ECOLOGICAL INTEGRITY AND BIODIVERSITY IN PROTECTED AREAS

The Politics of Separation

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A common symbol in young children's drawing is the sun. And when children are mentally disturbed the colour of the sun is often black. Young children, therefore, may have an innate understanding of their place in the world and the importance of their environment.

As we mature, however, our intuitive sense of our environment is much influenced by our family, the education we receive, the neighbourhoods we grow up in, our experiences with nature and other creatures, the culture of which we are a part, our religion, the extent of concrete we have in our daily lives, and lastly, our experiences as adults. All of these influences, in turn, determine the nature of the lens we use to view the world around us and our sense of place in the world.

The nature of our perceptual lens, in turn, is strongly shaped and coloured by the prevailing paradigms of the times in which we live, not the least of which are religion and sex. A dominant mindset in modern EuroAmerican thought is dualism, an "ism" that shapes the thickness, determines the colour, and the flexibility of the lens we all use to understand the world in which we live. As well, it influences our relationship with other species and the sense of place to which we, as a species believe we are entitled. For the dualist Rene 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 its parts. The mechanical picture of nature then became the dominant paradigm of science since Descartes (Capra 1982), at least until recently.

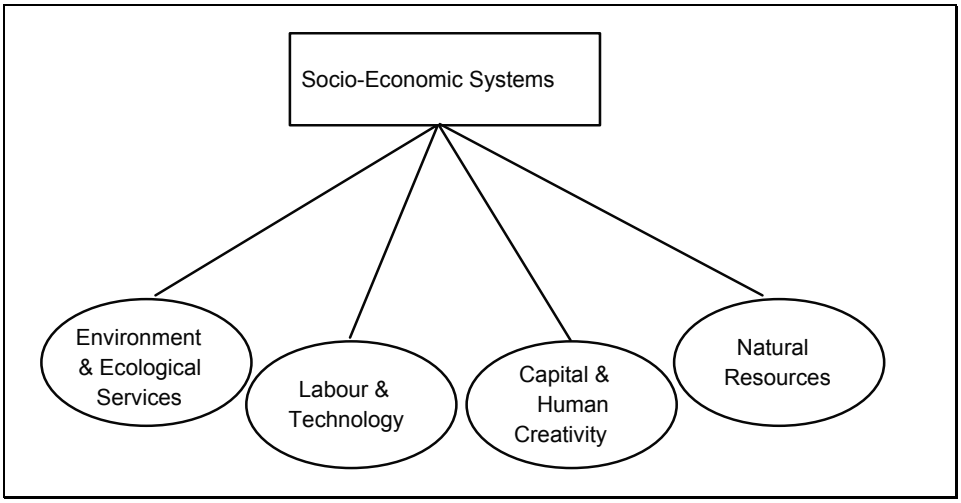
A paradigm that pervasively describes everything in the material world in terms of the arrangement and movement of its parts, and reduces nature to a linear mechanism leads to artificial separations. Humans in real life do not perceive themselves to be deterministic mechanisms only. And if humans are not mere machines then may there be other species that are

also not mere machines? Ultimately, any boundary between the fully machine-like and the not machine-like is a dualistic artifice.

The dominant paradigms in our society exert considerable influences on how we structure our science, how we conduct our economic affairs, how we build our settlements and how we

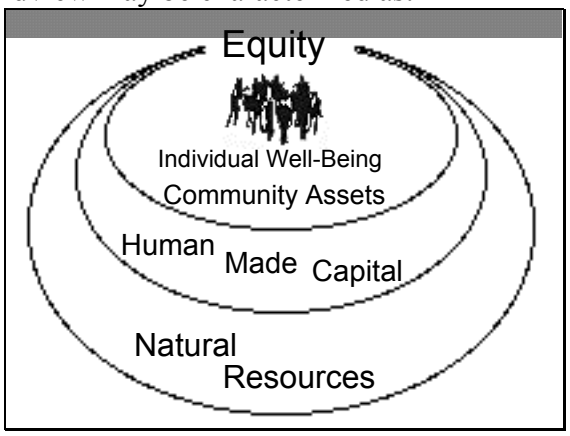
organize our institutions of governance. Often, the dominant paradigm is implicitly imbedded in our daily decisions, how we receive or reject new information and most importantly, it shapes our receptivity to new ideas.

A currently dominant paradigm or worldview may be characterized by the following model.



In this worldview, the "environment" includes "nature" to which machine-like behaviour is often attributed. What happens in the separate environment is of secondary, if any, importance.

An alternative worldview may be characterized as:

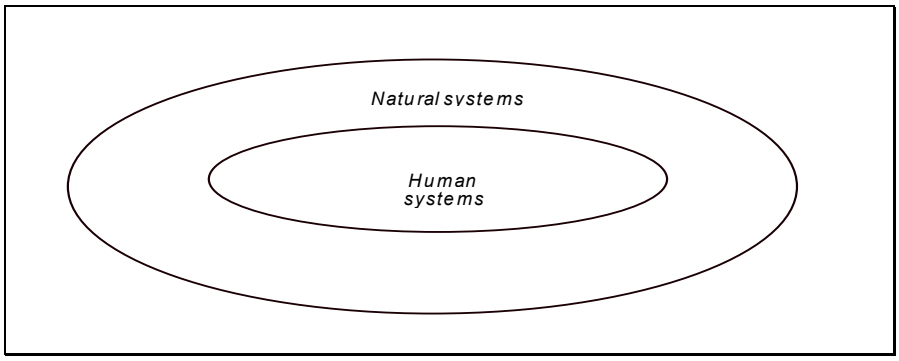


Some kind of cybernetic interactions may be perceived between the two separate systems, but they are still seen as separate.

Each of these worldviews has associated values and assumptions implicit to the models. The dominant "exploitist" model, see Regier and Bronson (1992), assumes that growth is inherently good; there may be no limits to that growth, and if there are limits, they can be transcended by man's knowledge and technology. There is an infinite ability for substitution between human and natural capital. It is a model of dominance and hierarchy, it presumes the dominance of the human species over all others and an associated rights regime that excludes the natural world. Its science can be characterized by its certainty of knowledge and control over the natural world. It is reductionist, analytical, curiosity-driven. Neutrality is revered for scientific rigour. Rigour is based on linear predictability and replicability, and its fundamental premise is duality, if A, then not B.

The assumptions and values implicit in an alternative "utilist" model are the notion of some limits to growth imposed by the carrying capacity of the planet as well as some recognition of responsibility by humans for other species. This responsibility, however, is primarily utilitarian, and there is a firm belief in the ability of man to manage the environment through ecosystem management.

The convergence of the new science of "complexity" with the SOHO politics of redemocratization can be characterized by the following emergent worldview model.



Within this third "integrist" paradigm, there is a growing appreciation for qualitative versus quantitative growth, and natural and human resources are complements, not substitutes. Its science is characterized by systems that are seen as SOHO, an acronym coined by Arthur Koestler, for self-organizing, holarchic and open systems.

In this emerging worldview, the global human system as a "holon", or "whole-part" of reality, is nested within a larger biosphere holon, for example. Any holon with SOHO features

has inherent within it a creative capability and is thus an actor in ultimate evolving reality. This notion of a holon transcends the reductionistic-holistic dualism.

The holarchic model infers that there are absolute limits to growth imposed by the biosphere, to which human systems are subject. Any holon persists because of reciprocal relationships between it and other holons with which it interacts. For the human holon the biospheric holon is indispensible. There is, therefore, an interdependence of human species with other species, and a different sense of "relational" to the world. In a co-evolving process between human and natural systems, the emphasis is on managing human impacts on the environment, rather than managing the environment. A value is placed on integration, rather than separation, with a focus on commonalties and differences. Its science has yet to emerge, and perhaps transcendent properties lie in the context of our currently evolving political and social contexts (Regier 1995).

The concept of protected spaces may be fully consistent and necessary for the first and second models. Although the development of a nation-wide network of ecological areas on the basis of representation and integrity is a commendable goal for the short-term, it may be a fallacy for the long-term, given mankind's increasing capacity to transcend time, place and scale phenomena through his technology. We have entered what Pavolov, Teilhard de Chardin and Vernadsky referred to as "the anthropogenic era of geologic time, that man, under our very eyes, is becoming a mighty and ever growing force." Humans now appropriate between one-third and one-half of the present net primary production of the biosphere (Vitosek et al. 1986). Some experts argue that human society is approaching, and perhaps has already exceeded, global ecological carrying capacity, and that extension of rates of consumption and production characteristic of industrialized countries to the rest of the globe is simply not feasible. Bill Rees and colleagues (1993) have used the symbol of the "footprint" to come to terms with the notion of carrying capacity. A building's "footprint" is the area on which it stands, - that area's prior ecological role has been pre-empted almost completely as the site for the building. Similarly, a human settlement, of whatever size, pre-empts physical space for buildings, roads, etc. The settlement also pre-empts ecological functions of increasingly larger scale and complete scope for a

much larger area which contributes raw resources of many kinds and to which the settlement distributes its wastes. The "ecological footprint" is a symbol of the area pre-empted ecologically by human settlements. Graphically, it does not have clearly demarcated boundaries, but is instead a calculated measure of human effects.

Our current ability to transcend time, place and scale constraints of the biophysical world, to continually expand our ecological footprint well beyond physical boundaries, is

underpinned by dualism and all of the subsequent separations it engenders. It is only a short step from Descartes' roots of radical separation of self and object, to the man-nature dichotomy, to separations based on gender, of our species from "other" species. Man's separation from nature, making it "an other" leads to dominance based on difference. Difference leads to differential valuations of what constitutes good and bad, what constitutes integrity, to polarities such as productive or non-productive, efficient and inefficient .

Framing an issue in polarities, regardless of which pole is valued, sets up false choices: Is it better to be logical or intuitive? Emotional or reasonable? Dependent or autonomous? And these separations and polarities, often defended as "natural" versus "unnatural", justify the need for different and special treatment, so that ultimately we need protected spaces for the "others". In reality, there is no inside-outside (Pinn 1994), protected versus unprotected. We must nurture and cultivate a sense of place and caring that ultimately leads to protection everywhere, to a more holarchic way of relations with the natural world.

Post-modern science with its emphasis on open, self-organizing and holarchic systems (SOHO) may provide some alternative pathways for changing our sense of relatedness based on inclusion, rather than exclusion. This science can be characterized as respecting the complexity of organizational forms, their function and change in open systems is seen to be the context of their dynamic interaction within and without their respective environments. As a result of this interaction, these systems manifest emergent properties, as in evolution, and exhibit multiple equilibria or attractors from a short-term, ecological perspective. Uncertainty and surprise, therefore, are fundamental features of open systems. They are arranged in nested holarchies, in which the parts are reciprocally interdependent with the whole, alternatively dependent and independent. Post-modern science serves an enlarged decision-making framework precisely because the facts are uncertain, reality is evolving, values are in dispute, the stakes are high and decisions are urgent. There is, therefore, a notion of a much more extended peer community in the new science of complexity, than in the old science (Funtowicz and Ravetz 1991, 1993).

Because of the complexity and interlocking systems effects, interdisciplinarity is a fundamental necessity for the production of useful knowledge. This knowledge is value-driven, rather than curiosity-driven, and consequently, demands an interface with science and philosophy.

And, it is concerned with integration and reconciliation of ecological, social and economic imperatives. In addition to changes in how we view science, one fundamental feature of the perceptions of the post-modern world recognizes that there may be no one fixed reality, there may be multiple emergent realities. It, therefore, has both political and social contexts.

It is within these political and social contexts that the means may lie to transcend dualism and the artificial separations it subsequently engenders. As mentioned earlier, thinking in opposites leads to what philosophers call "the law of the excluded middle", a place most men and women fall in terms of their beliefs, values and capabilities. The very term "opposite sex" implies an underlying opposition and perhaps antagonism, the pitting of one side against the other, one way (which is right and healthy) versus the other's way (which is wrong and unhealthy). Recognizing the increasingly plural nature of our societies and the necessity for the informative diversity of other voices to be included in multistakeholder processes, as well as calls for expanded decision-making, may well lead to redemocratizing our institutions of governance. These calls for greater diversity in both our political and social contexts may ultimately lead to greater integrity, for more unity may emerge through diversity. Diversifying the community of "interests", and expanding the definition of expertise enlarge the potentialities of linking ecological integrity, sustainability and the conservation of biodiversity.

Of pre-eminent concern to these three issues is changing human relationships in terms of equity, relatedness and empowerment. Empowerment of women worldwide is key for two reasons. A key driving force for unsustainability, with reduction of global ecological integrity and loss of biodiversity, is overpopulation. And much of this population growth is not by choice. In the majority of cases, the decision to have children is not in the hands of those who would bear them. Until women throughout the world have free access to family planning information and birth control, they can have little autonomy in their lives. This one basic right determines what choices women will have over their lifespan. Until women can decide the number, timing and spacing of the children they will bear, the means to self-sufficiency remains an impossible dream. Children born into abject poverty usually die in abject poverty. Poverty itself is a powerful incentive to have even more children in order to beat the odds of infant mortality. There is an inverse relationship between a woman's education and the number of children she will bear, as well an inverse relationship between a woman's literacy and infant mortality. Educating women, therefore, cascades into larger benefits for families, communities, and ultimately humanity everywhere.

Gender equity and empowerment are also important for allowing a new sense of relationship to emerge in human cultures. Theorists in the women's movement reject the assumed dualism of a separate self and other on which the rationalization, specialization, and quantification

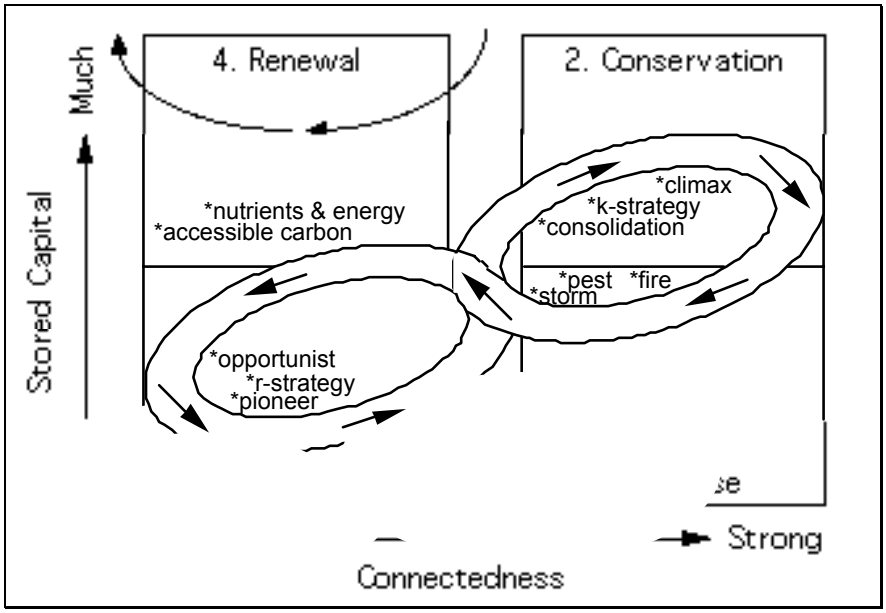
of industrial economies ultimately rest. They argue that the violence, dominance and hierarchy that accompany dualism represent only part of the human potential. Respect for diversity, nurturance, and a potential for oneness mediated by reciprocity are also part of the human

capacity. In the view of many women, the worldwide human dilemma cannot be resolved until these feminine qualities and potentials are valued more strongly, shared more widely, and expressed more clearly in the solutions to the global challenge" (Jiggins 1994). There are many examples, including numerous agricultural research programs, that demonstrate women-centered approaches change the values, the design, and the operations of programs. Human societies, structured on the present bias and imbalance are not sustainable in the long-run.

"In fact . . . it is striking how often, whenever the partisans in the battle over progress collide, the builders are men, and the preservationists, women. It is by no means a hard-and-fast divide. There is always crossover. But throughout history, there is a pattern (Garreau 1991, p.407). Joseph Campbell discussed it in *The Power of Myth*, "Society is always patriarchal. Nature is always matrilineal. Since her magic is that of giving birth and nourishment, as the earth does, her magic supports the magic of the earth. She is the first planter." . . ." A purposeful effort to change the lens we use to view gender relations in order to inculcate feminine values around the meaning of relations, maintenance and nurturance, therefore, may be a more direct pathway to changing relations between ourselves, with biodiversity, and with the integrity of the spaces we occupy. An appropriate new partnership between women and men, based on the human condition rather than solely on difference, may well be the most important policy innovation with respect to all aspects of culture-nature reciprocity. This notion was implicit in the outcomes of the 1974 World Population Conference in Bucharest and became quite obvious in the 1994 Cairo Conference.

Moving to changing definitions and values of what constitutes relatedness fundamentally challenges our existing ways of how we view nature and our relationship to it. Our principal challenge, therefore, is to move from a single distorting lens view of what constitutes integrity and culture to multiple apertures and the flexibility to allow for evolving multiple perspectives about what constitutes integrity. We must redesign human institutions to be in harmony with the functioning of natural systems, preserving the integrity of self-organizing processes, both ecological and in human communities. We need to encourage credible inquiry and discourse, often of the kind suppressed within organizational systems (Bella 1994). There must be a reconciliation of the maintenance and restorative processes of ecosystems, so necessary for integrity, with the production processes of human systems by developing co-evolutionary frameworks (Norgaard 1994, Hill 1980).

For example, the Holling ecosystem model provides a model for the necessary reconciliation of maintenance and production processes and the elimination of artificial separations that permeate our current systems of environmental management.



Holling proposes four basic functions common to all complex systems and a spiralling evolutionary path through them. With this model, systems evolve from the rapid colonization and exploitation phase, during which they capture easily accessible resources, to the conservation phase of building and storing increasingly complex structures. Examples of the exploitation phase are early successional ecosystems colonizing disturbed sites or pioneer societies colonizing new territories. Examples of the conservation phase are climax ecosystems or large, mature bureaucracies.

The release of "creative destruction" phase represents the breakdown of mature structures via aperiodic events such as fire, storms, pests, or political upheavals. The released structure is then available for reorganization and uptake in the exploitation phase. The amount of ongoing creative destruction that takes place in a system is critical to its behaviour.

The conservation phase can often build elaborate and tightly bound structures by severely limiting creative destruction, but these structures become brittle and susceptible to massive and widespread destruction. The former Soviet Union is a good example, or in Canada, the present federal/provincial gridlock. If some moderate level of release is allowed to occur on a more routine basis, the destruction is on a smaller scale and leads to a more resilient system. It would appear that our current institutions are stuck in a spiralling pattern of exploitation and convervation, and we have lost our capacity for release and reorganization that we must re-integrate in government policy development and program design. We clearly need a different view of what constitutes good governance. Instead of controlling and doing, governments should be catalyzing community empowerment by leading and developing strategic partnerships.

They must concern themselves with creative destruction, by devolving power and authority to the most effective level of government possible, or the politics of separation will continue into the next decade at the expense of our innovation and creativity and our environment.

Of paramount importance to this necessary reconciliation is guaranteeing access to the natural information as a part of reality especially necessary for renewal, that is, biodiversity. We must reshape the lens we use to view our world to allow a new sense of relationship to develop with other species, so that ultimately, we change our definitions and language around what constitutes "other", and its protection.

Protected species, time intervals and spaces must exist everywhere, they are not out there, but must permeate all areas of human activity. Developing a knowledge of local ecosystems leads to a sense of place. A well-defined sense of place leads to caring that leads to protection. Hiss (1990) proposes doing several things at once when we change a place: the change we agree upon nurtures our growth as capable and responsible people while also protecting the natural environment and developing jobs and homes enough for all. What every community needs, in other words, is a systematic assessment of its own landscape character, an inventory of the connectedness it has--and of any broken connections that need mending. Garreau (1991) acknowledges the contributions of Tony Hiss but may go a step further: "Only . . . if we come to see it all as sacred -- the land on which we build as sacred as the land we leave untouched -- will we break through to higher ground and reunite our fragmented universe.

We cannot win this battle to save species and environments without forging an emotional bond between ourselves and nature as well--for we will not fight to save what we do not [know] and love (Gould 1991). There is great difficulty in discussing love in relation to two of the most powerful of human activities, science and politics. Life, however, is also about passion and love. Passion, love and the values they engender have been removed from the public sphere largely as a result of our dualistic thought and emphasis on the separation of the public and private spheres, and particularly the separation of the rational and objective from the subjective and emotional. We are still dominated by the expert, rational-driven model in both science and governance, and these dominant paradigms and their associated values and beliefs should be exposed at every opportunity through discourse, taken out and re-examined under the light of the day. This requires far greater consciousness about how language, models and theories, the concrete we surround ourselves with, and our curriculum can sometimes alienate us from life. And by what is included or excluded, we teach students that they are part of or apart from the natural world, what we mean by relatedness and what constitutes a democratic society.

This new sense of relatedness must also permeate our institutions of governance, as redemocratization is critical in moving to the third integrist model. Revitalizing democracy

means restoring the moral basis of political life. The personal is political, there is no real separation between the public and private spheres, it is a distortion in our lens. We need a different view of what constitutes good governance (Fukuyama 1995). Democracy is facilitated by informed and engaged publics and trustworthy institutions. Instead of controlling and doing, governments should be catalyzing community empowerment by leading and developing strategic partnerships. The Federal Government, in particular, must become truly national rather than just federal, bridging the cleavages in this country by subsidiarity, devolving its power and authority to the most effective lowest level of government possible, or the politics of separation will continue into the next decade.

We live in a world with multiple realities and pluralities. We need an emphasis and valuing of both commonalities and differences. Emergent relations and processes can only come from the synergy of complementary differences, not from preserving traditional separations. Valuing one over the other denies diversity and leads to separations that on the surface appear rational and natural, but in reality, are based on the bankrupt politics of power and divisiveness.

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