozone layer and the global ecological crisis will, by the end of this election year, be recognized as the most serious issue facing this country and the world. Three days later, a George Will column ridiculed the naiveté of a politician who could imagine that issues of this kind would be politically salable.

I guess he was partly right and partly wrong. I was right in that the issue has, during this year, attained enormous importance and new recognition. But he was right, since it didn't do me any good politically. There are still barriers to political action. Let me discuss five of them.

► Number one, there are areas of uncertainty about the greenhouse effect and the dire nature of the ecological crisis we face, which are seized upon as excuses for inaction. This is a psychological problem common to all humanity. If strong responses are needed and yet there is some residual uncertainty about whether you are going to have to make those responses, the natural psychological tendency is to magnify the uncertainty and say, "Well, maybe we won't really have to face up to it."

But the fact that we face an ecological crisis without any precedent in historic times is no longer a matter of any dispute worthy of recognition. And those who, for the purpose of maintaining balance in debate, take the contrarian view that there is significant uncertainty about whether it's real are hurting our ability to respond.

► The second barrier to political action is an unwillingness to believe that something so far outside the bounds of historical experience can, in fact, be occurring. To put it another way, this set of problems sounds like the plot of a bad science-fiction movie. People automatically assume it can't be real.

► The third political barrier is the assumption that it will be easier and more sensible to adapt to whatever climate change occurs than it will be to prevent the crisis. But the change could come so swiftly that adaptation will be all but impossible.

► The fourth barrier is the lack of widespread awareness among the peoples of the world about the nature of the problem. Most political leaders, let alone their public, are unaware of what is happening and how severe it is. That must be changed.

► The fifth barrier to political action is the knowledge that many of the ultimate solutions are almost unimaginably difficult.

And since they are harder than anything we have done before, and the efforts may all come to naught anyway, why mess with them? Why not conserve our energy and just not even try? That is a formidable barrier, not least because the solutions require international cooperation on a scale that is totally unprecedented in history.

Those five barriers must be overcome before the political system reacts. The role of leadership is critical in spreading awareness, in framing solutions, in offering a vision of the future we want to create, as well as a vision of the nightmare we wish to avoid.

There is an old science experiment in which a frog is put into a pan of water, and the water is slowly heated to the boiling point. The frog sits there and boils because its nervous system will not react to the gradual increase. But if you boil the water first and then put the frog in, it immediately jumps out.

We are at an environmental boiling point right now. Is the destruction of one football-field's worth of forest every second enough to make the frog react and jump out of the pan? What will it take? If, as in a science-fiction movie, we had a giant invader from space clomping across the rain forests of the world with football field-size feet—going boom, boom, boom every second—would we react? That's essentially what is going on right now.

We saw the two whales trapped in the Arctic ice, struggling for air, and the world responded. The U.S. and the Soviet Union cooperated. Yet we see 40,000 babies starving every day, and we don't react. What is wrong with us?

There used to be a debate in the '70s about appropriate technology. Now the question is: Did God choose an appropriate technology when he gave human beings dominion over the earth? The jury is still out. And the answer has to come in our lifetime from the political system.

There are precedents. We made human sacrifice, once commonplace, obsolete. We made slavery obsolete. These things, just like changes in weather patterns, took a long period of time. But now, just as climate changes are telescoped into a very short period of time, changes in human thinking of

a magnitude comparable to the changes that brought about the abolition of slavery must take place in one generation.

We know how to solve the problem. It will be unimaginably difficult. The cooperation required will be unprecedented. But we know what to do. What is required is a change in thinking and a change in the equilibrium of the world's political system.

Right now the political equilibrium is characterized by short-term policies at the expense of long-term policies. It is characterized by actions to confer national advantage at the expense of actions designed to promote global advantage. It is characterized by preparations for war, ignorance and starvation.

Our challenge as political leaders is to come up with an agenda of solutions, which we are doing. But the larger challenge for all of us is to shift the world's political system into a new state of equilibrium, characterized by more cooperation, global agendas and a focus on the future. As General Omar Bradley said at the end of World War II, "It is time we steered by the stars and not by the lights of each passing ship."



"Did God choose an appropriate technology when he gave human beings dominion over the earth? The jury is still out."

CONCLUSION

1. The less valuable your contribution to society, the more you will be rewarded.
2. Never under-estimate the importance of bullshit.
3. All government financial legislation ultimately achieves the opposite of its expressed intent.
4. The health of New Zealand farming and commerce can be measured by the number of rods in the Major Jones trout pool of the Tongariro River in May.

Bob Jones Four Laws of Economics

I realised in coming to the end of this project, what a difficult task I had set myself in making some conclusion, let alone develop a ten minute speech on the concepts.

Maybe one is not necessary, but as I have enjoyed the study and the fitting together of the different parts, I found the whole project hard to let go. Given another few months, I would have launched into a diatribe on the rabbit problem and the ever increasing problems of Tuberculosis. Remember the comment "we don't learn from experience, but react to imposed conditions".

Lord Northbourne poses a question "Is the romance of country life really only a poetic survival of a bygone age, not very practical because there is no money in it, or is it that romance is something to which we must cling, and to which we must build? Is farming a necessary drudgery to be mechanised so as to employ a minimum of people to be standardised and run in even bigger units to be judged by cost accounting only?"

We must be ever vigilant in not undermining the very special relationship that farmers have with the land. The major problems of modern agriculture in the United States, soil loss, chemical dependency, fossil fuel dependency, loss of family farms, more corporate forms and an expansion of agribusiness are the consequences of too much reductionism. Problems were, and are still, being defined for farmers, problems farmers scarcely knew they had. Scientists, technologists and salesmen encouraging everything from fertilisers to computers, push their products. Many farmers have come to distrust their own common sense observations, when confronted with an abundance of quantitative documentation of the remedies.

Many back to the landers who attempted sustainable agriculture, found it difficult as individuals or individual families.

"Once the systematic destruction or dismantling of rural communities was underway in the United States, the weakening of the family farm was inevitable". Wes Jackson I believe the implications are that sustainable agriculture will need rural communities if it is to survive and flourish.

The rather vociferous Sir George Stapledon says "Nature is nothing if not artistically harmonious in her blendings of her numerous, conflicting and frequently savage purposes, and I think we must admit that evidence is accumulating to suggest that she will not tolerate, and in fact is not tolerating, man's blatant transgressions against her own standards of appropriateness. It is fashionable today to scoff at the word "natural", forgetting that as we learn more and more about the secrets of nature, so we are shown how colossally much more there is to be known. We are ever increasingly prone to act on what little we know without making any sort of allowances for what we do not know, and our ignorance is greatest where it affects us most nearly, namely, in our own physical, mental and emotional reactions to the environments, we see fit to make for ourselves.

Agriculture is nearer to nature - to nature in all her moods and tenses, and in all her complexities - than is any other industry, and so those who serve agriculture are

brought nearer to nature than those who serve other industries.

That, to my mind, in the national interest, is an all sufficient argument for safeguarding the affairs of agriculture in every way possible". C.1938.

Owen Jennings, speaking at the New Zealand Institute of Agricultural Science Conference said "agriculture suffers in favour of environmental issues". So I'll remind you again, of what Gerry McSweeney said in February "all farmers are conservationists".

I hope that the perception is not harmed as we move forward to changes that will no doubt come about from the Resource Management Law Reform, Environmental Protection Agency, and changes in emphasis of the researchers and the M.A.F., to sustainable agriculture systems.

Carl Jung said "A good thing is unfortunately not a good forever, for otherwise there would be nothing better. If better is to come, good must stand aside. Therefore:

The best farming is farming that makes people healthier.

The best farming is farming that promotes a just society.

The best farming is farming that preserves the earth and its networks of life.

and finally from F.D. Roosevelt:

"The test of our progress is not whether we add more to the abundance of those who have much; it is whether we provide enough for those who have too little".

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Rural New Zealand -

What Next?

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DEFINITIONS

- Paradigm - Example of pattern
- Reductionism - Analysis of complex things into simple constituents; view that a system can be fully understood in terms of its isolated parts.
- Mechanistic - Doctrine that all natural phenomena, including life, allow mechanical explanation by physics and chemistry.
- Synergy - Combined effect of drugs, organs that exceeds the sum of their individual effects. Hence Green Synergos-working together.
- Symbiosis - Association of two different organisms living attached to each other, or one within the other to their mutual advantage.
- Cybernetics - Science of systems of control and communications in animals and machines.
- Rational - endowed with reason, reasoning

Intuition - immediate apprehension by the mind without reasoning.

Determinism - Doctrine that human action is not free, but determined by motives regarded as external forces acting on the will.

Steward - person entrusted with management of
another's property.