

## Some Notes from Belshaz'zar's Feast

King Belshaz'zar made a great feast for a thousand of his lords, and drank wine in front of the thousand . . . They drank wine, and praised the gods of gold and silver, bronze, iron, wood, and stone.

Immediately the fingers of a man's hand appeared and wrote on the plaster of the wall of the king's palace, opposite the lampstand; and the king saw the hand as it wrote. Then the king's color changed, and his thoughts alarmed him; his limbs gave way and his knees knocked together. The king cried aloud to bring in the enchanters . . . and the astrologers . . . Then all the king's wise men came in, but they could not read the writing or make known to the king the interpretation.

Then Daniel answered before the king ". . . you have praised the gods of silver and gold, of bronze, iron, wood, and stone, which do not see or hear or know, but the God in whose hand is your breath, and whose are all your ways, you have not honored."

"Then from his presence the hand was sent, and this writing was inscribed. And this is the writing that was inscribed: MENE, MENE, TEKEL, and PARSIN. This is the interpretation of the matter: MENE, God has numbered the days of your kingdom and brought it to an end; TEKEL, you have been weighed in the balances and found wanting; PERES, your kingdom is divided and given to the Medes and Persians." — DANIEL 5: 1, 4, 5 - 6, 8, 17, 23 - 28

Throughout his writings Father Tom Berry, whose seminal theological reflections have given us new ways to think about God, has reminded us of two central themes: First, as human beings we are part of natural history, a larger evolutionary story, a geological story—indeed a cosmic story. Secondly, in that larger narrative we now find ourselves at a critical juncture—a key turning point in that entire narrative, the outcome of which will be determined in part by the beliefs we affirm through our daily behavior. Given his geological training and orientation Berry phrases this turning point in geological terms. We live, Berry says, in what can be described as the "terminal Cenozoic era." Before us we face the choice between the "technozoic" or the "ecozoic." In short, as humans we are an evolutionary outcome of natural processes, but our theology determines the character of

our engagement with these processes, and it will thereby condition the outcome of the story itself.

One of the reasons some people find Berry's insights so disturbing is that it is uncomfortable to be reminded that we live simultaneously in multiple nested realities. When people point this out to us in everyday experience and we come to realize that they are right, we frequently feel we have been stupid, naive, duped, or misguided. The net result is that we feel sheepish about our previously bold assertions and a little humiliated by the whole experience.

The insights of geologists force this recognition upon our culture as a whole because geologists have a different sense of time than those of us preoccupied with day-to-day events. Their professional perspective spans millions or billions of years. The evolution and extinction of entire species form but a small part of their purview. They are aware that the earth's history is nested within a larger narrative of cosmic evolution. Moreover, they are fully aware that within the earth's story are nested a whole series of more limited narratives involving the evolution of multicellular life, the development of life forms with central nervous systems, the development and demise of dinosaurs, the appearance of mammals, and eventually the evolution of human forms from the late Pleistocene onward. While much of this process has involved gradual, cumulative patterns of change, geologists are aware that there have been numerous abrupt discontinuities in the earth's history, marked by massive extinctions of numerous species.

In the face of the accelerating rate of ecological decline in our own experience, these large-scale scientific insights about the origins and cosmic context of human activity can prove to be disconcerting. Looking at the larger picture, for example, biologists reassure us that the invertebrates and microbial species are likely to survive our current epoch relatively unscathed. Yet, if you are anything like me, this message provides small comfort when one begins to realize that the larger point is that *life as we know it* is undergoing massive extinction. More precisely, geologists, evolutionary biologists, and paleontologists are now reporting evidence in their professional journals that we are currently in the midst of a global "extinction event" which equals or exceeds in scale those catastrophic episodes in the geological record that marked the extinction of the dinosaurs and numerous other species.

At least two important differences exist between this extinction episode and those previously documented in the geological record. First, in previous events of similar magnitude the question of agency and the sequence of species extinctions have remained largely a mystery. In the current extinc-

tion event, however, we now know with a high degree of certainty what the effective agent of system-wide collapse is, and we have a fairly good notion of the specific dynamics and sequence of species extinctions. Second, previous events of this nature seem to have involved extraterrestrial phenomena, like episodic meteor collisions. Alternatively, the long-term flux of incoming solar radiation that results from the harmonic convergence the earth's asymmetrical path around the sun and the "wobble" on its axis also drive system-wide changes generating periodic advances and retreats of continental ice sheets in high latitudes. These too cause system-wide transformations and have precipitated extinction events in the past.

In contrast to these extraterrestrial or celestial phenomena that served as the forcing functions behind previous mass extinctions, the current extinction event results from an internally generated dynamic. The relatively stable exchanges between various biotic communities have shifted in a short period of time into an unstable phase of runaway, exponential growth for a small sub-set of the species mix—namely, human beings, their biological symbionts, and their associates.

The seemingly unrestrained growth of these populations has unleashed a pattern of accentuated parasitism and predation of these growing populations upon a selected number of proximate species that were deemed by them to be useful. This accentuated parasitism led to the creation of anthropogenic biological environments which, in turn, drove hundreds of other species directly into extinction—sometimes within periods of only a few centuries or decades. More significantly, however, this pattern of unrestrained growth and subsequent collapse has repeated itself again and again, engendering in each instance a syndrome of generalized habitat destruction and over time precipitating the cumulative extinction of thousands of species as one civilization after another has devastated its environment and dispersed its remnant populations far afield in search of new resources of plunder and squander.

For a variety of reasons—some of them apparently related to their religious beliefs—humans remain fundamentally ignorant of or collectively indifferent toward the fate of their fellow species, insisting instead that measurements of human welfare should be the only criteria for governing human behavior. Apparently, the "right to life" is effectively defined as the "right to HUMAN life." In system terms this anthropocentric belief in human exceptionalism has characterized past civilizations and remains no less dominant today. Scientists and techno-boomers alike promise us that technological miracles will save us from our rapidly deteriorating ecological circumstance and that no substantial sacrifice will be required of

us. After all, "thanks to science" we have miracle crops, miracle drugs and miracle whip! What more can we hope for?

Well, the fact is we need a great deal more to survive as a society and as a species. In reality, we are just beginning to recognize the true immensity of the problem.

Consider, for example, the truly dramatic dimensions of our recent growth as a species. By recent here, I mean in evolutionary terms and in terms of the relatively long time scales required to engineer stable social adjustment to changing circumstance. In evolutionary terms, it took since the dawn of humanity to roughly 1945 for the human species to reach the total figure of about 2 billion people. That figure has more than doubled—indeed, nearly tripled—just since 1945. During the rest of our lifetime experts say that figure could well reach a total of 9 billion people if left to grow at projected rates.

Consider, as well, the overall ecological "footprint" of human expansion over the millennia, particularly as we have come to congregate in cities. Depending upon how one wishes to segment us from our biological relatives, humans have been around for roughly a million years or so. It is only in the last 1.2% of that history—roughly the last 12,000 years—that we have come to depend upon agriculture, and only the last 6,000 years or so that we have begun to transform our settlement patterns into urban concentrations. We are still in the midst of what might be called the "urban transition" in the human evolutionary experiment. It is not clear that the transition will be successfully achieved or that the human bio-evolutionary experiment will endure very much longer in evolutionary terms. Nevertheless, there is enough evidence available about the urban transition in human history to begin generating some general statements.

The new evidence of environmental archaeologists is especially sobering in this context. The history of cities has been associated with the history of repeated ecological disaster. The growth of cities has engendered rapid regional deforestation, the depletion of groundwater aquifers, accelerated soil erosion, plant genetic simplification, periodic epizootics among pest species and animal domesticates, large-scale human malnutrition, and the development and spread of epidemic disease. In many cases the individual elements of ecological decline have been linked in positive feedback processes, which reinforced one another and led to precipitous collapse of particular cities.

To overcome the limitations imposed by these patterns of localized ecological collapse, cities have historically sought to dominate rural regions in their immediate vicinity and extend links of trade and alliance to simi-

larly constituted cities further afield. As arable land and strategic water supplies became more scarce and more highly valued, violent conflict between individual city-states emerged, leading in short succession to the development of leagues of allied cities and subsequently to the formation of kingdoms and empires with organized armies for conquest and permanent defense.

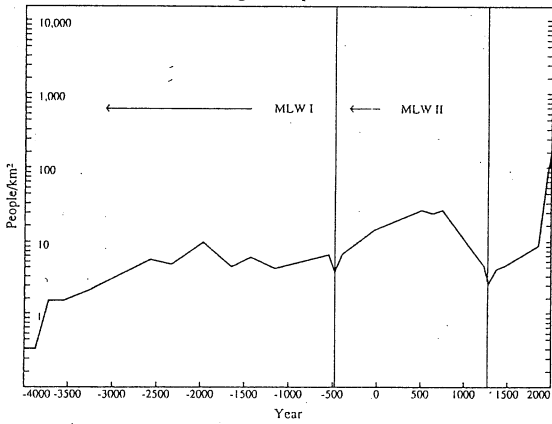
Even with the limitations of preindustrial technology, the results of these conflicts could be devastating indeed to local or regional ecosystems, particularly when victorious groups sought to destroy the ecological viability of defeated groups with such policies as scorched-earth punishment and the sowing of salt over the arable land in defeated territory. The ecological impact of warfare and the preparation for warfare has been devastating in all ages. C. S. Lewis's observation has proved sadly correct that "the so called struggle of man against nature is really a struggle of man against man with nature as an instrument."

Demographic historians have added further details to the picture of repeated ecological disaster painted by environmental archaeologists. Human populations have demonstrated again and again the long-term regional tendency to expand and collapse. These undulating patterns are referred to by demographers as the "millennial long waves" (MLW), and they appear to be manifest in both the old world and the new. Consider the regional data in figures 1 and 2.

Two patterns are discernible across all cases despite the considerable differences between each region. First, the human population is both highly unstable and highly resilient. That is to say, there is considerable variation in the amplitude of the population waves and therefore human populations cannot be considered stable in regional terms. Moreover, the population is resilient in the sense that it "bounces" back from demographic catastrophe with an even stronger surge in reproductive performance. The second phenomena of the MLW on the regional level is that the frequency between their occurrences is successively shortened. Thus, populations seem to be collapsing and rebounding at higher and higher levels more and more frequently as we approach the present.

When we move beyond the regional evidence to a global scale, another important pattern emerges. On this level of analysis it seems that human populations seem to expand in spurts, corresponding to the quantities of energy they are able to harness with their available technology. This may emerge as a new way of stating the Malthusian theory of population limit. Thomas Malthus focused on the relation of populations to their food supply and pointed out what while populations tend to grow exponentially

### Tigris-Euphrates



### Egypt

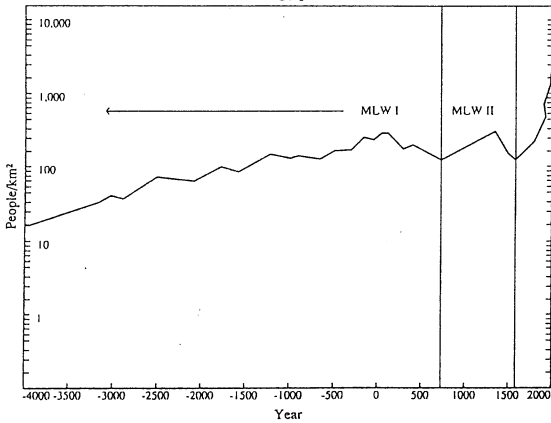


Fig. 1. Tigris-Euphrates lowlands and Egyptian Nile Valley population densities.

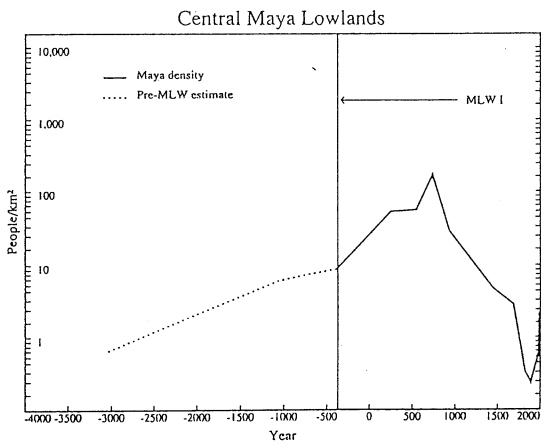
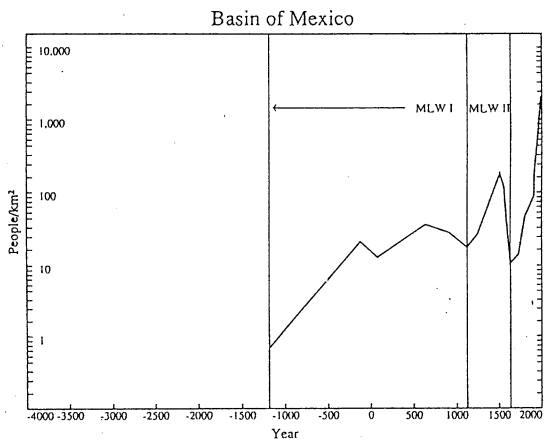


Fig. 2. Basin of Mexico and central Maya lowlands population densities.

the food supply tends to grow only arithmetically. As a result, populations are ultimately limited, according to Malthus, as their reproductive performance outstrips the food supply needed to keep them alive, and there are periodic widespread famines.

Since Malthus we have come to realize that "food" itself is really "energy"—a form of captured solar energy (i.e., kilocalories) that humans can assimilate to maintain themselves and do work. If we build upon this observation to reformulate Malthus's observation in terms of energy instead of food itself, we are probably close to a broad-level truth about the human species. Simply put, the Malthusian law can be restated in these terms: human populations tend to expand to the levels supported by the supplies of energy that they can mobilize with available technology.

The industrial era in world history marks an unprecedented period in human evolution history from this perspective. Never before have global populations experienced such high rates of growth for such sustained duration, reaching a worldwide climax with an average annual population increase of 2% during the decade from 1965 to 1975. The demographic historian Paul Demeny has described this extraordinary period quite succinctly:

It took countless millennia to reach a global 1700 population of somewhat under 700 million. The next 150 years, a tiny fraction of humankind's total history, roughly matched this performance. By 1950 global human numbers doubled again to surpass 2.5 billion. The average annual rate of population growth was 0.34% in the eighteenth century; it climbed to 0.54% in the nineteenth century, and to 0.84% in the first half of the twentieth. In absolute terms, the first five decades following 1700 added 90 million to global numbers. Between 1900 and 1950, notwithstanding two world wars, an influenza pandemic, and a protracted global economic crisis, the net addition to population size amounted to nearly ten times that much.

As Dr. Demeny summarized the situation:

Clearly, viewed in an evolutionary perspective, the 250 years between 1700 and 1950 have witnessed extraordinary success of the human species in terms of expanding numbers, *a success that invokes the image of swarming* [emphasis added].

For demographic historians, then, it would seem that humans in the modern era are behaving much like a plague of locusts.

What is even more striking is that the pattern of distribution of this burgeoning population is one of rapid relocation into massive urban agglomerations. In 1700 less than 10% of the total world population of 700 million lived in cities. By 1950 a full 30% of the global population lived in cities. In North America the urban proportion of the population had reached 64% by that time, while in Europe it was 56%.



In 1700 only 5 cities in the world had populations of 500,000 people. By the turn of this century that number had risen to 43 cities in the world with populations of 500,000 or more. Of those, only 16 cities had populations over 1,000,000. By now, however—that is to say, in a span of under 100 years—there are nearly 400 cities that exceed 1,000,000. Moreover, the trend is accelerating, particularly in the Asian countries of the Pacific Rim. A recent report of the United Nations has indicated that “by the year 2000, the population of Dhaka is expected to double to 12.2 million; Bombay, Calcutta, Delhi, Jakarta, Karachi, Manila and Shanghai would each gain four million people; and Bangkok, Bangalore and Beijing [will each gain] three million.” The numbers of mega-cities—those in excess of 10,000,000 people—will reach 21 by the turn of the century, with 13 of these in the Asia-Pacific region. By the year 2020 the report estimates that 1.5 billion more people will be living in Asian cities than live there today. This is the equivalent of creating a brand-new city of 140,000 people every day for the next thirty years.

The localized and global ecological costs of this seemingly unstoppable rush toward urban life are difficult even to imagine. While some techno-boomers and inveterate optimists suggest that newly planned cities might prove to be more energy and resource efficient, this kind of rapid urbanization has historically been accompanied by accelerated resource depletion, increased pollution and a decline of public health and welfare. In this large-scale process the “good life” for some has generally been purchased by the increased immiseration of many more and the nearly complete foreclosure on possibilities for a sustainable and stable livelihood of future generations.

Nowhere is this more apparent than in the massive transformation of the global food system in the last half century. The rapid growth of the world's population and its even more rapid urbanization since the end of World War II have meant that more and more food has had to be produced on a shrinking base of potentially arable land. While new land is still being brought into agricultural production, in the last decade or so the amount of arable land *per capita* has begun to decline on a global basis. This is a very ominous trend. Moreover, it seems to be an irreversible one.

So far the primary reason why this has not led in the short run to massive famine is that new, petro-intensive forms of agriculture have come to dominate global food production. Crops have been bred or engineered to respond to fertilizer inputs; crop losses and damage have been reduced by petrochemical pesticides and fungicides; competing weeds have been reduced by herbicides; and aridity problems have been overcome by using

gas-driven pumps to extract fossil water from underground aquifers. In short, the increases in food production needed to support recent population growth and accelerated urbanization have been made possible through a more intensive use of non-renewable resources (topsoil, groundwater, and petroleum) in a farming system that generates ever more lethal side effects (pesticide residue poisoning, groundwater contamination by fertilizers, salinization of irrigated surfaces, agro-chemical "accidents" like Bhopal).

All of this has been accomplished on a rapidly declining crop genetic base, as indigenous varieties around the world are being displaced by varieties responsive to petro-chemical inputs. Never before in the history of humanity have so many people come to depend on so few plant species grown in such restricted regions and subsidized by the net destruction of such quantities of non-renewables. In just fifty years humanity has transformed global agriculture from a net source of captured solar energy into a net energy sink. We now face a situation as a species where our primary production system (agriculture) has become irretrievably dependent on a non-renewable (petroleum). At a time when atmospheric scientists tell us that erratic weather patterns and perhaps a changing climate regime may characterize the decades ahead, it seems likely that a stable global food supply will be harder to secure in the future than it has been in the past half century.

So much, then, for the environment and the transformations of it that we have wrought as a species. What about the "good" life? The obvious comment to be made in this context is that in our culture a desire to pursue "the good life" aggravates our momentous ecological crisis. Consumption patterns of the "Northern" countries and the "Western" countries are obscene by global standards, yet there is no apparent end in sight to the gluttony. Indeed, as citizens of the United States we have the right to "the pursuit of happiness" written into our constitution, and in culture the prevailing message is that happiness itself is inextricably linked to an ever greater consumption of material goods and energy.

In some cases, of course, individuals, households, and even entire communities have made great strides in efforts to reduce, reuse, and recycle. Nevertheless, the underlying economic logic of an economy based on unlimited growth remains largely unchallenged in public discourse. Not a single national political leader has been elected on a plank of steady-state economics. Indeed, I know of no candidate that would attempt to seek public office on a no-growth or a slow-growth platform.

Even if an exceptional candidate could be found to articulate this kind of appeal, such an effort would be laughed off the public stage. The reasons for this have as much to do with arguments about social justice as they do with shameless consumerism. After all, growth has become the only means that late capitalism has devised to cope with the increasingly evident problem of inequity. The promise of more tomorrow is at least partially successful in silencing those who object to the current distribution of goods and privileges. Political and social liberals are particularly easy to divert with this appeal. In general, they are well enough off in material terms not to question the fundamental system from which they benefit. When they go further and express concern for the welfare of those who have been left out of the system, they seem to be easily persuaded by the promise that more tomorrow will eventually do everyone good. After all, the system worked for them, why shouldn't it be thought to work for all others? In short, there is no significant debate between conservatives and liberals on the question of growth. Squabbles over relative rates or targeted sectors may occur, but they serve only to underscore the broadly shared consensus that growth itself is an unquestioned virtue and the only legitimate goal of all public policy.

This is why both national political leaders and Wall Street alike are driven with religious zeal to preach one or another variant of the gospel of growth. Ironically, those most victimized and marginalized by this organized system of accumulation are frequently persuaded by the proselytizers of growth that generalized expansion is their best available strategy for self-improvement. Thus it is that the poor become both the strongest justification of and supporters of the pro-growth evangelists.

Without any exaggeration, therefore, it is fair to say that in practical terms the most pervasive form of this religiously held belief in our day is that of *growthism* founded upon a doctrine of *techno-scientific salvation*. For the most part, the recent surge of "environmentalism" has not challenged this form of public religion. The fundamental belief is still that the earth and all it contains is constituted simultaneously as a treasure trove of raw materials and a repository for our wastes. When the absolute supply of resources is diminished, scientific discoveries and technical inventions, so it is believed, will save us from the constraints of absolute scarcity as new and more efficient production processes and waste treatment technologies are developed. Recycling itself is touted as a "growth industry" and a promising investment prospect on Wall Street. The sacred creed remains both pure and simple: *more is better; growth is good*. Anyone who expresses

misgivings about this credo is soon taught through public rebuke and personal ridicule that it is blasphemy to question this golden rule of growthism.

We are confronted, therefore, in every respect with a growing problem. Given the pervasive character of the public faith in growth, it is impossible for the dominant forms of public religion to offer us a way out of our environmental crisis. From the vantage point of a systems ecologist or a "geologist," like Tom Berry, growth is the problem, not the solution. Yet the principle of continuous growth has achieved godlike status in the pantheon of modern religious icons:

When the high priests of public religion are asked, Can we survive?, their answer is emphatic: *Of course we can!* All we need is adequate investment incentives, a sense of determination, good ol' American inventiveness, and political will to make the "tough" decisions. One can hear the strains of "Onward Christian Soldiers" playing in the background as if we were "marching into war." The trouble with this is that the problems we are up against will no longer be solved simply with a new dose of messianic triumphalism.

In a narrow sense and in the short run we may succeed in "saving ourselves" from immediate manifestations of disaster, but it is essentially beside the point. The far more compelling question on a large scale and in the long run is, *will we*—as a species—survive? Not just theoretically, *can* we, but in a very practical sense, *will* we? This can only be answered by looking carefully at what we mean by "we" and what we mean by "survive." Growth evangelists and techno-scientific salvationists—like other fundamentalists—are regrettably silent and often sadly ignorant of the social dimensions of the changes required to answer this larger set of questions. Indeed, I would argue they are helpless in the face of such questions. Techno-boomers can do no more than offer us more of what got us into our sad circumstance in the first place.

It follows, therefore, that the only real chance we have of surviving as a species is through a radical theological revolution—that is, a thoroughgoing reexamination of those cultural beliefs we hold to most religiously. From the point of view of ecological sustainability, we have been weighed in the balance and found wanting. At current rates of growth and consumption our days have been numbered and the culture of growthism will be brought to an end whether we like it or not.

In some quarters this theological reformation is already underway. One can point to the most recent of a whole host of writers, from James Nash to Sally McFague or Jay McDaniel to Michael Fox, by way of supporting the

point that church people and academic theologians are beginning to re-think concepts like "dominion," "stewardship," and "covenant" in terms that are more consistent with our contemporary ecological circumstance.

Further religious reflection on the relation between religious beliefs and the environment has also led to a reexamination of selected texts in the Judeo-Christian canon. Professor Theodore Hiebert at Harvard, for example, is currently in the process of retranslating the Yawist sources in the Hebrew Bible and will shortly publish an entirely new scholarly interpretation of the ecological setting of these early Hebrew scriptures.

Much of this effort is intended explicitly or implicitly to refute the assertion that the Judeo-Christian value system is somehow uniquely responsible for humankind's exploitative relationship with nature. Professor Lynn White leveled a stinging indictment at the dominant religious traditions of the West in just these terms in a 1968 article in *Science* magazine, and many of the writings from religious circles over the last twenty-five years have been largely defensive efforts protesting "no, it isn't so."

Other works from avowedly secular sources have served to let the Judeo-Christian tradition off the hook by pointing out that other ancient cultures were also devastating to their environments and seemed to similarly privilege human agency in the cosmic order of things. Thus, works like Donald Hughes's, *The Ecology of Ancient Civilizations* and a whole variety of subsequent ecological histories that it inspired have succeeded in spreading the blame fairly uniformly across all cultural traditions. Perhaps only the native American tradition has been spared a full-length ecological critique, but even here the burden of the evidence now being collected indicates that pre-Columbian civilizations did not represent the kind of ecological nirvana that some strains of contemporary environmentalism would have us believe.

These religious and cultural critiques are well intentioned and no doubt quite important in their own terms, but we need now to ask more fundamental questions. O.K., let's assume as given the two central points of all this recent scholarship: first, the Judeo-Christian tradition is more complex than one might think at first glance, allowing for, or indeed perhaps even encouraging, a far more ecologically sustainable approach to the environment than heretofore recognized. Secondly, virtually all other cultural traditions have in practice been equally exploitative of their resources. What of value, then, have we learned from all this? Have we learned to live more lightly on the earth? Have we effectively challenged the public theology of growthism in our day?

I think not. I would argue that what we need now is far more profound

than proof-texting and retranslating our received traditions or launching yet other campaigns of cultural chauvinism in favor of one or another variant of the human achievement. What we need instead is a thoroughgoing reformation of our public theology of growthism.

We are all guests at Belshaz'zar's feast. On a global scale the handwriting is already on the wall for the culture of consumerism and its theology of growthism. Moreover, the meaning of this handwriting has been made plain. We are faced, as Tom Berry has suggested, with a choice between the "ecozoic" or the "technozoic." The question remains: will we behave like the king's "wise men"—the "enchanters" and the "astrologers"—and remain profoundly confused, or will we have the prophetic insight and the internal fortitude to challenge the public theology of our day?

The fundamental problem is that because of our patterns of growth our ecological impact as a species far outstrips our capacity to construct responsible communities of concern. We are just now beginning to monitor the radiological impact of the Chernobyl incident upon populations in nations far removed from the former Soviet Union. Less obviously but more insidiously, it is now possible to detect PCBs in the body fat of penguins in Antarctica. That is to say, the growing urban agglomerations around the world are already registering their ecological "footprint" in the snows of the last uninhibited continent. The mounting tragedy is that just as our collective behavior is registering a wider and wider ecological impact, our sense of effective community under stress is sharply shrinking.

A sense of moral compulsion cannot be imposed effectively from above, no matter how loudly it is preached from on high. Moral and ethical imperatives emerge spontaneously from a shared sense of community—a feeling that what "I" do or what "we" do matters to others within a community of which I wish to be a part. Our past record as a species is not encouraging in this regard. Historically, those considered to be *outside* the moral community have simply been ignored or—worse yet—legitimately persecuted in the name of the ethical principles of those *within* the boundaries of the recognized moral community. Clearly, our notions of what is *outside* and what is *inside* must change if we are to survive much longer as a human species in a wider biological community.

Environmental ethics, then, can be seen as an aspect of the more fundamental problem of community. In the time we have remaining can we fashion and believe in a collective sense of belonging to a global life process that transcends our home, our family, our class, our nation, and indeed our species? If our contemporary reactions to Somalia, Liberia, East Timor,

Haiti, Zaire, and numerous other "hot spots" around the world are any indication of what is to come, the signs are not entirely encouraging. Left to our default behavioral modes our effective sense of community seems to shrink in time of crises.

The discouraging fact is that throughout history religious identities and concepts of God have all too frequently been implicated in this pattern of inward-looking retreat from responsibility. In historical terms humans have not shown an ability to create and control stable ecological communities for very long, and many societies have accelerated their decline through an unreflective affirmation of outmoded religious beliefs. Unless exceptional leaders—religious and otherwise—can articulate a new vision of community and a compelling theory of human limit, we are likely to accelerate our demise by winning in the competitive struggle for dominance over all other species.

This, then, is what is meant by the need for a new theology. A theology is in essence a theory of human limit. Each culture and each age has had its own functional theology as the experience of human limit has varied through space and time. In our place and our time a forceful theory of human limit needs yet to be proclaimed with all the clarity of the prophetic pronouncements of old. The essential elements of such a theology are apparent: we live in a world we did not create and cannot control. This awareness inspires in whole people a feeling of humility, an enduring sense of wonder, and an abiding reverence for life itself. These sensibilities generate a profound sense of gratitude and motivate and orient our pursuit of truth, our struggles for justice, and our efforts to realize our potential as human beings. The outcome of our enterprise is *not* entirely in our hands, but the little that we do know about the world and our place within it allows us, nevertheless, to affirm meaning in the face of mystery.

This is where, in a modest way, I would say my own outlook departs most markedly from that of Tom Berry. The new narrative of cosmic "creation theology" that Tom Berry has inspired goes a long way to resituate the human species and its evolution in its proper natural history context; but there is a subtle danger in recounting this story, and it is simply this: we humans inevitably assign ourselves too large a role in the cosmic trajectory, as if our species were the goal or crowning achievement of evolution itself and perhaps of all cosmic process. In some formulations this perspective assigns to man a co-creative role with God for the unfolding of the future history of creation. This cannot be proved, but as with all fundamental beliefs it can be affirmed, declared, and proclaimed. In an

effort to emphasize the important character of our responsibility as a species, it is tempting to emphasize the extraordinary power of the human species.

My own hunch is that such affirmations are a bit too grandiose. For my taste, the structure of this new creation narrative smacks too much of the old creation narrative wherein man was said to be made in the "image of God" and placed in a garden to tend and keep it and have dominion over it. In short, in some of its formulations the new narrative of creation theology can serve to engender and support an anthropocentrism which I feel is no longer credible and is potentially quite dangerous in sustaining the illusion that the future of the natural world is in *our* hands.

It is of course important to understand the beneficial ways in which we can interact with the environment, but it is equally important to understand the limits of human achievement in this regard and specifically what it is that we are not capable of doing. Announcing that we are co-creators with God in some process of cosmic self-realization is a bit like the rooster asserting that by crowing he makes the sun rise. If we are to be honest with ourselves and acknowledge what we have come to learn from science, we will need to start recognizing some real and palpable limits to the human prospect.

We are unlikely, for example, to be able to know enough to predict or perhaps even survive global climate change, so we had better build into our societies buffers and margins of collective safety that are much larger than any we have developed to date. We are unlikely to be able to win the co-evolutionary race with new and resurgent diseases, so we had better anticipate broad new public health strategies which are not predicated upon the "conquest" of disease.

We cannot regulate the earth's water cycle at will, particularly in the face of a potentially changing climate, so we should expect that limits on the availability and distribution of fresh water will pose limits on human expansion and industrial activity. Despite all our bio-technological wizardry in altering or modifying genetic material, humans have not "created" a single species. Instead we have only manipulated existing species for our perceived short-term benefit. Quite apart from the moral questions involved in the genetic manipulation of other species for human ends, it is unlikely that we will ever develop a predictive ecology that will be sophisticated enough to foresee the ultimate impact of introducing genetically altered species into the earth's complex ecosystem. We are not currently able to accomplish this kind of prediction for the thousands of new syn-



thetic chemicals we introduce to the environment each year, and predicting the synergisms between these chemicals and life forms will probably prove to be beyond our reach.

Meanwhile, valuable genetic material in indigenous crop species and medicinal plants is being driven into extinction at rates that far exceed our capacity to catalogue the tragedy, let alone introduce new cultigens to take their place. We are unlikely to increase markedly the photosynthetic efficiency of the green leaf, so we had better begin to acknowledge that there are practical limits to the expansion of human numbers imposed by some photosynthetic process. Already it is calculated that roughly 40% of terrestrial photosynthesis is devoured by human beings, their animals or their industries. Even if we achieve the impossible and capture 100% of terrestrial photosynthate, the world's population cannot continue to double at its current rate without running into catastrophes of biblical proportions.

A sober assessment of our collective human limits suggests that even at our best we are perhaps not so co-creative as some new creation narratives would have us believe. This is not because we have merely been sloppy or asleep at the wheel. The problem goes deeper than this.

Human limits in the ecosystem stem from the basic fact that human societies and ecosystems operate most of the time on fundamentally different principles. As the noted ecologist Eugene Odum has phrased it, humans maximize for net production while ecosystems maximize for gross production. Ever since the advent of agriculture human societies have driven inexorably toward the logic of *more is better; growth is good*. Natural ecosystems operate on the contrasting principle: *enough is enough; balance is best*. The tension between these two principles is the ecological root of all evil. Humankind's repeated insistence upon trying to manipulate the larger ecosystem on the basis of its species-specific logic is the ecological equivalent of "original sin." The "sin" is original in the sense that it is built into our condition as humans. We can do no other. This aspect of the human condition cannot be overcome by pious good intentions to "do better" or earnest attempts to improve the efficiency of our maximizing strategies. It is these strategies themselves that are the source of the problem.

The only salvation from this condition is to step outside the strategy itself—to decenter ourselves and recenter our awareness around the logic of the larger system of which we are a part. This effort to recognize ourselves as part of a larger logic has been at the heart of both religious experience and scientific inquiry. Indeed, as William James pointed out nearly a century ago, the two endeavors are intimately linked:

. . . all the magnificent achievements of mathematical and physical science—our doctrines of evolution, of uniformity of law, and the rest—proceed from our indomitable desire to cast the world into a more rational shape in our minds than the crude order of our experience. . . . The principle of causality, for example—what is it but a postulate, an empty name covering simply a demand that the sequence of events shall some day manifest a deeper kind of belonging of one thing with another than the mere arbitrary juxtaposition which now phenomenally appears? It is as much an altar to an unknown god as the one that Saint Paul found at Athens. All our scientific and philosophic ideals are altars to unknown gods.

If the story of Belshaz'zar's feast tells us anything, however, it is surely that we should be wary of altars to unknown gods. It is as if we have been warned that in our quest for what James calls "a deeper kind of belonging" we should accept no substitutes.

Most disturbing of all, however, is the implication that even if we finally get our theology right—as Belshaz'zar appears to have done—this fact is not redemptive. There is no opportunity for confession, contrition, and absolution—no assurance of forgiveness nor possibility of salvation. Consider the story's outcome. In spite of the fact Belshaz'zar has come to understand the writing on the wall and appears to be genuinely chastised, duly fearful, and appropriately grateful to Daniel, he is not spared. The narrative records that after the feast he died that very night.

For those of us who have been steeped in Christo-centric theology, this is disconcerting. We would prefer a more comforting closure. The message is that even if we get around to reading the handwriting on the wall and earnestly desire to change our ways, it is probably too late for those of us who are already at Belshaz'zar's feast. If the story can be repeated often enough and widely enough, perhaps others will benefit, but we will not be spared.

It is perhaps precisely for this reason that notes on Belshaz'zar's feast may well speak more directly to our culture's condition than the comfortable stories of oneness with nature or the new narratives of belonging to a cosmic creation. The message from researchers like Dennis Meadows and others, including demographers, agronomists, atmospheric scientists, and even some economists, is quite simply that the ecosystem will not support or tolerate a global repetition of the development patterns characteristic of the West and the North. In particular if the countries in Asia seek to replicate historical patterns of Western resource use and energy exploitation and, in effect, praise as we have "the gods of gold and silver, bronze, iron, wood, and stone," the fate of our species as a whole does not look hopeful.

It is possible that Asian countries will learn from our sad environmental

record just as we may have learned something from Belshaz'zar, but any realistic assessment of the probability of this occurring is rather small. The reason once again is simple: it is hard to read the handwriting on the wall when your back is up against it. Many Asian countries are experiencing the world's fastest rates of economic growth, and many more are promising ever greater growth as the only means of accommodating burgeoning populations. Already, as a recent international Academy of Sciences conference has demonstrated, Asian cities are becoming the largest concentrations of human immiseration on the planet. Public health officials are concerned about newly resistant forms of cholera emerging from Bangladesh, and it seems evident that many of Asia's forthcoming mega-cities will have to survive on radically reduced amounts of fresh water per capita by the turn of the century. Without massive and concerted efforts now to avert these circumstances it is difficult to see how epidemics and civil disorder on a large scale can be avoided.

Where is God in all of this? What attributes would such a concept possess? Are we prepared to believe in a God that seems poised to wreak such destruction, confusion and such massive suffering on the already poor and destitute? Whether or not academic theologians get their narratives reworked and their texts re-translated in time, I suspect that the effective theologies of the modern world are in for a radical and brutal transformation in the decades ahead. While from a comfortable distance we are on the verge of announcing that God's handiwork as manifest in the natural environment is a glorious harmonious whole, the mass of the world's humanity is about to endure a very different experience of human limit and divine presence. Metaphors of wanton destruction, vindictive revenge, and suffering innocence will probably be more consistent with their experience, and the concept of redemption may not take the form of worldly survival.

In short, while considering "God, the environment, and the good life" in the comfortable surrounding of New England, I suspect we should all be wary of overly domesticating the concept of God and re-creating him/her too much in our image. It is understandable that we all yearn for a new sense of belonging, a new sense of reconciliation with an alienated nature, but in our earnest and devout efforts to achieve this reconciliation we should be prepared to understand as well that for the mass of humanity other, more terrible concepts of God are likely to predominate for the foreseeable future. Unless we understand this and can learn to speak to this condition, we will have learned nothing from the notes we have taken at Belshaz'zar's feast.