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"NOT ON OUR WATCH"

The Biodiversity Crisis and Global Collaboration Response

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For those people who work with endangered species, the current rate of extinctions is experienced as a chronic disaster. However, many dedicated professionals continue to work with commitment, despite discouraging trends, to try to stem the tide. This article uses qualitative data gathered from interviews with an international group of biologists, zoologists, and wildlife managers associated with an effective global social change network, the Conservation Breeding Specialist Group. It explores their motivations and analyzes these in terms of Erikson's descriptions of classical responses to chronic disasters, particularly environmental disasters. It suggests that organizational form, network relationships, inspirational leadership, and the ability to cognitively frame or delimit scope and responsibility are all critical to responding positively to seemingly hopeless situations.

This article concerns a particular kind of crisis and the human and organizational capacities best designed to address it. The focus of the article is a network of scientists and managers centrally preoccupied with the problem of conserving endangered species. This group, all members of the Conservation Breeding Specialist Group (CBSG), a nongovernmental organization (NGO) based in Minnesota, forms an international network working to fight the ever increasing speed of extinctions threatening biodiversity on this planet. As such, they represent an example of a new form of organization—the global social change organization.

This article will explore a number of theoretical questions. The first is the nature of the crisis. What is the impact of ecological crisis and change on individuals? Is it the same or different from other forms of crisis from the point of view of human response?

Second, what motivates and enables individuals involved in confronting this crisis to work effectively and with commitment? What are the elements of the social organization that facilitate or block their efforts?

Finally, this article will tell a story of a particular kind of dedication and motivation. In doing so, it will raise the question of what kinds of satisfactions and rewards are offered by global social change organizations and to what extent these differ from those found in more traditional organizations.

A NEW SPECIES OF TROUBLE

One of the most critical issues confronting the globe today is the rapid extinction of species. The loss of biodiversity has profound implications for our societies:

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economic, psychological, aesthetic, moral, and biological. However, to stem this tide demands profound changes in the way in which we organize at a global level.

> A chronic disaster is one that gathers force slowly and insidiously, creeping around one's defense rather than smashing through them. People are unable to mobilize their normal defense against the threat, sometimes because they have elected consciously or unconsciously to ignore it, sometimes because they have been misinformed about it, and sometimes because they cannot do anything to avoid it in any case. (Erikson, 1994, p. 21)

In a recent book titled *A New Species of Trouble*, Kai Erikson (1994) describes what he sees as an increasingly common occurrence of the modern world: disasters that instead of stemming from "acts of God" are the result of man's own choices and activities, the side effects of his technologies and his relentless quest to control the world and its resources to his own ends. Erikson suggests that these disasters are different from many that communities have dealt with through history because (a) they are chronic and insidious rather than acute and dramatic, (b) they are man-made, and (c) they often include toxins that seem to permeate the very ground of being, rendering the environment that surrounds us and of which we are a part "defiled and unreliable."

Such disasters are a "new species of trouble" because humans seem constitutionally poorly equipped to handle them. The dread such disasters evoke seems out of proportion to the real danger. It appears to grow with time instead of resolving itself. It has the capacity to make people feel demoralized and helpless, traumatized in a peculiarly inaccessible way. It rends the very fabric of community in a way not easily repaired.

Erikson (1994) amasses data from a whole series of such disasters, from the nuclear leak at Three Mile Island to the mercury contamination of Grassy Narrows. He notes that these disasters, unlike classic tragedies, had no beginning, middle, and end. As they are perceived to be man-made, there exists among those affected the need to attribute blame. However, blame is often diffuse and difficult to pin down, especially if there is no one company responsible for the problem. And the end of the story is even more difficult to formulate in an intelligible way. Because we have, as yet, little understanding of the ultimate effects of such disasters, and those affected wait—seemingly endlessly—to see what the costs will be. This is what give such disasters their chronic quality and an aspect of the severe trauma those affected experience.

In addition, Erikson (1994) seems to indicate that the dread that individuals experience in such situation is disproportionate to the real danger. Erikson suggests that this dread may have a primal quality, as something "naturally loathsome, inherently insidious—a horror, like poison gas, that draws on something deeper in the human mind" (p. 147). Erikson himself hesitates to push this further, arguing that it is "odd conceptual terrain for a sociologist to be wandering around in" (p. 147). However, he argues that it has something to do with the sense that "poisons are now lodged in the tissues of the body, and that the surrounding countryside is contaminated as well, that the whole natural envelope in which people live out their lives has become defiled and unreliable . . dead ground" (p. 155). This is put in mythic terms by the elders of the Indian tribe of Grassy Narrows who feel that a land that had once been good, a "land that would give people strength," has been taken over by bad spirits.

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> We call it "pijibowin". This is the Ojibwa word for poison. You can't see it or smell it, you can't taste it or feel it, but you know it's there. You know it can hurt you, make your limbs go numb, make your spirit sick. But I don't understand how the land can turn against us. (p. 39)

Erikson's (1994) comment on the above quote was that he felt that the use of the term *poison* by the elder was symbolic as well as literal. It referred to the mercury that had literally poisoned their bodies and it referred to "a pervasive fear that the world of nature and the world of human beings can no longer be relied on in the old way." This fear—and the numbness, apathy, and alienation that the elder described—Erikson argues, are characteristic of all chronic disasters, whether or not they include "real" poisoning.

Although Erikson (1994) may feel that such primal dreads are uncertain grounds for sociologists to tread, E. O. Wilson—biologist and father of sociobiology—has no such difficulty. In his recent work, Wilson (1984) has increasingly championed the idea of biophilia, which he defines as "the innate tendency of humans to focus on life and lifelike processes." Wilson argues that although many have noted the potential economic, social, aesthetic, and even moral costs of the destruction of biodiversity, little has been said about the biological costs for human beings. Since primitive times, Wilson notes, humans have built on their innate, genetically programmed responses to the natural world to construct rich human symbolism of language and art. It is still the natural world, and not the world of machines, that provokes the most primitive, irrational emotions, whether of dread or pleasure. For example, take the universal response of dread that snakes evoke that have caused them to figure so centrally and cross-culturally in human myths and images. This dread exceeds the dread of cars; therefore, in urbanites it is irrational but peculiarly hard to eradicate. Wilson argues not so much that it is instinctive (i.e., inbred), because it is a fear that grows with age in humans as well as in primates, but that the tendency to be particularly stimulated, both to pleasure and to fear, by certain kinds of natural stimuli is innate:

> How could it be otherwise? The brain evolved into its present form over a period of about two million years. . . . Snakes mattered. The smell of water, the hum of a bee, the directional bend of a plant stalk mattered. . . . And a sweet sense of horror, the shivery fascination with monsters and creeping forms that so delights us today, even in the sterile hearts of the cities, could see you through to the next morning. Organisms are the natural stuff of metaphor and ritual. Although the evidence is far from in, the brain appears to have kept its old capacities, its channelled quickness. We stay alert and alive in the vanished forests of the world. (Wilson, 1984, p. 100)

Increasingly, Wilson (1984) argues, he has been convinced of the fact that much of what we perceive as aesthetic as well as much of what motivates us to explore, innovate, and invent is grounded in our biological relationship to other species. We have been, in fact, programmed for diversity and for survival within that diversity. From the diversity itself comes our excitement with exploration, our restless pursuit of variety, and our imaginative capacities. From our need to survive comes our preference for certain kinds of landscapes (high, with sweeping vistas, by water: the choice of dwelling for those free to exercise a choice), certain colours and shapes (that stimulate reproductive urges), and our desire to control the natural world. Both the need for variety and the need for control and safety are programmed in our genes, argues Wilson. But modern humans live in a world that has been too

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successfully controlled, and the subsequent reduction in variety threatens not only other species but our own as well.

> The brain is prone to weave the mind from the evidences of life, not merely to minimal contact required to exist, but a luxuriance and excess spilling into virtually everything we do. People can grow up with the outward appearance of normality in an environment largely stripped of plants and animals, in the same way that passable looking monkeys can be raised in laboratory cages and cattle fattened in feeding bins. Asked if they were happy, these people would probably say yes. Yet something vitally important would be missing, not merely the knowledge and pleasure that can be imagined and might have been, but a wide array of experiences that the human brain is peculiarly equipped to receive. (Wilson, 1984, p. 118)

Taken together, Erikson's (1994) notion of a new species of trouble and Wilson's (1984) theory of biophylia suggest that a healthy environment, one with natural biodiversity, is more closely linked to psychological health than we had thought previously. It is not merely economic gains and aesthetic satisfactions that we lose when we contaminate or destroy that environment. We risk evoking lingering feelings of dread, of trauma, of alienation, and of numbness when we tamper either deliberately or accidentally with the fundamental balance of nature. As human beings, we have the capacity to compensate, to overcome such feelings, but their primitive and enduring potential should not be underestimated.

RESPONSES TO THE CRISIS

> What event likely to happen during the next few years will our descendants most regret? Everyone agrees, defense ministers and environmentalists alike, that the worst thing possible is global nuclear war. If it occurs the entire human species is endangered; life as normal human species wish to live it would come to an end. With that terrible truism acknowledged, it must be added that if no country pulls the trigger the worst thing that will probably happen—in fact is already well underway—is not energy depletion, economic collapse, conventional war, or even the expansion of totalitarian governments. As tragic as these catastrophes would be for us, they can be repaired within a few generations. The one process going on that will take millions of years to correct is the loss of genetic and species diversity by the of natural habitats. This is the folly our descendants are least likely to forgive us. (Wilson, 1984, p. 121)

The rapid disappearance of biological species, and the resulting reduction in biodiversity, is an example of the kind of chronic disaster Erikson described. It is happening rapidly, and it is changing our environment forever. Wilson argues that of all the crisis facing the modern world this is the worst, as it will take perhaps millions of years to correct. "Species are disappearing at a truly alarming rate. Some say as many as 24 species are disappearing a day, more than ten thousand species a year" (Wilson, 1984, p. 122).

For many urban dwellers, however, it is a crisis we only hear about. We still consider ourselves unaffected and may be only dimly aware of the psychological trauma Wilson described of living in an increasingly uniform and "dead" environment. For those whose livelihood, profession, or love is centred on animals, however, the experience of chronic disaster associated with species extinction is real and oppressive. The North American Indians were deeply affected by the disappearance of the buffalo; today, exception is perhaps the fishers of the eastern

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seaboard who have watched their source of livelihood dry up almost overnight, the seemingly inexhaustible bounty of the sea unaccountably exhausted. And, those whose career and passion is the study or care of animals (zoologists, biologists, naturalists) mourn the passing of species with the same sense of inestimable loss.

> The tropical rain forest . . . is being clear-cut from the edge inward. It is being lifted up from the ground entire like a carpet rolled off a bare floor, leaving behind vast stretches of cattle range and cropland that need artificial fertilization to sustain even marginal productivity. . . . Tens and thousands of species have been scraped away as by a giant hand and will not be seen in that place for generations, if ever. The action can be defended (with difficulty) on economic grounds, but it is like burning a Renaissance painting to cook dinner. (Wilson, 1984, p. 25)

In addition, observers speak with some despair of the possibility of stemming the tide of extinctions. The complexity of the problems, the numbers of human actors (individuals and organizations) required to solve the problem, the deep-rooted nature of the desire and need to exploit nature for economic gain all seem to argue against hope for the future.

However, a small but effective group of individuals have responded to this chronic disaster not with hopelessness but with action. CBSG, based in Minneapolis, Minnesota, is not only an excellent example of a global organization for social change but an interesting exception to Erikson's (1994) profile of community reaction to an insidious, chronic environmental disaster. Instead of responding with numbness and alienation, they have responded with unprecedented energy.

A New Species of Solution: The CBSG

CBSG is a subcommittee of the Swiss-based International Union for the Conservation of Nature (IUCN). The IUCN had established a series of taxon-based specialists groups, to act as advisory groups as to the status of particular taxons in the wild. CBSG was formed initially to act as a liaison between these groups and the captive breeding community (represented by zoos worldwide but most particularly in England and North America). However, it remained largely inactive until, in 1979, Dr. Ulysses Seal was appointed chairman.

Seal came at the problem of endangered species and the conservation of biodiversity from a rather unusual angle. He was trained initially in psychology (BA and MA), then switched fields, and in 1957 received his PhD in biochemistry. Seal had always had a personal interest in animals; his research led him to seek out the zoos as sources of blood samples of exotic species with which to work. In exchange, he helped them develop more effective immobilization drugs to facilitate sampling. In the process, Seal championed a scientific medical approach to the management of zoo animals, an approach he found sorely lacking.

> What I did in the course of time I spent with (zoo people) was to hear about problems. These guys would all tell me: "Here's a problem. Here's something we don't know, here's something we can't do." Wherever I thought I could bring to bear what I knew about human medicine, I did. At one time I had over thirty projects going with people on a variety of species all over North America. (Seal, personal communication)

Seal carried this approach of applying knowledge across disciplines and of entrepreneurial action to solve the problems he identified into his role as chairman

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of CBSG. His work with captive animals made him aware of the need to genetically manage small populations if the endangered species were to survive. Seal recognized that to solve this problem, an intensification of the kind and quality of information available about individual animals was needed, as well as far greater collaboration between the individuals and organizations where the information was stored.

On taking over the chairmanship of CBSG, Seal took on the challenge. In the early years, he worked largely alone. Until 1990, CBSG was a one-man operation, staffed by Seal himself on a part-time basis. In that year, an executive officer was hired, and a secretary was hired in 1991. By 1995, the staff had grown to three program officers and three office staff, with Seal, having retired from his research position at the Veterans Administration Hospital in Minneapolis, devoting full time to CBSG activities.

Funding, like staffing, has also always been low. The group is supported by donations from its members, which are largely zoos. Beginning with 15 members in 1984, CBSG now has a formal membership of 653 from 150 countries, of which 140 are donor institutions and organizations. From this donor base, CBSG works with an operating budget of $300,000 a year.

In the 1993 Futures Search Report, drafted by a group of staff, board members, and interested stakeholders, the first "highly-valued characteristic" of CBSG was summarized as follows.

> One of the primary qualities identified was the priority that CBSG places on the exchange and sharing of information, with free dissemination of products and data. CBSG's communication network was seen as critical—keeping members and constituents up-to-date on technology and new programs. Its facilitation of problem-identification and problem-solving, as well as being a forum for discussion of global conservation issues are highly valued. Its ability to facilitate mutual problem-solving by people with diverse interest is appreciated, and was identified as the foundation upon which most, if not all, the workshop successes are based. (Conservation Breeding Specialist Group, 1993, p. 34)

The above quote accurately summarizes the interesting organizational aspects of CBSG. It is a far-flung network, held together by modern communication technology. In the 16 years that Seal has been chairman, it has developed a set of "processes and products" on which it relies to facilitate the identification, discussion, and resolution of extinction crises. CBSG has been described as "an endangered species fire brigade which careens from crisis to crisis with state-of-the-science advice on the emergency moves best calculated to avert calamity" (Alvarez, 1994, p. 356). The small staff of the Minneapolis office can only act as a catalyst and an advisor. The actual saving of the species is in the hands of the approximately 5,000 to 6,000 people who have participated in the initiatives.

This group (which CBSG refers to as the *network*) may be further divided into peripheral and core members. Peripheral members are those who may have participated in a CBSG workshop (some 3,000 participated in Population and Habitat Viability Assessments [PHVAs] in 1994), may be on the CBSG mailing list for the quarterly newsletter (circulation is 7,000 in 170 countries), or may be a member whose support is largely financial but who attends CBSG annual meetings (653 individual members). In addition, there is a core group of some 100 to 200 people who have been identified by Seal as primary resources, and who donate their time and energy and expertise repeatedly for CBSG workshops—for consultations or

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for helping to design new initiatives. These core representatives come from all levels of hierarchy and all parts of the world; they are recruited by Seal at workshops or meetings, they are brought there because of their reputation, or they themselves seek out CBSG because of their own convictions. For the most part, these individuals have full-time jobs as researchers, zoo employees, or government officials. Yet, they give extensive hours, indeed weeks of free time, sometimes with the support of their home organizations to make the products and processes of CBSG successful.

The network is convened only rarely and incompletely. CBSG has an annual meeting each year in which some 200 or 300 members meet. Most important, however, the network members are "called in" on workshops on endangered species. These include Population and Viability Assessment Workshops where members act as facilitators and experts in multistakeholder meetings to determine how to manage threatened species all over the world. The workshop process was designed to help maximize the good scientific analysis of the current status of endangered species.

It is a process in which conflict management and cross-cultural management are crucial skills. PHVAs seem designed to maximize conflict; an organizer or facilitator must be adept at handling such dynamics. Most members of the core group of CBSG have received no formal training in facilitation or management skills; they are scientists by training. The amount of effort, both on a professional and personal basis, that participating in these exercises requires is phenomenal. To organize one can take up to a year, and even to only participate in one takes up to a week (including preparation and travel time). It is time fraught with setbacks and frustrations as well as gratifications. The work is intense, demanding, and emotionally draining.

Yet, a large group of dedicated professionals have given their time, often on a voluntary basis, to make these exercises a success. And, considering the complex and nearly hopeless proportions of the task, CBSG has had some astounding success. The volume has been enormous. In 1994 alone, the "node" conducted or participated in 63 workshops, prepared 96 workshop reports and similar documents, and responded directly to more than 3,200 queries from people in 120 countries. More important, to date, some 20 species have been temporarily "saved" by captive breeding programs in which the information from ISIS and the collaborative processes of SSPs have played an important role (Tudge, 1991, p. 29). The PHVA and CAMP processes can be credited with helping some 40 other species. The sheer (and ever-increasing) volume of these workshops qualifies as a measure of the initiative's ability to convene stakeholders. Anecdotal testimonials support this assumption. For example, one CBSG member working in India stated at the close of a recent workshop that "PHVAs had become one of the most important tools in assessing wildlife conservation in country" and that "PHVAs are now considered an integral part of the management scenario." And a U.S. commentator, involved in the almost certainly doomed struggle to save the Florida panther summarized succinctly, if pessimistically: "Without the CBSG, there would be no movement at all" (Alvarez, 1994, p. 447). No stakeholder group has been credited with doing more to organize the domain in the interests of constructive action.

How then, does CBSG work, on the level of process in terms of the motivations of individuals who give their time and energy often voluntarily and also surprisingly tirelessly? They are waging an almost hopeless battle, truly a chronic disaster in Erikson's (1994) terms, with very limited means. Why do they persist? The work keeps them long days, weeks, sometimes months from home, family, and friends.

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What keeps them going? Why do they not succumb to the apathy, numbness, and alienation described by Erikson?

In an effort to understand the motivations, we sent a query to 47 core members of the CBSG network, those who were identified by Seal as having participated in numerous CBSG processes over time and as being a group that could consistently be relied on to give its time and energy. Of these, 37 (83%) responded in writing, at length, and in very moving terms. In addition, we interviewed the CBSG staff and several key individuals closely associated in the office. This combined database provides a surprisingly clear picture of both the degree to which CBSG core members view the current situation in the light of a chronic disaster and the emotional, intellectual, and moral reasons they have for continuing the effort.

"Not on Our Watch": Motivations and Misgivings

> Psychologically, since at the ecosystem, landscape, and species level most battles are being lost, this is discouraging and gloomy stuff. A steady diet of the gloom is depressing. Aldo Leopold said that one of the costs of being an ecologist was that everywhere you look, you see only wounds.

It must first be noted that although many in the CBSG network describe themselves as inherently optimistic, they are nonetheless acutely aware of the grave and hopeless nature of the problem with which they are struggling. This paradox is present in many of their statements.

> Fundamentally to all the efforts—so much so that it can probably be taken as a given—there is an urgent and critical need to change the relationship that people have with the rest of the natural world—both for our sake and the sake of the health of the rest of the biota. I am discouraged about the likely status of the world—the standard of living for people and all other organisms (what's left anyway)—in future decades and centuries. In fact, this is one reason that I would not want to bring offspring into the world. . . . I'm not confident that we are leaving the world in very good shape for the future.

The above quote renders very personal the sense of desolation. In this respondent's view, the world is unlikely to be a fit place for offspring, even as early as the next generation. Although this view may strike the reader as doom and gloom, keep in mind that it is not the viewpoint of a defeatist, rather of one of the key members of the CBSG whose efforts for conservation can be (with no exaggeration) deemed as tireless. One respondent described the discrepancy between effort and possible success as reflecting a "kind of craziness." Others referred to it as blind determination.

> We are in a crisis and we must succeed, but I am not optimistic that—in the broad sense—we will. In part, I think that my perspective is that we will almost certainly fail, but we cannot not try to change the course of things. It is as if you are lost in a snowstorm, and sense that you are almost certainly going to die—you still try to get through it and survive.

On a more mundane level, it is not unusual to hear complaints from CBSG network members about the tremendous pace set by Seal and the difficulty in coping with the demands of a seemingly endless problem. The staff in the CBSG headquarters often struggles with exhaustion and potential burnout.

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> At times, the staff simply can't keep up with the workload. I have seen them in tears, frazzled beyond words. When Ulie is away, he sends them a fax a day with 3,000 new things to do and they are still working on last week's. They never get a break, it is unremitting. I know they feel extraordinarily proud and honoured to be part of something so important, but they sometimes just can't handle the frenetic pace, and the fact that it never ends.

For the volunteers who are part of the far-flung but active network of CBSG, the problem is somewhat different. They, too, confront the fact that the ambitions of CBSG seem to expand to exhaust all available time and energy. It is hard to draw lines around global challenges of this nature.

> It is not that I wish all this would go away, but working with CBSG is like opening the shallow top drawer of a bureau. You are invited to make a contribution, you make it and then you discover that the real problem lies in the deeper second drawer; you get through that and discover yet a deeper drawer. This keeps exploding in more and more in-depth reviews, and soon you are talking to people all over the world, and it is never finished. It is exciting but never ending. You go into one project and if you've got your eyes open you know it isn't enough by the time you've done. It's frustrating. And it consumes the volunteers. After all, they have the rest of their lives, their jobs, their families. There are just not enough hours in the day. It would be nice if you could say it was done, but it never is.

In addition, network members sometimes find the work lonely. This may be an impediment that is poorly documented in networks in general. To the extent that motivation is—at least in part—a social construction, it is sometimes hard to keep motivation high in the long stretches between contact with other, like-minded individuals.

> When you are sitting in rainy California and it is eight o'clock at night and you're trying to put together some data and you haven't talked to anyone in five months because Ulie hasn't been there and pretty soon you give up and turn on the TV or go to bed. It's a unique situation as people are spread all over the world. And when it comes to these bigger products, the global action plans, et cetera, really need his input. . . . And we need a few more warm bodies that you could contact.

Despite the loneliness, the ever-expanding expectations, the pressures, and the exhaustion, members of the CBSG network gave a rich description of the motivations that informed their efforts. These motivations turned out to span the gamut from emotional and visceral to intellectual and professional, and to moral and spiritual. Analysis of their extensive and often moving statements revealed what we felt were five distinct themes:

1. the emotional impact of working with animals,
2. the satisfaction of working with others in the CBSG network,
3. the sheer love of the work itself,
4. an intense excitement with the CBSG approach, and
5. a profound sense of duty or responsibility.

As each of these contributes to the overall picture of motivation, we will discuss each in turn.

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THE EMOTIONAL IMPACT OF WORKING WITH ANIMALS

In many of his books, Wilson (1984) describes how his love of insects, snakes, and the natural world informed his life for as long as he could remember. This would appear to be true for many of the biologists and zoologists who work for CBSG as well. As one respondent noted,

> Most people such as botanists, entomologists, horticulturists, and zoologists find a real joy in working with living things. They are not working just for a financial return. This is often manifest through a very deep affinity with living things of a particular taxon or with a particular organism. The sense of responsibility is strong. We are trusted with that particular organism; it requires our attention. There is a deep fear of loss, therefore, not just a "management failure" but a personal loss.

An interesting element of the above statement is the degree to which the attachment to the animal world begins with the particular and moves to the general. Members of CBSG (and probably all naturalists) joke about having a particular totem animal or plant. Although it is not universally true, many specialize, focusing their particular sense of responsibility on a particular organism. As the speaker above notes, the sense of affinity is deep, the sense of being entrusted is the equivalent of the sense of being entrusted we express about the people we love, the threat is tangible and highly personal. It is also deeply visceral, in a sense that seems to support Wilson's (1984) notion of the innate biophyliac tendencies of man.

> I love the animals and nature. The research is exciting. Personally, I think I do it for my own pleasure. Field work is very exciting for me because I'm very close with the deer, and when a deer looks me in the eyes I surprise myself with the deep happiness I feel. I feel hopeless when I find a dead animal, angry and worried if I notice habitat alteration, and I feel discouraged when I think that at this moment I can do nothing to change the situation.

This claim to working for *my own pleasure* is a reflection of the strong emotional or visceral sense of connection to animals. As another respondent said,

> Perhaps it is also altruism, the survival of future generations on this planet that drives me. However, it's probably more accurately selfishness. I love wildlife and wild places. I am moved emotionally when I see the vast herds of wildebeest on the Serengeti or a single butterfly landing in my garden to sip nectar or lay eggs.

This intense love of other species—which Wilson (1984) describes so well and which makes altruism feel like selfishness and hard, and sometimes hopeless, work feel like self-indulgence (for my own pleasure)—is noteworthy. In addition, it is at times supported by early childhood experiences of family or friends who simply "took the world seriously" as one interviewee noted. This was not necessarily only the world of nature; it was just a view that the world had value, both emotionally and intellectually, apart from an environment for the self. It deserved to be cared for in its own right. One respondent, whose father felt an affinity for the disappearing breeds of domestic livestock in England, tells of the following "shaping" incident.

> My father's passion was the conservation of old English breeds of domestic livestock. So my childhood was spent travelling around collecting individuals

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> from the last herds/flocks in the U.K. Many of these were maintained by old farmers who were having to break up bloodlines maintained for generations. On one occasion, I was taken out of school by my father to see the last purebred Norfolk Horn ram before he died. I was collected from school that evening, the next morning the breed was extinct. The sense of loss was very tangible.

Therefore, these respondents do seem motivated to struggle against overwhelming odds because of what they see as an affinity to the animals that are disappearing, an affinity that is fundamental to their own identities at a visceral level. Therefore, although Wilson's (1984) theory might seem to support Erikson's (1994) in that fundamental disturbances in the natural environment are a new species of trouble that fundamentally undermine man's relation to himself—as well as to the environment—it would appear that for some, that sense of connection is also the source of an (unreasoning) determination to work to rectify the situation, to *not* give in to the sense of hopelessness that Erikson describes. However, there are other motivations at work here as well.

THE SATISFACTION OF WORKING WITH OTHERS IN THE CBSG NETWORK

One of the interesting things about the CBSG global network, which may in fact be characteristic of all well-functioning networks but has not, we believe, been well documented in the literature to date, is that the network acts as an important reference group for members. Reference groups is a term used to connote informal groupings that are important identity-creating and -maintaining units for the focal individual. Generally, more complex than friendship groups, in that they are not only important social but also professional reference points, such groups represent important resocializing forces for adults and can act as important emotional alternatives to families, as well as offering new ego ideals and identities to adherents.

However, most of the discussion on reference groups suggests that a certain amount of fairly intensive contact is a necessary condition. In the past, this meant that global reference groups were fairly rare. However, changes in communication technology (without which an organization such as CBSG could not exist) have expanded the affective as well as instrumental possibilities of global networks. Although physical contact might be severely limited, telephone, fax, and most important, e-mail allow for an intimacy and a regularity of exchange. "While I may not see them often," one interviewee noted, "these are some of my best friends." This reference group aspect of CBSG represents an important motivation for adherents, energizing them to work seemingly endlessly and against the odds.

> I have enjoyed the interaction (and cultural learning associated with all the terrific people that participate in CBSG activities. For whatever reason, there are some really nice and intensely dedicated people working in conservation. They certainly are not doing it for the money. Perhaps, it is a mothering instinct within all of us, a drive to preserve what is close us. In any case, the horrific decline in habitat makes all of us want to work together, and the commonality in interest or commitment spins us to an extended family-like relationship, friendships that likely will last for a lifetime. That in itself is a pretty good reason to work with CBSG.

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In the above quote, the elements of friendship, family, admiration, and common purpose are all clustered to suggest that the emotional affiliation with other humans is as important as the emotional affiliation with animals mentioned in the first theme. Somehow, the sense of community acts as a bulwark against the horror of the problem; the two are often mentioned in the same breath. Others in the network are referred to almost as comrades in arms:

> On the other hand, getting to know people from all over, with whom you share some fundamental value, is a great reward. Learning to work with them in some way, where cooperation is the theme, is equally rewarding. And, no matter how small, there is a sense of making a contribution, and engaging in a fight that is truly historical.

In particular, several of the leaders, notably Seal himself, are mentioned as sources of inspiration and even energy. As one respondent noted succinctly, "Ulie is a recharge point for many of the people in this network." Seal and the deputy chair of CBSG, David Wildt, were respected not only for their dedication, their drive, and their energy but also as notable scientists who had advanced the field in general. They inspired confidence and emulation:

> Having "grown up" working with Ulie, Dave Wildt and his group and countless others gave me quite an advantage in knowledge and perspective. These men are all pioneers in the field and watching them work hard and take chances is certainly inspirational.

From a theoretical view, it is interesting to note that Erikson (1994) identified the erosion of community as one of the truly pernicious attributes of the new species of trouble with which he was concerned. Something about the numbing, alienated effects of feeling that the environment could no longer be trusted was the sense that other human beings could no longer be trusted either. Whereas Erikson noted that literature on crisis often identifies a new sense of community as being one of the positive side effects of crisis, in chronic disasters—with their insidious disturbance of the very ground of community—he found no examples of a heightened sense of community. Again, he attributes this to subtly different nature of these crises, perhaps (although Erikson does not specify this) the "boundariless" nature of the problem that puts it outside the control of traditional communities. If this is so, the voices of members of CBSG suggest to us that global, boundariless networks represent the appropriate community unit for responding to chronic disasters and that when such global networks are both affective and instrumental they represent real bulwarks against despair and apathy.

THE SHEER LOVE OF THE WORK ITSELF

A disproportionate number of CBSG network members are highly trained professionals, hold advanced degrees, and are often with admirable reputations in research and practice. They are professionals who understand their work and who love to do it. As one respondent noted,

> Your question certainly caused me to stop long enough to reflect on my life and why I do what I do. I find it most interesting that you ask this, because it is rare that someone that is self-motivated and consistently produces is asked to explain why. Most people either find more work for them, or are just glad it's not them.

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However, the intense pleasure respondents found in working had a double focus. For some, such as this researcher, it was the day-to-day tasks of their job that provided the critical motivation that fuelled their extracurricular activities.

> Then, why do I go beyond the normal demands of my job to participate in CBSG activities? Of course, I am passionately engaged in the conservation of species. I do not need utilitarian arguments for saving species. I just want them to stay alive. Still, I do not think that is a complete explanation. What keeps me working for another hour, and another, is probably not the cause, it is the work itself. I do feel discouraged about the state of our environment and exhausted at times, but it does not stop my work. It is a bit like the mouse in the wheel: He knows he is not getting anywhere, still he keeps running, just for the fun of it!

However, for others the relationship was reversed. CBSG depends on professionals who, once established, find that the day-to-day demands of their job are not entirely satisfying. They miss a sense of making a contribution, of "doing something real," that CBSG can provide. Many of these went into zoo work because of a "fascination with animals" and a desire to "keep them around." They then discovered, to their chagrin that "the routine day-to-day work in a zoo has almost nothing to do with such goals." For such individuals, participation in CBSG processes provides a sense of meaning and contribution that gives a purpose and a shape to their daily activities. And for everyone, participating in CBSG provides a historical opportunity.

> There's also the sense of real involvement with a *big issue of our time*. For anyone with biological interests, the current biodiversity crisis is the biggest issue since the Cretaceous (i.e., in 60 million years!). Besides, public radio here points out that environmental interest is emerging as a dominant theme of world culture, right up there with rock music and its descendants, and Coca-Cola.

Finally, it is hard to deny that CBSG core-group participants are characterized by an exceptional amount of energy. They like to work, and they do so longer and harder than the average person. At most, CBSG workshop participants work 16- to 18-hour days. Although this is partly motivated by the cause, it is also clearly part of the basic disposition of members. There is an elective affinity between those who simply like to work hard and the kind of never-ending challenge that the problem of saving endangered species presents:

> Being a workaholic certainly helps, and work is probably the only thing that I've ever been consistently good at. I guess I feel that if you are not part of the solution that you are part of the problem, and ignorance is no excuse for lack of activity.

In sum, CBSG core-group members work for the sheer love of the job, as well as for the love of the animals they are trying to save. Because much of what they do is above and beyond their normal job requirements, they are self-selected for their high energy and willingness to work, as well as for their love of animals. Of course, this may be peculiar to CBSG network, but it is also possible that global social innovation networks are largely peopled by this type of person and fuelled by the excess energy that remains when normal working hours end. Much as the knowledge workers whom Drucker argues are the wave of the future, such individuals measure organizations by their capacity to meet their professional needs.

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Therefore, they are not wedded to any organization in the traditional sense but search for organization as a vehicle for self-actualization. Hence, the network form may be inherently more empowering, or more attractive to empowered people wishing to engage in effective action. It would be interesting to compare the response of networked individuals to that of community-based individuals in their response to chronic disasters.

AN INTENSE EXCITEMENT WITH THE CBSG APPROACH

Certainly, the respondents overtly express an appreciation of the structures and processes that Seal and CBSG have developed. They are articulate in their awareness of the unusual nature of CBSG as an organization and as an approach to established problems.

> I share the strong feeling that many of the organizations, institutions and structures that have been built up have become the problem instead of the solution. CBSG work offers the chance to break some of the shackles and do something in spite of the structures; so anyone with a trace of anarchist in them, or a desire for progress, feels rewarded. In an age of exploding communications and travel, lots of people see the anachronisms, feel that the old structures are clearly drawn too narrowly, and do too little.

Therefore, some of the motivation comes from the sense of taking part in an experiment, of being part of a process in which action is more important than custom and in which communication is more important than hierarchy. As most of the core group of CBSG members work in traditional, often hierarchical organizations, participation in CBSG gives them an alternate identity, alternate roles, and a kind of freedom of thought and expression they may feel they have to inhibit elsewhere. In contrast, for those working in professional bureaucracies, as researchers or scientists, CBSG processes offer not so much an alternative to hierarchy as an alternative to competitive, individualistic orientations:

> CBSG simply cuts through the crap and provides written guidelines put together by experts that, if implemented, will help conserve a rare species. It provides organization in a field that is inherently unorganized because of self-interest spawned by having accessibility or ownership of rare specimens. It also brings science to the forefront making it practical and useful. Before these strategies were available, chaos reigned. Territoriality was rampant, zoos were strictly competitive, and no species benefited. For scientists, there was less justification for their existence. Basic science in a zoo was seen as a luxury. CBSG breaks down the territoriality and reemphasises the importance of the scientific method and basic research. In addition to offering organization, it mandates cooperation not just locally, but internationally. This is the only way to affect real conservation change.

Here, the emphasis is on the breaking down of old boundaries, of thought, and of practice to "affect real conservation change." As mentioned earlier, this is partly viewed as a radical new approach and partly viewed as "getting back to basics." After all, as one scientist reported, "That's why most of us became scientists . . . to work together to make things better."

Whereas the first two categories, the emotional impact of working with animals and the satisfactions of relationships within the CBSG network, may be said to be

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emotionally based motivations, the second two (the love of the work and the excitement of CBSG's approach) may be said to relate to intellectual and ego needs, the need to work well and productively, and the recognition and appreciation of new and successful methods for achieving goals. The last two motivations, potentially the most interesting, have to do with moral or spiritual concerns. These type of statements were the most common of all the categories and have to do with a sense of duty and of morality that is unusual but clearly deeply felt.

A PROFOUND SENSE OF DUTY AND RESPONSIBILITY

As an article of faith, members of CBSG felt strongly that biodiversity was a "good." This was a belief that could be defended intellectually, but it was also deeply felt. It was strong enough to represent the kind of conviction that provides an unquestioned guidance for action and for effort. As one respondent said, "We have no *right* to extinguish other species." To destroy species was linked very closely to destroying life itself, and certainly an important part of the beauty and wonder that was an essential ingredient of creation.

> The natural world is the work of millions and billions of years of unique evolution. The idea of trading such marvels forever for one more ephemeral gas station, housing development, or even farm seems outrageous. Worse, species are far less replaceable than human art works—we can make good reproductions of the Mona Lisa, but not of elephants.

As regards this treasury of marvels, CBSG respondents had developed a sense of duty and obligation. It was this sense of duty that kept them going rather than any sense that victory or success was imminent. "It is as if you are lost in a snowstorm" said one respondent "You have to keep going, even if it isn't very likely that you are going to survive." Some even expressed this sense of duty and responsibility as a spiritual or religious trust.

> I do not believe for a moment that we are going to win. I do not openly say this. . . . Instead, I make up slogans about "winning the war on wildlife" but it is not going to happen. There are too many people who do not have a dominant gene for picking up a piece of paper. Even if everyone got it overnight, it would still be difficult. I continue to work because, even if the desired result is not forthcoming, I have still done my duty. . . . I have done whatever I could to bring it about, irregardless of anything. This is important to me spiritually.

However, CBSG members were not unconscious of the chronic disaster nature of the problem. Species are never saved for all time. The problem is endless, and probably hopeless. However, apparent in many of the statements made by members was an interesting symbolic device for dealing with the "unbounded" nature of the problem. It was the concept of "watch," a means of placing an arbitrary, comprehensible frame around the problem, setting the limits to be the life span of each individual.

> Ethically, the idea of passing on a permanently impoverished world is also pretty distasteful to me—it feels like things are going bad on my watch. One current phrase reacts with "No more prizes for predicting Floods . . . prizes only for building arks." As a friend of mine said, instead of wanting to go down in history, our ambition is *not* to go down in the geological record—i.e., *not* to mark our time

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> stratum with the very last of the rhinos, et cetera, as a near-eternal monument to one generation living stupidly.

In this rich statement are a number of themes that are critical to the ability of CBSG members to find motivation to continue in the face of a chronic disaster. The first is the notion of finite responsibility. We are not responsible for saving endangered species, only for saving them "on our watch." Our responsibility ends when our productive life span ends. The future is the watch of others. A second is an emphasis on action. Knowledge is seen as only valuable if it is translated quickly and effectively into restitutive action. The image of the ark is widely used among this group of conservationists and is a dramatic symbol. However, in this flood, the water is the wave of human population, drowning out all other species. Finally, there is the notion that individual quests for fame—linked as this is with the philosophies of competition, dominance, and individualism—is no longer appropriate in a time of crisis and flood. For too long, human individuals have distinguished themselves by "making a mark." Now, a generation must be distinguished for not making a mark, for conserving rather than destroying or producing.

However, most critical from the point of view of Erikson's (1994) chronic disasters is the psychological value of framing the sense of responsibility and duty and for selecting milestones for progress that become grounds for optimism. As one respondent noted,

> Although the big picture looks pretty hopeless, we do win small battles. Most of the species on which we work will be lost, but my efforts might secure the future of a species that took millions of years to evolve and which plays important roles in the ecosystem. That makes it all worthwhile.

As was mentioned earlier, CBSG, *has* been associated with saving (at least for the moment) a number of species (or at least with a major beneficial revamping of conservation efforts) including the Florida panther, the black-footed ferret, and the Kenya black rhino. Each recovery can be treated as a milestone. For some, the milestones are defined even more minutely:

> I do get discouraged when people don't appreciate the world around them or become disgusted when I talk to them about the beauty of jumping spiders. But when at least one person is changed, I feel good. When another species is saved, I feel good. This business is replete with discouragement and hopelessness, but if I weren't a little bit of an optimist, I would have given up a long time ago.

Hence, the notion of bounded duty and of interim milestones helps to make a sense of duty and responsibility bearable, in the face of a nearly hopeless dilemma. Nonetheless, CBSG members describe themselves as "honour bound to give our best." Their best is certainly considerable, but to whom are they honour bound? There was little reference to any specifically religious motivations. However, a number of the North American respondents mentioned having participated in the Scouts as children, and it is interesting that much of the language, the concept of watch, the concept of duty, and terms such as honour bound seem reminiscent of the scouting movement. For all that it has lost much of its earlier momentum, the scouting movement was perhaps particularly attractive to those with strong biophyliac tenancies. It taught a love of nature, a harmonious coexistence with nature and certainly contained a concept of duty to community and to the world that is

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rarely taught in children's group or community activities today. As Seal himself reported, "We didn't have organized sports. . . . What we had was the community churches and the scouts." Both these organizations demanded commitment, responsibility to others and to the world (whether social or natural). Whatever its origin, a strong sense of duty, it appears, is considerable protection against the apathy, depression, numbness, and alienation of chronic disasters. Moreover, once committed to a community, once permitted to "taking the world seriously," this sense of duty in CBSG members seems to be less tied to a specific community and more to a sense of inner direction. This allows them to operate at the more abstract level of the global community as well as the specific physical community in which they find themselves. It certainly results in a mental toughness and an intense dedication to life itself.

> Yes, I feel exhausted, discouraged, and hopeless most of the time, but at least you know you are alive. Most everything in my life has come the hard way and I wouldn't be here if I were easily discouraged. You have to want and believe you can make a difference to continue at the pace that it takes to be involved in so many things. If it helps in any small way, then it is worth it. The alternative is to say that I can't or don't have time to make a difference. I personally think that attitude is terrible.

SUMMARY AND CONCLUSION

> The Beauty and Genius of a Work of Art May Be Reconceived Though Its First Material Expression May Be Destroyed; a Vanished Harmony May Yet Again Inspire the Composer. But When The Last Individual in a Race of Living Beings Breathes No More, Another Heaven and Another Earth Must Pass Before Such a One Can Be Again. (W. Beebe, 1906)

The above quote, written on the memorial stone of Gerald Durrell—novelist, conservationist, and founder of the Jersey Wildlife Preservation Trust—is a fitting epitaph for a man who was a pioneer in the fight to preserve endangered species. In this article we have argued that the CBSG network is activated by many who share Durrell's inspiration, commitment, and determination. As a social organization, CBSG indeed represents a global social innovation. It is a loosely structured, value-driven but ongoing (as opposed to temporary) network organization operating on little money, volunteer time, and the ingenuity and commitment of a core group all over the world. Its processes are designed to fundamentally address some of the contradictions of global problems, such as the need to operate simultaneously on a global and local level; to find a unity of perspective and purpose while simultaneously allowing for diversity and variety; to marry the technological sophistication, relative resource richness, and power of the North to the traditions and local knowledge of the South. To operate such processes requires great skill in process design, in conflict management, and in cross-cultural sensitivity. Each workshop mounted is very labour intensive, drawing heavily on the time and energy of the organizer. And ultimately, this dedication, skill, and commitment can be but a drop in the bucket compared to the enormity of the problem, a "vast wave of destruction sweeping over the planet" as one respondent described it.

This article represents an exploration of some of the reasons why CBSG, whose only real resource is the talent, knowledge, and energy of its members, has operated so successfully in the face of the chronic disaster represented by the rapid extinction of species and the diminishing biodiversity of the planet. It suggests that in fact an

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important element of humanity is moved by biophyliac tendencies as Wilson (1984) argued. It also suggests that although such individuals are particularly sensitive to the chronic disaster of extinction, they have found in CBSG ceratin tools and resources that protect them against the demoralization described by Erikson (1994). They also bring certain dispositional resources to CBSG that strengthen their sense of resolve and purpose. From the point of view of Erikson's theory of "new species of trouble," CBSG's new species of solution offers the following insights.

1. The hopelessness expressed by the representatives of Erikson's (1994) chronically traumatized community is a reaction not only to a fundamental destruction of the environment but also to the sense of lack of empowerment. His cases describe laypersons without the tools to discern and represent the threats they face. CBSG democratizes tools; it gives people the chance to feel they can act productively as individuals in response to their emotional and intellectual concerns.
2. The boundariless aspect of the CBSG network provides a structure that may be said to fit with the boundariless nature of chronic disasters. In this sense, it is an appropriate organization for such problems and seems more immune to demoralization than traditional bounded communities.
3. Due to improvements in technology, the sense of connection—both instrumental and affective—is strong in the CBSG network. Hence, it satisfies emotional needs for contact as well as moral aims and professional competencies.
4. The CBSG members bring to the network an intense love of their work. They are people endowed with unusual amounts of energy and competence. The network form of CBSG is a vehicle that allows them to use this energy in effective action. Traditional communities and organizations think of individuals as members, subservient to the community as a whole. They see their contract as one of integrating, regulating, and caring for members in return for loyalty; they do not see the contract as one of providing environments and materials that provide exciting opportunities for those motivated to turn expertise to action. Traditional communities may hence fail to provide such vehicles.
5. Erikson's (1994) case described communities that become disorganized as a result of a threat, with the subsequent loss of the experience of trust and goodwill that is the basis of that community. Most people in the CBSG network experience profound disorganization, even chaos, as part of their efforts to work for conservation. However, in their case, the disorganization is viewed as a beginning of a new form of organization as opposed to the ending of an old, as an experiment and a pioneer effort in their field instead of the loss of valued order. This suggests that optimism may be a function of an innovative organizational form and of the interpretation of disorder that is associated with innovation.
6. Erikson (1994) describes the debilitating effects of the fact that chronic disasters do not have a beginning and an end and that although they are the result of human error, blame is hard to allocate. CBSG network members bring a profound sense of duty and responsibility to the cause; they handle the need to assign responsibility by voluntarily assuming it themselves. They balance this with the concept of watch, a symbolic attempt to frame and subdivide the problem into manageable units and milestones. Their concepts of duty are deeply held and unquestioned, and they act as an effective bulwark

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against depression. Nonetheless, it would appear that for unbounded problems, some psychological "limiting" devices are necessary for successful functioning.

For scholars interested in global social change organizations, our case also offers a number of interesting insights. First and foremost, it underlines the need to do more research around the affinity between the network form and the type of social problem. Erikson's (1994) work suggests that unbounded problems, such as what he describes as chronic disasters, have qualities that seem to undermine human beings' inherent problem-solving abilities. Perhaps an organizational form that is equally unbounded can counteract this tendency.

However, although the network may be theoretically unbounded—in the sense that it is without a centre, exists on a worldwide basis, and has no planned limits to growth—it nonetheless has important emotional significance for members. On the level of finding role models and points of reference for adult identity and intense friendships, the CBSG strikes the researchers as certainly a highly personal environment, containing clan-like qualities many organizations would envy. We have attributed some of this to the availability (and indeed emphasis) on communications within CBSG. But this relationship is one that deserves more study, as does the role of affect in general.

Finally, we would argue that the case of CBSG demands that we rethink our tendency to view organizations as actors in the interorganizational domain and see them more often as vehicles, resources for people who are anxious to put their expertise to work. From a psychological viewpoint, the CBSG respondents whom we have represented in this article are highly inner directed and value driven. This dedication is not produced by CBSG, rather CBSG offers them an exciting vehicle for putting the dedication to work. This may generally be true of networks and suggests that maybe it is not only the form that makes them effective but the form provides a better vehicle than hierarchy for a growing and highly effective part of the population.

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