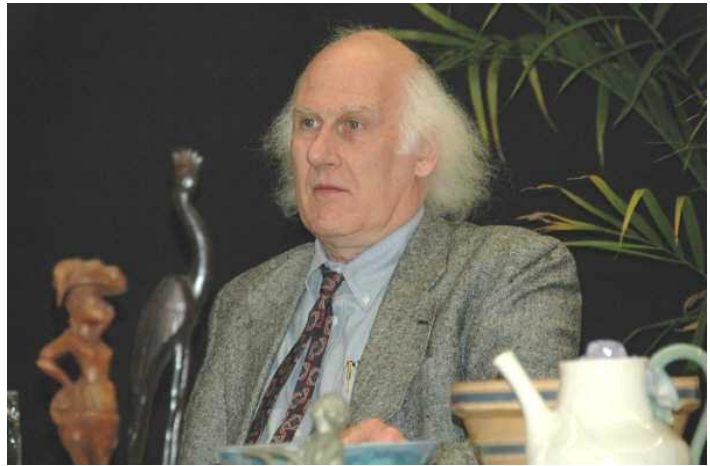


MR. STUART M. LEIDERMAN

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Ecology, Environment,
Public Health, Education,
Water/Sanitation, Development
Refugees and Restoration
Disaster Preparedness,
Non-governmental Organizations



STUART M. LEIDERMAN has more than forty years' experience as teacher, researcher, writer, organizer and consultant in the fields of ecology, environment, public health, water, sanitation, community development, international and humanitarian affairs. He is a pioneer in recognizing, explaining and addressing the plight of environmental refugees and the need to restore damaged homelands. Beginning in the 1970's in the United States and then also overseas from the early 1990's, he has assisted and advised organizations and individuals affected and alarmed by the frequency and magnitude of environmental uprooting and the lack of effective response. He sees environmental refugees both as victims of a distinct kind of persecution and also as "bio-indicators" of environmental emergencies ["Outcasts from Eden" by Nolan Fell, *New Scientist*, 31 August 1996].

Leiderman has a unified and predictive theory of environmental refugees based on his studies at the University of New Hampshire, particularly his "Remainder Earth Scenario." [available on request] His article, "Environmental Refugees" appeared in the premier edition of *Encyclopedia of the Future* [Macmillan, 1996]. His report and analysis, "World Problems of Environmental Emigration from Polluted Regions" won top honors at the NATO Advanced Research Workshop, Ukraine in 2002. He co-authored "Twilight People: Iraq's Marsh Inhabitants" carnegiecouncil.org/publications/archive/dialogue/2_11/section_3/4458.html In 2004, he co-founded the Toledo [Spain] *Initiative on Environmental Refugees and Ecological Restoration*. His *The Plight of Environmental Refugees: The Need to Restore Damaged Homelands* was published by Just Change magazine globalfocus.org.nz/uploaded/documents/Just_Change_9.pdf in June 2007

Among his college-level teaching accomplishments, Leiderman created an original online course on the restoration of the marshlands of southern Iraq <<http://www.eeob.iastate.edu/classes/EEOB-590A/eeob590a.htm>> [three universities, several semesters]. He maintains an extensive personal library and correspondence network of environmental and humanitarian experts, cases, analysis and historical documentation. From this Leiderman serves as a substantial and authoritative link to knowledge, resources, leaders and refugees of environmentally-caused migration and methods for repairing damage to homelands. His research, conferences, seminars and courses include Iraq, Ukraine, Haiti, Black Mesa, Arizona, Superfund sites, coastal zones and small island states.

STUART M. LEIDERMAN
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SELECTED EXPERIENCE AND CREDENTIALS

FORMAL EDUCATION:

1992-2004 University of New Hampshire-Durham - graduate studies and research, natural resources, environmental refugees and ecological restoration
1971 Smithsonian Tropical Research Institute, Barro Colorado Island, Panama
1968-71 Washington University-St. Louis - graduate studies and research, ecology
1968-71 Center for the Biology of Natural Systems, Washington University-St. Louis
1968 Graduate School, U.S. Department of Agriculture-Washington, D.C. - chemistry, ecology, physiology
1967 University of Maryland, Chesapeake Marine Biology Laboratory
1966 Georgetown University, Washington, D.C. - physics
1963-67 Washington University-St. Louis - B.A., sociology, biology
1962 National Heart Institute, Bethesda, Maryland, cardiopulmonary physiology intern

FORMAL TEACHING

2006 Prospect Mountain High School, Barnstead/Alton, New Hampshire – teaching coach for “Destination Imagination” semester competition in critical thinking, writing and performance skills.
2004-07 University of Vermont, Nova Southeastern University [FL], and Iowa State University – created and taught original course on “Restoring the Marshlands of Southern Iraq”
2004 University of the Middle East, Toledo, Spain – guest instructor, “Restoring the Marshlands of Southern Iraq”
1998 University of New Hampshire, College of Lifelong Learning-Portsmouth – created and taught “Environmental Heritage” semester course
1994: University of New Hampshire-Durham, Department of Natural Resources – created and taught original semester course, “Environmental Refugees and Ecological Restoration”
1977-78 Integral Urban House, Farallones Institute, Berkeley, California – creator/teacher, adult education course, “GYST,” on ecological households and self-reliance skills
1968-71 Washington University-St. Louis - biology laboratory instructor

OTHER EDUCATION-RELATED

1998 Antioch New England College – guest instructor, “Environmental Refugees and Diasporas”
1997 University of New Hampshire-Durham, Department of Earth Science and Geography Department – guest instructor, “Environmental Refugees in the American Southwest”
1996 Princeton University, NJ, Woodrow Wilson School, Department of Politics - guest instructor, “Environmental Degradation, Refugees and National Security”
University of New Hampshire-Durham, Environmental Ethics – guest instructor, “Environmental Ethics: “Ready, Aim, Fire!” - Emphasis on Environmental Refugees
University of New Hampshire-Durham, Natural Resources Department – guest seminar

- 1995 presenter, "Environmental Refugees and the Remainder Earth Scenario"
University of New Hampshire-Durham, Symposium on International Change: Third World Development-"Why is the Future Not What It Used to Be?" – presenter, "Reviewing Global Awareness of Environmental Refugees, 1985-1995"
- 1994 Oyster River High School, Durham, New Hampshire – guest instructor, journalism and science classes
Stanford University, California, Overseas Development Network, "Global Objectives" conference – guest instructor, environmental refugees and ecological restoration
- 1993 University of New Hampshire-Durham, Natural Resources Department – presenter, departmental seminar, "Introduction to Environmental Refugees and Ecological Restoration"
University of New Hampshire-Durham, Peace Studies – guest instructor, "Considering Environmental Refugees and Ecological Restoration"
- 1992: University of New Hampshire-Durham – University and NASA grant to prepare curriculum and materials for teaching global climate change at the college level.
- 1987: "FatalFiber" – original research and education on the health effects of asbestos-cement water supply pipes
- 1985-86: Save the River!, Clayton, New York – advisor and educator for sanitation projects in St. Lawrence River region, New York and Canada
- 1980-87: Sloop Clearwater, Poughkeepsie, New York - educational exhibits designer and builder, annual summertime ecology and music festival
- 1980: First National Energy Day, Washington, D.C. – creator and grantee, U.S. Department of Energy, composting toilet technology exhibit on the Capitol Mall
- 1979-80 National Water Center, Eureka Springs, Arkansas – cofounder
- 1977-80 New Life Farm, Drury, Missouri – cofounder, ecological demonstration farm, water conservation, sanitation and Ozarks bioregion/ecology specialist.
- 1971: Library-Based Ecology Centers, St. Louis City/County, cofounder and grantee, U.S. Department of Education, Office of Environmental Education
- 1970 Environmental Response, Washington University, co-founder and grantee, student-based environmental studies program

SCIENCE, ENVIRONMENT, HEALTH, HUMANITARIAN

Private, For-Profit Sector

- 1970-now Independent scientist, consultant, advisor – education, environment and health, focus on environmental refugees and ecological restoration
- 1989-1990 American Pure Water Concepts, and Creative Water Technologies, Manchester, New Hampshire – senior staff, residential/industrial/commercial water supply treatment company
- 1987-88 WaterTest Corp., Manchester, New Hampshire - technical advisor and education specialist, largest American private water testing laboratory
- 1984/5, 90/2 Horton International, Inc., Cambridge, Massachusetts – research and consulting for the dairy/cheese/food industry, including conservation, price forecasting, technology assessment, imports/exports
- 1980-83 Lombardo & Associates, Boston, and Woodstock, New York – writer, designer, trainer and environmental engineer for innovative/conservation sewage systems
- 1963 Canada Dry Corp., Silver Spring, Maryland – assistant quality control chemist

Public, Non-Profit Sector

- 2009-11 Haitian Resource Development Foundation, Florida and Haiti – scientist, advisor, writer concerning non-governmental organizations and earthquake recovery
- 2008 HURAH-AUMOHD, California and Haiti – grant writer on Haitian human rights
- 2007-2010 Community Coalition for Haiti, Virginia and Haiti – advisor, project developer, agriculture, environment and health programs
- 2007 Human Services International/HSIndia - developed and promoted "Indi-Scholars" program
- 2006-07 Haiti Governance, Massachusetts and Haiti – advisor, project developer, NW region of Haiti
- 2004-11 The Haitian League, New Jersey and Haiti – advisor, project developer, including "Lakou-Haiti Project for Fast-Track Education, Employment and Rural Renewal" [2005-2010], "Status of Research on Haiti and the Origin of HIV/AIDS" [2007], program coordinator for International Diaspora Unity Congresses [2008, 2009]
- 2004 Toledo [Spain] Initiative on Environmental Refugees and Ecological Restoration – cofounder, movement for international recognition of environmental refugees
- 2001 Survival 2001 – scientist and advisor on environmental refugees and the ecological restoration of Haiti," and author of "Directory of Humanitarian and Environmental Organizations Working In and For Haiti"
- 1998-99 Strategy Program, Mariupol, Ukraine – scientist and fundraiser for "Formula of Health - "Environmental Refugees, Health and Lifestyle Survey," research program
- 1986 Northeast Rural Community Assistance Program, Winchendon, Massachusetts – technical advisor, federally-funded water supply and innovative sewage systems for low-income communities
- 1979-80 Ozarks Community Congress [OACC] – cofounder, bioregional ecology movement
- 1979-80.1 Greenwood Forest Land Trust, Mountain View, Missouri – cofounder, 600-acre old-growth forest protection community
- 1978 "Why Flush?" – cofounder and grantee, Winthrop-Rockefeller Foundation and National Demonstration Water Project, for compost toilets and conservation sewage management, southern Missouri/northern Arkansas.
- 1975 Community Development Agency, St. Louis – cofounder and grantee, federal "Whip Inflation Now" [WIN] program for inner-city community gardens, St. Louis
- 1969 Office of the Science Advisor to the President, U.S. Department of the Interior, Washington, D.C. – summer intern, ecology research
- 1967-68 U.S. Veterans Hospital, Washington, D.C. - cardiopulmonary medical research
- 1964-66 Public Health Department, Washington, D.C. – summer jobs as HeadStart medical services coordinator, rheumatic heart disease study, electrocardiogram technician, diagnostic bacteriology technician, air pollution monitor

WRITING, PUBLISHING, BROADCASTING, INTERNET

- 2007 Just Change Magazine, New Zealand – author, "The Plight of Environmental Refugees; The Need to Restore Damaged Homelands"
- 2004 "Earth Matters," Australia Public Broadcasting – two half-hour interviews on environmental refugees and ecological restoration
Carnegie Council on Ethics and International Affairs, New York, Human Rights Dialogue Magazine – coauthor, "Twilight People: Iraq's Marshlands Inhabitants"
- 2002 Journal of Haitian Studies – author, "New Haiti - A Proposal for a Model Community in Haiti"
- 2000 University of New Hampshire-Durham – published "Portfolio of Original Work on Environmental Refugees and Ecological Restoration"

- 2000 Sierra [Club] Magazine – featured in “No Place to Call Home” article on environmental refugees
 1999 Institute for Global Futures Research, Australia – wrote “Discovering the New World of Environmental Refugees”
 University of New Hampshire - videographer, rapporteur, proceedings for conference series on New England climate change and forest decline
- 1998 Manhattan Network News, New York – half-hour television interview, “Talking About Environmental Refugees”
- 1997 New Hampshire National Public Radio [NPR] – half-hour interview concerning “Perspectives on Environmental Refugees”
- 1996 New Scientist Magazine [United Kingdom] – original work featured in article on environmental refugees, “Outcasts from Eden”, August 31, 1996
 British Broadcasting Corporation [BBC], Refugees 2 Episode of “Costing the Earth” series – interviewed on “The Global Presence of Environmental Refugees”
- 1995 Encyclopedia of the Future [Macmillan Publishing] – commissioned and wrote original articles on “Environmental Refugees” and “Hazardous Wastes”
- 1981 “Songs of Conscience” – writer and performer, long-playing record of environmental-topic songs
- 1977-78 Integral Urban House, Farallones Institute, Berkeley, California – finish editor, “Integral Urban House – Self-Reliant Living in the City,” Sierra Club Books

CONFERENCES AND SYMPOSIA

- 2011 Geological Society of America, annual meeting – convener and presenter, symposium on “Environmental Refugees and Ecological Restoration of the Black Mesa Region, Northeast Arizona”
- 2008-09 The Haitian League – program coordinator and presenter, annual international Haitian Diaspora Unity Congresses, Newark, NJ and North Miami Beach, FL
- 2002 North Atlantic Treaty Organization [NATO] Advanced Research Workshop, Mariupol, Ukraine, “Approaches to Handling Environmental Problems in the Mining and Metallurgical Regions of NIS Countries” – conference videographer and presenter, original research paper on environmental refugees and ecological restoration, “The World Problem of Environmental Emigration from Polluted Regions”
- 2001 Haitian Studies Association, annual meeting – panelist and presenter, “Ecological Restoration of Haiti”
 University of Massachusetts-Boston, videographer, “Emergency Meeting on Haiti”, Univ. of Mass-Boston
 Geological Society of America, annual meeting – videographer, “Water & Ethics”
 University of New Hampshire and Cornell University, New York – videographer, conferences on sustainable agriculture
- 2000 University of New Hampshire-Durham – presenter, forum on “Tibet, China and the World Bank”
 International Conference on Complex Systems – presenter on “Environmental Refugees and Ecological Restoration”
 Geological Society of America, annual meeting – creator, presenter, videographer of symposium, “The Case Study of Black Mesa, Arizona”
- 1998 Third World Conference - presenter, “Environmental Refugees Require Restoration, Not Development”
- 1997 Geological Society of America, Annual Meeting – presenter, “Environmental Refugees from Energy Projects”
 New York City Bar Association – guest speaker, “Legal Bases for Recognizing Environmental Refugees”

- 1997 Rapporteur, proceedings writer for national conferences on
 - Environmental Mercury, U.S. Environmental Protection Agency [USEPA]/Electric Power Research Institute [EPRI];
 - Remote Sensing, Geographic Information Systems and Disaster Management, National Aeronautics and Space Administration [NASA]/Federal Emergency Management Agency
 - Climate Change, National Science Foundation [NSF]/U.S. Global Climate Research Program
- 1996 North Atlantic Treaty Organization [NATO] Advanced Research Workshop on Environment and Conflict, Oslo, Norway - presenter, "Environmental Refugees"
 American Association for the Advancement of Science [AAAS], Annual Meeting – created and convened symposium on "Environmental Refugees: Anticipation, Intervention, Restoration"
- 1995 Climate Institute and Green College, Oxford, England – working conference on environmental refugees and ecological restoration
- 1978 American Association for the Advancement of Science [AAAS], annual meeting – creator and convener, symposium on "American Mountain People"
- 1976 American Association for the Advancement of Science [AAAS], annual meeting – creator and convener, symposium on "Urban Agriculture"

POLITICAL

- 1992 Green Party Candidate, NH House of Representatives [New Castle, Rye, North Hampton]
 1978 Democratic Party Candidate, Missouri House of Representatives [Douglas and Ozark Counties]
 1976 Independent Candidate, U.S. Congress, Eighth District, Missouri – "Free Rivers, Free People" campaign to save the Meramec River

GENERAL PROFESSIONAL EXPERIENCE AND CAPABILITIES

Professional services, investigations, consulting, management, education and action on:

- | | |
|--|--|
| Education, curriculum development, teaching | Documents analysis, impact studies |
| Environmental refugees, ecological restoration | Public affairs programs, TV/radio production |
| Environmental science and technology | Media and marketing programs |
| Environmental engineering and processes | Political and public interest campaigns |
| Ecological economics, self-reliance | Community bio-regional advocacy |
| Water resources and pollution control | Project planning, public education |
| Resource conservation, pollution prevention | Copy-writing, editing, ghostwriting, publishing; |
| Urban and rural alternative development | Conference coverage and reporting |
| Land trusts and resource management | Audio/visual recording and performing |
| Public health, water, sanitation | Illustrative and industrial photography |
| Waste management and recycling | Fundraising, grant writing and public relations |
| Agriculture and food technology | Conferences, symposia and exhibitions |
| Toxics avoidance, reduction and transition | International law, refugees and migration |

AVOCATIONS AND OUTSIDE INTERESTS

Musician and songwriter - jazz, bluegrass, folk; musical instrument and furniture repair/restoration, vintage recordings, radio and high-fidelity equipment, organic farming, gardening, permaculture, nature study, history of environmental action, geography, maps and graphic illustration, Jewish history, heritage and culture, space science and remote sensing, NASA Apollo program

**ENV 552: ENVIRONMENTAL HERITAGE - University of New Hampshire College of Lifelong Learning
Stuart M. Leiderman - Syllabus for the Winter Term, 1999 5:30-9:00 pm, Thursdays, Jan 7 thru Mar 25**

COURSE DESCRIPTION - Environmental heritage is a human concept about the intrinsic goodness of nature and its absolute requirement for people's survival, health, livelihood, education and enjoyment. Environmental heritage exists and operates on at least three planes, each with its own qualitative and quantitative dimensions:

First, there is nature, i.e. the world's plants and animals and their habitats and interrelationships whose numbers, distribution and varieties respond and adapt to changing soil, water, mineral, geologic, atmospheric and energy conditions to create and perfect sustainable, self-regulating and self-protecting ecosystems.

Second, there is the way humans regard nature, i.e. their range of awareness, imagination, perception, curiosity, fear, fascination, appreciation, understanding, attitudes and values about nature, and what programs, methods and technology people develop and use to learn about, coexist with, shape, exploit, cooperate and conflict with nature.

Third, there are the results and impacts of the forces of nature on people, communities and society and, vice versa, the human impact on the environment, meaning the consequences of whether, how and to what extent one benefits or suffers from the presence, absence, success or failure of the other.

This course will attempt to a) explore these three dimensions, b) show how to recognize, understand and appreciate environmental heritage and the diversity of points of views about it, and c) demonstrate the potential for involvement in environmental heritage as an avocation, career or lifestyle.

REQUIRED READING - A basic collection of five books has been selected for this course, giving each of them approximately two weeks to be read, contemplated, discussed, and used in course assignments. Each book treats the subject of environmental heritage from distinctly different professional perspectives:

Earth in the Balance: Ecology And The Human Spirit, Al Gore. Plume (Penguin), NY 1992/3

The Reporter's Environmental Handbook, Bernadette West et al, Rutgers University Press, 1995

Geography For Life: National Geography Standards, Geography Education Project. Nat'l Geog.Society.

Valuing the Earth: Economics, Ecology, Ethics, Daly and Townsend. eds. MIT Press, Cambridge, 1993

Earth Education: A New Beginning, Steve Van Matre. The Institute for Earth Education, West Virginia. 1990

ASSIGNMENTS:

Imagine how the author(s) of each book--whether as politician, reporter, geographer, economist or educator--might comment on the following environmental heritage subjects: clean air, drinking water, topsoil, forests, watersheds, coastlines, wildlife, wetlands, oceans, and climate. For each book, write a brief paragraph (3-5 sentences) for each of these subjects in the voice of the author(s), giving page numbers from their books for reference.

Choose an environmental heritage subject of particular interest to you, and then interview a politician, a reporter, a scientist, a businessman/woman, and an educator of your choosing about the subject of environmental heritage in general and your subject in particular. Write a paper to compare and contrast the answers/responses to your questions, including actual quotes from the interviews.

Outline an information, education or action project about your particular environmental heritage subject. Describe the "who, what, where, when, why and how" of your campaign in the form of a simple brochure, press release, contact list, time line, and display poster.

CLASS TIME:

Approximately one-half of each class period will cover the subjects and significance of the reading material; the other half will concern the substance and progress of the assignments and provide time to work on them cooperatively. The class will be conducted in a workshop atmosphere with a vigorous give-and-take; the instructor will arrange a portion of each period to meet briefly with each student on a one-to-one basis.

HOT TOPICS COURSE ON "ENVIRONMENTAL REFUGEES AND ECOLOGICAL RESTORATION"
Stuart Leiderman, Natural Resources Department, University of New Hampshire, Spring Semester, 1994
[excerpts from weekly bulletins; full copies on request]

January 21, 1994 - Weekly Seminar on Environmental Refugees and Ecological Restoration Begins - The first of fifteen weekly seminars concerning the plight of millions of environmental refugees worldwide and what can be done to restore their homelands began Thursday, January 20th at the University of New Hampshire, Durham, NH. <snip> The seminars investigate and compare urban and rural populations that have been forced to flee because of natural and man-made environmental disasters. The sessions also examine successful or promising restoration projects and explore their potential for repairing or reversing the ecological damage of earthquakes, floods, fires, pesticides, radioactivity, toxic wastes and other contaminants. Mr. Leiderman will help students choose endangered areas throughout the world, including the U.S.A., correspond with governments, organizations, scientists and refugees to report on their crises and learn what is being done to repair environmentally damaged homelands. <snip>

January 27, 1994 -- Seminar on Environmental Refugees and Ecological Restoration Continues at UNH - ...Today's session opened with the short video "The Gardener's Hand" recently completed by Video International Productions, Woodstock, New York. Photographed in the Catskill mountain region, this work tells how one person imagines the combination of biological diversity, beauty, order, functionality, aesthetics, and human responsibility necessary to restore and maintain natural environments for human use and enjoyment. Students attending the seminar added their own ideas, including biological productivity, sufficient quality and quantity of resources, long-term stability, safety, and self-sufficiency. A graduate student from Madras, India described how her city lacked many of these characteristics; particularly, the loss of open space and drinking water has forced residents to go further and further into the countryside for these resources. <snip> Students are searching for cases of environmental refugees worldwide, and are gathering restoration data on ecosystems of their choice. <snip>

February 3, 1994 -- Students Select Areas of Research in Seminar Series - Students...expressed a wide range of interests in selecting research topics to be the focus for a day-long conference of invited scientists and humanitarians... Each student will develop two research profiles: the first by choosing a location in the world and discovering the history and current plight of refugees there who fled because of man-made or natural environmental disasters; the second by choosing a favorite ecosystem type and finding successful restoration projects that might be applied to restoring damaged homelands. <snip>

February 17, 1994 -- Seminar Students Ponder Prevalence of Environmental Refugees - The Department of Natural Resources' NR993: "Hot Topics" seminar series today continued to provide students and visitors the opportunity for wide-ranging discussion about environmental conditions threatening the homelands of people worldwide. <snip> In Iraq, the army is viciously attacking Marsh Arabs by setting fire to their fragile wetlands and by draining away their precious fresh water supplies. In Canada, seven million secession-minded Quebecois are usurping and flooding the Cree's natural domain in order to build an immense hydroelectric power scheme. <snip> Robin McLane, educational program coordinator of the University's College for Lifelong Learning, said, "unfortunately, many people today accept the presence, or fact or eventuality of refugees because they have been so much a part and pattern of our past history...Whether in disasters, wars, environmental contamination, etc. But whenever there are refugees, there are tremendous side effects we have to explore and be concerned about." A surprise guest was Dr. Thomas Fairchild, Dean of the University's College of Life Sciences and Agriculture. <snip>

March 10, 1994 -- Students Hear Three Mile Island Testimony - Students in this semester's "Hot Topics" seminar series concerning environmental refugees and ecological restoration had the privilege to hear what it was like to experience the Three Mile Island nuclear disaster, when Dover resident, Mrs. Donna Sgrignuoli spoke this afternoon in the conference room of the Complex Systems Research Center at the University of New Hampshire. Mrs. Sgrignuoli and her husband, Gene, were literally "living in the shadow" of the power plant's cooling towers; she was pregnant with her first daughter and her grandmother was ill and had been hospitalized "virtually under the tower of TMI". Before the disaster, she said, "we never thought about it...I was very naive about the government...I thought they took care of us, but I was wrong!" <snip> Students then proceeded to list a number of preliminary high priority questions they hope to answer during the course of the seminar series: <snip>

March 31, 1994 -- Research Progress, Specific Questions and Tight Scheduling Preoccupy - Meeting in its ninth weekly session, students of the Natural Resources Department's "Hot Topics" Seminar on environmental refugees and ecological restoration began attending to the details of hosting a conference on these subjects at UNH, Friday and Saturday, April 22 and 23, 1994. <snip> At the moment, here are specific questions students for which students hope to find answers during the conference: [continued next page]

Environmental Refugees

Tropical Rainforests: What are governments in countries with tropical rainforests, e.g., Brazil, Philippines, doing about land reform, to help the landless peasant class? (Kate Bolster)

Three Gorges Dam, Yangtze River, China: What is the human and ecological toll of the construction of the largest hydro-electric power project in the world? (Dorian Breuer)

New England Region, U.S.A.: How many people in New England could be considered "environmental refugees" over the last two decades? What are the circumstances which would make a New Englander an "environmental refugee"? Is the threat increasing? (Mary Catherine Harmon)

Aral Sea, Russia: What is the human dimension of the disappearance of the Aral Sea? (Heather Holt)

Indian Nations, U.S.A.: Can you explain how the degradation of the wild rice beds on Big Chippewa Lake, White Earth Reservation, Northern Minnesota, has begun and progressed? What industries are involved? Which dammed rivers have caused damaging water level alterations? What efforts have been made by the Hopis to nullify their contract with coal companies near the Four Corners area in New Mexico to take water from tribal lands for coal slurry transport? Has the drop in the water table been significant? Was it an expected event or an unwanted and unexpected result of the contract? (Jennifer Hall LaPointe)

Haiti: Under what conditions would military intervention be justified to save Haiti's environment and prevent further generation of environmental refugees? Where else in the world would intervention be justified on environmental refugee grounds? (Stuart Leiderman)

Southern Iraq: What can be done to save the Marsh "Arabs" (Ma'dan) from extinction because of Saddam Hussein's environmental war on revolutionaries hiding in this 6,000 square mile wetlands region of the ancient Fertile Crescent? (Stuart Leiderman)

Chiapas Region, Mexico: Has the land ownership and land reform problem in Chiapas and the resulting uprising there created any environmental refugees? (Alison Magill)

Chernobyl, Ukraine and Belarussia: What has happened to the Chernobyl refugees? (Malathi Raghavan)

James Bay Region, Quebec, Canada: Despite financial compensation paid to the Fort George Cree to leave their village and move to a new location (Chisasibi) prepared by HydroQuebec, are not these people still refugees and suddenly aliens in their own land? Is this a foreboding of a future trend? Will there not be more refugees with more impoundment of rivers as planned in the Great Whale and NBR projects? (Michael Smith)

Central and South America: Has environmental coercion been used as a strategy in any of the wars that have been fought lately in Central or South America? (Blake Sasse)

Ecological Restoration

Stream Restoration: What kinds of natural elements can begin to re-establish localized stream ecologies? (Dorian Breuer)

Temperate Forests: Is ecological restoration a viable option for temperate forest ecosystems that have been or are being destroyed? What are the advantages to restoration of the Northern Forests, and what are the disadvantages - not only in physical terms, but philosophically, ethically and spiritually? (Mary Catherine Harmon)

Aral Sea, Russia: Given the existence of several plans to restore water to the Aral Sea, what is the next necessary step in multinational action towards a complete restoration? What sort of recognition and assistance is the post-Soviet Russian Government giving to the Aral Sea problem? (Heather Holt)

Mountain Restoration: What sort of work has been done with this relatively unaddressed issue? How does mountain restoration connect with other issues of restoration (forests, specifically)? (Heather Holt)

Wetlands: For local New England wetlands, can you explain the succession of vegetation, i.e., from freshwater to saltwater, involved in restoring saltmarsh from freshwater marsh? What factors help in this effort? For the wild rice beds on Chippewa Lake in Minnesota, what is the optimal manner in which to restore them for the White Earth Reservation? (Jennifer Hall LaPointe)

Stripmines, Western U.S.A.: What kind of revegetation is appropriate for ecological restoration of stripmines in semi-arid regions. (Alison Magill)

Volcanoes: Is the effort to restore the hundreds of square miles around Mt St. Helens effective and worth the cost? (Blake Sasse)

Madras, India: What steps can be taken to restore the highly polluted Cooum River that flows through Madras? (Malathi Raghavan)

Large Artificial Lakes: Given what is known today about mercury fallout accumulating in artificial lakes and moving up through aquatic food chains, are there any restoration strategies available for removing this toxic substance from lake ecosystems? (Michael Smith) <snip>

HAITI

"AQUIN, BETWEEN THE SEA AND A HARD PLACE"
Improving Life And Livelihoods In Haiti's Coastal Zone:
Focus On Aquin, South-Central Haiti -
Phase One: Forests, Food And Flood Control
Author and photographer, Stuart M. Leiderman, May 2010
For the Haitian Resource Development Foundation hrdf.org
[full copy on request]

A project is proposed to reforest watersheds, promote food security and prevent flash floods in Aquin, Haiti, a south-coastal city of approximately 50,000. Aquin is typical of many communities that have depleted and degraded their natural resources and become more vulnerable to disasters from the sea and mountainsides. Therefore, successful methods and management developed in this project could also benefit other Haitian cities. The project was conceived by the Haitian Resource Development Foundation, a nonprofit professional organization that is officially recognized in both Haiti and the United States. HRDF has more than twenty years' experience in health, education and disaster preparedness, including in Aquin. For this project, it will recruit environmental experts, teachers, engineers, foresters and agronomists from Haiti, the United States, France, Israel and other countries known for their success with reforestation, catchment lakes, organic agriculture, self-reliance and municipal capacity building. In addition, HRDF will hire, educate and train a large workforce of Aquin residents and recently-displaced earthquake survivors to: a) reduce threats from flash floods and other natural disasters, b) restore Aquin's watershed, c) improve local self-reliance, especially food security, d) maximize use of remaining natural resources while minimizing environmental impacts, e) demonstrate the value of planning, research and development, cooperative management, private enterprise and respect for Nature, f) accommodate the influx of environmental refugees from this year's earthquakes. <snip>

"NEW HAITI" - A PROPOSAL FOR A MODEL COMMUNITY IN HAITI
Stuart M. Leiderman <leiderman@mindspring.com>
published in Journal of Haitian Studies, Fall 2002, Volume 8, Number 2, Pages 146-158

Abstract: For the 2004 independence bicentennial celebration, a model community is proposed that combines the best examples of mutual aid, rural development, conservation, ecology, education and artistic expression within Haiti but which may now exist only in isolation or in fragmented form elsewhere in the country. The purpose is to create in one location a glimpse of an alternative vision of the future that is within the reach of all citizens nationwide.

With the help of representatives from local Haitian organizations and the assistance of friends overseas, the model community will bring together and celebrate a wide variety of individual community efforts. The goal is to produce food, maintain good nutrition and health, offer educational, crafts and employment opportunities, design and build safe and durable housing, renewable energy, water and sewage system, conserve and restore soils, forests, fisheries, wild plant and animal diversity, and practice small-scale manufacturing, marketing, transportation and land management. The result will be a self-reliant, non-sectarian rural demonstration community. The proposed name is "New Haiti". <snip> [full copy on request]

IRAQ

A RAPID PLANNING TOOL FOR RESTORING THE MESOPOTAMIAN MARSHLANDS OF SOUTHERN IRAQ Stuart Leiderman [USA] Hamid Ahmed, Halton College [UK] [transcript on request]

During the summer 2004 session of the Institute of Sustainable Development at the University of the Middle East Project the authors introduced a rapid, low-tech planning tool for restoring the Mesopotamian Marshlands of Southern Iraq. The session was conducted during the afternoon of July 7. The participants were primarily young leaders from a variety of national government agencies, educational institutions and non-governmental organizations from the Middle East and North Africa. Working in teams of three, the participants prepared nine-step sequences that they believed would accomplish the ecological restoration of the marshlands and the repatriation of thousands of political and environmental refugees who once inhabited the marsh region. Among the most-frequently mentioned steps were: a) comprehensive involvement of the marsh refugee population in restoration planning, design and implementation, b) early removal of the offending dams, drains, canals and interceptors, c) pilot-scale restoration projects to test the power of available techniques, d) reintroduction of marshlands plants and animals, f) financial support for ecological restoration projects and traditional-style livelihoods and g) improved electricity, telephone and health care services. <snip>

RESTORATION OF THE SOUTHERN IRAQI MARSHES - College-Level Online Course (3 credits) Stuart M. Leiderman [online at UVermont, Nova Southeastern, Iowa State] [full syllabus on request]

PART I: THE PAST: 3000 BC - 2002	Preconceptions; Speeches in Parliament; Human and Environmental Dimensions; Demise?
PART II: THE PRESENT: 2003-2005	Ten Years' War, Five Years More; Re-entry, Reassessment; Early Revival? Work to Do; Whose Marshes?
PART III: CAST OF CHARACTERS	United States; Iraq; United Nations; Non-governmental Organizations and Academia; Business and Industry
PART IV: RESTORATION TOOLBOX	Conservation; Ecological Restoration; Wetlands; Wetlands Restoration; Wadi Gaza Nature Park
PART V: FLORIDA CONNECTION	The Everglades; Marshlands Congressional Hearing Ghosts of the Marshes; What Is Education For?

Abstract: Throughout the 1990's, the regime of Saddam Hussein committed genocide and ecocide against the people and environment of Mesopotamia -- the vast marshlands between the Tigris and Euphrates rivers in Southern Iraq. The government did this through a secret "Plan for the Marshes" to drain away its life-giving water and attack, kill and scatter its half-million inhabitants who were predominantly Shi'a Moslem and perceived to be a threat to the ruling Ba'athists who were predominantly Sunni Moslem. Today, the former regime is gone and other forces occupy the country, but Mesopotamia is still a depopulated wasteland. A new plan for the marshes is urgently needed to restore the environment and permit the return of refugees and others who might settle there and resume their distinctive way of life. For restoration models, the degraded Florida Everglades is comparable in size, but that project has become extremely politicized and there is little progress to report despite the promise of commitment of billions of dollars. And while the Everglades is principally a wildland -- birds, reptiles, panthers, grass, reeds and trees -- Mesopotamia is a homeland whose pastoral and fishing communities, until recently, provided large amounts of food and fiber for all of Iraq. <snip>

"I really enjoyed this class. It was my favorite that I have taken at ISU." "I have really enjoyed this class. The subject matter and the format have been very informative, engaging and even inspiring." "...thank you for the information I gained from this course. I've considered wetland restoration courses before, and work in that area as well, but have not yet made that move. I learned enough in your class to answer most of my questions in that regard and I'll certainly be more actively involved in this in the future."

UKRAINE

THE WORLD PROBLEM OF ENVIRONMENTAL EMIGRATION FROM POLLUTED REGIONS

Stuart M. Leiderman leiderman@mindspring.com [full copy on request]

NATO Advanced Research Workshop "Approaches To Handling Environmental Problems in the Mining and Metallurgical Regions of NIS Countries" - Mariupol, Ukraine, September 5-7, 2002

Abstract - Every year, millions of people are involuntarily forced from their homes and homelands because of persecution, war, poverty, disasters and development. Most are environmental refugees who flee from floods, fires, droughts, industrial pollution and other chains of natural and manmade events that seriously damage the air, water, forests, topsoil, watersheds, coastal zones, wildlife and other life support systems. The mining and metallurgy industries have been particularly destructive: To remove and process the raw materials beneath farms, villages and cities, these industries often force large numbers of people to sacrifice their health and safety while others profit from the international trade of oil, water, coal, diamonds, metals and minerals. This form of development is unjust and unsustainable and requires a new look at how societies demand, consume, conserve and discard materials. There also needs to be an emphasis on the temporary resettlement of displaced people, and then the ecological restoration of their land so they can safely return after mining and manufacturing have ceased. <snip>

"FORMULA OF HEALTH": CORRECTING THE RELATIONSHIPS AMONG WATER, FOOD, HEALTH, POLLUTION AND ENVIRONMENTAL REFUGEES IN MARIUPOL, UKRAINE **Irina Butorina [Ukraine], Marina Butorina [Russia], Stuart Leiderman [USA], 1999 [copy on request]**

In this work, we present the results of our action entitled "Formula of Health" carried out by the Mariupol public organization Coordinative Ecological Center "Strategy". The action was carried out according to the International Convention on Access to Information, Public Participation in the Decision Making Process, and Access to Justice on Environmental Questions@ adopted at the Fourth Ministerial Conference "Environment for Europe" held in Aarhus, Denmark, in July, 1998. The purpose of this action was to show the citizens of Mariupol that they can provide themselves and their children with a praiseworthy life if they actively assert their constitutional right to a clean environment and stop being slaves to their weaknesses. Having read this report you will find out a) why a citizen of Mariupol lives for 11 years less than a European and 17 years less than a Japanese, and b) what must be done to prolong our own lives.

Health and longevity are two different things. In opinion of the doctors, health depends on a set of factors. The experience of world civilization says that the "Formula of Health" can be expressed as *"Life expectancy equals quality of [food + air + water] divided by harmful habits [e.g. overeating, drunkenness, smoking]."* <snip> In other words: the higher the quality of our food, the cleaner the environment, and the fewer harmful habits we have, the longer we live. The most distinct definition of this law was given by the famous American Paul Bragg, who also proved it with his lifestyle. In an address to the people, he said: "None of us will manage to avoid death; however, each of us can prolong our life by complying with certain hygienic and dietary rules. Everyone is obliged to do this for his own sake, for the sake of his friends and neighbors, at lastly, for the sake of his country". <snip>

To learn a) how the lifestyle of the Mariupol population compared to Bragg' formula, b) what the average citizen gets in return for a lifetime that is ten years shorter, and c) what is his attitude about that bargain, we decided to survey the population. A special questionnaire was developed with the help of experts' advice. <snip>

INDIA

“INDI-SCHOLARS” PROJECT- POCKET SCHOOLS, SCHOLARSHIPS, SUPPLEMENTS AND INCENTIVES **Stuart M. Leiderman, for Human Services International/HSIndia, Bangalore, 2007**

INDI-SCHOLARS

Human Services International

There are more illiterate individuals in India than in any country in the world. There are more than two hundred million school-aged children, but more than 25% (59 million) are not now in school, “and probably a larger number of older youth received little or no schooling at all.” [Bridges to the Future Initiative – India]

The education of children is the survival of nations. But in India, neither the country nor the communities nor the parents seem to be adequately educating their children. According to both the numbers and the quality, the overall deficits are quite large. There are various contributing factors -- poor planning, insufficient resources, extreme social stratification, poverty, devaluing and exploitation of youth, a damaging colonial legacy, and perhaps even a kind of cultural exhaustion or narrowing of vision. Some Indians think not every child needs or ought to be fully educated.

There is a crisis of basic education in India. In particular and for a variety of reasons, too many children are not attending school, or are dropping out of school, or are being sent to madrassas in lieu of school. Altogether, millions of potentially bright futures are lost every year. Human Services International [HSInternational] recognizes this crisis and therefore propose to a) create one-room “pocket-schools” for poor children who have little or no education, and b) offer scholarships, supplements and incentives to poor children already attending school or who want to compete for placement in existing schools. Whether attending pocket schools or existing schools, children in these programs will be known as “Indi-Scholars”.

At minimum, India’s youth cannot and must not be kept ignorant and defenseless about forces in the world around them. They need survival skills, the refuge of safe schools, the courage of good teachers and the shield of broad education. This is what the “Indi-Scholars” program of HSInternational represents. [full text on request]

WHAT IS AN INDI-SCHOLAR?

HSInternational and HSIndia have in mind a particular kind of educational program, motivated by the Universal Declaration of Human Rights, whose students will learn and exhibit self-reliance and innovation, inquisitiveness, optimism and kindness, spirit of adventure, love of freedom and learning, pursuit of excellence, exercise of tolerance and a lifelong respect for and defense of the Family of Man and the Balance of Nature, in the broadest sense of those terms. Indi-Scholars will be taught to find and develop both their individualism and also their capacity for teamwork and give-and-take in human relations. Indi-Scholars will be able to succeed in both realms, whether they set out alone on a long journey or find themselves in periods of intense social responsibility -- whether in peace or war, feast or famine. Throughout, the educational goal is to enable students to recognize, claim, preserve and develop their rightful places in the world.

While the Indi-Scholars program will require discipline and hard work, students will not be subjected to dogma, brainwashing or half-truths, nor will they be forced to be subservient to or bullied by their peers, teachers and administrators. Indi-Scholars will not be made to suffer embarrassment or shame because of their families’ poverty, religion, caste or ignorance. Instead, the programs will to help Indi-Scholars attain and maintain a high level of competency and self-worth, without arrogance, so that they can help themselves and each other leave their days of poverty and ignorance behind.

Upon graduation, Indi-Scholars will be able to return to school periodically for advanced studies, or to become employed as teachers, administrators and program staff. This formula of lifelong promotion and continuing involvement of graduates is envisioned as the principal way the Indi-Scholars program will expand in Bangalore and into greater India.

BLACK MESA, ARIZONA

ENVIRONMENTAL REFUGEES AND ECOLOGICAL RESTORATION AT BLACK MESA, ARIZONA

Convener: **Stuart M. Leiderman**, leiderman@mindspring.com

For the Annual Meeting of the Geological Society of America (GSA), Denver, Oct 31-Nov 3, 2010

Ten years ago at GSA-Reno, native residents of Black Mesa, Arizona with supporting scientists, journalists and educators pled the case for saving the region from further coal exploitation, aquifer depletion, pollution and eviction. The case was well-received, but environmental and humanitarian problems continue, with new threats on the horizon. This session will give a ten-year review and a look forward, in the context of the worldwide plight of environmental refugees and the need for ecological restoration of damaged homelands. Panelists from the 2000 session and other experts will be invited to attend and be available to reflect on prospects and strategies. Transcripts of the 2000 session and from the related 1997 GSA-Salt Lake City session are available on request: leiderman@mindspring.com Abstract ID#: 179805

THE CASE OF BLACK MESA, ARIZONA

Session on Mining as Geoscience Education: Programs, Curricula and the Case of Black Mesa, Arizona
Annual Meeting of the Geological Society of America, Reno, Nevada, Tuesday, 14 November 2000

[excerpt from transcript] **Stuart Leiderman, University of New Hampshire, Durham:** Thanks very much and welcome to everybody, and we hope you'll stay through the entire program. This is one of the most unusual types of sessions that I've had the pleasure to work with because it's a combination of the hard work from the professional teaching community, in this case geoscience teachers, and an actual case study of something that's happening within the United States that many people have thought is one of the worst-kept secrets in the United States. We've thought for many years that this particular story ought to be put in some form that it can be taught. There are five or six themes to the drama that's been going on out in northeastern Arizona and too often they are confused and brought out as just one sad story that's continued since the 1960's. We think there's some reason for hope, of unraveling these themes, teaching them as individual subjects, and beginning to find ways of resolving them, and certainly prioritizing the subjects around what most people can agree on. You'll hear some of those themes today and all of us will be available to talk with you, to exchange ideas on how we can meet further through the NAGT [National Association of Geology Teachers]. <snip> [full transcript on request]

ENVIRONMENTAL REFUGEES IN THE AMERICAN SOUTHWEST

Lecture to Introductory Geography Course, Department of Earth Science and Geography
University of New Hampshire-Durham, May, 1997

Stuart Leiderman: One of the most important learning experiences that a person can have about a subject that interests them is to look for the consistencies and the contradictions. And when I began my research work around the subject of environmental refugees and what causes them, and the need to restore the places refugees came from, I was immediately thrust into a situation where there was lots of contradictions and much less consistency about things.

This is a matter of life and death for people, but also for the earth. And this is just a small amount of evidence to describe how serious the situation is. Not so much the quantitative [dimension]...the numbers of people, the amount of land, but the seriousness and the contradictions that are going on in people's minds about what the world is. You have a chance while you're here at the University, it's almost a luxury of being in a sanctuary for a particular period of time in order to make sure that you understand very clearly the contradictions, and it's these contradictions that are the root of what we generally know as problems in life. <snip> [full transcript on request]

"BALANCE OF NATURE, ENVIRONMENTAL REFUGEES AND ECOLOGICAL RESTORATION"

Stuart Leiderman, 1996

This letter was written to an editor of New Scientist magazine [UK] during the preparation of "Outcasts from Eden" by Nolan Fell, for the August 31, 1996 issue featuring the work of Stuart Leiderman.

August 4, 1996

Kate Douglas, Editor
New Scientist Magazine, London

Dear Kate:

Your assignment writer Nolan Fell called to ask if I would help answer some questions you posed about my work that is described in his draft article about environmental refugees. I believe they concern certain factors in the formula I'm developing that I hope will become a unified theory linking and explaining what causes environmental refugees and what permits ecological restoration of damaged homelands.

The Balance of Nature -- The Conventional View

Let me begin by saying a few words about the well-worn expression "Balance of Nature". To many people, the expression conjures up the image of a druggist's or chemist's scale with two balance pans whose positions are dead still and horizontal with each other. For ecological purposes, one imagines the pans are filled with any variety of interacting elements or factors and, ideally, the scale should balance. We might want to represent the predator-prey relationship, for instance, by placing a few wolves in one pan and "balancing" them by a much larger number of rabbits on the other, in proportion to wolves' appetite for them. We might want to represent the biosphere's carbon-oxygen relationship by placing on one pan the whole host of oxygen-consuming and carbon dioxide producing heterotrophs, from bacteria and protozoa on up to insects, amphibians, reptiles and mammals, while on the other pan are placed the world's oxygen producers and carbon dioxide absorbers: the forests, prairies and phytoplankton.

Very simply but awkwardly said, people believe that the Earth was either created in perfect tune or, alternatively, has reached a point in its long story where the quantity and quality and variety of organisms, climates, land- and water-forms,

nutrient, mineral, gas and liquid cycles, atmospheric fluxes, etc. now interact in a way that is largely complementary, regular, seasonal and moderately-paced enough to permit living things to be born, to flourish, reproduce and regenerate "in balance" with each other, and that the overall process is continuous and certain to continue, rather than sporadic, hesitant and doubtful, barring the rare calamity.

I think this is what most people accept and expect as the "balance of Nature," although it is just an anthropocentric notion and requires lifeforms, especially humans, to be in the equation. Others may argue that Nature doesn't necessarily have to include life-forms, especially not humans, and might even be better off (i.e., better balanced) without them.

Going further, the balance of Nature is also a time-related notion and depends on whether we believe it exists or should exist at any scale other than whole planet. If at any moment, for example, Nature may seem unbalanced in locales or regions of the world, it may be balanced globally and/or over time because ecological adjustments, for instance to acid rain or to radioactive fallout, are seldom instantaneous. Then again, it may not be balanced, it may be dangerously tilted, and this is the drama in the environmental movement today.

Here, we might want to add that the balance of Nature also depends on a constant supply of sunlight to illuminate its stage--a factor so bright that as to blind people to its overarching importance. I know there are some organisms who live in darkness in caves, sand, soil or sea depths; their lives may only indirectly depend upon sunlight falling elsewhere but solar radiation also sets weather, temperature and climate patterns that, in turn, may affect their quality of life.

There is more. Not only must the pans of Nature be equally loaded but also so stoutly loaded that slight additions or subtractions to either pan will not appreciably tilt the balance. I suppose one needs to fool with balancing apparatus to have a feel for this, but there is a greater tendency to tip, per unit added or taken away, when the pans are lightly loaded than when heavily loaded. This is starting to stretch the analogy, but it speaks to the need for backup systems or species in Nature, to maintain balance over time. Thus, when a mite infestation virtually wiped out honeybees in New England this year and there were no other species, or insufficient numbers available, to pollinate orchards, vineyards, etc., farmers had to import bees from as far away as Europe to save their crops.

(It is possible, of course, to load the pans too heavily...to the point where the balance breaks. Humans' struggle to stay within our "carrying capacity" is an example, and in many places the balance has already broken and perhaps cannot be restored. This is part of what I call the "Remainder Earth Scenario" where greater portions of the Earth's surface become seriously damaged and abandoned, forcing us all to live on the remainder...what is functionally a smaller and smaller planet.)

The Balance of Nature -- Leiderman's View

I think I can go along with all of this except for the part about the still and horizontal position of the pans. I think the balance is more "vibratory" than that and, if one were to look closely, the pans would be slightly moving all the time, oscillating on their pivots around an approximate balance position. What this means in the classical physics sense is

that anytime the pans are even slightly moving vertically--up or down--they will tend to continue moving in that direction unless slowed and stopped quickly by something being added to or taken away from the other pan. Balanced pans are closely coupled in an obligatory way, and if a mistake is made where something is, for example, added to rather than subtracted from the companion pan, the other's movement will not slow or stop but will accelerate in the direction it was moving...and it may quickly and drastically upset the balance.

In agriculture, integrated pest management (IPM) capitalizes on this principal to minimize the use of poisons--applying them when pest populations fluctuate to their lowest level helps depress their numbers further still by amplifying their downward trajectory. However, where greenhouse gas polluters are concerned, scientists worry that modern-era CO2 emissions, superimposed on an atmospheric trend towards unfavorable temperatures, may cause an overswing or stronger trend toward extreme climate change.

Parenthetically, to do any good, one also has to actually know what a balance is. Unfortunately, these days, there are not balances but "scales"--electronic postage scales, bathroom scales, hamburger-and- sausage portion scales and the like, so you seldom realize that one of the balance pans is hidden inside the case in the form of coiled springs or electrical circuits, and so there are fewer chances to connect the metaphor with the real thing.

Environmental Refugees and Ecological Restoration -- Two Research Thrusts

Be that as it may, the image of the balance of Nature is vivid in my mind and has, I'm sure, contributed to the way I originally conceived of my double focus on environmental refugees and ecological restoration, and to how I am attempting to link them in the course of my doctoral research. My work has two investigative thrusts:

One is to produce a "capability analysis" (my term) that graphically positions organizations, agencies, institutes and other groups in relation to two coordinates--environmental refugees and ecological restoration--producing a scatter gram or clusters of positions that describe their capabilities to

simultaneously recognize, address and succeed at both of these issues. My thesis here is that the "ideal" organization will be one that scores high along both coordinates, i.e., has a position far up in the right hand corner of a conventionally-laid out graph. Organizations such as the Red Cross, CARE and UNICEF will likely be in or near that region, whereas mainstream refugee and disaster relief organizations on the one hand, and strictly environmental protection or Nature preservation groups on the other hand, will occupy peripheral positions close to their respective baselines. Given that these more narrowly missioned organizations are often overwhelmed by the worsening frequency and magnitude of human and natural disaster, I believe a synthesis of missions is necessary (one of this kind I know a little about is the huge coalition of very diverse groups that cooperated to rescue Romania orphans), and I need such a graphic analysis to persuade that a certain kind of "matchmaking" now has to occur, or for entirely new organizations to be formed where combinations are impractical or resisted.

The second thrust is the unified theory of refugees and restoration. I believe there are many reasons to consider these issues simultaneously. Together, they tell the story of the people and their place...their common history, their natural resource availability, use and abuse, and their cultural shaping. Together, they describe the simultaneous abandonment of people and place...there are certainly homelands that I would call refugees, although that's a subject for another time. Together they describe the logic of sustainability - both are limited quantities of living matter that must exist somewhere, so why not rejoined?

So, I have a formula, at present in the shape of a worded equation, with the forces that lead to environmental refugees on one side, and those that lead to ecological restoration on the other. Specifically, on the refugee side, the factors are the rate of deterioration, time, and the vulnerability of people and the environment. On the restoration side, the factors are the rate of restoration, time, and the recoverability of people and the environment.

It is tempting to say that, when the two sides are of equal force, a balance of humans within Nature exists. But as I've described above, I see the balance as vibratory, not static. A mathematician might like to explore what comes out when the equation is "balanced", i.e. with an expression of equal weight on either side. This way, many conditions become possible, including 1) no refugees are being created nor is their any restoration underway, 2) a little or a lot of refugees are being created, but these are counteracted by comparable amounts of restoration (which, may or may not translate into "new homelands for old refugees"), 3) people are not becoming refugees but instead are dying, giving the appearance that no refugees are being created, and this is "balanced" by little or no restoration because, with people dying, none is necessary, and 4) homelands are being abandoned by cramming people into smaller settlements, and for the moment, no refugees are appearing. It is hard to imagine that these conditions, although mathematically possible, are desirable balances.

My point is that there could be troubles ahead if too much emphasis is placed, too soon, on having an equal sign between the two expressions. At some point, when adequate weights are developed for each of the three factors within each expression, some useful equivalencies may emerge...I'm just afraid people might try to legitimize some very objectionable conditions such as the four above. Already, there is twisted logic in the world that the quickest way to solve the refugee problem is to kill all those who try to flee.

So, for the time being, I want people to consider and recognize that 1) what creates refugees, and 2) what leads to restoration, are opposing forces whose comparison and contrast ought to be able to describe the state of "people and place" in any size community, region or hemisphere, and whether disaster is trending or imminent. Under certain but not all conditions, the two forces might balance each other and thus promote or emulate the balance of Nature and sustainable living conditions, within homelands...but certainly not if any refugees are being created or if no restoration is being carried out. That's where I draw the line.

Factors Causing Environmental Refugees

Now for the clarifications: On the refugee side, it should be clear that people become refugees when they decide

to flee or are forced to flee by forces beyond their control. Unless they are like Jonah who was first swallowed and then vomited up out of the ocean from the belly of a whale, we are talking about something that is largely a human reaction and decision process that comes from perceiving a threat to life, livelihood and wellbeing...some might say "threat to security"...and fleeing rather than fighting or continuing to try to adapt to worsening conditions.

The first factor, the rate of deterioration, concerns how rapidly environmental conditions worsen towards what I would call a threshold for flight. It is the rapidity of deterioration, as can be sensed or experienced by the victims (whom I believe have their own notions about when to flee), or independently measured and reported, that I want to explore. I understand that rate of deterioration can also be mathematically expressed as deterioration over time, but this somehow swerves from the concept of rapidity and its impact on human response, especially if the rate of deterioration changes during the course of events. In other words, I believe the shape of the curve describing deterioration over time is important to look at, not just the average rate.

The second factor, time, is the accumulated period over which deterioration has been occurring. This could be the period that goes as far back as the last time the balance shifted away from favoring restoration. I want to explore the differences that appear in refugee causation when, for example, an earthquake episode is considered to be just the duration of the final 'quake versus a period that goes all the way back to the beginning of tremors and/or the first alerts. I think this will be important when looking at sudden-versus-chronic forms of environmental deterioration and when looking at episodes that span generations.

The third factor is the vulnerability of people and the environment. In this case, vulnerability is, at least, the measure of inability to withstand a certain pace, intensity, extensiveness and quality of deterioration in living conditions and the environment. In the case of both people and the environment, it means that reserves of strength and other resources are used up to try to withstand

deterioration, beyond what can be normally replenished if the environment were not deteriorating. Keep in mind that refugees must flee before their reserves are exhausted; they must have enough to organize themselves to flee, to survive the journey of undetermined distance and duration, and to finally resettle in safety. At times in refugee episodes, the people may be more vulnerable than their environment (for example, where Native Americans may become mercury poisoned by eating fish, although the fish continue to live and reproduce), or the environment may be more vulnerable than the people (for example, when the blight attacked the potatoes rather than Irish peasants), or when both are so interdependent as to be equally vulnerable (for examples, 1) when westward expansionists attacked Native Americans by slaughtering the buffalo, 2) when the U.S. military simultaneously destroyed Marshall Island atolls and uprooted Pacific natives for atomic bomb testing after World War II, and 3) when Saddam Hussein attacked the Marsh Arabs after the Gulf War by draining the wetlands, poisoning the fish and water buffalo, and burning the reed-beds).

Factors Permitting Ecological Restoration

Turning to the restoration side, the first factor is rate of restoration. I take this as the pace of restoration up to a point of sustainability or natural self-maintenance. In this, of course, restoration must include the rehabilitation by people. We're not talking about restoring an area for a nature preserve, but for a (regenerated) homeland. Like the rate of deterioration, I am interested in the shape and the slope of the curve over the period of restoration and how the actual fact or the perception of this helps or hinders continued restoration to the point of self-sustenance. Rates aside, I will also look at what point restoration begins, i.e. when the ecosystem is half destroyed? when it has totally collapsed? etc.

Nolan said you asked whether the "rate of restoration" was equivalent to "how quickly an area might be made habitable after total destruction." If one knew the starting point (quarter destroyed? half destroyed?) and the endpoint, we might be able to take an instantaneous rate or the overall rate since the effort began, and extrapolate the time to completion. My experience is that estimating the time to completion, much less describing what "completion" actually means, is very difficult...even for modest engineering projects, not to mention small ecological restorations such as isolated

wetlands or prairie patches. I believe that restoration of homelands, to the point of sustainability, is and will be quite an experimental challenge. For example, with some projects, each successive step towards completion may be more difficult and thus take longer and longer, while, for other projects, each successive step completed may shorten the time for the next ones. I'll be trying to compile this evidence. My hope is that meaningful involvement of refugees who are recruited to return and work in their damaged homelands will always help shorten the restoration time.

The second factor, time, is analogous to time in the refugee side of the expression. It is the time over which restoration has been occurring. With time are associated the important factors of willingness, know-how, level of effort, commitment of resources and long-term protection. All other things being equal, anything that extends the time of restoration means the whole expression will

likely swing toward causing more environmental refugees.

The third factor is the recoverability of the people and the environment. I see this as the sum-total of genetic, biodiversity, cultural, technological and many other characteristics and values that will determine whether and how much restoration will be possible at all, even if societies are one-hundred-percent committed to their task. In answer to one of your questions to Nolan, yes, the recoverability factor is different from the rate of restoration in my formula. By recoverability I mean the presence or absence, and the potential for recovery inherent in, a set of values and characteristics that may yet remain in the damaged homeland...or could be brought there. The rate of restoration is the pace at which restoration is accomplished, per instant or over the entire period of effort. Yes, I understand that the rate of restoration might conceivably contain the factor of recoverability, but at the moment I feel it more depends upon the factor of recoverability and so for now, I want to try to look at them separately.

Conclusion

This has been a nice exercise for me. Thank you for taking such a real interest in my work and for assigning Nolan to do the article. I look forward to looking at copies of all your readers' reactions and questions. I have no idea how volatile my theoretical ideas are, but they help me stay on track as I complete my doctoral studies here. After that, I've a movement to build, and I hope New Scientist will be following every new development!

Yours,

Stuart M. Leiderman

“SOIL , SUFFICIENCY, SECURITY”

PROPOSING A TWO-YEAR NEW HAMPSHIRE COLLEGE OF FOOD & AGRICULTURE [PERMACULTURE] STUART LEIDERMAN, 2009

This is a proposal to create an independent New Hampshire College of Food and Agriculture offering fully accredited Associate of Science degrees to fifty students per year, consisting of two years' academic study, research and on-the-job training. Tuition will be approximately \$25,000 for the entire course of study. The college will be located in the rural town of Center Barnstead, ninety minutes' drive north of Boston, between New Hampshire's scenic seacoast, Lake Winnepesaukee and White Mountains regions.

The campus will be environmentally-designed and maintained, with accommodations for students, staff, and visitors. Architecture will be reminiscent of a traditional New Hampshire village, with 21st century features added for maximum durability, conservation and use of energy, water and materials. The college will be predominantly owned and staffed by Barnstead residents, with afternoon and summertime jobs offered to youths of high-school age. Food for college and visitor dining will be primarily from campus gardens and orchards, supplemented by local farmers and growers. Facilities will be open to the public and meet requirements for access by the senior citizens and the handicapped.

For many years, New Hampshire's farmland that was once plentiful and productive has become disused, overtaxed and ultimately fragmented, subdivided, paved or abandoned to brush and forest. As a result, the land no longer provides much of the state's food supply nor offers meaningful employment. This has been an unwilling transition and a lose-lose proposition for New Hampshire. Farmers have not wanted their land slowly whittled away for non-nutritive purposes. Families have not wanted all of their children to have to move away by necessity rather than choice, just to find work. At the same time, America's fling with cheap food from foreign countries has run its course. Today, most foreign food is not cheaper, safer nor more desirable than what can and ought to be locally grown and marketed. To the credit of New Hampshire residents, the foreign-food illusion has not fooled all of them, all of the time. We believe they still have the appetite to occupy, know, enjoy and be near the land that feeds them.

Education at the New Hampshire College of Food and Agriculture is rooted in “soil, sufficiency and security,” the three elements upon which all life depends. When they are present, people and communities can freely pursue their chosen paths. When they are not, frustration and anxiety creep in, ultimately leading to poverty, aggression and greed. This is a well-known dynamic and cannot be taken lightly. The balance, of course, is maintained by education, in this case the ability to impart sufficient knowledge and skills to help the next generation restore old farms and start new ones, select and plant crops appropriate for the location and climate, and then grow, harvest and sell food that is plentiful, safe, nutritious and affordable.

If we educate New Hampshire's youth, just out high school, their lives and livelihoods will become better than ours. For a community such as Barnstead, with hundreds of years of farming tradition, we believe this is a feasible goal. Education is the highest and best use for the land in question; it deserves to be acquired and developed as a college of food and agriculture.

Thank you,

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