

## **Where is Anthropology When You Need It? Real World Problems and Reflexivity**

Robert Daniels  
Department of Anthropology  
University of North Carolina at Chapel Hill

Nothing human is alien to anthropology. Indeed, of the many disciplines that study our species, *Homo sapiens*, only anthropology seeks to understand the whole panorama--in geographic space and evolutionary time--of human existence.

American Anthropology Association webpage <http://www.aaanet.org/anthbroc.htm>

### **Motivation**

It is now being widely recognized that the human species is on the brink of massive changes as great as those resulting from the rise of industrialization, and perhaps even as great as the changes brought about by the development of food production. The interlocked problems of non-renewable resource depletion, accumulating industrial waste, biosphere degradation, and climate change lead both expert and lay observers to postulate drastic predictions about the foreseeable future. The events being predicted for the coming decades and next couple centuries are, by almost all current standards, extremely negative: e.g. the replacement of democratic civil society by authoritarian police states, the permanent collapse of electric power grids, resulting in the loss of all digitally encoded information, the collapse of industrialized food production and a "die off" of human population, etc.

Three times over the past several years I have offered a seminar course entitled "Anthropological Perspectives on the Energy Crisis." Anthropology (using the term in its inclusive American sense that seeks to combine human evolution, bioanthropology, archaeology, culture history, linguistics, and much more with social anthropology) is the social science that most fundamentally takes a global view, looks at the human species over the long (indeed evolutionary) scale, and has investigated the collapse of past civilizations with a comparative, multidisciplinary, cultural-ecological approach. The seminar examined the validity of the dire predictions of an energy shortage and climatic crisis. We also looked at various studies of the trajectories of past civilizations. And we searched for analyses in the social sciences, and particularly in anthropology, that might help us understand current processes and help us anticipate and

prepare for the future. Surely, we asked, anthropological theory and research has something to contribute to these debates. In short, of what use is anthropology?

To date the results of this quest have been very slight. Rather than being centrally concerned with these issues, academic anthropology is largely silent, and seems about to be overwhelmed by the truly global transformations occurring among its own subjects and to be rendered irrelevant. This paper is my attempt to explain why I think the discipline is not dealing with the real world (and a plea to colleagues to save me from my ignorance if there are anthropologists who are addressing the crisis).

## **Some Real World Problems**

In this section I mention facts and references which have influenced my thinking on these topics. I make no attempt to present complete summaries; I assume readers are familiar with the basic issues discussed here.

### **Oil**

"Learning the facts of peak oil has a tendency to refocus the mind on the fundamental question of human use of resources; abstract ideas about society seem less important. But if history teaches us anything, it is that ideas have consequences. As one of the greatest changes in the human story is now afoot, it would seem foolish in the extreme to leave intellectual rigor to the physical scientists while allowing sloppy armchair anthropologists and historians [to] frame the relevant cultural questions." (Polycarpou 2005)

On a human time scale, the amount of fossil fuels (coal, oil, natural gas), both known and as yet undiscovered, is finite. Meanwhile worldwide demand is accelerating rapidly. Over the past several years a number of independent oil geologists have pushed awareness of the problems of fossil fuel depletion. The first article addressed to the general American public (or at least the general intelligentsia of America) appeared 10 years ago: "The End of Cheap Oil" by Colin J. Campbell and Jean H. Laherrère, in *Scientific American*, (March 1998). Six years later the same title was used in a lead article in *National Geographic* (Appenzeller 2004).

Campbell, a retired British petroleum geologist, went on to found ASPO, the Association for the Study of Peak Oil & Gas (<http://www.peakoil.net/>). 'Peak Oil'<sup>1</sup> has become a major scientific focus, and propagation of public awareness about it has become a major social movement among a certain set of

concerned scientists and citizens in many countries as well as spawning countless local “power down” organizations seeking practical applications for low energy lifestyles. (A Google search on “peak oil” will produce over 4½ million hits.) The problem is not that sooner or later we will run out of fossil fuels. The problem comes when we run short of oil. Global oil production cannot expand indefinitely and at some point production will peak. The term draws our attention to the fact that the critical transition will not be when oil reserves near exhaustion, but when worldwide production peaks and less and less oil can be produced no matter what effort or expense is made. At that point whatever the level of demand may be, the level of consumption worldwide will start to decline.<sup>2</sup> Further, it is misleading to focus on the amount of oil remaining in the ground. We cannot recover all of the oil from any field, and we will never recover all of the ‘recoverable’ oil in the world since industrial society will have ground to a halt long before the last 100, or 1,000 or 10,000 barrels are pumped from the earth.

The title of Campbell and Laherrère's paper, “The End of Cheap Oil,” also draws our attention to the fact while “the first half of the age of oil” has involved extraction of roughly half of the ultimately recoverable oil, the second half is qualitatively different, for the oil already extracted has been from the most accessible and highest grade resources, that is those with the highest energy return on energy investment (EROEI). The cost of recovery, and in many cases the ecological destruction necessary, can only increase.<sup>3</sup>

The central message of these “pessimists” or “Cassandras” is that the “peak oil” transition is not in the distant future but here now. A few years ago many people considered “peak oil” simply wrong-headed and refused the basic premise of the analysis. But as Colin Campbell is fond of saying, this is something every beer drinker knows: “the glass starts full and ends empty, and the quicker you drink it, the sooner it is gone.” In 1998 Campbell and Laherrère suggested 2010 as the rollover date. Others have moved this prediction forward or back a few years. In the past decade many others have considered these predictions wildly wrong, but recent events are producing new believers every day:

At just under 86 million barrels per day, global oil production has, essentially, stagnated since 2005, despite soaring demand, suggesting that production has already reached its geological limits, or “peak oil”.

Pessimists believe that production has passed its peak. Optimists say it may be 20 years or so away - which would give us some time to prepare - but [they] are now muted. Last week [March 2008] the hitherto optimistic International Energy Agency admitted that it

may have overestimated future capacity. Chris Skrebowski, editor of 'Petroleum Review' and once an optimist himself, believes that the world is now in "the foothills of peak oil". Prices may ease a bit over the next few years, but then the real crunch will come. The price then? "Pick a number!" (David Strahan, quoted in Lean 2008)

And this from the great oil tycoon T. Boone Pickins three years ago:

"Let me tell you some facts the way I see it. Global oil (production) is 84 million barrels (a day). I don't believe you can get it any more than 84 million barrels. I don't care what (Saudi Crown Prince) Abdullah, (Russian Premier Vladimir) Putin or anybody else says about oil reserves or production. I think they are on decline in the biggest oil fields in the world today and I know what's it like once you turn the corner and start declining, it's a tread mill that you just can't keep up with. (EV World 2005)

### Climate Destabilization

I would sooner expect a goat to succeed as a gardener as expect humans to become stewards of the Earth. James E. Lovelock (1994)

Throughout the 20th century anthropologists have conducted research within the context of the expanding global economic system. We have documented its rapid spread into the far corners of the world, and the frequently deleterious social and psychological results as communities found themselves being monetized and commoditized. While the discipline has struggled since the 1930s to conceptualize these processes, without much theoretical success in my opinion,<sup>4</sup> we have mounted a telling critique of neoclassical economic theory, telling at least within departments of anthropology. Our substantivist objections to groundless models of human behavior have only influenced a few academic economists (I will mention one, John Gowdy, below). And outside the academy, in the business world, the neoclassical religion has never been stronger. Everywhere, it seems, people are clamoring to become more deeply involved in an economic system in which the goal of each component is to "grow" and the whole system of investment is premised on endless expansion through increased industrialization. The concern is with throughput without concern for the finiteness of the earth's ability to supply inputs or absorb outputs. We have reached the point where we face not only resource depletion (peak oil) but also levels of accumulated industrial waste which have pushed global climatic patterns past certain tipping points. While the public has become aware of "global warming," it is perhaps more accurate to speak of climate destabilization since the changes underway are complex and not fully understood. Five years ago the

peak oil experts Anders Sivertsson, Kjell Aleklett, and Colin Campbell presented an analysis (Coghlan 2003) that concluded that global warming was not going to be a problem since industrial society would crash before then (cold comfort, literally and figuratively). Now we know that we face the worst of both possibilities: the climatic changes are already well underway and moving faster than even the experts thought just a few years ago. We are no longer in the Holocene but a new geological era, the “Anthropocene,” to use Paul Crutzen’s term, in which human behavior, starting with James Watt’s development of an effective, coal-fired steam engine, has changed climatic patterns. In her three part essay “The Climate of Man” (2005)<sup>5</sup> the science writer Elizabeth Kolbert quotes Robert Socolow, a professor of engineering:

Socolow had recently become co-director of the Carbon Mitigation Initiative, a project funded by BP and Ford, but he still considered himself an outsider to the field of climate science. Talking to insiders, he was struck by the degree of their alarm. “I’ve been involved in a number of fields where there’s a lay opinion and a scientific opinion,” ...“And, in most of the cases, it’s the lay community that is more exercised, more anxious. If you take an extreme example, it would be nuclear power, where most of the people who work in nuclear science are relatively relaxed about very low levels of radiation. But, in the climate case, the experts - the people who work with the climate models every day, the people who do ice cores - they are more concerned. They’re going out of their way to say, ‘Wake up! This is not a good thing to be doing.’”

## Food

Between 1950 and 1984, as the Green Revolution transformed agriculture around the globe, world grain production increased by 250%. That is a tremendous increase in the amount of food energy available for human consumption. This additional energy did not come from an increase in incipient sunlight, nor did it result from introducing agriculture to new vistas of land. The energy for the Green Revolution was provided by fossil fuels in the form of fertilizers (natural gas), pesticides (oil), and hydrocarbon fueled irrigation.

The Green Revolution increased the energy flow to agriculture by an average of 50 times the energy input of traditional agriculture. In the most extreme cases, energy consumption by agriculture has increased 100 fold or more. (Pfeiffer 2004)

"The ... Green Revolution ... was a one-time miracle, and it's over. Since the beginning of the 1990s, crop yields have essentially stopped rising. [Meanwhile] The global population more than doubled in that time...

...at some point not too far down the road we reach the point of absolute food shortages, and **rationing by price** kicks in. In other words, **grain prices soar, and the poorest start to starve**. (Dyer 2006) [emphasis added]

The global food crisis seems to have caught the US by surprise this spring, suddenly appearing in

newspaper headlines and magazine cover stories. Of course there has been a long standing concern over the unsustainability of agrobusiness. "In the United States, 400 gallons of oil equivalents are expended annually to feed each American" (Pfeiffer 2004). And that estimate is from 14 year old data. But rather than recite the details of mechanized farming and transcontinental and international food shipments, I will just focus on one dimension of the problem, one of the things they never told me about in my liberal arts undergraduate education or in anthropology graduate school: the Haber-Bosch process to produce fertilizer.

As geographer Vaclav Smil has argued ... the Haber-Bosch process probably deserves to be considered **the principal invention of the 20th century** since today ammonia synthesis provides more than 99 percent of all inorganic nitrogen inputs to farms -- an amount that roughly equals the nitrogen tonnage that all of green nature gains each year from natural sources... (Heinberg 2005:66) [emphasis added]

Here's the catch: the natural gas that fuels the process represents approximately 70% of the cost.

As the Haber-Bosch process branched out in global use, it became the primary procedure responsible for the production of fertilizer to feed the world's population. **Without it, billions of people might not exist.** Today, the Haber-Bosch process is used to produce more than 500 million tons (453 billion kilograms) of artificial fertilizer per year; roughly 1% of the world's energy is used for it, and it sustains about 40% of our planetary population. (Anissimov n.d.) [emphasis added]

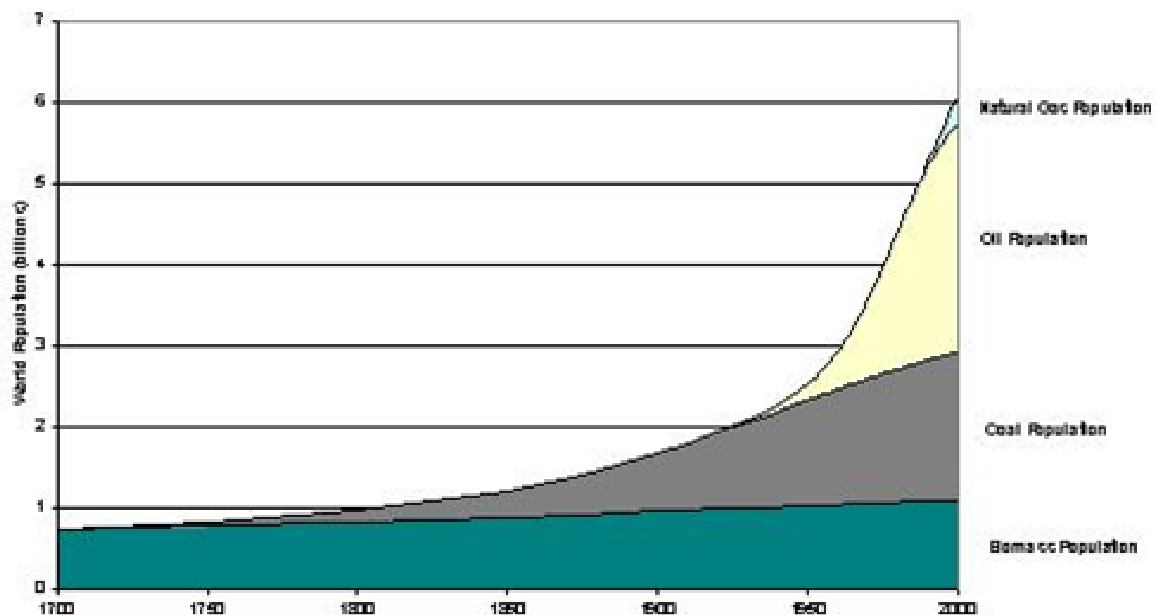
### Population Die Off

How many people will post-industrial agriculture be able to support? ... A safe estimate would be this: *as many as were supported before agriculture was industrialized ... somewhat fewer than 2 billion people.* (Heinberg 2005:196) [emphasis in original]

In 1960 Heinz Von Foerster and others published "the Doomsday paper" in which they fit a statistical model to population history and projected that if world population continued to grow as it had for the last 2,000 years, it would reach infinity on Friday the Thirteenth, November, 2026 (Von Foerster et al. 1960).

The Doomsday paper gave us a 65-year lead time. Most published comments failed to grasp its central point: the demographic behavior of 2 millennia will change by 2026, willy-nilly. At a 51- year lead time (... 1975), and again at a 39-year lead time (... 1987), the population was still ahead of the Doomsday projection. We had done nothing. This is presumably the result of denial: 'The human population cannot decline.' Malthus observed that the 'first grand objection' ...to a limit was Genesis 1:28, the infamous 'multiply-fill-subdue-master' verse singled out by Lynn White, Jr. ... as the root of our ecological problems. There is no reason to think that denial has decreased since Malthus wrote (MacIntyre 2005:38).

In 2000 Graham Zabel's paper, "Population and Energy," argued that "Energy is an issue that has been widely ignored when attempting to explain historical demography and it is widely ignored when attempting to project future demographic scenarios." Zabel attempted to break down population growth from 1700 to 2000 in terms of the estimated number of people supported by biomass, "traditional renewables (wood, dung, etc.) and animal power (with minor amounts of wind and hydropower)", by the use of coal, then the development of oil, and finally natural gas. The massive population increase attributed to chemical fertilizers seem to fall into his 'oil population' rather than his 'natural gas population', but the overall picture is clear enough.



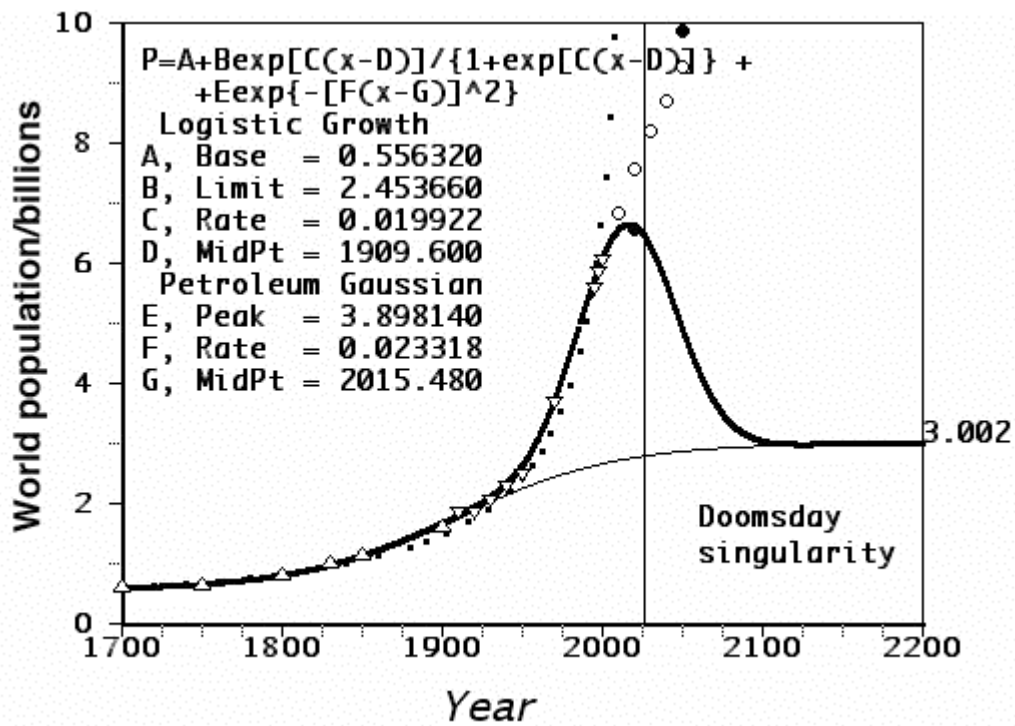
**Figure 3: Sun-of-Energies model of World Population**

When one considers peak oil, Zabel's analysis leads to an obvious and chilling conclusion:

If oil and gas production does exhibit a bell curve shaped profile ... then at some point humanity will reach the peak. After that time oil and gas will become much more 'expensive'. A decline in production would mean a decline in energy inputs into society - less thermodynamic energy - a decline in productivity and, hypothetically, a decline in population. If population growth were in any way related to oil production, **Oil Population may decline more quickly than most people anticipate.** (2000:22) [emphasis added]

Ferren MacIntyre recently published another projection testing hypotheses that took economic factors into

account. One doesn't really need to master the details of his statistical analysis to understand the message of his summary graph:



As Heinberg and MacIntyre are aware, it is, of course, far too simple to assume that in large parts of the world agricultural productivity can go back to pre-industrial levels, as if there had been no loss of arable land to urbanization, no ecological degradation, no dislocation of agricultural populations, no loss of pre-industrial infrastructure or knowledge of farming, etc. It seems even the 'pessimists' are soft-pedaling their message.

### The Relevance to Anthropology

Surely nothing could be of more central concern to anthropology than this global crisis. I do not know any anthropologist who is not deeply concerned; many are alarmed. 'Global Warming' is now widely recognized by the UN and national governments, the oil crisis is increasingly acknowledged (though most established authorities still coyly avoid the term 'Peak Oil'). While the global food crisis is widely discussed, it is still discussed as a short term problem; the full implications of the energy crisis for the long term food supply and world population levels have still not penetrated the mainstream media or general public discourse. There are some attempts to get the natural scientists who are modeling global

patterns to involve social science findings in their projections; my colleague Carole Crumley has spent many years fighting this good fight, urging the necessity of including the human dimension in their analyses, with limited success (e.g. Hornborg and Crumley, 2006). Needless to say, most natural scientists do not know how to make use of anthropological studies that lack quantified data. And so the vast majority of those discussing the possible futures of humanity are natural scientists, or independent authors, or journalists.

## Predictions

The world development model presented as being 'sustainable' by New Economics in fact has a 'useful lifetime' measured in less than two decades. Yet it is presented as our only option. No alternative is feasible or imaginable. Debate on any alternative is swept aside as 'idealistic' or mischievous. (McKillop 2003)

The last few years have seen a torrent of articles, books and videos in North America, mostly by people outside academia, directly challenging the sustainable development model, and predicting the imminent end of 'the American way of life,' for example: Richard Heinberg's *The Party's Over: Oil, War and the Fate of Industrial Societies*, James Howard Kunstler's *The Long Emergency: Surviving the End of Oil, Climate Change, and Other Converging Catastrophes of the Twenty-First Century*, and the DVD *The End of Suburbia: Oil Depletion and the Collapse of The American Dream* by Gregory Greene. But as you will surmise, the real hotbed of this sort of thinking is the Internet.

Perhaps the most provocatively named prediction is "The Olduvai Theory" found on the Web in a series of papers by Richard C. Duncan (1996, 2005-2006). He comes to the subject with a background as an electrical engineer. Duncan starts with assertion that "the life expectancy of industrial civilization is approximately 100 years: circa 1930-2030" (2005-2006:1). His measure of industrialization is worldwide energy production per capita or "**e**". Duncan argues the exponential growth of **e** ended in 1970, has basically flat-lined through 2008, and is about to go into sharp decline, with world population falling to about 2 billion by 2050 -- which would be a reduction of 4.6 billion people in the next 42 years. (For an alarmist reflection on the implications of these ideas see Arnett 2007).

An excellent web site, launched in 2003 and kept current, is "The Wolf at the Door: The Beginner's Guide

to Peak Oil" (<http://wolf.readinglitho.co.uk/> and <http://www.wolfatthedoor.org.uk/>) by Paul Thompson, a graphic designer in Reading, England (once again the non-academics are far ahead of us in educating the general public). Thompson pulls together a great deal of information; I wish here to draw attention only to his prediction of the imminent future, which he groups into "the four stages of the breakdown":

Stage 1: Awareness: This is the stage we are at now.....

Stage 2: Transition: subdivided into two further phases:

2a: Ordered Transition

Initially ...[t]he deprivations of oil shortages can be mollified somewhat ... Governments still retain control ...

2b: Anarchic Transition

...order breaks down. ....we are increasingly forced to look after ourselves, growing our own food and protecting our homes against the poor and starving.

Stage 3: Scavengery

... just about all hydrocarbons are unavailable. National security has disappeared, interdependence is unsustainable. We are forced to live in **small groups of village or tribal size**, growing our own food, maintaining our own buildings and providing our own security. Those who are not in village groups will be forced to steal from others.

This period is called Scavengery because we will be forced to rely on the remains of our present industrial society... Our societies will have to change dramatically with, for example, **practices such as monogamy possibly giving way to polygamy**, and interdependence becoming multi-skilling.

Stage 4: Self-Sufficiency

... By now, everybody who is unable to convert to a sustainable, self-sufficient lifestyle would have died off, leaving only those in organised, independent groups to remain....**we might eventually 'progress' to something like a Medieval level of civilisation...**

There have been any number of post-apocalyptic novels and movies, and Duncan's scheme can be seen as another intelligent, but amateur attempt to imagine the future. While anthropologists may find a list of these stages reminiscent of 19th century unilineal evolutionary schemes, Duncan does not, apparently, have an underlying social theory, or much background in non-European kinship systems (though, thankfully, he and others outside academia have not taken refuge in the just-so stories of evolutionary psychology).

Jared Diamond, professor of geography and physiology at UCLA, takes a far more sophisticated and deeply researched look at the world crisis in his recent book *Collapse: How Societies Choose to Fail or Succeed* (2005). While not specifically focused on prediction, the work, which has become a bestseller, reviews several specific cases of past and recent societal failures, and a few success stories, and seeks to identify the factors responsible for their various fates. Diamond has written a number of books and essays that speak directly to anthropological issues and are widely used in the US in anthropology courses. In the last section of the book, he tries to draw lessons from these cases, and ends, in sharp contrast to Duncan and Thompson, on a note of "cautious optimism." It received some initial rave reviews, for example:

... the fact that one of the world's most original thinkers has chosen to pen this mammoth work when his career is at its apogee is itself a persuasive argument that *Collapse* must be taken seriously. **It is probably the most important book you will ever read.**  
(Flannery 2005) [emphasis added]

My own opinion of the book is not nearly so positive. Diamond is to be commended for bringing awareness of the looming crisis to the general public. He takes the sort of broad comparative perspective that too few anthropologists are willing to attempt. But although the specific examples are recounted in very engaging ways, they involve interpretations of complex and controversial cases (e.g. the root causes of the Rwandan genocide) that were bound to raise objections from our discipline. My colleague Patricia McAnany was co-convenor of a conference of archaeologists, cultural anthropologists, and historians who are writing a volume that will take issue not only with the factual details of many of the case studies Diamond cites but also with his 'methodological individualism'<sup>6</sup> and the very concept of "collapse" as a model for the decline of state formations. While the conference was considered significant enough to be reported in the New York Times (Johnson 2007), there is no doubt that Diamond's book will reach a much larger audience. Unfortunately I find Diamond's closing arguments for optimism unconvincing, primarily because his overall analytical framework is seriously underdeveloped. Perhaps a sophisticated theory of social dynamics is too much to ask for from a non-anthropologist. Perhaps it is also too much to ask from an anthropologist as well.

## Specifically Anthropological Writings

Any discussion of anthropological theorizing about energy and human societies must start, I suppose, with Leslie White and his famous dictum:

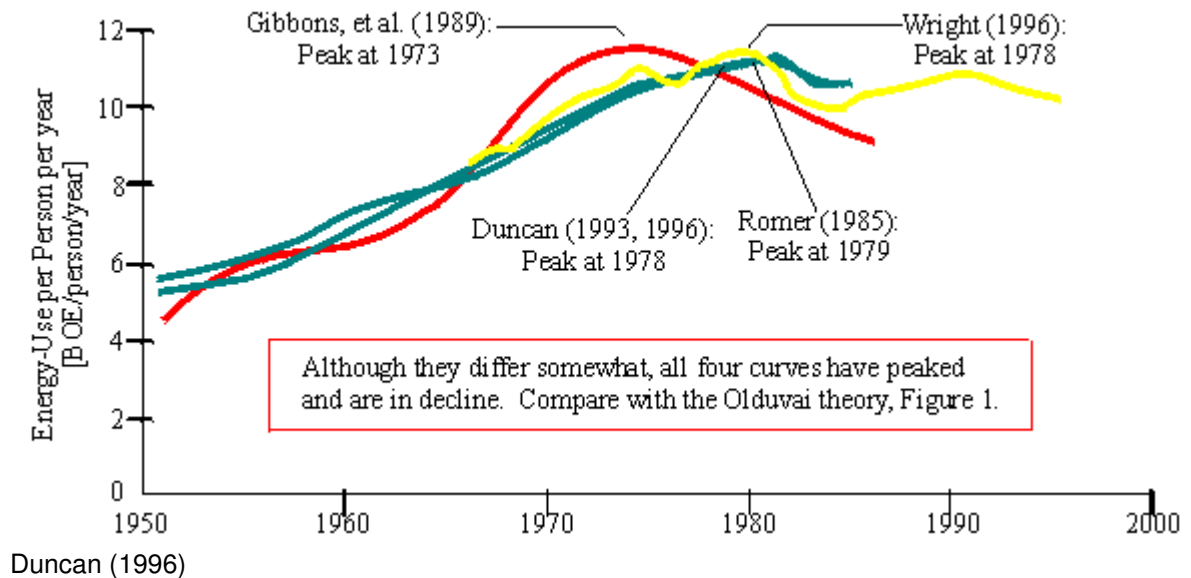
Other factors remaining constant, culture evolves as the amount of energy harnessed per capita per year is increased, or as the efficiency of the instrumental means of putting the energy to work is increased. ... We may now sketch the history of cultural development from this standpoint (1949).

No doubt most social anthropologists take offense at White's 'superorganic' view of culture since it violates our sense of the importance of individual free will. Nor does his monolithic view of culture sit well with the traditional anthropological concern with diversity and specificity of cultural patterns. Most of us, having been profoundly effected by the personal relationships we formed during fieldwork, resist the idea that our findings are just another data point on a dimension of energy use. . My own reaction to reading White is to wonder how anyone could have been so right and so wrong at the same time. White's scheme is extremely effective for organizing the long sweep of human history and energy levels are critical to social forms (so too are ecological factors influencing population densities, modes of communication, cultural traditions, etc.). Among those of us willing to speak in terms of cultural evolution (and I recognize that many are not), I think most of us would object strongly to his definition of cultural evolution in terms of per capita energy use.

White, of course, was writing at a time when the finite nature of world supplies was not pressing. For contemporary readers this leads to uneasiness with the expansionist or triumphalist undertones of his scheme. When per capita energy use starts declining, as the following chart suggests it already has, are those societies which have been using energy at a higher rate still going to appear to have been "more advanced in an evolutionary sense" and will they still find themselves at "an advantage over other societies"?

[next page]

Figure 2. World Average Energy-Use Per Person Comparison of Four Sets of Historic Data ("BOE" means Barrels of Oil Equivalent)



A much more pointed essay, "Energy and Human Evolution," by the anthropologist David Price<sup>7</sup> was published in 1995. On the Internet, at least, it has achieved the status of a classic, widely cited and echoed on many web sites. The argument is both theoretically eloquent and extremely pessimistic.

Price starts with the Second Law of Thermodynamics:

... energy flows from areas of greater concentration to areas of lesser concentration, and local processes run down. Living organisms may accumulate energy temporarily but in the fullness of time entropy prevails.

Humans have increasingly been tapping into the energy stored up in the earth. This leads Price to a striking metaphor that has been widely quoted:

Today, the extrasomatic energy used by people around the world is equal to the work of some 280 billion men. It is as if every man, woman, and child in the world had 50 slaves. In a technological society such as the United States, every person has more than 200 such "ghost slaves."<sup>8</sup>

To Price, the human ability to cash in the world's energy stores has, in effect, made us an introduced species on our own planet:

By using extrasomatic energy to modify more and more of its environment to suit human needs, the human population effectively expanded its resource base so that for long periods it has exceeded contemporary requirements. This allowed an expansion of population similar to that of species introduced into extremely, propitious new habitats such as rabbits in Australia or Japanese beetles in the United States.

And like introduced species, we are destined for runaway population growth, resource depletion, and population crash, in a word a classic overshoot (Catton 1982). Price continues,

But the exhaustion of fossil fuels, which supply three quarters of this energy, is not far off ... **A collapse of the earth's human population cannot be more than a few years away.** If there are survivors, they will not be able to carry on the cultural traditions of civilization, which require abundant, cheap energy. It is unlikely, however, that the species itself can long persist without the energy whose exploitation is so much a part of its modus vivendi. [emphasis added]

The human species may be seen as having evolved in the service of entropy, and it cannot be expected to outlast the dense accumulations of energy that have helped define its niche. Human beings like to believe they are in control of their destiny, but when the history of life on Earth is seen in perspective, the evolution of Homo sapiens is merely a transient episode that acts to redress the planet's energy balance.

A more recent paper coming to a perhaps more optimistic interpretation of the impending collapse is

"Production Theory and Peak Oil: Collapse or Sustainability?" by John Gowdy<sup>9</sup> (2006).

Just as the massive injection of energy brought forth a frenzy of production and an ideology to support extravagant consumption, it seems likely that an opposite reaction will happen as per capita energy use declines. .... and total energy use falls. Other social and belief systems will eventually evolve in the context of the new limits on human exploitation of the planet. This has happened many times before in human history ([here he references] Diamond, 2005).

One of Diamond's main points in *Collapse* is that communities who failed (e.g. the Norse in Greenland, Easter Island) had clung to dysfunctional cultural patterns rather than change them adaptively. Gowdy addresses the question of existing institutions in the industrialized world and predicts a similar refusal to adapt, writ large:

Given the power of the fossil fuel cabal, the multinational corporations with their ideology of expansion and exploitation, their military power, and control of the media, it is likely that the West will follow the path of Easter Island. Those in power will do anything they can to keep the energy flowing including using all the remaining coal, massively subsidizing nuclear power and ethanol, and undertaking more military adventures to secure the remaining stocks of petroleum.

Gowdy's conclusion is only comfort for those who can take a very long view, and look past what must

happen between now and then:

The modern drift toward religious fanaticism, new age mysticism, and post modern dismissal of reason and logic is not encouraging. But if there is a ray of optimism regarding the future human prospect, it is that the current system of social and environmental exploitation, based on a frenzy of growth of production and consumption, will come to an end.

Finally, I would like to conclude this review of the literature with a recent challenge to anthropologists to address the energy crisis directly. Thomas Love, Professor of Anthropology and Environmental Studies at Linfield College, Oregon, made the case in a guest editorial, "Anthropology and the fossil fuel era" in the April issue of *Anthropology Today* (Love 2008) Love contends that "we are in the last days of cheap oil" and, following Price, asserts that "[h]umanity is already in ecological overshoot." Rather than lament the species' long term prospects, Love clearly feels that anthropology can contribute useful information, and that such information will be used, in ameliorating the effects of the energy crisis:

We need cross-cultural perspectives and commitment to ethnography to understand how such large-scale forces play out on the ground in the everyday lives of ordinary people. Detailed grasp of the non-fossil-fuelled ways of living of pre- and non-industrial peoples will convey to interested publics and policy-makers alternative ways of organizing human society. We can help understand how humans might manage to power down without precipitating collapse.

Love call on us to focus our research on the current crisis:

The complexity of the interwoven problems sketched above calls for a holistic examination to which anthropologists can contribute by documenting and understanding how people make sense of these issues and frame their responses. How does this crisis resemble previous ones? What metaphors and symbols do people use to make sense of it all? To what discursive structures will people turn to make sense of the potential unravelling of their worlds? How has the fossil-fuelled growth system already affected the lives of people in producing areas?

## **Shortcomings of anthropology**

I agree wholeheartedly with the concluding sentence of Thomas Love's editorial: "Let us examine the real crises upon us." But why is it even necessary for someone to say that in 2008? Why don't we have at least half the energy of most of the departments of anthropology in the world debating the validity of these warnings and what courses of action to pursue? Why are there literally only a handful of articles by

anthropologists that address these problems?

An answer that has been suggested by many is that the idea of industrial collapse or a population die off is too dire to think about in a concerted way. While there may be some truth to that (as an American I cannot deny the existence of widespread denial), I think there are more specific aspects of current anthropology that explain the discipline's near silence.

### **Relevance**

The question of relevance has been a chronic concern for anthropology. Here is just one example from hundreds: "Do anthropologists have anything useful or relevant to say about human rights? Six Perspectives" (Anthropology News, April 2006). And the current AAA web page carries an announcement for a "Pulse of the Planet" Op-Ed series (<http://www.aaanet.org/meetings/Pulse-of-the-Planet.cfm>).

In a new media collaboration, anthropologists from the AAA 2008 annual meeting double-session, "Pulse of the Planet-Human Rights, Environment and Social Justice in the 21st Century" have teamed up with CounterPunch, the online news magazine, to launch an op-ed column that aims to reshape public debates on some of the biggest issues facing the U.S. and the world today.

From global climate change and the human rights disasters that accompany violent storms and droughts to the increasing assaults on biodiversity and cultural diversity in the name of economic, energy, food, and national "security," the "Pulse of the Planet" op-ed series takes a probing look at the ulcerating conditions that may be driving up the planetary pulse and asks the question: Where are we going, and at what price? Collectively, these anthropologists urge our leaders to rethink the meaning of security and the role of government in achieving a sustainable and healthy way of life.

Most of the time we are thus urging leaders to listen to us. But sometimes we are embarrassed by the fact that some parts of the power structure, in particular the military and intelligence community find anthropology's local knowledge and intensive field methods very relevant. How many of us, upon returning from foreign fieldwork, have received that phone call or inquiry from some innocuous government agency wanting to "exchange information"?

A few anthropologists (the leading figure is discussed below) are now "embedded" in Afghanistan and Iraq, and there has been much heated discussion of this situation. Many fear their local knowledge will be co-opted and misused. The American Anthropological Association appointed a commission on the "Engagement of Anthropology with the US Security and Intelligence Communities." The final report

sought a rather lonely apolitical middle ground:

We have found no single model of “engagement,” so issuing a blanket condemnation or affirmation of anthropologists working in national security makes little sense. Moreover, this very formulation - engagement vs. non-engagement - is itself problematic because it suggests that there is only one choice to be made in a monolithic military, intelligence, and security environment. (24)

The Commission recognizes both opportunities and risks to those anthropologists choosing to engage with the work of the military, security and intelligence arenas. We do not recommend non-engagement, but instead emphasize differences in kinds of engagement and accompanying ethical considerations. We advise careful analysis of specific roles, activities, and institutional contexts of engagement in order to ascertain ethical consequences.... (Peacock et al. 2007:4).

At least one anthropology department, California State University – Long Beach, has formally debated the ethical implications of anthropologists' engagement with military and intelligence agencies (Loewe and Kelly 2008).

While the anthropological understanding of self and other, culture and society, seem profound on the individual level to us (and we hope, to our students), the utility of this empirical knowledge on a social level has probably been much less than claimed. I think the bitter truth in the characterization of earlier anthropology as 'the handmaiden of colonialism' is that the role was that of a servant, not a full participant. Anthropology may or may not have been a particularly handy handmaiden, but it was not a significant policymaker. While we have been worrying about **relevance**, with its implications of understanding and policy making, the real policy makers considered (and still consider) the **utility** of anthropological information in carrying out their plans. This, of course, rankles.

### **Reflective and Reflexive Knowledge**

From its emergence, ethnography has prided itself in, and promoted itself to the general public on the basis of, the reflective value of the knowledge we have gathered about human communities around the world; what the study of 'others' tells us about 'ourselves.'

The quality of our information about the variety of human societies and the conceptual foundations of the discipline coevolved with a methodology based on highly localized, in-depth long-term research. The central concept that developed was culture as socially learned, largely symbolically transmitted systems of action, meaning and value. Social anthropology is thus ultimately rooted, not in objective knowledge, but the appreciation of shared understandings, not just in external reality but in collusions about the

meaning of aspects of external reality. . Within the discipline the result is very understandably a concern with the reflexive nature of our knowledge, an appreciation that what we have learned is inseparable from how we have learned it, and that our knowledge, in its formation and dissemination, is not independent from those who are its immediate subjects. But there is a difference between self-awareness and self-absorption. Feeling, somehow, that we possess an exquisitely sensitive understanding of cultural meanings and their variations (why else did I suffer through fieldwork?) we doubt if non-anthropologists really 'get it.' The simple answer, I think, is that they don't worry about it.

### **Reflexivity as a Sidetrack**

Twenty years ago, Philip Salzman wrote a brief, rather cutting, reflection on the state of anthropological theory in North America, entitled "Fads and Fashions in Anthropology" for the *AAA Anthropology Newsletter* (Salzman 1988). When he completed his Ph.D. at the University of Chicago in 1968:

current wisdom had it that a new dawn had broken in anthropology, shedding light through processual analysis upon the generation and change of social forms, phenomena that had been hidden in the darkness of synchronic, norm-ridden, structural-functionalism (herein considered prehistory). Firth, Barth, Swartz, Turner and Tuden were the inspirations, and network analysis, extended case study analysis, decision theory and transactional analysis were the means.

As it happened, Phil and I overlapped in graduate school, and I find great resonance in what he says, including his self-deprecating comment about our naïve dismissal of structural-functionalism.<sup>10</sup> To Salzman's surprise a few years later "the processualism of the earlier false dawn was characterized as the bad old anthropology, worth nothing and destined for the trash heap of false doctrines" (32)

Reviewing the twenty years since his Ph.D. Salzman finds that North American anthropology has followed a five year pattern of dismissing the past and adopting new intellectual fashions (largely, I might add from the fringes of the discipline, or beyond). Thus processual anthropology was eclipsed by structuralism (a turn that mystified me when I returned from two and a half years in the field in Kenya). Structuralism, then gave way to Marxist anthropology (having never been a structuralist, I did not feel that I could move downstream to 'post-structuralism'). Then "symbolic/semiotic/interpretive anthropology" held sway "taking 'text' to be any social/cultural phenomenon."

Salzman's article stops short of the post-modern wave, deconstructionism, and the rest. I presume my

readers are familiar enough with the last couple decades. The bitter truth, I have long lamented, is that far from the development of cumulative knowledge or an appreciation of foundational works within the discipline, anthropology is, indeed, ruled by fashion.

What we seem to have in anthropology, is not so much progress, or even much in the way of discipline, but rather a cyclical kaleidoscope of the intellectual imagination, lively certainly, insightful occasionally, well-meaning sometimes. But can we have any confidence that it is adding up to much of anything or going anywhere particularly noteworthy? (Salzman 1988:33)

### Confirmation From the Dark Side

Another voice decrying anthropology's turn to reflexivity comes from an unexpected quarter. Montgomery McFate<sup>11</sup>, the leading anthropological advisor to the Defense Department, traces the history of anthropology's associations with, and animosity toward, imperial power<sup>12</sup> in "Anthropology and Counterinsurgency: The Strange Story of their Curious Relationship" (McFate 2005). McFate sketches the history of anthropology, particularly American anthropology in the 20th century, and laments "[t]he curious and conspicuous lack of anthropology in the national-security arena" and the "grave consequences" that have resulted.

Anthropology actually evolved as an intellectual tool to consolidate imperial power at the margins of empire.

In Britain the development and growth of anthropology was deeply connected to colonial administration. (28)

Once called "the handmaiden of colonialism," anthropology has had a long, fruitful relationship with various elements of national power, which ended suddenly following the Vietnam War. The strange story of anthropology's birth as a warfighting discipline, and **its sudden plunge into the abyss of postmodernism**, is intertwined with the U.S. failure in Vietnam..(24) [emphasis added]

Part of the reason for this turn away from reality to seek a new intellectual fashion, as McFate sees it (and I suppose Salzman would agree on this particular point) is that "anthropology is primarily an academic discipline." But the real reason that anthropology, despite the value of our local knowledge gained through long-term in-depth fieldwork in "foreign cultures and societies ... is a marginal contributor to U.S. national-security policy" (28) is the profession's reaction to the use of anthropologists in Viet Nam by the RAND Corporation, Project Camelot<sup>13</sup> and the revelation that anthropologists were involved in U.S. counterinsurgency programs in Thailand.

The retreat to the Ivory Tower is also a product of the deep isolationist tendencies within the discipline. Following the Vietnam War, it was fashionable among anthropologists to reject the discipline's historic ties to colonialism. Anthropologists began to reinvent their discipline, as demonstrated by Kathleen Gough's 1968 article, *Anthropology: Child of Imperialism*, followed by Dell Hymes' 1972 anthology, *Reinventing Anthropology*, and culminating in editor Talal Asad's *Anthropology and the Colonial Encounter*. (17)

Rather than face the real issues and contribute to them (as we should in McFate's opinion), Anthropology sought other muses:

... anthropologists refused to "collaborate" with the powerful, instead vying to represent the interests of indigenous peoples engaged in neocolonial struggles....Thus began a systematic interrogation of the contemporary state of the discipline as well as of the colonial circumstances from which it emerged.(18)

The turn toward postmodernism within anthropology exacerbated the tendency toward self-flagellation, with the central goal being "the deconstruction of the centralized, logocentric master narratives of European culture." This movement away from descriptive ethnography has produced some of the worst writing imaginable. (28)

DOD [the U.S. Department of Defense] yearns for cultural knowledge, but anthropologists en masse, bound by their own ethical code and **sunk in a mire of postmodernism**, are unlikely to contribute much of value to reshaping national security policy or practice.(37) [emphasis added]

### Paradigm Envy

The general conclusion I draw from such critiques as Salzman's and McFate's is that, in Thomas Kuhn's terms, anthropology is in a "preparadigmatic state" that is we lack a generally agreed upon framework, a method of generating hypotheses, and definitions of what constitutes evidence, on which to start a predictive theory. We are still doing alchemy, not chemistry, or as Gregory Bateson characterized the behavioral sciences in 1971:

About fifty years of work in which thousands of clever men have had their share have, in fact, produced a rich crop of several hundred heuristic concepts, but, alas, scarcely a single principle worthy of a place in the list of fundamentals. (Bateson 1972)

### Anthropology's Mistaken Image of Itself

Just what role should anthropologists take? David Shankland, reflecting on the 2000 conference of the Association of Social Anthropologists in Britain, expressed his discomfort with the

a dominant interpretation of the anthropologists' role [that] emerged at the conference. This vision seemed to regard the anthropologist as a broker or facilitator between the forces of development and 'other ways' of looking at the world. (2000:21)

This is certainly a standard and long-standing self-image, one that is the justification for a large proportion of non-academic jobs held by anthropologists (and an echo of undergraduate teaching). But Shankland reminds us that

... the assumption of 'cultural brokering' comes with a great deal of baggage ... It assumes that there are a multiplicity of communities in the world, and that to all intents and purposes these communities are mutually unintelligible. This is the justification of the anthropologist's task as a 'translator' ... The consequence, however, is that the discipline tends to become the juxtaposition of a series of micro-studies...

The vast proportion of development is about universals in the human condition. In order to study this, we surely need to take into account the comparative dimension much more scrupulously and explicitly.

Shankland's call for a refocus on universals may seem desperately out-of-date to many, but the emphasis on the comparative approach, which we tout in our introductory texts, needs to be rethought, and not abandoned to those who do so quantitatively (they, at least, have explicitly wrestled with the fundamental issues of comparison, whatever you think of their results). Here, again, we hear the need to more fully actualize the realization that anthropology has long come to, that despite the location of classic case studies (the island of Kiriwina and Tikopia, the isolation of the Nuer in the Southern Sudan), and despite the premises of structural-functionalism, societies are not cleanly bounded units. Ironically Malinowski's first book was about inter-ethnic trade and its effects, not just intra-island social dynamics, and to read *The Nuer* and assume they dealt only with the culturally very similar Dinka misses the *raison d'être* of the book. There is a vast body of fascinating studies on ethnic boundaries and inter-ethnic cooperation and conflict that we need not forget.

Shankland deflates the idea that an anthropological understanding of cultural differences is necessary for "development" in its material form:

the astonishing thing about development is how successful it has been in becoming the usual state of human-kind. There is no major society, culture, or group that remains aloof from the globalization of affluence, technology and communications that has emanated from what is sometimes known as the 'first world'. This is a simple fact. It has, also whether like it or not, taken place without the help of anthropology (21-22).

The example he chooses is probably the sort of thing that Montgomery McFate would want us to study (and report on):

As an instant but perhaps crude example, on the surface at least, it would seem that instruments of coercion (that is, weapons and armaments and the like) move more successfully across cultures than instruments of health or education: certainly it would appear quite unnecessary for anthropologists to be present as 'culture brokers' in arms sales. This is a slight instance, perhaps, but it does serve to illustrate just how much we miss if we concentrate only on the local, and only on those areas where development appears to have stumbled, rather than where it is a triumphant, albeit perhaps ultimately a tragic, success ( 22).

With the death toll from the latest decades of ecological theft of the Congo estimated in the millions, the international arms trade is, indeed, serious and should not be underestimated. But if one takes a broad definition of the "instruments of health", then perhaps a far greater "triumphant, albeit perhaps ultimately tragic" aspect of rampant cross-cultural technology transfer has been death control. Certainly no one who was involved in the spread of new food crops from the new world (potatoes, corn), or the spread of soap, machine-made cotton clothing, basic biomedical care, etc, was intending to cause the explosion of world population which is now one of the fundamental drivers of the global crisis and the clearest manifestation of our overshoot. While there is much good work to be done by anthropologists translating concepts in order to facilitate the delivery of health care across cultural and linguistic boundaries, in my experience people in the 'developing world' do not need to be convinced of the power of biomedicine. The hospitals and clinics I am familiar with in Africa are overwhelmed with patients (and desperately short of personnel and supplies) because of the demographic "success" of the species. And to bring it all back home, Zabel reminds us

The majority of schools, hospitals and health clinics in Africa are built with first world capital, and with first world energy. Money does not build the schools and clinics; machines and tools, designed and built in the developed world, produced using fossil fuels, do.

A tractor, for example, is made of metal, rubber and plastic. Plastic is a direct by-product of oil. Metal is mined and forged using immense quantities of heat and energy. The designer of the tractor uses a computer, office space, lights and heating, drives to and from work in a gasoline-burning car. The tractor is built in highly sophisticated factory that in turn must be designed and built with metals and plastics, and required large amounts of energy. The chain of events always has another link, but the ultimate first cause is always inputs of energy (Zabel 2000).

## What can anthropology contribute?

Of course it is ludicrous for me to suggest what my fellow anthropologists can or should do. But here goes:

Let's start by dismissing the obvious temptation to study the peak oil movement and 'power down' groups as revitalization movements. It's been done, and by objectifying their social processes we will miss the content of their concerns and the effects of their actions.

Let's not try to do "social science" as if it were a version of natural science; it isn't and the natural scientists know it. If we are cultural brokers, then we need to assist the natural scientists in their efforts to inform the general public. To do so, we need to forget disciplinary boundaries and educate ourselves and our students as best we can in a number of fields beyond anthropology.

While we are at it, let's stop worrying about the reflexive nature of our knowledge. No one else worries about it, and it misleads us into involuted particularisms.

As discussed above, we need to return to a wider, comparative scale of analysis, and focus on the interrelationships between regions, classes, and other social divisions, particularly the role of **energy** and other resources in those exchanges. With apologies to Evans-Pritchard: *Cherchez le hydrocarbure*.

Further, I think we need not to lose heart from visions, such as Price's, that question the survivability of the entire species. His analysis, while chillingly convincing in the overall argument, does not take into account the most striking aspect of the human species, **the diversity of our adaptations**. Cultural ecology is not simply biological ecology. Unlike his examples of species which have overshot their resource base (yeast in grape juice and reindeer introduced on an island), we are not homogeneous. However and whenever the world population experiences the 'down slope' it will be experienced diversely. The age of oil has been brief, within living memory in many parts of the world, while the traditional focus of ethnography has been on hard-won, deeply rooted ideas of how to live (many years ago I gave an undergraduate seminar on "Ecological Awareness in Non-Western Societies" and managed to get most of the class to understand what I was driving at by the end of the semester). In taking a wider comparative view, we need to resist the seduction of unitary global models from the world of numbers.

Finally, let's remember that not all humans, as yet, are dependent on fossil fuel for their subsistence. The relatively remote populations in Africa or New Guinea might well survive even a cataclysmic collapse of urban civilization, industrial production, and agrobusiness. Perhaps all those obscure anthropological

field trips will pay off. While James Lovelock suggests, in *The Revenge of Gaia* (2006), that we start stockpiling the arctic, the last green place in our future, with how-to-do-it books on acid free paper, we anthropologists have been collecting indigenous information in the form of Australian songlines describing the details of their environments,, the chant the Trobriand wood carver makes as he forms the prow board of an deep water canoe, and thousands of pieces of African social wisdom. And as we all know, these are ways to be human that are as valuable as those that will necessarily disappear.

### References Cited

- Anissimov, Michael  
n.d. What is the Haber-Bosch Process? <http://www.wisegeek.com/what-is-the-haber-bosch-process.htm>
- Appenzeller, Tim  
2004 The End of Cheap Oil. National Geographic. June 2004.  
<http://ngm.nationalgeographic.com/ngm/0406/feature5/>
- Arnett, Perry  
2007 Peak Oil, Total Collapse, And The Road To The Olduvai: A Commentary.  
<http://www.oilcrash.com/articles/arnett05.htm>
- Bateson, Gregory  
1972 Steps to an ecology of mind; collected essays in anthropology, psychiatry, evolution, and epistemology. San Francisco, Chandler Pub. Co.
- Campbell, Colin J. and Jean H. Laherrère  
1998 The End of Cheap Oil Scientific American, March 1998 <http://dieoff.com/page140.pdf>
- Catton, William R., Jr.  
1982 Overshoot: The Ecological Basis Of Revolutionary Change Urbana : University Of Illinois Press.
- Coghlan, Andy  
2003 'Too little' oil for global warming. NewScientist 05 October 2003.
- Daniels, Robert E.  
1980 Pastoral values among vulnerable peasants: can the Kipsigis of Kenya keep the home fires burning? In: Predicting Sociocultural Change, S. Abbott and J. van Willigen, eds. Southern Anthropological Society Proceedings No. 13. Athens, Georgia: University of Georgia Press. pp. 57-75. <http://www.unc.edu/~rdaniels/papers/homefires/HomeFires.pdf>
- Diamond, Jared  
2005 Collapse: How Societies Choose to Fail or Succeed. New York: Viking.
- Duncan, Richard C.  
1996 The Olduvai Theory: Sliding Towards A Post-Industrial Stone Age  
<http://dieoff.com/page125.htm>

- 2005-2006 The Olduvai Theory: Energy, Population, And Industrial Civilization  
<http://www.thesocialcontract.com/pdf/sixteen-two/xvi-2-93.pdf>
- Dyer, Gwynne  
2006 "How Long Can the World Feed Itself? Energy Bulletin."  
<http://www.energybulletin.net/node/21736>
- Environmental Defense  
2008 Canada's Tar Sands: The Most Destructive Project on Earth.  
[http://www.environmentaldefence.ca/reports/pdf/tarsands\\_the report.pdf](http://www.environmentaldefence.ca/reports/pdf/tarsands_the report.pdf)
- EV World  
2005 Boone Pickens Warns of Petroleum Production Peak May 04, 2005 PALM SPRINGS, CA. <http://www.peakoil.net/boonpickens.html>
- Flannery, Tim  
2005 Learning From The Past To Change Our Future Science 307( 7) January  
<http://www.sciencemag.org.libproxy.lib.unc.edu/cgi/reprint/307/5706/45.pdf>
- Gowdy, John  
2006 Production Theory And Peak Oil: Collapse Or Sustainability? International Journal Of Transdisciplinary Research 1(1):23-33.  
[http://www.ijtr.org/vol%201%20no1/3.%20gowdy\\_ijtr\\_article\\_vol1\\_no1.pdf](http://www.ijtr.org/vol%201%20no1/3.%20gowdy_ijtr_article_vol1_no1.pdf)
- Heinberg, Richard  
2005 The Party's Over: Oil, War And The Fate Of Industrial Societies. Gabriola Island, BC, New Society Publishers. 2nd Ed.
- Hornborg, Alf and Carole L. Crumley, eds.  
2006 The World System and the Earth System: Global Socioenvironmental Change and Sustainability Since the Neolithic. Left Coast Press
- Johnson, George  
2007 A Question Of Blame: When Societies Fall. New York Times December 25, 2007
- Kolbert, Elizabeth  
2005 The Climate of Man - III. The New Yorker, May 9, 2005.  
2006 Field Notes from a Catastrophe: Man, Nature and Climate Change. Bloomsbury.  
2007 Unconventional Crude. The New Yorker, November 12, 2007
- Lean, Geoffrey  
2008 Oil: A Global Crisis The Independent 25 May 2008  
<http://www.independent.co.uk/environment/green-living/oil-a-global-crisis-834023.html>
- Love, Thomas  
2008 Anthropology and the fossil fuel era. Anthropology Today 24(2):3-4.
- Lovelock, James  
1994 What Dangers Lie Ahead. <http://dieoff.org/page48.htm>  
2006 The Revenge Of Gaia: Why The Earth Is Fighting Back - And How We Can Still Save Humanity. Penguin Books Ltd.
- MacIntyre, Ferren

- 2005 The Maltho-Marxian Hypothesis 'Economics Controls Population': A Test And A Projection. *Population Review* 44(2):24-49
- McFate, Montgomery  
2005 Anthropology and Counterinsurgency: The Strange Story of their Curious Relationship. *Military Review*. March-April 2005.  
<http://usacac.army.mil/CAC/milreview/download/English/MarApr05/mcfate.pdf>
- McKillop, Andrew  
2003 The End Of The World As We Know It. <http://dieoff.org/page251.htm>
- Peacock, James L., et al.  
2007 Final Report, AAA Commission on the Engagement of Anthropology with the US Security and Intelligence Communities.  
[http://www.aaanet.org/cs\\_upload/pdf/4092\\_1.pdf](http://www.aaanet.org/cs_upload/pdf/4092_1.pdf)
- Pfeiffer, Dale Allen  
2004 Eating Fossil Fuels. From The Wilderness Publications.  
[http://www.fromthewilderness.com/free/ww3/100303\\_eating\\_oil.html](http://www.fromthewilderness.com/free/ww3/100303_eating_oil.html)
- Polycarpou, Lakis  
2005 Reflections On Urban Life In A Lower Energy Age. November 16, 2005  
[http://lakis.typepad.com/city\\_of\\_the\\_future/2005/11/defining\\_progre.html](http://lakis.typepad.com/city_of_the_future/2005/11/defining_progre.html)
- Price, David  
1995 Energy and Human Evolution. *Population and Environment: A Journal of Interdisciplinary Studies*, 16 (4): 301-318. <http://dieoff.org/page137.htm>
- Salzman, Philip  
1988 Fads and Fashions in Anthropology, *Anthropology Newsletter* 29 (5):30, 32-33.
- Shankland, David  
2000 Knowledge and Universals: A Note Prompted by the ASA 200 Conference on Indigenous Knowledge and Development. *Anthropology Today* 16 (3) 21-22.
- Stannard, Matthew B.  
2007 Montgomery McFate's Mission: Can one anthropologist possibly steer the course in Iraq? *San Francisco Chronicle*, April 29, 2007 <http://www.sfgate.com/cgi-bin/article.cgi?f=/c/a/2007/04/29/CMGHQP19VD1.DTL>
- Von Foerster, Heinz, Patricia M. Mora and Lawrence W. Amiot  
1960 Doomsday: Friday, 13 November, A.D. 2026. *Science, New Series*, 132(3436): 1291-1295. <http://www.jstor.org.libproxy.lib.unc.edu/stable/1707219?seq=1>
- Weinberger, Sharon  
2008 Do Pentagon Studs Make You Want to Bite Your Fist? *Wired Blog Network*, June 17, 2008 <http://blog.wired.com/defense/2008/06/do-pentagon-stu.html>
- White, Leslie A.  
1949 *The Science of Culture*. New York: Farrar and Straus.
- Zabel, Graham  
2000 Population and Energy. <http://dieoff.org/page199.htm>

---

<sup>1</sup> I find the term 'peak oil' rather unfortunate; it would have made much more sense to use the less melodious term 'oil peak.'

<sup>2</sup> Many of the subsequent papers on peak oil use charts to show past and projected oil consumption as a symmetrical bell curve, following the analysis used in 1956 by M. King Hubbert, the intellectual apical ancestor and first prophet of the movement. The visual image of going over the top of the hill, the peak, is compelling, but there is no reason to assume that the down slope will be a smooth "managed collapse" or "soft landing" rather than an overshoot and collapse.

<sup>3</sup> See, for example "Unconventional Crude" (Kolbert 2007) and "Canada's Tar Sands: The Most Destructive Project on Earth" (Environmental Defense 2008).

<sup>4</sup> For what it is worth, my own attempt to theorize the process appeared in an obscure publication a generation ago (Daniels 1980).

<sup>5</sup> "The Climate of Man" was first serialized in The New Yorker magazine (Kolbert 2005) and then published as a book, Field Notes from a Catastrophe (Kolbert 2006),

<sup>6</sup> I am still looking for the right term for this sort of monism that considers societies as bounded units that act as individuals (it is all too easy to go from The Nuer to "The Nuer believe that ..."). The temptation to think in these shorthand terms is strong: Elizabeth Kolbert concludes her three part essay on "The Climate of Man" with the observation "It may seem impossible to imagine that a technologically advanced society could choose, in essence, to destroy itself, but that is what we are now in the process of doing" (2005:52) If it were really analytically useful, and not misleading, to say that "societies choose" then there would be no need for any social science beyond psychology.

<sup>7</sup> David Price b. 1940, d. 1999, Ph.D. in anthropology from the University of Chicago, anthropologist, linguist and research associate with Cornell's Population & Development Program. Not to be confused with David H. Price b 1960, Ph.D. in anthropology from the

---

University of Florida, currently Chair of the Department of Cultural Anthropology & Sociology at St. Martin's College, Lacey, Washington, and author of *Threatening Anthropology: McCarthyism and the FBI's Surveillance of Activist Anthropologists* (2004)

<sup>8</sup> This odd image has led me to the realization that Watt's self-governing steam engine, which was the start of the industrial revolution and thus the Anthropocene, and also (as the first practical use of negative feedback) the start of the Information Age, was also the beginning of the end of commercial slavery. As for the inequalities of distribution of the 'petro-slaves', Price severely understates the case: quite aside from a house full of 'labor-saving' devices and industrially produced stuff, I have 175 horses waiting in my driveway (and they are thirsty).

<sup>9</sup> Although Gowdy is the Rittenhouse Teaching Professor of Humanities and Social Science Department of Economics Rensselaer Polytechnic Institute, he holds a B.A. in Anthropology from American University and clearly takes an anthropological perspective on economic theory, starting with an excellent critique of standard economic theory, following Sahlins and others.

<sup>10</sup> Years later a colleague, who had been through graduate school 15 years after me, complained bitterly about my choice of *Sorcerers of Dobu*, a pre-functionalist ethnographic classic, as required reading for a graduate core course we were team teaching. Having read the book as an undergraduate, quickly and with little understanding, I found rereading it slowly to be a series of almost guilty delights, like secretly eating a whole box of chocolates. Such are the differences in mindsets that we must deal with in anthropology.

<sup>11</sup> McFate holds a Ph.D. in Anthropology from Yale and a J.D. from Harvard. For more than you ever wanted to know about McFate, see "Montgomery McFate's Mission: Can one anthropologist possibly steer the course in Iraq?" (Stannard 2007) and "Do Pentagon Studs Make You Want to Bite Your Fist?" (Weinberger 2008).

<sup>12</sup> While McFate speaks of "imperial power" in the colonial era (2005:28), she describes the current situation with terms such as "the national security arena", "successful counterinsurgency" and "defeat[ing] the insurgency in Iraq" (2005:37).

---

13 "According to a letter from the Office of the Director of the Special Operations Research Office, Project Camelot was 'a study whose objective [was] to determine the feasibility of developing a general social systems model which would make it possible to predict and influence politically significant aspects of social change in the developing nations of the world.' The project's objectives were 'to devise procedures for assessing the potential for internal war within national societies; to identify with increased degrees of confidence those actions which a government might take to relieve conditions which are assessed as giving rise to a potential for internal war; [and] to assess the feasibility of prescribing the characteristics of a system for obtaining and using the essential information needed for doing the above two things' .... Chile was to be the first case study for Project Camelot" (McFate 2005:35-36).