THE IATROGENIC EFFECTS OF ENVIRONMENTAL MANAGEMENT: SERVICING A NEEDY NATURE?

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Those of us interested in environmental issues, whether or not we call ourselves environmentalists, are presented with increasing evidence of a global environment in need of our help. We are told that nature, once conceptualized by Western humans as a bountiful enemy to be aggressively subdued and defended against, has been conquered, tamed, predicted, and controlled. The wild frontier has been captured, in many instances destroyed, and has been replaced with monocultures or domesticated farms, whose sole purpose is to service the utilitarian interests of human beings. Those areas which have not been destroyed or domesticated are increasingly described as suffering from fragmentation and encroachment. Furthermore the monitored, managed, tamed and domesticated areas of nature, once thought to be both predictable and easily controlled, are proving to be chaotic, as evidenced by the failure of numerous resource management schemes. Ironically the failure of environmental management regimes has not led to a fundamental questioning of the *idea* of management and its underlying philosophical framework but has resulted in an expansion of its application. In our current context, the predominant view of nature is that of a sick patient in need of care. Operating from within this view of nature, we see an expansion of environmental management as new analytical frameworks such as ecosystem health, resource management, wildlife conservation, and environmental restoration situate themselves to service a needy nature.

Management strategies flourish in this environment, and are offered as solutions to the problems created by supposedly unenlightened exploitation and unknowledgeable, outdated husbandry. The metaphors which permeate the popular imagination focus on the belief in limits, scarcity, and depletion—people now claim they are crew members on “spaceship earth.” The spaceship metaphor leads us to the conclusion that our planet is in need of constant managed-servicing if we are to avoid a fatal malfunction and breakdown. It becomes the responsibility of *Homo administratus* to fix, optimize and contend with the functions of the biosphere, a biosphere now described as a giant cybernetic ecosystem driven by energy flows and nutrient cycles (Odum 1993). It is proclaimed that the management of all individuals, populations, watersheds, and ecosystems on the planet is necessary—they are all in need of help due to direct and indirect (anthropogenic and non-anthropogenicly induced) disturbance. Management “solutions” are proposed not only to avoid the extinction of *Homo sapiens* and to ensure the provision of a growing number of goods and services, but specifically in order to protect all life on the planet from what E.O Wilson has called the sixth, and only anthropogenic, mass extinction (Wilson 1992). This global management project in service of a needy nature challenges “resource” managers like never before. It claims to be motivated by a willingness and desire to help and like all managerial motivations it claims to allow for both greater efficiency of the system being managed and increased freedom and liberation for those being

administered. However, environmental management may in fact deliver disabling help: increased control over humans and non-humans and their surroundings, and the eradication of wildness.

Global management proponents are fond of reminding us that we are involved in an environmental crisis—the survival of the planet is at stake and so this crisis serves to justify any interventions to ensure *our* survival. Management dominates our eco-social imaginations and places severe limits on the type of world we can imagine and the patterns of relationships we can envision between ourselves and nature. The management of the environment is taking place with such urgent fervor that it is reducing the way we *think*, not only about non-human nature, but also about ourselves. It is with a critical eye toward this *framework of managerial thought*[1] that I will discuss the emerging iatrogenic effects of attempting to service a growing expanse of needy nature.

The term iatrogenic, to which I will refer in this paper, is usually associated with medical terminology. It refers to illness that is produced through medical examination or treatment. Ivan Illich and John McKnight have extended its use to include all service interventions, such as social services, educational systems and the criminal justice system. Illich and McKnight claim that these "helping" systems actually disable individuals and their communities by building reliance on institutions and their associated experts and managers and that they thrive, therefore, on need rather than capacities. John McKnight has written about the iatrogenic effects which social services delivered by modern welfare states, and increasingly the private sector, have on targeted communities. He has commented that the "helping" professionals delivering these services are disabling rather than helping and that this outcome ensues due to the delivery of counterfeit care in the form of services aimed at specific needs.[2] I would like to expand on the use of the term "iatrogenic" to include environmental management services such as environmental impact assessments, fisheries and forestry management, endangered species protection, park and reserve management and other preservation, conservation and restoration activities, all of which have the potential of becoming iatrogenic, that is, to produce what they are designed to mitigate or prevent.

THE *NEED* FOR NEED AND THE SERVICE BASED ECONOMY

> Just as General Motors needs steel, a service economy *needs* "deficiency," "human problems," and "needs" if it is to grow... This economic *need* for need creates a demand for redefining conditions as deficiencies (McKnight 1995:29).

John McKnight, in his book, *The Careless Society: Community and Its Counterfeits,* argues that human communities are destroyed by service intervention. He suggests that "helping" and "caring" professions use the offer of their services to produce clients out of citizens. Flowing from arguments put forward by Ivan Illich (1971, 1973, 1976, 1977), McKnight (1994, 1995) argues that "helping" and "caring" professions

are in fact a form of *disabling* help that undermines the very processes (interactions between active citizens) that sustain healthy communities. Institutions and market interests promote clienthood and dependency, McKnight believes, and this leads to the devaluing of citizen action in favour of passive, expert, service delivery. What is produced is a system which *needs* expanding needs to be discovered in increasingly dependent consumer-clients. McKnight illustrates how the typical enemies against which we have waged countless losing wars—poverty, sickness, disease, and drugs—are not the real enemies but rather the real enemies are "*a set of interests that need dependency masked by service*" (McKnight 1995:99). In other words, the more likely peril to a community's health is a health care system reliant on illness; social service providers whose existence depends on impoverished communities, or a criminal justice system which subsists on communities with a "drug problem." In this way Illich and McKnight radically reorient our thinking, turning the problem solvers into the problem.

What insight can be gained by applying Illich and McKnight's critique of human service professions to environmental managers and eco-service professions? Could it be that environmental management efforts to preserve, conserve, and restore nature are causing more problems than they are solving and are exacerbating the problems they set out to eliminate?[3] Could it be that environmental management processes are iatrogenic? I believe that a similar process to the one McKnight describes in human communities is occurring in non-human environments that are increasingly being serviced by an emerging eco-service sector comprised of ecologists, technocrats, eco-planners, resource managers, environmental economists, and other environmental management professionals. The discourse and techniques that describe humans as "needy" and expose them to iatrogenic servicing are increasingly being applied to nature. Natural areas themselves are being portrayed, and accepted, as being in *need* of our (*Homo administratus*) protection and management. This removes the emphasis from the surrounding environment in which these areas are located and ironically places the deficiency within nature itself, rather than in the destructive human economic and social systems in which they are embedded. Ironically the very organizations perpetuating this view of a "needy" nature are the organizations who claim to be interested in saving nature for its beauty, intrinsic value, integrity, and stability.[4]

These observations are not meant to dismiss the severity of our assault on human and non-human individuals, communities and environments, just as Illich and McKnight are not to be read as dismissing the very real problems of education, health care, crime prevention, and poverty. Illich and McKnight question the legitimacy of current patterns of *thinking* about these "problems" and the institutional, professional and managerial "solutions" mounted to fix them. It is important that we question the legitimacy of the idea of environmental management as a response to a supposedly "needy" nature. It is also important to question the role various environmental management structures have played in uncritically supporting the processes that create the need for their services in the first place.

The Deskilling of Nature and the Creation of "Nature-As-Client"

> The historical movement of the West, under the flag of evolution/progress/growth/ development, discovered and then prescribed needs. In this process, we can observe a transition from man, the bungling toiler, to man, the needy addict (Illich 1993:89).

"Man the needy addict" has been joined by nature. Environmental management has shifted the view of a wild and untamed wilderness frontier (and later a tamed, controlled and exploited nature) into a medicalized view of nature as a sick patient in need of intensive "care." This shift from *wild* to *tame* then *sick* forms of nature has been accompanied by the insertion of need into nature. This insertion comes with an associated utilitarian view of nature that describes it based on its various functions. Under many environmental management frameworks individual species, populations, communities, ecosystems, watersheds and landscapes are described by the role they play in particular settings. This functional view of nature allows for individual parts to be serviced as if in an ecomachine. This approach also enables the discovery of "missing parts" and "redundancy" in the system which can be lost or removed without destruction of the overall system.[5] This is how environmental management has used the ideas of indicator species, minimum viable populations and keystone species to prioritize which functional units are in need of help and which can be sacrificed to development in any particular area. When a species' function in a particular ecosystem has been mapped, and the necessary functions of that particular ecosystem have been identified, then management priorities can be set. For example, if there are ten species that perform a filtering function in a marsh, an environmental manager operating from a redundancy model could allow two of the species to go extinct and still maintain the valued filter function. However, if there is only one species to fulfill the function then the manager may become concerned and is likely to invest time and energy toward protecting the relevant "components" of the system. This functional approach downgrades individual species and reduces their value to an instrumental function within a given *system*.[6] It also reduces nature to a set of finite functions or eco-services which environmental managers assume can be understood, controlled and manipulated.[7] By adopting a strategy of describing, controlling and manipulating nature's functions, environmental management can ultimately aim to optimize a needy nature described functionally as an eco-machine in need of managed "care."

From this approach we can envision the *deskilling of nature*[8], where unmanaged natural processes (eco-services) are described as inefficient and ineffective in producing and delivering urgent human and non-human goods and services. Once nature is reduced to merely an eco-service provider, deskilling is only a matter of time—as new advances in environmental engineering technology, involving robotics, computerization and "living machines," out compete natural processes to "get the job done." The functional approach to nature also undermines attempts to defend nature against "development." After all, if we can design a bio-machine that filters water

better than natural kinds for what do we need critters like brine shrimp or plants like cat tails?

Perhaps one of the most vivid examples of the deskilling of nature is the Biosphere II project. This project illustrates the extent to which the deskilling of the *entire biosphere* is being aggressively pursued under the paradigm of environmental management.

> [Biosphere II is located under a sealed] glass superstructure covering three acres of the Arizona desert. It contains the largest, fully-closed "environmental system" on earth. Within it are housed around 38,000 species of plants and animals (and sometimes up to eight humans) in simulations of seven "basic biomes"—marsh, savannah, tropical rain forest, desert, a 25-foot-deep ocean and coral reef, intensive agriculture and human habitat—of Biosphere 1, the earth (Luke 1995:1).

Controversy has surrounded the effectiveness of Biosphere II, the validity of the scientific data produced by the project and even the technical feasibility of sealing humans in a self-contained biomachine (Warshall 1996). However, the failure or success of Biosphere II as a scientific experiment is irrelevant. It is the *idea* of creating such a project that illustrates the extent to which managerial thinking now occupies our eco-social imaginations.[9] Such an idea could only flow from a managerial framework of thought and relies on a narrow definition of nature. These types of projects and arguments illustrate some of the problems and dangers of using functional approaches to describe nature. They also illustrate how functional models quickly lead to strong managerial approaches to nature, which leave the idea of development—and how we *ought* to interact with each other and nature—unexplored.

It should be readily apparent that utilitarian arguments dominate environmental management approaches toward nature. Eco-managers are presented as saviours who can assess nature's needs and supply them. Eco-managers frequently believe science and technology contain many of the answers to environmental problems. It should be equally apparent that preservation, conservation and restoration issues are seldom simplistic and that numerous ethical, social, legal and political conflicts as well as practical limitations on knowledge exist in theory as well as in practice. Applied science and technology have a role to play, but the need for their application occurs within the context of socioeconomic systems, values and assumptions, which influence our interactions with each other and nature.[10]

I have discussed the functional view of nature in order to illustrate how the logic of environmental management has utilized a redundancy model from ecological science in order to map out deficiencies in nature, define them as needs, and service them by designing plans which depend on managerial expertise. Other theories within the science of ecology (such as ecosystems theory) can also lead to this outcome. As Wolfgang Sachs has pointed out,

> Ecosystems theory, based on cybernetics as the science of engineering feedback mechanisms, represents anything but a break with the ominous Western tradition of increasing control over nature. How can a theory of regulation be separated from an interest in manipulation? After all, systems theory aims at control of the second order; it strives for controlling (self-) control ...Looking at nature in terms of self-regulating systems ... implies either the intention to gauge nature's overload capacity or the aim of adjusting her feedback mechanisms through human intervention. Both strategies amount to completing Bacon's vision of dominating nature, albeit with the added pretension of manipulating her revenge (Sachs 1993a: 32).

The dual process of deskilling nature and casting it as a needy client ensures the expansion of environmental management applications. Nature is deskilled by first reducing it to nothing more than a collection of individual functions and then by replacing its mapped functions with optimized managed systems; unmanaged nature that is not replaced by cybernetic biomachines is thus re-cast as a needy client in desperate need of intensively managed "care."

SELF-VALIDATING REDUCTION: LABELING NATURE AS DEFICIENT

Through the narrowing processes of environmental management, nature is necessarily simplified and reduced in order to achieve control. This reduction does not only refer to how the management paradigm *alters how we know* nature but also has *direct* impacts on what nature becomes. Anthony Weston has explored the complex processes of reduction which accompany the labeling of humans and nature. Weston explains that it has long been known that labeling someone deficient (or stereotyping them) often induces and creates the effect one claims to be objectively describing; he calls this process "self validating reduction" (Weston 1996). Labeling involves complex dialectical processes that are not simply involved with describing reality from an objective, uninvolved and separate terrain but are implicated in the *production of reality*. This has important implications for management which sees itself as being able to step outside its operating context to obtain an objective and effective position. Management depends on strict boundaries, labeling, and categorization, in order to obtain control over what it seeks to manage.

Weston begins his description of self-validating reduction by describing how the complex processes associated with misogynist patterns of exploitation *create* realities from the stereotypical images of women they promote.

> [Through processes of exploitation] the beliefs of the misogynist become true not merely "for him" which would be the mere blindness, or the perspectivism, of it—but also genuinely true in the world. Women are changed. Women's

incapacity becomes *real*. The misogynist is only blind to his role in creating it (Weston 1996:116).

The same process holds true for a whole host of human reductions that become self-fulfilling. For example, self validating reduction was applied in Nazi concentration camps which "were designed to make the inmates subhuman; thus confirming the Nazis' prejudices and making systematic murder possible" (Weston 1996:119). While addressing the reduction involved with slavery, Weston argues that "the very crimes of slavery become slavery's best defense. By making the enslaved a character fit only for slavery, [supporters of slavery] excuse themselves for failing to make the slave a free man" (Weston 1996:116). Weston's insights apply equally well to environmental management*: The very crimes of environmental management become management's best defense*. Once management reduces nature to nothing more than a biomachine or a storehouse of resources, the pathologies resulting from managerial thinking—reduced biodiversity, loss of ecological resilience, and reduced "stocks" of natural resources—become strengthened. In the wake of these pathologies, come calls for *new* and improved managerial systems, systems that will ensure a successful result by using chaos and stochastic modeling, or new participatory management techniques aimed at local communities, or corporate and industry self-management through international standards, or countless other new managerial approaches. All of these new management strategies are simply more of the same and grow from the fertile ground of countless failed management models, theories, and trends that, instead of tempering faith in management as an *idea*, create fertile soil for the growth of managerial solutions. Anthony Weston claims that processes of reductive labeling—which comprise the foundation of all managerial approaches—form self-validating positive feedback loops.[11] He believes that this process applies equally to human and non-human labeling. For example, wild animals are often *made* to seem aggressive through habitat encroachment activities caused by human development.

> Habitat destruction pushes wolves and bears into competition with humans. Hunting, naturally creates fear and anger... In such ways, we make other animals monsters, we create their hostility—and then take their hostility, now an indisputable fact about the world, to confirm our own (Weston 1996:122).

Domestication is another example of self-validating reduction. In his book *Rogue Primate* (1994), John Livingston outlined the differences between domesticates and wild animals and argued that human beings were becoming domesticated. Domesticates are animals forced into permanent juvenile stages of development, who are ripped from their social matrix and are objectified. Increasingly, all we have access to are domesticated animals and this reduced experience creates self-validating reductive loops. If Livingston is correct and humans are becoming domesticates along with non-human nature, the self-validating reduction hypothesis would predict the emergence of dangerous positive feedback loops that reduce humans and other animals into mere resources (goods and services). This seems

to be what is occurring, for example as Weston explains non-human self-validating reduction is evident in industrial farming.

> Chickens, for instance, live about seven years naturally; the typical battery broiler lives seven weeks. The result is that infantile animals are all we know. *In general, the better we know such creatures, the worse for them*. Only the people who don't know them are left to raise their voices against the reduction—and then of course, their ignorance can be held against them. To speak for such insistently reduced animals in this way is inevitably "sentimental" ("romantic," "nostalgic") (Weston 1996:120-121 *emphasis added*).

The environmental movement often falls into the self-fulfilling trap of reduction. Neil Evernden has discussed the perils, of using utilitarian arguments (drawn from the science of ecology) to justify non-instrumental *moral* claims for the preservation of wild nature. Evernden argues that the science of ecology describes nature in a reductive way; therefore when environmentalists use the science of ecology to add legitimacy to their moral claims, they undermine their moral motivations. Ironically, the environmentalists who use utilitarian arguments to articulate their positions run the risk of being listened to.

> To describe a tree as an oxygen-producing device or a bog as a filtering agent is equally violent, equally debasing to being itself. For an environmentalist to so argue is to betray his cause utterly. It is as if, striving for position A in preference to position B, he pauses half way and redefines B as A, so that he can stay where he was and still claim victory. Absolutely nothing has been achieved in the struggle of the environmental movement, over the long run. In combating exploitation, environmentalists have tutored the developer in the art of careful exploitation. In combating the devaluation of nature they have embraced a method of study which takes such devaluation as its starting point. And in claiming victory though the spread of resourcism they have rejected their own moral position and given support to a cultural imperative that neutralizes and debases life itself (Evernden 1992a:23).

Environmental management leads to the self-validating reduction of nature. The environmental "mitigation" required during the recent construction of a fixed link bridge from New Brunswick to Prince Edward Island is typical of managerial environmentalism. During the construction of one of the on-ramps to the massive span, a large portion of a wetland marsh was drained and back filled. The Environmental Impact Assessment for the fixed link project proposed that the marsh be drained, filled, and ultimately destroyed to allow for the on-ramp and then ordered that a "new marsh environment" be engineered in an adjacent area (Strait Crossing

Incorporated 1996).[12] The *idea* of "moving a marsh" could have only entered into the minds of the planners, regulators and managers of the fixed link project, if they were operating from a massively reduced view of nature, one that saw a marsh as an instrumental "natural component" that could be recreated without any loss of value. The self-validating reduction of nature that accompanies environmental management and the application of managerial tools, such as Environmental Impact Assessments, led John Livingston to describe Environmental Impact Assessments in the following way:

> EIA is a grandiloquent fraud, a hoax, and a con. Others have both seen it as a boondoggle and a subterfuge...While sanctimoniously reciting the catechism of "environmentalism," it anoints and blesses the process of "development," takes the initiative from the preservationists, and, in most cases, effectively bulldozes, gravels, and hardtops the road for the technomachine. Ecology is thus used as a tool to allow developers to do what they have always done (Livingston 1981:33).

Weston has argued that much of the intellectual framework and set of assumptions which allow for the management of nature (conceived as interchangeable functional units) comes from a switch in emphasis from *place* to *space*. This switch involves a massive reduction in the way we view nature. With the advent of Christian notions of a separate God, the sacred was removed from nature and placed free floating above it, in heavenly *space*. This switch meant that all idols (sacred places in and of the earth) were to be destroyed for being sacrilege. Paul Shepard has called this the "evangelical desacrilization of place" (Weston 1996:123). Once all sacred sites on earth had been desacrilized, all limits for the development of the planet were removed. These observations often lead critics to argue for a radical re-sacrilization of place, although, simplistic calls to give up managerial thinking by shifting our point of view misunderstand the extent to which management has altered the world. As Anthony Weston explains:

> The commercial, anthropocentric view is hardly just a "view." In most places it is true. The land has been divided and consumed in accordance with it. And I mean that it is "true" quite literally... The reduction is real... So much of the land is now boring, simple, homogenous, "all the same"—so we have made it (Weston 1996:124).

We need to be aware of the interaction between the way we describe the world and the world that is created. From the reduced perspective of the environmental manager, all non-managerial arguments make no sense, they are non-sensicle in terms of the guiding sets of assumptions that make up managerial patterns of thought *and* in the world which they are embedded in and create. In a world of resources, nothing but the wise-use of those resources makes sense. In the

reduced world of the management paradigm, it is difficult to argue for anything other than the efficient management of resources because we have forgotten what a diverse world is; we have lost our awe of the world because we have, and continue to systematically destroy all forms of diversity in the world through the way we have come to know nature and the types of humans, non-human species, and environments which have been created through our managerial plans and actions.

> Noise remakes the land. Even in the wilderness you seldom can go very long without hearing engines. The human world insistently reintroduces itself: rarely can we feel, even for a moment, the sheer difference of the wild. As a result, it is a perfectly natural reaction to wonder what is so special or different about wilderness...The cycle continues. The land is devalued, disvalued, and then devalued again ... When everything is reduced to a commodity, the commodification of the world seems only natural. Nothing else even seems understandable (Weston 1996:125).

Once we live in a totally managed world nothing but managed solutions become imaginable. This is another example of how the dictatorship of the management paradigm not only controls and recreates the external world but forms our imaginations; ultimately the imagination itself becomes managed and reduced. Environmental management necessarily reduces the world in order to achieve prediction and control; this reduction creates patterns of self-validating reduction.

> [Self validating reduction] is a slow (sometimes not so slow) downward spiral, a reduction in fact was well as in thought, in which our ideas are as much influenced by the state of the world as vice versa, and—crucially—each stage is impeccably rational. Broiler chickens are not plausible candidates for animal rights; twice-logged kudzu-clogged woods are not plausible candidates for intrinsic value; Mount Sinai with a casino is no longer numinous and so on. Each new devaluation validates the next disvaluation, and vice versa. (Weston 1996:129).

What this paper has been attempting to illustrate is the interconenctivity and iatrogenic looping which occur under the managerial paradigm of thought. Environmental management is not just a frame of mind but also manifests itself in the production of the reduced world it takes as its starting assumption. These processes of labeling and devaluing nature are continuing to expand as discoveries of disturbance emerge in the natural and social sciences. Disturbance, once taken to be an abnormal or rare condition, is being “naturalized” and recast as the “normal” state of human societies, individuals, and nature.

DISTURBED NATURE

The needs mining discussed by McKnight and Illich with respect to professional services such as health care and education is evident in the general human population and in nature and is tied to the discovery of disturbance in humans and non-humans and their environments. The *need* for need, in order to feed growing service based economies, emerges as a response to the discovery of numerous forms of disturbance which require professional servicing. In both the social and natural sciences interest has been placed on discoveries of continuous change,[13] turbulence, disturbance and deficiencies, in human and non-human environments.[14] This is a break with the pasts emphasis on balance, homeostasis, and equilibrium in human and non-human systems. Donald Worster has traced the history of ecological ideas and has noted that present theories in ecology tend to emphasize the role periodic and chaotic ecological disturbance and patch dynamics play in structuring landscapes—in place of studying the ordered seral stages leading to a climax community (1994).

The ecologist's Frederick Clements and Henry Gleason illustrate the shift within ecology from a view of nature as a balanced and coevolved community, toward an individualistic focus on environmental gradients and life-cycle requirements (Worster 1994). Clements developed his theory of the ecological community based on observations of the great plains grasslands. According to Clements "communities were clear, identifiable, stable, resilient and... at their best when kept in isolation from the contamination and disturbance of human activity" (Lumpen Society 1997:14). This metaphor put severe limits on managerial tendencies in nature; in fact, human management under this framework was more likely to cause disturbance, and therefore, to harm the ecological community, rather than helping it. However, a shift away from the balanced community metaphor took place with the eventual acceptance of Gleason's individualistic views of nature and the debunking within ecology of the Clementsian idea of an autonomous, coevolving, balanced community. With this shift, nature was reconstituted from a self-contained and coevolving community (in no need of human help) to a disturbed patient in need of managed care. In 1926 Henry Gleason published a book on the *Individualistic Concept of the Plant Association*.

> [In it he claimed that] plant communities did not exist in the Clementsian sense of an easily identifiable climax, complete with a dominant species. Instead, Gleason reported observations of individual species distributions according to environmental gradients based on life-cycle requirements—not as coevolved interdependent parts of an organismic ecological community. He argued that "plants do form associations...but that these are mere accidental groupings, each the result of unique circumstances and too loosely related to be likened to an organizing being" (Gleason *in* Worster 1994:239). This hypothesis has been corroborated by the workings of statistical ecologists of a later generation, who attempted to demonstrate the appearance and disappearance of plant species

> according to a series of latitudinal, edaphic, climatic or other environmental gradients (Lumpen Society 1997:15).

The deconstruction of the community concept is often taught to ecology students in much the same way Lamark's ideas are presented to students of biology. Both Lamark and Clements are presented as having good ideas for their time but having been proved wrong by others. Lamark's giraffe with its acquired "long neck trait" being passed on to its offspring and Clements' coevolving, determined plant communities have both been debunked and thrown into the trash-bin of scientific history. Paul Colinvaux (1978) gives a good example of the extent to which the deconstruction of the community concept has occurred in ecology.

> Is there some mystic organization beyond the species level that fits communities together? Or could everything Clements saw be explained *more simply* by an hypothesis that *lets* each species in the plant community act selfishly in the pursuit of its own Darwinian fitness?...[This idea] is not so emotionally pleasing as the Clementsian dream of species co-operating for the good of the community, *but it is simpler* (Colinvaux 1978:123 *emphasis added*).

The simpler explanations in ecology have won out and nature has been described through individualistic lenses which argue that selfish competition is responsible for the distribution of species and the functioning of ecosystems. From this perceptive "any perceived associations of plants was a mere deceit or illusion of human sensory faculties and emotional yearnings, something the power of statistical analysis was able to dispel" (Lumpen Society 1997:15). Drury and Nisbet's work in 1973 solidified the rejection of Clementsian ideas by "proving" that ecological succession did not lead to a climax community or even anything that remotely looked like a community of any sort. The work of Drury and Nisbet represented the switch in ecology away from studying stability toward looking at the importance and naturalness of disturbance and directionless change.

> As Donald Worster has noted, this was a fundamentally new interest on the part of ecologists. Disturbance, connoting extreme exogenous change, was not a common subject in the time of Clements (or indeed of any of the "founding fathers" of ecology) and it rarely appeared in combination with the adjective "natural". Scientists now appeared to be almost actively looking for signs of disturbance, especially those which might be demonstrably non-anthropogenic. Disturbance was indeed everywhere—fire, wind, water, all were reconstituted as agents of continual change at a variety of scales. Even Clements' stable prairie grasslands were reconstituted as a regularly disturbed environment (Lumpen Society 1997:16).

Worster has described this trend in ecological science noting that ecologists and other natural, and social scientists, are presently fixated on disturbance and are seeing it everywhere (Worster 1995).

> Disturbance comes from a congeries of cultural and natural agents, including droughts, earthquakes, pests, viruses, corporate invasions, loss of markets, new inventions, crimes, federal laws, and even French literary theory. Disturbance *is* history. And a disturbed nature is a nature that has a history very similar to the history that humans make (Worster 1995:74).

With increased discussions and discoveries of disturbance come calls for interventions to mimic, optimize, control, and fix these disturbed processes. For example, if fire once "naturally" disturbed temperate forest ecosystems then controlled burning or clearcutting is required in order to maintain the "natural" condition by mimicking "natural" disturbance. Indeed, the government of British Columbia has noted that certain types of clearcutting can help to maintain *natural* disturbance patterns and hence nature itself (Forest Service 1995). In human communities, if a tragedy occurs in a school, trauma counselors are immediately needed for all those deemed exposed. If a development project is to be proposed, a thorough environmental impact assessment is in order, not to stop the development, but to mitigate abnormal disturbance to the natural environment. With all of these approaches, service providers are needed in the form of managers, professionals, and experts.

DISTURBANCE AS RESOURCE

A recent article in *The Globe and Mail* outlining the premeditated murder of an entire extended family that occurred in Vernon, British Columbia in 1996, describes the typical service response to a disturbed community in crisis and also illustrates how service interventions in communities tend to expand to include all spheres:

> Richard Wilford, program co-ordinator for the North Okanagan victim-assistant program, pulled together plenty of expert help: psychologists, social workers, registered counselors, mental-health workers, youth and family workers, government social-service workers and 28 volunteers with training in trauma counseling and crisis intervention. The team's first job was to identify those who might be affected. They drew up a lengthy list that included members of the immediate family; neighbors who saw the shooting; family friends; professionals such as police, ambulance drivers and hospital workers, who dealt with the bodies; members of Vernon's Sikh community; the slain children's schoolmates; the adult victims' co-workers; *the entire city of Vernon*; and local reporters who usually cover much tamer stories... [When asked if this drastic action was creating victims Richard Wilford said,] We are not [creating victims] ... If these people do not talk it out, then it remains stuffed in and the next time they'll have two things to deal with. It's a public health issue...*We can not predict who will suffer, so we inoculate everyone* (Staff Writer 1996a *emphasis added*).

The extent to which disturbance discovery and its associated service provision, aimed at individual clients, has been visited upon human communities is astounding, as the above example illustrates. What is seemingly forgotten is that, not unlike all drug therapies, these service interventions are not neutral, they have side effects. It is conceivable that such service provision could, in fact, undermine communities by framing them as collections of needy *individual clients*.

Examples of the massive servicing of non-human environments are also available in the literature. While environmental managers often lament about the deleterious exponential curves of human population and growth in global resource consumption, they fail to see anything wrong with the exponential growth of their own field. An article describing the need for interdisciplinary teams to manage all aspects of the environment reveals this in part:

> Environmental management, to a greater extent than any other management area, must be multidisciplinary and interdisciplinary. [For example,] optimal groundwater management decisions should be made, or strongly influenced by, multidisciplinary teams... such a team might include persons educated in communications, ecology, economics, engineering, ethics, geology, hydrology, information systems, law, planning, politics, public administration, public health, public participation, sociology and social psychology. Each of these participants should be familiar with the language and fundamental concepts of other disciplines represented, be able to communicate his or her insights to non-specialists, and be experienced in multidisciplinary decision making. The team leader should be a capable environmental generalist as well as a trained and experienced facilitator. Support for this team should be provided by a multidisciplinary staff qualified to produce information that is suitable in form and content for the multidisciplinary team (Goldfarb 1991:131).

Along with representing a modern description of Bacon's utopic vision of a scientifically managed world[15] it is interesting to note that there is no mention of community members or citizens. It is not incidental therefore that the panel in this example is looking into resource management issues; when managed, nature is reduced to a collection of natural resources and services and citizens are reduced to clients. In both these circumstances the potential for, or existence of wildness, autonomy or the sacred, in what is serviced, is not possible.

It is from within this managerial framework (if without this realization) that we now hear calls *for* community based services and environmental management programs to deal with numerous urgent "needs." In the human context, community, in the older sense of a social group of citizens tied to a particular place, increasingly resembles a mere collection of *clients and consumers* who are little threat to managerial centralist states or business management consulting conglomerates and multinational corporations. In fact, contrary to being a threat, collections of clients and consumers, endangered species, and polluted and degraded ecosystems are necessary *resources* for the expansion of goods and service production and consumption. The only autonomous entity which is left thriving in this environment is the "community of capital" in which consumers and clients are the primary resources (Rogers 1996). Through managerial interventions aimed at servicing a needy nature, the wild and domesticated nature of the past is turned into the eco-client of the present. In this way, nature as sick patient offers an unlimited sustainable resource for environmental

mangers intent on “helping” the environment. Indeed, we may have entered into an era where degraded and polluted landscapes, such as clearcuts, may be worth more in an economy of need servicing than old growth forests of the past were to the massively subsidized resource extraction industries such as logging. As McKnight has noted in reference to the servicing of human beings:

> Indeed, a very ill person disabled for a considerable amount of time could cause production of much more medical dollar value through their illness than the value of their own production were they healthy (McKnight 1995:162).

With the combined emergence of a service-based economy and the increased discovery of, and attention to disturbance, an increasing number of conditions of both human beings and nature are being converted into problems to be solved through professional service interventions, to be delivered by public or increasingly private interests. This trend can be seen in the actions of the Canadian federal government. In public lectures Sergio Marchi, the former federal minister of the environment, has repeatedly emphasized the importance of the expanding environmental services export sector and is actively promoting this emerging eco-service sector (Marchi 1997).

I believe that the move to a service-based economy brings with it a shift not only in the way we think about human beings but also in the way we conceptualize nature. Increasingly, polluted areas, endangered species, endangered habitats, the maintenance of minimum viable populations, the monitoring of species at risk, the managing of parks and precious “biological reserves,” and various biological inventory projects have created a growth eco-industry. We can expect that the servicing of these newly discovered natural resources and processes will develop according to the logic of late capitalism and the global marketplace. In order to create and feed a growing economy, the servicing of nature will gain importance. Along with the increased servicing of human and non-human individuals, populations, communities, and other environments will come iatrogenic effects which can not be fully anticipated.

One of the iatrogenic effects of this needs-based approach is that it places economic value on endangered species and on polluted and degraded land and seascapes. This puts conservationists and restoration ecologists (as well as other eco-planners and managers) in a paradoxical position. The raw material for their existence comes from the expansion of the very thing they are trying to prevent or reverse. The paradox of this situation, and the possibility to profit from it, has not evaded corporations, many of which are involved with developing environmental technology to clean up the pollution they helped to create. Dupont, for example, is one of the world leaders in the field of environmental technology and restoration activities. While Dupont and other international companies provide prime examples of the paradox of restoration and conservation internationally, here in Canada we have a significant example of our own, the Sydney tar ponds in the province of Nova Scotia.

The Sydney tar ponds is the most polluted site in Canada, containing a mixture of cancer-causing agents that are the remnants of the Sydney steel smelting industry. The tar ponds provide an excellent example of the similarity between the mining of human and non-human needs. The tar ponds and the people in Sydney have, and continue to provide ample supplies of needs for service professionals of all fields. The economic, social, and environmental problems in Sydney provide ample evidence that while people and nature suffer from pollution, service care providers can profit. This is the paradox of the new service based economy reliant on the mining of needs. Sydney's citizens, with their crisis levels of unemployment (and the social problems which are accompanied by this condition), a polluted environment, elevated cancer rates and other medical problems associated with the tar ponds and its history of dangerous resource extraction and processing, provide a growth environment for service care providers. There are so many opportunities in the servicing of the environmental needs associated with the tar ponds that environmental technology and management corporations are scrambling for the opportunity to showcase their technology and develop future markets.

The Sydney tar ponds example illustrates a disturbing lesson for environmentalists. A destroyed ecosystem containing carcinogenic chemicals can be more productive, in terms of economic dollar values, than a functioning healthy ecosystem. The extension of McKnight's ideas to nature seem appropriate when you consider the following statement from former Minister of the Environment for Nova Scotia Robie Harrison. He claimed that the Sydney tar ponds were a "wonderful resource" because they could be used as open air laboratories for Nova Scotia based companies to test new environmental technology which they could then "market to the world" (Harrison 1995). The former Minister is correct is his description, for both the citizens and the environment of Sydney have become a "wonderful resource" for professional service providers.

The problem with the management model is that it is based on deficiency; economic growth in the needs-servicing sector relies on growing deficiency in the environments they are servicing. This fundamental conflict illustrates why the needs- servicing economy may itself be subverting both human and non-human nature. Instead of concentrating time, money, and resources on capacities and exploring and supporting activities that minimize the need for management and the servicing of human and non-human environments, money flows into Cape Breton and other needy regions to service professionally defined deficiencies. *Homo administratus* is born in crisis environments such as Sydney. Michael Soulé (the father of conservation biology) has characterized Conservation Biology as a "crisis science" (Soulé 1986). This leads one to believe that this particular field is especially vulnerable to producing iatrogenic effects and a quick glance through the major journal in the field (*Conservation Biology)* reflects a strong managerial perspective toward nature.[16]

Homo administratus is also at home in Newfoundland, as is evident in the activities both prior to, and after the managed annihilation of the northern cod stocks. The

management pattern of thinking about nature which guided the Federal Department of Fisheries and Oceans (DFO) has not fundamentally been questioned or changed. Instead, since the fisheries closure, Newfoundland has seen a growth in managerial thinking with proposals to "professionalize" the fishery, a clamp down on unmanaged subsistence living (which has been called the criminalization of outport Newfoundland) as well as an emphasis on retraining for the new global economy and investment in aquaculture initiatives (Welbourn 1996). A description from an aquaculture operator in British Columbia explains the intensive management and infrastructure involved in creating an aquaculture industry.

> Essentially, through the hatchery programs, we'll be domesticating the fish, which will be knocking them down in generations to a more passive fish. Dealing with the wild stocks is basically what it is... It's very wild...due to the sense that you're taking something right out of the ocean, stuffing it into a pen and expecting it to behave. And they just don't do that. So, through the hatchery program, through our own brood stock programs, we will domesticate the fish over time... And we'll have fish that will just basically swim around and graze like a cow. And that's what we're all shooting for (Chechik 1989:11).

The actions described above represent and require an increase in managerial thinking and the creation of individualized "managerial man." This is painfully evident in the proposed expansion and promotion of aquaculture—a practice which will require increased management *both* of the farmed species themselves (first requiring the domestication of wildstock species[17]) and of the Newfoundland fish farm operators and employees whose activities will be geared toward work on controlled aquabusiness operations rather than at sea.[18]

NEEDY NATURE?

A trick is being played on us when management interventions are presented as liberating solutions. Management claims to allow for freedom, liberation and the possibility of autonomy but often delivers increasingly predictable environments, increased control over human and non-human nature (through their reduction) and the creation of needy consumer-clients. These outcomes are all illustrated in the pattern of fisheries management in Newfoundland as well as numerous examples from across Canada and around the world. The *managed* annihilation of the cod fishery and other management failures should not be taken as calls for new and improved management strategies leading to more of the same, but as a call for a broadening of the eco-social imagination and the end of the tyranny of managerial patterns of thought.

The dictatorship of managerial thinking is iatrogenic. When nature is constructed merely as a needy client, its autonomy evaporates as quickly as when it is cast as a

storehouse of raw materials. The service based economy requires expanding needs to be discovered in needy consumer-clients. This growing need based economy is undermining human communities and represents an additional threat to nature. *Nature is not in need of managed care, however our service based economy requires a needy nature.* Environmental management has become a hegemonic pattern of thought addicted to need servicing, that constructs nature and our experiences as simply a set of managerial challenges or "problems" and offers itself as the universal "solution." This dictatorship of one mode of thought places severe limits on our eco-social imaginations and ultimately results in the management of thought itself.

Despite the current dictatorship of managerial thinking, there are alternatives and the challenge is to resist totalizing managerial thought by maintaining and nurturing a diversity of eco-social imaginations and their accompanying manifestations. Different ways of knowing nature *are* possible and currently exist; while they do not offer the mapped out security of a homogenized and totally managed world, they do offer unlimited possibilities for restoring a richness of numerous forms of diversity.

While the management paradigm continues to grow "commentators from across the political spectrum from deep ecologists on the political left to conservatives on the political right, fear the managed society" (Oelschlaeger 1994:13).[19] This broad base of resistance to the managed society can serve as a fulcrum for continuing to discuss the perils of managerial dictatorship and the possibility for alternatives.

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[1] The all encompassing nature of managerial thought now afflicts such a plethora of theoretical and practical approaches that one could refer to the ensuing dictatorship of thought as the management paradigm.

[2.] McKnight's concerns are reflected by others critical of the professionalization of problems. W. Vanderburg argues that environmental professionals are hindering rather than helping with efforts to solve the environmental crisis. "One might even argue that there is a growing inertia against solutions because the problems contribute to the *raison d'être* for the existence of the community of specialists. Moreover, the specialists often use the very methods, approaches, and techniques whose limitations typically helped produce these problems in the first place. The professionalization of the problems of modern society is in fact part of the problem" (Vanderburg 1989:151).

[3.] Other authors have explored this point using different language. John Livingston (1981), Neil Evernden (1992a), and David Ehrenfeld (1978) have all questioned the validity of managerial approaches toward environmentalism and the negative effects often produced through attempts to protect and "save" nature.

[4.] Organizations such as the World Wildlife Fund, Greenpeace, and the Sierra Club.

[5.] Quite an opposite interpretation and value of redundancy has been put forward by ecologists operating from the diversity/stability hypothesis who see the maintenance of redundancy in biotic communities as a key factor in the resilience of biotic communities to recover from periodic disturbances (Odum 1993). However, recent trends in the science of ecology are moving away from a focus on equilibrium, homeostasis and balance (and even the idea of unified biotic communities and

ecosystems) toward an emphasis on directionless change, chaos, perturbation and disturbance (Worster 1994). These changes have undermined the validity of the diversity/stability hypothesis and the associated value placed on redundancy and resilience. This trend has reinforced managerial approaches to nature. This chapter will discuss the importance this switch in ecology has had on increasing the justification for the expansion of environmental management in service of a "needy" nature.

[6.] Eric Katz has explained how this process of describing an individual entity solely based on its instrumental function within a larger system destroys its intrinsic value. He calls this process the "substitution problem—the replacement of one entity in an ecosystem by another provided that the overall functioning of the system is not harmed" (Katz 1985:241).

[7.] Neil Evernden argues that, "Once the means of livelihood of a creature is known, it is up to us to mimic its adaptations through 'appropriate technology' so that the human niche can be successfully expanded. To those who equate human biomass with the amount of good in the world, this might seem a noble enterprise (manifest destiny?)" (Evernden 1992b:10).

[8.] *The A B C of Management* describes deskilling as: "Essentially, the transfer of workers' craft, practical knowledge and elements of job control to management and or to machines. This happens either as a result of increasing division of labour, or as a consequence of greater technical sophistication—mechanization, automation, computerization" (Blake et al. 1989:43).

[9.] The postmodern sociologist Jean Baudrillard sees Biosphere II as a reflection of the totally managed lives we are currently living on biosphere one (the earth). "The finest example of what the human species is capable of inflicting upon itself is Biosphere 2—the first zoological gardens of the species, to which human beings come to watch themselves survive, as once they went to watch apes copulate…The human species is currently domesticating itself, this time for good, by means of its technologies. It is submitting collectively to the same rituals as insects...It is immortalizing itself as the zero degree of a living species, as an operational artifact which no longer even obeys the law of species, except the law of artificial species [the engineered genetic code]...*As a result by going down these paths of artifice which were suppose to ensure its infinite survival, it is perhaps hurtling even more quickly to its doom*... Soon it will submit to the same controlled techniques of reproduction as the protozoa, will inflict on itself the same biogenetic (phylop or ontogenetic) destiny to which it has subjected others. It no longer, in fact, sees itself as different from the others in spite of its supremacy. It treats itself as a species that may be ruthlessly exploited, condemned to a brutalization and annihilation of its own. Here again, all the advances it has made and has forced others to accept have had a reverse effect upon it. To such an extent that it—the guardian, in its zoos, museums, reserves and laboratories, of condemned species—regards itself as a condemned species, and keeps an anxious eye trained on its biospheric destiny" (Baudrillard 1994:84-85 *emphasis added).*

[10.] There have been ecologists who have questioned both the validity of resource management models and some of the fundamental assumptions of environmental management (*see* Holling and Meefe 1996), however the connection between human and non-human management and a fundamental critique of the *idea* of management is often avoided and after delivering powerful critiques of management these scientists often call for new and improved management models and/or increased management of human beings.

[11.] A positive feedback loop is a set of activities which produces a final product that acts as a catalyst to continue the production of more catalysts. Negative feedback involves systems that produce final products which dampen the system, the products of positive feedback promote the production of more of the same. Examples of positive feedback loops include cancer cell growth and nuclear fission reactions. Positive feedback processes are inherently unstable and very few of them exist in natural systems (Odum 1993).

[12.] I witnessed a similar process in St. John's, Newfoundland when the Outer Ring Road development project was given permission to bisect the cities largest park. The four lane highway project paved over significant portions of wetland habitat located in Pippy park. However the environmental engineer for the road project argued that the construction had resulted in an "enhanced wetland environment" by increasing the overall area for duck nesting sites through a system of coffer dams and dikes. After hearing about the project *Ducks Unlimited* expressed interest in establishing a partnership with the road developers to build a permanent coffer dam which would maintain the enhanced duck habitat and serve as a pilot project to illustrate how road construction projects could integrate habitat enhancement into their engineering plans.

[13.] By emphasizing continuous change, change has become naturalized in both ecology and the social sciences. Within ecology, emphasis is now placed on the importance of natural and human disturbance in structuring healthy dynamic "patches" of nature. In the past, ecology focused on the negative effects disturbance had on biotic *communities* and their ability to resist change through resilience (the ability for biotic communities to bounce back to their "normal" equilibrium condition). Now the normal state has shifted to mean the *disturbed* condition. Everywhere ecologists look they see disturbance (Worster 1994). This is also evident in the social sciences descriptions of human communities although this is often cast as difference versus sameness. In the past, discussions of human communities emphasized similarities, now postmodern critics focus on differences, epitomized by the referral to multiple fractured identities (Haraway 1991). This emphasis on the naturalization of continuous change fits neatly into, and emerges with, the cultural logic of late capitalism and creates a positive feedback loop for the expansion of managerial strategies, which often utilize recent discoveries of change in nature without the associated limits of scale or reference to the type, or rate, of change with which ecologists discoveries of change are often situated (Callicott 1996).

[14.] This is most evident in the collection of essays in *Uncommon Ground* (1995) and *Reinventing Nature?* (1996). The essays in *Uncommon Ground* deconstruct the traditional notion of nature as a balanced system and propose that there are multiple nature's. According to the authors, our views of nature are always tied up in cultural constructions of what it means to be natural. Michael Soulé in "The Social Siege of Nature" published in *Reinventing Nature?* claims that his aim is to defend nature from the "humanists [represented in *Uncommon Ground*] who feel they must attack and redefine the concept of living nature and its protection as part of the struggle to liberate the less powerful classes *of Homo sapiens* from oppression by economically

and politically stronger groups of the species" (Soulé 1995:138). While Soulé attacks the deconstruction of nature launched by poststructuralist arguments (such as those contained within the pages of *Uncommon Ground*), he seems blind to the equally disturbing changes occurring within the field of ecology (Callicott 1996). Callicott coins the term deconstructive ecology to describe the recent trend toward "the desconstruction of the popular concept of living nature as a symbiotic, delicately balanced, well integrated, orderly system" (Callicott 1996:353). Both the social sciences (arguing from postmodern or poststructuralist positions) and the new theories in "deconstructive ecology" fixate on directionless change, perturbation and chaos, in short, they both are involved with arguments that disturb the balanced view of nature. Both of these trends toward "disturbance discovery" enhance the management paradigm.

[15.] Bacon's *New Atlantis* academy, called Solomon's House, housed expert scientific mangers whose purpose was "the enlarging of the bounds of human empire, to the effecting of all things possible" (Bacon 1955:87).

[16.] I do not wish to reduce *Conservation Biology* to merely a managerial publication, as there are other journals in the field that display a far more stringent managerial attitude (*see Environmental Management, Environmental Professional* and *The Wildlife Society Bulletin* for examples). In *Conservation Biology* there are articles questioning different management approaches to nature (Holling and Meefe 1996) and the ethical, moral, social, political, and spiritual aspects of conservation are addressed by some contributors, however, the journal does possess a large number of articles which unquestionably accept and reinforce a "Man-as-manager" approach to nature and are oriented toward resource managerialism.

[17.] Aquaculture requires the creation of a feedlot for fish with its associated need for high levels of management. Large concentrations of organisms often involve increased risk of infections and disease and consequently, fish farms require intensive disease management programs (Chechik 1989).

[18.] I hope that my arguments do not get taken as a simple contrast between pre- and post-aquacultural development in Newfoundland. Of course, factory freezer trawlers and other fishing technologies involved intensive management. My point here is that the move toward aquaculture solidifies and strengthens managerial trends toward Newfoundlanders and nature. This is evident not only in the scientific effort underway to domesticate the wildstock, but also in the moves to "domesticate" the future aquaculture operators of Newfoundland through retraining programs, schooling in business management, grants, economic incentives, and the post-collapse cod fisheries compensation "package" aimed at managing people out of the wildstock fishery and into other areas of the economy, including aquaculture.

[19.] While both left wing radicals and right wing conservatives fear the managed society, my critique should not be taken as an argument in support of neoconservative demands for deregulation, which do not represent a critique of the dictatorship of management but merely a swapping of administrators from public government officials to private sector executives (Ehrenfeld 1993).

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