

A Short Sweep of the Global Situation: Environmental Crisis and the Place of Anthropology¹

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O ruined piece of nature! This great world shall so wear out to nought.
(William Shakespeare, from King Lear)

In the whole animal kingdom I recollect no family but man, steadily and systematically employed in the destruction of itself.
(Thomas Jefferson, in a letter to Madison)

Human societies have shown their capacity to bring about their demise in the past, a capacity that continues to exist today.
(Scudder 1999, 358)

Abstract:

Concern about the future of the world, as well as recognition that human groups have the capacity to destroy their ways of life, is nothing new. What is new is that the intensity of degradation of the ecosystem supporting human societies has escalated to the point of emergency. Human societies have reached a point of unprecedented amplification of global structures and concomitant local economic activities that are spoiling our nest worldwide. A declaration that we are facing a global environmental crisis is not merely a cultural or idiosyncratic turn-of-the-millennium tendency to anticipate apocalyptic transformations. There is an explosion of well-substantiated scientific findings to support such an assertion. Anthropologists have an imperative to examine the evidence; employ the critical, holistic perspective that we claim for our discipline; and fashion our praxis accordingly.

This paper provides a brief sweep of the "big picture" of the state of the world as the 21st century dawns, with an emphasis on the degradation of environmental resources. It is based on a presentation at the year 2000 meeting of the High Plains Society for Applied Anthropology, delivered as an introduction to the final conference session on "Futures." My intention here, as was there, is to establish a context for the papers that follow, provide a set of references for discussions and teaching, and be a stimulus to move our discussions beyond local, national, and immediate disciplinary concerns.

Introduction

During spring semester, 2000, a dozen graduate and advanced undergraduate students at the University of Colorado at Denver and I worked our way through a diagnostic and prescriptive study of "The Future of the World." Entering the year 2000 seemed excuse enough to take stock of how humans are doing on this world and what the future may hold. What better framework to employ than the perspectives of anthropology? The course was segmented into conceptual units that briefly reviewed what anthropology teaches us about human nature, adaptation, and human potential, then moved through an examination of present troubles, and explored possible corrective actions. We addressed an

assortment of questions: What do current trends portend? What does knowledge of the past and the cross-cultural present suggest? What does understanding of "human nature" suggest? What is the evidence for the apprehensions of present day Malthusians and environmental doomsayers? What are the bases for popular futurologists' predictions? What are the implications of current trends for human societies, governance, and well-being in the coming century and beyond? What should be done? What are the contributions of anthropologists to "futurology" and to solutions to the problems that affect us?

We drew from a broad literature including many "fact sheets" and summary statements produced by international organizations and bodies of research

scientists (for instance, <http://www.un.org/esa/earthsummit/ga97fac.htm>, Lester Brown et al., 2000, Instituto del Tercer Mundo 1999) on aspects of environmental conditions. We read a travelogue-essay on the global environment (Hertsgaard 1998), a futurologist's perspective (Linden 1998), a science fiction novel (Stewart 1949), and works by anthropologists and others addressing sustainability (Little 1999; Orlove and Brush 1996), cultural resilience (Bodley 1998; Elsass 1992; Sahlins 1999; Wilmer 1993), and intentional communities (Elsass 1992; McKibben 1995; Weisman 1998; Schwarz and Schwarz 1999). Since political economy is the strong suit of our cultural anthropology offerings for students, we took that as backdrop, frequently referenced in discussions but less emphasized in readings (useful references include Bodley 1996; Robbins 1999; O'Connor 1995).

Our initial intention was to review not only the environmental literature but also writings on new technologies for subsistence, communication, and control. We revisited that plan partway through the course, having understood the fundamental nature of our ecological circumstances and the profound implications the crisis represents for all else. The environment is the sine qua non, the underpinning of techno-economic, social structural, and ideological levels of human life. We took seriously John Bennett's admonition that "the human-centeredness of our social disciplines must give way to a concept of 'socio-natural systems' – systems of effort and impact of humans on Nature, in which humans are part of the larger whole" (1990, 437). We were theoretically invested in a systems perspective such as Raybeck outlines (2000). Thus our attention was taken by those observable, to some extent predictable, first-order changes in the enormously complex global biocultural system.

Whatever else we choose to examine or predict about the future, first-order changes in the environment *must* be taken into account. Where visions of the present and future have been constructed with economic themes or forecasts of technological advances at their core, they appear – to an aficionado of the Big System – so detached from ecological groundedness that their credibility is diminished. Discourse on "development" seems particularly afflicted by unconcern about non-renewable resources. Remarkably, few key references on the global economy and development make more than passing mention of the present crisis affecting

economic and social pursuits (cf. Gardner and Lewis 1996; Featherstone 1990).

What is the Current State of Things?

Given a concern for the future, what is the state of the environment? It looks grim. Below I provide cursory snapshots of various dimensions of the problem; all the summaries are "bad news." This gloominess is not a product of unreflexive, uncritical acceptance of their validity, but of the reality of consensus within the scientific literature that we are in a bleak situation. (Compare the weaknesses of the "don't worry" arguments in Markley and McCuan's 1996 *Opposing Viewpoints* volume with the accumulated scientific evidence reported therein and elsewhere.) Credible researchers are no longer asking, "Is it bad?" but discussing what needs to be done and how to refine methods to better understand what is happening. The "brownlash" critique – the well-publicized arguments by a few that the problem is overstated, and that the environmental situation presents no threat to life as usual is rendered implausible by careful examination such as that by Paul and Anne Ehrlich (1996).

The state of scientific consensus is summarized in a statement by 58 of the world's scientific academies (National Academy of Sciences 1993) and the *World Scientists' Warning to Humanity* (Union of Concerned Scientists 1992), the latter signed by over 1,575 distinguished scientists. The evidence points to the likelihood that we will experience an increasing frequency of devastating ecological and social crises, as is outlined below. Wackernagel and Rees's estimates indicate that "the ecological footprint of today's consumption in food, forestry products, and fossil fuels alone might already exceed carrying capacity by roughly 30percent" (1996). Competition for environmental resources is likely to fuel an increasing number of violent clashes (Homer-Dixon 1999). These crises have been created and are fueled by ongoing, destabilizing, sociopolitical realities. Primary among them are the logical contradictions of a political economy designed around assumptions of continuous expansion, accumulation, and exploitation. Similarly, the reign of the globalized military industrial complex, with the extreme social inequality it entails, appears incommensurable with sustainable social and economic systems. The need for global, social, and economic arrangements capable of sustaining indefinitely the

environmental base is urgent. Meeting this challenge will require both a new ethic and the mobilization of the world's currently reluctant, if not largely uninformed, people.

Commercial culture and the market ethic must be increasingly challenged by an environmental, ecological, or "land" ethic (Leopold 1949) in which resource conservation, sustainability, and social justice are key constructs. In my more optimistic moments, I anticipate that, in response to environmental and political economic instability, there will be a mushrooming of small social experiments and regional alternatives endorsing and auguring the more global "simplification" of economies, political units, and communities. I also am convinced of the resiliency of the currently disenfranchised and non-marginal peoples in the world (Elsass 1992; Bodley 1998, 1996; Wilmer 1993). A more sanguine but not very tenable perspective envisions completely bloodless, technology-driven resolutions to the contradictions between needing to use environmental resources now for the livelihood of the world's people, and needing to protect and conserve those resources in a sustainable fashion. Regardless of how unlikely or nebulous the necessary changes appear, we must move towards solutions.

Any solution requires that we have at hand knowledge of the situation. The following facts and the references provided are chosen for conciseness and utility. Obviously, each topic merits far more extended discussion than is provided here. The website references are reputable sources, include many useful links, and regularly update their data.

Population

It took many thousands of years for the world's human population to reach 2.5 billion people, which occurred in 1950. Since then human numbers have increased from about 4.0 billion in 1975, to 6.1 billion in 2000. The United States' population doubled in the past 58 years. It grew from 152 million in 1950 to 270 million (a 78 percent increase) in 2000. The population of "indigenous people" was about 200 million in the year 1800, which represented about twenty percent of the total global population, and is today about the same absolute number, now three percent of the world's human population. The current growth rate is about one and a half percent per year; if it continues, the

world population will double in 46 years. If the growth rate drops to about one percent per year, it would still take only 70 years to double again. Even if every society in the world were to slow population growth to 2.1 children per couple, over 60 years would pass before the world population stabilized at about 12 billion people (Weeks JR 1998; National Academy of Sciences 1993).

Water

Clean water is a finite and increasingly vulnerable resource in the world, necessary for food production and the well-being of living things. Although the human population tripled during the 20th century, water use increased sevenfold. In the last forty years, there has been a decline of over 50 percent in the per capita availability of fresh water. Global climate change may accentuate problems of water shortages and floods. One of the most serious problems facing the less developed world is unsafe drinking water. More than twenty percent of the world's population lacks access to the most basic water and sanitation services. In ninety percent of the developing world, sewage is still released directly into surface water. The costs, especially to the wellbeing of women, children, and rural communities, are enormous (UNDP 2000). Quality of groundwater is threatened in various parts of the world by such factors as pesticide use, nitrates from fertilizer and runoff, petrochemicals leaking from storage tanks, chlorinated solvents, naturally occurring arsenic, other heavy metals from mining and hazardous waste disposal, and salts (Sampat 2000). Groundwater pollution, falling water tables, and aquifer depletion indicate that water may soon be a limiting resource in many world regions. Conflicts over water access are likely to increase. Population growth, increased economic activity, water "development" such as massive dams and diversion projects, pollution, and inequitable within-nation distribution systems are all implicated in water problems (World Water Forum 2000, Global Water Partnership 2000, UNEP 1996).

Global warming

Climate changes have the potential to destabilize our present life-support systems. Climate scientists are concerned that climate changes are occurring at unprecedented rates and could exceed natural rates of species' adaptation through evolutionary processes. The scientific consensus is that the world is

experiencing rising sea levels; more frequent extreme weather events, heat waves, and droughts, and that these current processes are a reaction to human transformations of the planet. The 1990s were the hottest decade on record, with the four hottest years ever recorded being 1990, 1995, 1997, and 1998. This might be considered a normal fluctuation except for other indicators. Until the 1980s, average land and sea temperatures over the entire world varied little; they have suddenly increased significantly. Atmospheric concentrations of carbon dioxide are increasing at alarming rates. For the year 1800, CO₂ concentrations were found to be 280 parts per million; in 1959, they were measured at 316, and in 1998, at 367 (NOAA 2000).

Soil and land

Population and economic pressures, coupled with detrimental irrigation practices and inappropriate agricultural technology, have resulted in practices including deforestation, over-cultivation, overgrazing, and otherwise unsustainable land management. These processes have compromised the sustainability of dryland and wetland ecosystems. In some cases the removal of people from land requiring management has resulted in its degradation. In contexts of overpopulation, war, and climate variations such as drought and flood, there is less flexibility for human populations to deal sensibly with land management.

Since 1960, nearly one-third of the world's arable land has been lost by wind and water erosion. One inch of soil takes 200 to 1000 years to form, and can be lost in a few years. Expansion of highways and urbanization are also responsible for the loss of over ten million hectares per year. Garbage, produced at ever-increasing rates, contributes to toxification of land as well as water. Coupled with these problems is the loss of wetlands worldwide. Desertification, in which topsoil and vegetation cover are degraded and agricultural production drops, affects over 250 million people who are experiencing famine, geographic displacement, and severe losses to their well-being. In the USA, topsoil is being lost at 20 times the rates of replacement, more than occurred during the Dust Bowl. At a time when greater food yields are needed, the world is seeing a reduction in cropland per person (UNCCD 2000).

Oceans and Fisheries

Global marine catches have increased from 19.2

million tons in 1950 to 121 million in 1996. Since 1989, per capita catches are falling despite expanding fleets and greater use of new, inappropriate technologies. Over sixty percent of the world's fisheries are being used at or above sustainable levels. Waste is a factor in the decline: twenty million tons of the catch (about 25 percent of the annual number of fish and marine animals caught) are killed and discarded. Only about one percent of the world's food is provided by fish, but fish are a key source of protein, especially for the poor. One billion people, mostly in poor countries, rely on fish as a principle source of protein. Coastal areas and coral reefs, essential for the lifecycle of over two-thirds of fish, are disappearing or being seriously degraded through pollution, increases in water temperatures, high tech equipment, and other anthropogenic means of habitat destruction. Atlantic cod, bluefin tuna, a number of sharks, swordfish, Atlantic lobster, and shrimp are only a few of the species whose populations appear to be collapsing. (FAO 1998; National Coalition for Marine Conservation 2000).

Biodiversity

Humans affect biodiversity primarily through modifying and destroying critical habitats. This happens through such activities as clearing and planting land, deliberately or inadvertently introducing non-native species, draining wetlands, destroying forests, hunting or harvesting vulnerable species, and polluting the environment. The destruction of tropical rain forests represents a serious and immediate threat to biodiversity, since they contain more than fifty percent of species globally on only seven percent of the planet's land. Rates of loss of plant and animal species are so great -- from 100 to 1000 times the rates before human intervention -- that many are concerned that we are facing an anthropogenic extinction crisis, a global "Sixth Extinction" or "biotic holocaust" (Loh et al, 1998; Myers 1999; Wilson 2000). As many as one third of known plant species, and as many as one half of mammals, may be extinct by 2050. One third of global food crops are pollinated by bees, but populations of bees and other pollinating insects are declining (Convention on Biological Diversity 2000).

Rich and Poor: Inequities in Wealth and Well-being

The inequities among people in the world today are staggering. The World Bank estimates that over one billion people live on less than one dollar a day.

The number of billionaires in the world has jumped from 274 in 1991 to 470 in 2000 (Forbes 2000). The wealthiest's total assets are equal to the total combined incomes of the poorest half of humanity. The portion of the wealth of those most economically privileged that would be required to provide basic social services for the world's population (primary education, basic healthcare and nutrition, reproductive health and family planning, clean water and sanitation) is less than four percent (UNDP 2000, Vittachi 1997). In the United States, the number of billionaires has increased from 13 in 1985, to 99 in 1990, to 268 in 2000 [Forbes 2000]. There are currently over five million U.S. millionaires, a fourfold increase in the past ten years. The richest man in the world, the American Bill Gates, in early July 2000, had a net worth of \$54.1 billion. This amount, based on the number of shares of Microsoft stock he owned times the value per share at the time, was down from over \$70 billion in April 2000 (Bill Gates Net Worth Page 2000).

Examples abound of inequalities between haves and have-nots across the world. Indigenous and tribal populations, despite changing articulation of their rights in the United Nations, are under unceasing pressure to abandon their lands and ways of life. The ecocide, ethnocide, and genocide to which marginal cultural groups around the world are still being subjected is a tragedy (Bodley 1998).

Country-level data from World Bank and CIA websites, including comparative data for some West African nations and their former colonial powers, are indicative of the differential futures various nations might expect in the coming decades. Life expectancy in France is over 78.6 years. In neither Benin, Burkina Faso, Cameroon, Guinea, the Ivory Coast, Mali, nor Niger is it over 55. Only in two of France's former colonies in Africa, Senegal and Togo (59.25), does life expectancy approach 60 (57.83 and 59.25, respectively). Literacy for females 15 and older in Burkina Faso is reported at 9.2 percent and in Niger at below 7 percent; in France, over 99 percent of women are literate. In Ghana, 1.2 persons per thousand have a personal computer; its former colonial power, the United Kingdom, has some 225 per thousand. Access to healthcare is available to about one quarter of the population of Ghana, but 44 percent do not have access to safe water. The doubling time for Ghana's population growth is estimated at 23 years. In Ghana, by the year 2014 as many as 35 percent of deaths are

expected to be from AIDS (*Panafrican News Agency* 2000). In Zimbabwe, 26 percent of adults have HIV/AIDS and each week an average of 1,200 people die (Biriwasha 2000).

Social inequality is a driving force in the global destruction of habitats and exhaustion of natural resources. Many conservative technocrats do not see how poverty is connected to unsustainable resource use (nor do they acknowledge causal links between globalization and poverty), and argue that technology is the essential feature in the system. Anthropologists and in-the-field development workers understand the imperative experienced by the world's hungry and poor to meet the day's urgent needs, and what that often implies for depleting forests, overgrazing and otherwise misusing land, exhausting fishery resources, and polluting water, air, and soil. One of the multitude of cases is provided in Pomfret's exposé of the current crisis in Mongolia, in which structural adjustment pressures by the World Bank, International Monetary Fund, and the Asian Development Bank have grossly exacerbated the devastating effects of a year of drought and early winter (2000).

Hunger, Disease, and Other Threats to Human Health

The assorted factors mentioned above -- poverty, unclean water, climate change, deforestation, urbanization, agricultural practices, migration, etc. -- contribute to the exacerbation of disease and health problems facing humans. These factors are implicated in the current epidemic levels of HIV/AIDS, drug-resistant tuberculosis and malaria, asthma, dengue fever, and depressive disorders, to name a few. They are also instrumental to the rise of virulent strains of cholera, zoonotic "jumper" diseases and other emerging infections that humans now acquire, and antibiotic resistant diseases (Barrett et al 1998; McMichael 1992). Environmental toxification, including acidification and increased levels of ultraviolet radiation, also threaten human well-being.

Of the 6.1 billion humans on Earth, more than two billion are malnourished. Some 800 million are chronically under-nourished. Hunger affects one in seven every day. In the less developed world, one child in ten dies before age five; most of these deaths are related to malnutrition. Over forty million people have Vitamin A deficiency. Food emergencies affect from thirty-five to forty or more countries each year of the

late 1990s. Over the coming decades the needs for food will increase dramatically, at the same time the gap between the rich and the poor shows no sign of abating (World Food Programme 2000; Lupien and Menza 1999; UNDP 2000; Lappe et al. 1998).

How Did We Get to this Precarious Situation?

This question is already an orienting principle for many introductory anthropology courses, although not always with environmental doom and gloom as the end issue. Answers lie in the broad corpus of work in all subdisciplines of anthropology. Each subdiscipline gives fragmentary, and sometimes contradictory, responses that range from the genetics of "human nature," to theories of inexorable intensification, technological change, and population growth. John Bodley's admirable text (1996) on contemporary problems sums up the situation as follows:

What we are now seeing is perhaps the final irony of cultural evolution – the latecomer, industrial civilization, has suddenly arisen as a clear dominant and brilliant short-run success. We have eliminated the earlier tribal cultures, which were proven long-term successes, and there are now clear indications that civilization has accumulated enough internal problems to be self-terminating. We seem about to become victims of our own evolutionary progress (p.2).

Industrialization, capitalism, globalization, and the cultural values that provide their rationale are responsible for the environmental emergency. In the big picture, first the Agricultural Revolution and then the Industrial Revolution are what now make necessary an Environmental Revolution, or "Simplification" as I think of it, in the future. The commercial era has "destroyed or transformed all previous cultural adaptations" and "given humanity the power not only to bring about its own extinction as a species, but also to speed the extinction of many other species and to alter biological and geological processes as well" (Bodley 1996, 4). Since 1950, world economic activity has more than quadrupled. In the next thirty years, the number of automobiles is likely to double. Dominant nations regard less developed nations as "underpolluted" (Robbins 1999, 234-235). Seen from a perspective of environmental mindfulness, these

figures are less evidence of global wellbeing than cause for concern.

Who is Concerned?

Increasing numbers of people, from laypersons to scientists, are worried (Ehrlich and Ehrlich 1996; Pettinico 1995). Even in the face of the relative invisibility of the problem in the mass media, and the platitudes expressed publicly by opinion leaders, representatives of corporate entities, and the rare scientist, many world leaders are worried. The situation is so dire that even leaders at the helm of global economic and structural adjustment programs have begun to question such policies. Michael Camdessus, in his Farewell address as Managing Director of the International Monetary Fund, stated that "...the widening gaps between rich and poor within nations, and the gulf between the most affluent and most impoverished nations, are morally outrageous, economically wasteful, and potentially socially explosive" (Camdessus 2000).

On the home front, surveys I have carried out with convenience samples of students in undergraduate anthropology courses at my university show concern, and suggest a trend towards greater concern. In 1994, of 55 students in two introductory cultural anthropology courses, 51 percent reported they were "not at all worried" about the survival of the human race, about 42 percent reported they were "somewhat worried," and 7.3 percent reported they were "very worried." In 1998, of 96 students surveyed in three introductory courses, 29 percent were "not at all worried," 50 percent were "somewhat worried," and almost 18 percent were "very worried." In both years, a few students indicated that they thought "human beings don't deserve to live," or they "don't care if we survive." In the *Future of the World* class, the distribution of responses by the sixteen students who filled out the survey in January, 2000 (the first class of the course) was very similar to the percentages reported for the 1998 respondents.

National surveys by the Gallup organization report increasing anxiety on the part of the general public. *TIME* Magazine dedicated its first global issue, a special edition for Earth Day, 2000, to the topic, "How to Save the Earth" (*TIME* 2000). A sense of anxiety and urgency appears to be spreading, despite little concrete evidence that recognition of the problem is

transforming public and political discourse, much less action.

Fiddling while Rome Burns? Missing the [R]evolution? The Role of Anthropology

In the 1992 volume *Rereading Cultural Anthropology*, an article by Orin Starn admonishes the dozens of ethnographers working in the Peruvian Andes for their failure to anticipate the emergence of a major revolutionary movement emerging in the 1970s, in which insurgents took over about half of the Andean territory of Peru. Starn didn't claim that anthropologists should be in the business of forecasting the future. However, he did ask why anthropologists were not attuned to the intensifying conditions underlying the emergence of such dramatic social changes: "They positioned themselves as the 'good' outsiders who truly understood the interests and aspirations of Andean people; and they spoke with scientific authority guaranteed by the firsthand experience of fieldwork. Why, then, did anthropologists miss the gathering storm of the Shining Path? What does this say about ethnographic understandings of the highlands?" (Starn 1992: 152)

Like Starn discussing the anthropology of the Andes, I am concerned that too few anthropologists are attuned to the environmental crisis, its forms, and the implications for human life. I do not claim that anthropologists are ignorant of the growing environmental crisis and its implications. Three thoughtful, important, recent books by anthropologists are Johnston's edited volume, *Life and Death Matters* (1997), Emilio Moran's *Transforming Societies, Transforming Anthropology* (1996), and Raybeck's *Looking Down the Road* (2000). However, although most of us have some familiarity with the grim state of things, we rarely choose to think about it directly. T. S. Eliot may have been right when, in the poem "Four Quartets: Burnt Norton," he stated that "Human kind/ Cannot bear very much reality," but it behooves us to think about these issues. If not anthropologists, with an agenda traversing all human time and space, along with training that ranges from evolutionary biology to political economy to symbolic anthropology, then who?

The present infrastructures in the world are not adequate to diagnose, interpret, manage, or correct the environmental problems we are facing. Anthropologists

need to position ourselves to change them, and to make possible through education and action a positive global transformation. With our training and experience, anthropologists can document, analyze, and reveal, from Peru to Ghana (Mendonsa, this issue) to Mongolia and elsewhere, the nature of the problem and possible local-to-global solutions. We need to address openly the challenge of directed change (Rogers 1995), generate prescriptive social change theory, and read diverse proposals for solutions (Lovins 2000; Lerner 1996). We need to ask, as individuals and professionals, how we can reconcile our knowledge with our praxis (Brown, this issue)?

This global socio-environmental crisis has the potential to overwhelm us all in all our multiple identities, as citizens, educators, consumers/transformers of food, and as creatures making a living on the planet. Yet, as this issue looms larger, it seems ironic that some corners of our discipline are insisting that anthropology's mission should be re-imagined in highly subjective, abstract modes. The concrete, material, and biological realm in which we live seems to have shifted, for some, nearly out of sight. At this moment, such a diversion strikes me as mystification. If we let such an orientation take too large a role in our discipline, we risk being found guilty of fiddling while Rome burns; at a minimum, we may "miss the [r]evolution."

Conclusion

We always need introspection, discussion, and deeper comprehension, but the times we live in call for action. Although it would be an interesting exercise to deconstruct the representations of the environmental crisis as depicted on websites, in the materials of involved organizations, and in the appeals of scientists and activists, our time is better spent preparing to do something about the problem. Echoing St. Exupery's *Little Prince*, the stakes are too high not to apply the precautionary principle: "But the danger of the baobabs is so little understood, and such considerable risks would be run by anyone who might get lost on an asteroid, that for one I am breaking through my reserve. 'Children,' I say plainly, 'watch out for the baobabs.'"

We need solutions, writ small and large. We in the community of applied anthropologists must assist one another to contextualize our efforts in the light of the current crisis. H.G. Wells (1920) cautioned that human

history is increasingly "a race between education and catastrophe;" we must educate ourselves and our students, and act. The urgency of our situation has never been greater, nor the stakes higher. Let us put the issue at the forefront of our anthropological pursuits, our activities as educators, and our praxis.

Notes

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