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Revisioning Development in a □
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Revisioning Development in a Changing Environment

by Donna Maher*

Does development have a direction? How viable are the visions of future human society which guide our actions?

For millennia, most people lived in small, agrarian communities. Their continued existence depended on maintenance of the land, the occurrence of natural events, and relationships with kin and neighbors. In the 20th century, we have seen dramatic changes in how societies function, and how people live. We see both the world and ourselves very differently than our ancestors did.

Following the Second World War, governments conceived of planned 'development' as a conscious response to this rapid

change. It was envisioned as a concerted effort to better human life overall, and to somehow balance emerging inequities among nations. While the focus of development efforts has changed since then, we are still operating on unspoken and relatively unexamined assumptions about how human societies evolve, and what paths might realistically be open to us. We are becoming increasingly aware of environmental limitations to societal growth, and how our choices today may expand or foreclose on future human possibilities.

To make wise decisions in the present, we need to know much more about the relationship between two processes of evolution, human and natural.

Are they separate and independent? Are they bonded through stewardship? Or are we and the natural world linked in an equation of interdependent coevolution — with our actions changing the environment, and its state shaping our history and potential?

Such concerns, though broad and long-term, should be of keen interest to development practitioners. When you are traveling somewhere, it's essential to know the terrain, and have a destination in mind.

This paper sketches past, present and possible future concepts of our relationship with the environment. It looks at current attitudes, reasons why we need deeper understanding, coming

* This EXPRESS was written by Donna Maher. The opinions expressed in this article are those of the author and do not necessarily reflect CIDA policy. The contents of these circulars should in no way be viewed as modifying or updating any of the Agency's existing policies.



trends, and some implications of our role in development.

Hindsight

Many believe that the last set of ice ages catalysed the emergence of civilization. Certainly, human-induced changes to the environment intensified in their wake, with agriculture appearing in many places — notably the Indus, Nile and Tigris-Euphrates valleys.

Even in the distant past, human impact was not always benign. Africa's savannah was likely created by hunters burning forests. In North America, extinctions of many large animal species followed the arrival of hunters 10-20,000 years ago. The environment has been changed, sometimes irrevocably. But there is also evidence that once a community inhabits a region over hundreds or thousands of years it can develop a deep understanding of the area's ecology and evolve a niche for itself. Inuit knowledge of the Arctic, and the many well-established indigenous communities in the Amazon, are among the best documented.

The past was not homogenous. Various cultures coexisted at different levels of complexity, and similar environments prompted

sometimes similar, more often unique, responses in geographically distant regions.

Hunter-gatherer societies offer the most stable, long-standing relations between environment and humans. They demonstrate equilibrium, with many achieving 'steady-state' economies which are yet able to adapt to occasional extreme events such as drought and flood. Their cosmology places them in the environment, as a part of it.

The change from simpler hunter-gatherer to complex modern societies has not been continuous; there have been many different paths, with merging and backtracking. Societies exist today in all stages of 'development', complexity, isolation and integration, with great diversity of lifestyles and perceptions of our place in the world. Most nations have urban and rural populations with very different values, and a wide variety of worldviews — based on differences in gender, age, religion, ethnicity and class — can be found within a city.

Since the Industrial Revolution began, more than 250 years ago, social change has been constantly accelerating. Technological change in response to changing environmental conditions and

cultural perceptions brought increasing separation of society from environment. Social organization grew more complex and humans took on specialized roles (causing, in Marxist analysis, 'alienation'). Many new roles had little to do with subsistence and direct interaction with the environment, or dealt with only a fragment of the whole system. As our social structures grew more complex, our perception of nature simplified, and became increasingly utilitarian.

Human settlements have moved and expanded through exploration, colonization, slave trade, urbanization, immigration, and refugee flows. Such mobility, encouraged in recent times by cheap fuel and transport, is projected to increase in coming years, further severing ties between individuals, families, communities, and the land they may have occupied for generations. Relocation problems are well documented; removing people's link to their past and place alienates them from nature and land, weakening any sense of responsibility or protectiveness.

In this technology-driven age, it is all too easy for us to forget that mankind is a part of nature and not apart from it.

– HRH Prince Charles,
Millennium Reith lecture
(in the *Globe and Mail*,
31 May 2000)

The dominant, western industrial-development model distances humans from their environment. Social groups increasingly provide the ‘environment’ for one another, and are separated physically and functionally from nature, our life-support system. Primary sectors (agriculture, resource extraction) are economically devalued, while the highest-level, least connected sectors (services, and now information technology) are overvalued. Individuals may recognize biodiversity loss, climate change, ozone depletion, and the degradation of land, water and air, but the economic models that govern our global activities do not.

Prevailing neo-classical economic theory and business practice externalize social and environmental costs, setting up self-amplifying positive feedback loops. Symptoms of resource destruction, unsustainable management of renewable

resources, reaching of ecological limits, and imminent system collapse are often ignored or denied. Polluting industries are exported to places with lower social and environmental standards — where, in theory, rising GDP will lead to democracy and give people a voice in their own destiny. However, this linkage may be tenuous. Encouragement of democracy will require more direct action.

Human society is now experiencing the results of several centuries of unrestricted growth. Unique to our time is heavy dependence on non-renewable fossil fuels, which have provided cheap and plentiful energy, allowing humans (like any species, when a limit to growth is removed) to expand exponentially — changing our ‘empty’ world to increasingly ‘full’.

Since the early 1960s, awareness has grown of the negative effects: consumption of limited resources, overburdening of the environment’s capacity to absorb our wastes, health problems related to pollution, and the global impact (ozone depletion, climatic warming) of our individual and societal actions. Unanticipated consequences threaten to reduce the quality of

life for all, within perhaps one or at most two generations.

A movement toward environmental sustainability is necessary, but is strongly resisted by entrenched interests. Where cause-and-effect connections are complex and difficult to trace, and time lags are long, inertia fosters denial that problems exist. Even successful actions in response to identified problems may lead to complacency and further denial. Destructive paradigms are defended by their short-term beneficiaries. Institutional inertia and defense of the status quo give existing organizations stability, but make change a challenge.

Over time, our perception changed from an unconscious appreciation of ourselves as part of nature to a feeling that we are separate and disconnected from it. A sense of responsibility and stewardship was replaced by a competitive and exploitative vision of nature’s role.

Many hope that we may now be moving toward a more conscious sense of integration and belonging in nature. How we see our relationship to nature matters profoundly. How that relationship evolves will steer our development and shape our future on this planet.

Insight

Insofar as attention is paid to long-term outcomes, the prevailing credo holds that human ingenuity will respond to any self-imposed crises (technological optimism), or that our ability to create technologies and substitute resources will surmount any perceived limits to growth (cornucopian view). There is even speculation that, in a worst-case scenario, space exploration and colonization may offer an escape hatch — but costs and risks are astronomically high, while benefits are uncertain.

We can fine polluters, recycle chemicals, and *temporarily* decouple production from its environmental effect — at a cost, and within limits. However, our large and complex societies, able to control and affect land, air, water and living systems on a global scale, are initiating environmental change that is rapid and unprecedented. Emerging environmental issues have been characterized as multifaceted ‘metaproblems’, and our existing institutions face great difficulties in understanding and responding to them.

Unanticipated consequences and negative impacts may result when those who benefit do not also bear the cost of the decision to proceed with a project or a new

technology. Due to system complexity, cause/effect distance, and relational mechanisms not yet understood, the real costs of an activity may be unrecognized.

In a condition of turbulence, systems of interrelated problems are exacerbated by the independent actions of many unrelated organisations or entrepreneurs, and change can be rapid and complex, and even bewildering or chaotic.

– Michael Carley and Ian Christie, in *Managing Sustainable Development* (Earthscan, 1994)

To comprehend the extremely intricate interactions between human societies (which constantly deconstruct and reconstruct themselves) and the evolving ecology that sustains us, we must explore a variety of different and emerging fields of study and research. Our new world requires of us a new perception, and multidisciplinary collaboration is vital to tackling the complex array of issues concerning ‘the environment’ and our relationship with ‘it’.

Some scholars at the margins (or vanguard) of established disciplines see the need for multidisciplinary thinking. Cross-pollination and the sharing of

ideas are discouraged by our still-reductionist education system, growing specialization, and the sheer increase of ideas and information to be absorbed, but seldom synthesized.

Multidisciplinary scholars may currently lack credibility because they offend the entrenched assumptions of traditional disciplinary cultures.

Nonetheless, new ways of thinking and interacting are emerging in many areas and disciplines, to deal with a vast array of neglected or unresolved issues.

Social sciences

Fresh approaches, and perhaps whole new disciplines, will yield crucial insights into our changing relationship with nature. If we are to build environmentally sustainable societies, we must understand better why we behave as we do.

Social experience and genetic factors influence who we become — but one needs to exercise caution in suggesting genetic factors as a sole or dominant behavioral cause, as this could be used to justify racism or even genocide.

With the development of new genetic mapping technologies, however, work in the nascent field of *evolutionary psychology* is

more acceptable, if still highly controversial. Our ancestors, who were hunter-gatherers in small communities, developed instinctive behaviours which were useful in an 'empty' world. These same instincts may be destructive in our self-created 'full' world, and warrant critical examination. Also, new insights into our behavior may suggest useful social strategies for the future.

Anthropology can help us comprehend past and present social relationships with ecosystems, including adaptation, equilibrium, and disequilibrium. It can also elucidate the accompanying range of worldviews: a traditional sense of humans as part of nature; varieties of spirituality; the concept of stewardship (human responsibility to/for land and resources); and the various religious and ethical perceptions of nature.

Sociology evolved to help analyze the industrial world's rapid social change. Reflecting the worldview of the time when it emerged, sociology affirmed that growth and modernization were good, but ignored socioenvironmental connections. At its core, we find a 'human exemptionalist premise', separating and elevating human action from the environment, and dictating that "the physical

environment was irrelevant to modern humans" (R. Dunlap, in Redclift and Woodgate (eds.), 1991, *The International Handbook of Environmental Sociology*, Elgar, Cheltenham).

Sociology's many useful perspectives can enrich the study of socioenvironmental relations. The recent emergence of a sub-field — *environmental sociology* — seeks to recognize the linkages between industrial society and the environment. Woodgate and Redclift suggest using a model representing society and nature as two equal-sized spheres, connected through coevolution; nature 'evolves' while society 'structurates', and a subprocess within society allows social construction and deconstruction at the interface ... "so that coevolution can be understood as an interactive synthesis of both natural and social mechanisms of change".

The framework, addressed to sociologists, incorporates environmental perspectives only weakly. Traditional sociology offers useful tools but seriously misunderstands our ecological place. It needs to be reconstructed to include the ecology of which we are a part. Society and its activities are physically a part of the environment, and a more appropriate model might

represent society as a subset of the environment, rather than an equal, separate entity.

A unified framework of environmental sociology — incorporating the strengths of traditional sociology with the understandings of all disciplines, as well as the evolving 'science of complexity' — remains a work in progress, with unresolved issues, but would be of great benefit.

Politics is the process through which resources are allocated. Considerable recent work in *peace and conflict studies*, carried out by Thomas Homer-Dixon and colleagues at the University of Toronto (among others) promises to shed light on how conflicts over natural resources evolve, and what may be done to prevent or resolve them.

And certainly there is a similar need for fresh thinking, for deconstruction and reconstruction, in other areas — notably in economics, a discipline critical to the development community. *Environmental economics* is a classically formulated approach which seeks methods of valuation to reflect natural capital in economic models. *Ecological economics* is more philosophically oriented, and its practitioners challenge the underlying assumptions that drive dominant neo-classical

theories. They suggest that economic behaviours that evolved in a past world of vast natural frontiers and few humans are inappropriate in our present 'full world'.

Environmental ethics

T.H. Huxley, Darwin's defender, wrote that "the ethical progress of society depends, not on imitating the cosmic process ... but in combating it" (1894, *Evolution and Ethics*).

This adversarial vision is precisely opposed to the values, concepts and worldview emerging from environmentalist thinking, particularly over the past generation. On 'moral standing', VanDeVeer and Pierce (1991, *The Environmental Ethics and Policy Book*, 2nd ed., Wadsworth, Binghamton) assert: "The well-being of the individual is morally relevant for its own sake and not just because it is of value to another individual".

Ethical questions in the field of environment are problematic because they involve:

- non-standard (and non-human) 'individuals';
- non-existent individuals (future generations, the Chernobyl unborn);
- ecosystems;
- cumulative harm; and
- occurrence-of-harm 'probability'.

Ancient societies generally recognized the rights of a select few adult males; modern societies have progressively eliminated slavery and extended rights to all men, women and children. There is growing international acceptance of human rights, and systematic expansion of rights for all (disabled, comatose, those unable to speak for themselves) and occasionally for animals, as well as recognition of the rights of collective entities (government, business, cultures, species, ecosystems).

Do our duties to nature imply that nature possesses 'rights'? How far do our duties extend: to ourselves, our children, other people, future generations, the human species, other species, or all life? Do they extend to aesthetic principles, or non-living systems? Genetic experimentation is opening doors on new zones of potential rights, faster than we can define answers. Current schools of thought range from radical speciesism (human-centric) to species egalitarianism (bio-centric).

Will rights and duties be further extended in the future? Do they rest on a traditional moral/ethical basis such as stewardship, or on a different perception of our relationship with the environment? We face great ethical challenges in the new millennium.

Science and complexity

Science is a dialogue between society and nature. Growing awareness of the limitations of traditional scientific method has generated an appreciation of alternative ways of understanding nature and society, along with a new scientific methodology for modeling and describing complex systems. This moves beyond a mechanistic Newtonian view, where prediction of system behaviour was a matter of having enough data, to a 'science of surprise', where chaos and unpredictability are endemic, with stability and predictability the exception.

"Newly recognized environmental problems", observes Bryan Norton, involve "a catastrophic effect, resulting from a large number of small but incremental decisions made in the present (that) would affect mainly future generations (and) harm large numbers of people over geographically broad areas" (in VanDeVeer and Pierce).

These 'zero-infinity dilemmas' are posed by decisions that carry seemingly negligible possibility of cataclysmic, irreversible consequences, "such as risks of a serious accident in the production of nuclear power".

Technology and risk

Exploding technology and compounding economic growth, on an increasingly populated planet with finite resources, are creating risks unprecedented in kind and scale. Unfortunately, current scientific methodology is proving inadequate — for instance, to analyze the long-term or synergistic impact of pollutants on living systems. We are constantly surprised: by finding PCBs in the fatty tissue of almost every organism, by disappearing fish, and DDT-resistant malarial mosquitoes, and antibiotic-proof superbacteria. It seems that almost every technical effort made to isolate a substance from the environment has failed or is failing.

"The cause of many such surprises seems clear", notes Bill Joy, co-founder of Sun Microsystems. Systems are complex, "involving interaction among and feedback between many parts. Any changes to such a system will cascade in ways that are difficult to predict; this is

especially true when human actions are involved" ('Why the future doesn't need us', in *Wired*, 8.04, April 2000).

As successive innovations beguile (or capture) us, our social identities are altered around them ...in certain fields society has been embarked on what are effectively uncontrolled scientific experiments.

– Robin Grove-White, in 'Blind Commitments' (1991)

Significant risks in many areas are emerging. The viability of long-term storage of increasing quantities of radioactive waste has been questioned for decades. Effects of introducing genetically engineered organisms into the environment cannot be known for certain, and many are questioning the long-term health effects of consuming food produced with this technology. Our use of antibiotics for the treatment of disease has encouraged the development of more virulent antibiotic-resistant pathogens, and increased pesticide use has resulted in the emergence of resistant pests.

Bill Joy and others in the high-tech field are expressing reservations about converging research into nanotechnology, exponentially more powerful

computing technology, and genetic engineering, speculating that these technologies will likely behave in complex and surprising ways — even, perhaps, threatening human survival.

Limits to growth

In the early '70s the Club of Rome pioneered computer modeling of then-current trends in growth and resource use, with extremely pessimistic outcomes. Recently, more sophisticated models have produced less dismal projections (partly because of slower population increase, consumption efficiencies, and technological change), but new factors (global warming, ozone depletion) give fresh cause for concern.

Resources are physically limited. We tend to use the best and most accessible first — leaving the more costly and difficult-to-extract resources for coming generations. We seek substitutes for future use, but have found no replacement for some non-renewable resources. Even renewable resources can be destroyed, as evidenced by devastating soil erosion in Haiti, Madagascar, and many other areas.

Current practices threaten prospects for future growth, or even maintenance of existing

quality of life: net loss of resources, urbanization of rural areas, and degradation of productive land through erosion, salinization, overuse and depletion of nutrients and biota. Some of this damage is physically or financially irreversible. Each loss may be bearable in itself, but the cumulative outcome is unpredictable.

A 'tragedy of the commons' occurs when individuals destroy a common resource, such as a fishery or a forest, to maximize their own benefit. Private ownership of common resources has often been proposed to prevent this outcome. However, when the commons come to be privately managed for short-term gain, and when capital is mobile, the result may still be destruction of the common resource.

Depletion may be avoided if users have a strong local commitment to maintaining a resource, consider the real costs of its misuse or degradation, take measures to prevent social or environmental damage (for instance, buffer zones between logging and streams), and if all affected by a decision have a voice in that decision.

Hydrocarbon dependence

Extraordinary and unprecedented is the degree of our dependence on fossil fuel. An ever-increasing supply of cheap energy has removed a limit to growth, allowing human population to expand exponentially and radically restructuring our use of land and resources.

For a century now, fossil hydrocarbons have fueled the development of society, seemingly freeing it from ecosystems. Largely, however, "the apparent freedom was due to the long delays between the initial oxidation of hydrocarbons and the cumulative impacts of their use, which we now think are leading to climate change. In any case, modern values, knowledge, organization and technological systems reflect the availability of hydrocarbons rather than the features needed to interact and continue to coevolve effectively with ecosystems" (Richard B. Norgaard, 1997, 'A coevolutionary environmental sociology' in Redclift and Woodgate (eds.), *op. cit.* p. 167).

Reliance on non-renewable fossil fuels entails tremendous investments and creates unsustainable social institutions. If we are unable to find a

substitute technology or somehow replace fossil fuels, modern industrial society may be simply an aberration in history. Ours wouldn't be the first society to destroy its resource base and perish, and this thought should give us pause.

Foresight

Despite deepening complexity and accelerating change, it is possible to identify some specific trends and concerns that will almost certainly loom large as society and the environment continue to coevolve in the early 21st century.

Conflict

The human population, especially in lower income countries, continues to increase. Per capita consumption of resources, especially in higher income countries, is also rising, and there is an expectation among people in growing economies that they will be able to enjoy the same living standards as people in the wealthiest countries. At the same time, resources are physically limited and many are being used up or degraded.

We can expect increasing conflict related to resource use and access, especially where food, water and energy are concerned. Already we see significant

conflict over water in the Middle East.

Natural' disasters

With more people, more 'property', more intense and unpredictable weather systems (a product of global warming), and fragile human-built infrastructure designed for past conditions, we can expect more natural disasters and greater harm to people and property. As conflicts over dwindling resources intensify, we can expect the number of refugees, and costs for reparation (if this is possible) to increase dramatically.

Previews have been offered by earthquakes, flooding, and wind- or ice-storms around the world; the number and intensity of hurricanes, monsoons and tropical storms have increased recently in Southeast Asia and the Caribbean. Some extreme events are influenced by us; others are not, but will certainly affect us.

New mind

The dominant premises (progress, modernization), initially useful and publicly agreed-to, became embedded in social structures. To escape their limitations, we must see differently.

"Societies, rather than picking and molding technologies according to their values, are being shaped by technology" (Richard Norgaard, 1994, *Development Betrayed: the end of progress and a coevolutionary revisioning of the future*, Routledge, London). Must technological advance mean a decline of local, immediate, personal understanding of our connection with and place in the environment? To regain balance and control of our own future, we need new (expanded) minds, a greater consciousness with more emphasis on holistic judgment and wisdom.

Only a minority of social scientists today believe that values and facts can be separated, but positivism is institutionalized, so social scientists have little influence on government. Still believing that we can predict response and make systems behave as we wish "we repeatedly delude ourselves ... that ecosystems and societies are analogous to mechanical systems. Our remedies do not lead to new equilibrium solutions we prefer. On the contrary, new problems with new relationships between them evolve with every step we take" (Norgaard, 1994, *op. cit.*, p. 69).

Paradoxically, while change is accelerating and time shrinking,

we must learn to think in much longer time-frames than the next annual report, election or mortgage renewal. Today's decisions will have impact for generations (land and water use), millennia (nuclear waste — 20,000+ years), or even eternity (biodiversity loss). There is profound dysfunction between hurried, short-term decision-making and delayed, long-term effects on the future, which we must learn to correct.

Development practitioners must achieve transformative breakthroughs in their thinking, to deal effectively with systems that, in Norgaard's words, feature "counterintuitive, seemingly acausal behaviour ... labyrinthine interactions ... decentralized structure ... holism ... contextualism ... subjectivism ... pluralism".

Intergenerational equity

Most theories of 'intertemporal ethics' recognize obligations to the next one or two generations. Extreme versions draw a cut-off line beyond our children, in sharp contrast to the native American suggestion that all planning decisions consider the seventh generation following ours, 150-200 years ahead.

Concentration on individual rights and utilitarian claim on

resources is “inadequate ... to deal with second- and third-generation environmental problems” (Norton, *op. cit.*, p. 444) such as biodiversity, soil loss, or resource depletion, or to meet our “obligation to perpetuate and protect the human species”. In fact, “given our knowledge of ecological fragility and our powerful technological capabilities to alter those systems, a generation such as ours has special obligations”.

If concerns are real and the risk of irreversible change significant, the precautionary principle dictates that, even where knowledge is incomplete, we must alter our course. The right response to uncertainty is caution, not inertia. But who is obliged to change course: those initiating change? those living on capital accumulated from past change? And who pays? All of us, developed and developing? Through a tax on income, consumption, property? These are ultimately difficult political problems, seldom even discussed.

Sustainability

In the ever-more ‘full world’ of the 21st century, sustainability will be an increasingly key priority and element in decision-making, particularly in development work.

In Herman Daly’s words, “Historically, in the ‘empty world’ economy, manmade capital was limiting and natural capital superabundant”. Today, “the roles are reversed. More and more it is remaining natural capital that now plays the role of limiting factor. The fish catch is not limited by fishing boats, but by remaining populations of fish in the sea. Economic logic says to economize on and invest in the limiting factor (and) maximize present welfare subject to the constraint that natural capital be maintained over generations” (1989, *For the Common Good*, Beacon, Boston).

Problems of scale, variables and data make it impossible to define sustainable development operationally. As Norgaard notes, “there is little potential for further refinement of modern social rationality to better respond to our environmental dilemma by increasing the responsibilities of bureaucracies or by redrawing their boundaries of responsibility and lines of coordination”. The law of diminishing returns has caught up with modernism, and answers must be sought elsewhere.

Revisioning development

Since the Second World War, ‘development’ models have focused on basic needs, then

economic growth, compensation for growing inequity, and recently participatory initiatives and endorsement of human rights. In parallel to this more human focus has come a recognition of the importance of environmental sustenance to social development, and the growth of supporting international institutions such as UNEP and UNESCO. Even established organizations have slowly evolved processes to monitor the social and environmental effects of their project activities.

The idea of development continues to evolve as “environmental phenomena such as global warming become better understood, as Third World peoples put their own imprint on the term, and as cultures repressed by westernization recapture their own sense of destiny” (Norgaard, 1994, *op. cit.*, p. 234).

Inertia and change

Institutions give us stability, continuity and capability, at the cost of inertia. They resist change. Thus, more than a dozen years after the Brundtland Report, environmental concerns are not yet well integrated into our perceptions and visions of development.

At present, “in the developing world, as well as in our overdeveloped world, we are obliged to present economic, utilitarian arguments to preserve the biological diversity that ultimately benefits us all”, writes James Nations, research director at the Centre for Human Ecology in Austin. “The day may come when ethical considerations (suffice) for species conservation. But in the meantime, if we want to hold on to our planet’s biological diversity, we have to speak the vernacular. And the vernacular is utility, economics and the well-being of individual human beings” (1988, ‘Deep Ecology Meets the Developing World’, in E.O. Wilson, *Biodiversity*, National Academy Press, Washington).

“The primary risk”, Ulrich Beck argues, is “that of social dependency upon institutions and actors who may well be ... alien, obscure and inaccessible to most people affected by the risks in question”. Issues of trust and credibility arise, only to be “reduced and coopted into the prevailing instrumental terms, as to how institutions can adapt procedures and self-presentation in order to secure or repair credibility, without fundamentally questioning the forms of power or social control involved”. At “a stage of modernity in which the hazards

produced in the growth of industrial society become predominant (we) do not reflect on the consequences, and pursue an industrial policy of more-of-the-same” (1992, *Risk Society: Towards a New Modernity*, Sage, London, pp. 4, 28-29).

An iterative (as opposed to blueprint) model is more difficult to manage, and requires expertise in multiple fields — but it is better suited to complexity, unpredictability, and ‘the science of surprise’, and more appropriate in an era when relationships between developed and developing countries are changing, while the environment and sustainability are rising on the development agenda.

Rapid and great environmental changes are now observable in human lifetimes. Exponential change is detected late, when it may be irreversible. To save ourselves, we must identify actions that degrade, and selectively replace the responsible models, perceptions and plans with, at the very least, less destructive structures and processes. We must look critically at our institutions, and remove the dysfunctional.

Third World criticisms

Many lower-income countries have been shaped by colonial exploitation of their resources and labour, and economic marginalization persists through the process of ‘globalization’. “Through most of the Third World”, Gadgil and Guha note, “the transition from the peasant to the industrial mode is very incomplete”. Environmental debate, in India for example, involves “the relative claims of the industrial and agrarian sectors over natural resources ... the respective proprietary claims of individuals, communities and the state, and finally the role of natural resource management in an alternative development strategy. But whether these debates will result in a new mode of resource use and a new belief system to hold our society together, it is too early to say” (Madhav Gadgil and Ramachandra Guha, 1992, *This Fissured Land*, OUP, Delhi).

The South has no shortage of targets when it questions the industrialized world’s environmental record, rhetoric, and new-found concern — from resource pillaging and the export of ‘dirty’ operations (even garbage and toxic waste), to hypocrisy in trying to block developing countries from taking the same path they themselves

followed, while continuing extravagant per capita consumption of resources.

In India, resources are rarely wasted and most ecosystems are already fully used (full world). The concern is utilitarian, the management of resources for continued human use. A North American 'wilderness ethic' seems an aesthetic luxury, inappropriate when there are problems of diminishing stocks of non-renewable resources, and contamination or unsustainable use of renewable resources (air, water, fish, forests, fields).

This diminished, present reality may reflect all of humanity's future, unless we proceed carefully. If they wish to help lower-income countries preserve their environmental heritage and use natural resources sustainably, development practitioners will need a sophisticated, broad understanding of the complex mix of political, cultural, economic and ecological factors at play in decision-making, enabling tactful, strategic intervention to tip the scales in favour of sustainability. To be credible, those from higher-income countries must also pursue policies that promote sustainability and equity in their own societies.

Respect, wisdom and empathy

In the past, human smallness in a large and dangerous environment made an adversarial approach more reasonable and pragmatic. Now, the environment is small, society large, and human impact dramatic. A more cooperative relationship with nature will benefit both humanity and the environment in the new millennium.

"Historically", writes Norgaard, "peoples who clung to their own cultures were a threat to modern peoples' (benevolent) belief in progress. As that belief has weakened and transformed, other cultures pose less of a threat. This offers some hope that the few remaining non-westernized peoples might have more influence over their own evolution" (1994, *op. cit.*, p. 59). Diversity gives strength and resilience, enriching all human culture.

Such thinking can create a 'wise society' — one that encourages wise decision-making. "Research on wisdom", Birren and Fisher argue, "will help to develop useful tools (for) the increasingly complex problems ... from nuclear waste to water use (that) face leaders and policy makers each day" (1990, 'The Elements of Wisdom', in Robert Sternberg,

Wisdom: Its Nature, Origins and Development, CUP, Cambridge).

Conclusions

The 'coevolution' model sees the environment responding to changes we make, and us changing, in turn, in response to altered conditions. Humans, enormously adaptable, can continue to survive in a diminished world, perhaps forgetting in time what has been lost. Much has already been forgotten. Most people are unaware that walrus lived in the St. Lawrence River a century ago, or that forests once covered the Mediterranean's now-eroded coasts.

At present, "the structuring of the future is taking place indirectly and unrecognizably in research laboratories and executive suites, not in the parliament or in political parties" (Beck, *op. cit.*, p. 223). Genetic modification, toxic waste, nuclear power and fossil fuel dependence show how "we have become embedded as societies in massive technological commitments, without any real processes of public decision-making", with critical choices generally "made blind, without realistic or meaningful advance assessment of their wider potential social consequences, at any stage at which options are genuinely open" (Robin Grove-

White, 1991, cited in Redclift and Woodgate, 1993, *Concepts of the Environment in the Social Sciences*, Wye College External Program, Ashford, U.K.).

We are on a technology treadmill, driven by consumption and fear, moving ever faster as we seek to solve problems we increasingly create. We face a dichotomy: quasi-religious faith in technology and material progress, opposed to concern about the potential cumulative impact of unexamined change on our lives in a world that is growing measurably smaller in resources even as our numbers swell.

Because it is vast and various, the environment is a Rorschach test: what we see may reflect who we are (the 'constructivist' analysis). Where everyone's perception of problems and solutions is different, consensus and a democratic mandate for changed behaviour are elusive, so local action and diverse, unique responses may be the most effective remedy.

Civil society can offer an alternative voice, with social and environmental groups working for change, both outside the system (exerting pressure) and within it (seeking accommodation). This may be increasingly effective, if institutions succeed in their effort

to become more nimble and responsive. In an increasingly resource-impooverished world, with timely technological innovation uncertain, we must use limited resources effectively, acting promptly on the precautionary principle, since the cost of delay may be devastation.

(T)he acceleration of technical, economic and social change necessitates long-term vision, because 'the faster you drive, the further ahead your headlights must shine.'

– Carley and Christie, *op. cit.*

Many positive trends hold potential for change and a brighter future:

- increasing respect for local, traditional and indigenous knowledge and culture;
- more use of participatory techniques in development planning, empowering local populations as 'agents of change' with the best insight;
- stress on democracy, gender equity and human rights as the basis for positive development;
- use of 'quality of life' as an appropriate indicator of social

change, and a recognition that improvement is not necessarily linked to economic growth or increased energy consumption;

- growing consciousness of our individual and societal 'ecological footprint';
- efforts (by individuals and civil society) to address the North's over-consumption, for better equity in resource use;
- creative efforts to replace status quo institutions with more responsive, 'nimble' structures.

At best, and perhaps necessarily, we can work a transformation through the emergence of new ethics and new ecologically-based economics, grounded on a greater understanding of our place in nature and appropriate to a 'full' world. We are a highly diverse and adaptable species. Living as if we don't have a civilized future may be a self-fulfilling prophecy — but, just as the industrial culture emerged two centuries ago, we can shape a new culture of balance, responsibility and wisdom. An environmentally sustainable society, supported by science and tradition, can be our conscious choice.

For more information

Should you require further information on education and human development, or any other subject related to international development, please contact IDIC Client Services at (819) 953-1035, or come to the 8th floor, 200 Promenade du Portage, Hull, Québec, K1A 0G4. The centre can put you in touch with a broad range of information sources on virtually any development issue. More information on CIDA and Canada's development cooperation is also available on the CIDA Home Page in Internet: <http://www.acdi-cida.gc.ca>.

This EXPRESS was written by Donna Maher. Comments from Henri Knoop and Wes Darou are greatly appreciated.

DEVELOPMENT EXPRESS is produced to contribute to CIDA's realization of knowledge-based and continuous learning objectives. Our intent is to facilitate learning by providing reader access to consolidated information from significant works on critical topics and issues.

Ideas, views or comments

If you have any ideas or views to share or comments to make concerning the subject matter of this article, please send an e-mail to the editor (express@acdi-cida.gc.ca)

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L'EXPRESS SUR LE DÉVELOPPEMENT entend favoriser l'acquisition d'une culture du savoir et d'apprentissage permanent au sein de l'ACDI. Le but visé est de faciliter l'apprentissage en offrant aux lecteurs une synthèse des renseignements contenus dans des travaux d'envergure portant sur des sujets et problèmes importants.

Ce numéro a été rédigé par Donna Maher. Nous remercions vivement Henri Knoop de ses commentaires.

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