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Food and Other Things

When the Chancellor's Office called to tell me I'd been selected to give a speech this evening, I was somewhat overpowered by the opportunity it presented. Here in this room I would have a captive audience for the space of perhaps twenty minutes, during which I could preach myself asleep. I could present a great message, send all of us in this Class of 1976 out into the world with my words ringing in our ears. It was a nice idea. What that message would be I wasn't quite sure-"Power to the People!" seemed a little overworked, and "Don't Litter!" was a little trite. But I figured I could come up with something.

Fortunately, I went to see Chancellor Young before I began to write this great message, and though he in no way limited what I was allowed to say tonight, he did give me a single piece of advice which held me back. "Whatever you do," he said, "try to avoid giving out a great message. They never work. Last great message I heard was Gettysburg. Talk about something you want to talk about." That was all he said, and I had to admit that it made sense. The problem was, one of the things I wanted to talk about was great messages. The hankering for prophecy was still strong within me, so I finally decided that what I would say tonight would begin with a great message, get the thing over with, and end up with a tiny message. Before I'm done I'll say something about us and the world you're about to enter, something about the relation between petroleum and food, the ease with which plutonium can be stolen, a little bit about God and religion, and I'll end up with a child and an old man standing in a yard staring at the moon. If that can't fill twenty minutes, I don't know what can.

The great message is this: it seems to me that it is not at all impossible-I do not say likely, only not impossible-that we in our lifetimes will live to see the end of civilized life on this planet. That's a big statement-prophets are fond of such things-but I mean it quite seriously. I could point to a number of problem areas within our culture to support the argument. Overpopulation is an obvious one, and I could proceed from there to chemical pollution and the declining supplies of non-renewable resources, from there to the uneasy balance between the nuclear superpowers, ending up, perhaps, with the imminent collapse of California into the sea and the threat fluorine poses to our precious bodily fluids. That would make it all somewhat far out and a little more comfortable. So I won't start there. I'll begin instead with a single word: food.

It's an essential trait of all animals that they must eat. Man is no exception to the rule. The average American male must consume approximately 2700 calories of food per day in order to continue an active life. Any quantity much

below that will seriously impair his ability to function, will lead to malnutrition, and finally to undernourishment and starvation. Now, starvation is something we Americans do not bother to think much about-it's not a problem we have to deal with very much-and if we consider it at all it is usually when we talk about the population explosion in India, or watch the distended stomachs of Biafran children on the evening news. What I would like to examine tonight is the reason *why* we Americans do not think much about starvation. The reason is both enlightening and not a little frightening.

Americans have always prided themselves, particularly during this century, on being the most efficient producers of food in the world. On the whole, we yield more food from every arable acre than any other nation in the world. What is more, we manage to do it with an incredibly small proportion of the total population actually working the soil. The history of our agriculture has been one of constant reduction in the human inputs necessary to till the land. To cite just a few examples, it's safe to say that at the time of the American Revolution, two hundred years ago, well over half of the colonists in this country were directly engaged in the raising of crops. The two centuries which followed saw a steady decrease in that percentage so that, by 1916, only 13% of the population was still actively farming, and today that number has dropped nearly an order of magnitude to 1.9%. 1.9% of the population feeds us all.

How have we managed to arrange this? How is it that we need only two out of every hundred among us to bring bread and meat to our tables? The answer is simple: we have done it with technology. In 1910 there were some 1000 tractors operating on our farms. Today there are 4,800,000. In 1850, 53,000 tons of commercial fertilizer were consumed in the entire United States. Today we use 38 million tons each year. The results which these and other technological changes have produced in our economy are amazing. The sheer quantity of human labor which we have done away with, and the amount of leisure we have managed to enjoy, is difficult to imagine. At the time of the American Revolution, it took 373 man hours of labor to produce 100 bushels of wheat. Today it takes only eleven. In 1800 we needed 600 man hours-most of it in slave labor-to produce a bale of cotton. It now takes only thirty.

Stop and think what that means. The great majority of us in this room, I'm sure, have neither lived nor worked on a farm, What is more, it's quite unlikely that many of us-except those who are graduating from the College of Agriculture-are planning to spend the rest of our lives raising food. Our economy takes care of that for us. Indeed, most of us never stop to think of the vast and complicated chain of farming, storing, purchasing, processing, packaging, and transporting through which each morsel of food we eat must pass, but our lives depend on it. It would be impossible-absolutely impossible-for our population to feed itself without it. The great urban centers where most of us will work, what with our interests in engineering, education, business, and the arts--none of

those would survive. We depend on the chain which stretches back to the farms.

But we depend on something else as well. As we have reduced the human labor involved in agriculture, our consumption of physical energy has radically increased. In fact, it is possible to say that, viewed in terms of net energy consumption as opposed to per acre yield, U.S. agriculture is the most wasteful in the world. During the twentieth century, though our population and the amount of food we ate rose slowly, our energy input into the food system shot drastically upwards. Where in 1900 we contributed little over a calorie to the food system for each calorie we received out, we are now pumping in 8 or 9 calories for each one that we eventually eat. That number is still increasing.

Where do those calories come from? In the main, they come from oil. Like our automobiles, like the transportation systems which allow our cities to exist, like our heating, our lights, our music, our publications, like almost everything we do, our food comes from fossil fuel. I think we tend to forget that. We imagine that our rapidly dwindling petroleum supplies raise only the price of the gasoline we pump into our cars. Nothing could be further from the truth. Our cars are the least of the problem.

No one knows how soon the oil will run out. The Club of Rome says that known oil reserves will be gone in under twenty years. If you need to put that in terms of your own life, you'll be somewhere around forty when that happens. And even if known reserves are increased by a factor of five, the Club says, the oil will still run out in fifty years. You'd be seventy if that happened.

These are guesses. No one knows these things for sure. But we do know for a certainty that the supply of oil is finite, it *will* run out, within a century or two at the very most. At that time we will have to have an alternate supply of energy, or there will be death as this planet has never seen human death before. And not just in countries like India. Remember the long chain of farmer and processor I have been describing. Remember too the distance you are removed from the open fields. And remember how far your own dreams for your life run from the life of the farm. All of that rests at this instant in history on a thin stream of black gold.

What alternate sources do we have available to us? Well, to begin with there is coal, of which we have several hundred years' supply, but coal is dirty, hard to pump into cars and tractors, and will at any rate eventually run out too. Solar energy is by all accounts the most desirable alternate source, but it is also the farthest off. Using it for electrical power is not feasible at this time, and the amount of funding we're putting into solar research is so small in relation to nuclear research that its technology is not likely to improve in the near future.

So-What about nuclear energy? At this time, only fission reactions are controllable in a non-destructive way, and fission reactions are dirty. Fusion, which might possibly be a cleaner process, is at least twentyfive years off if it is possible at all. I'll say nothing here about the problem of storing nuclear wastes, or about the relation between those wastes and cancer. Those effects are reasonably far in the future (though quite deadly) and my initial statement was that civilized life might be ending within our lifetimes. So again-let me point to just one tiny portion of the problem. We currently propose to transfer the bulk of our energy production in this country to fast breeder reactors using radioactive plutonium as their core fuel. The technology of those reactors requires that the plutonium be removed from the core at periodic intervals, a process involving the transport and cleansing of hundreds of kilograms of plutonium. It would take only twenty kilograms of that plutonium to produce a fission bomb of the sort used on Hiroshima in 1945. Moreover, it takes only a level of education which we in this room can reasonably possess to design that bomb. Not long ago the AEC took two physics Ph.D.s who then had no previous high energy experience, put them in a well-stocked university library, and told them to design a bomb. In under three months they had done it, and the weapon they concocted would have been powerful enough to literally vaporize the stadium next door to us, and flatten much of the surrounding city. It seems to me that the proliferation of that kind of destructive power in a world where so few are so rich and so many are so poor makes it almost inevitable that some day it will be used, probably by a terrorist group like the IRA, the Palestine Liberation Organization, or by simple madmen. When it is, God help us. I'm not all sure that the political organization of the world is prepared to absorb that kind of shock. Attack will in all probability lead to retaliation and that to further retaliation and finally to a thin layer of radioactive dust encircling a blue and lifeless earth. And that will have been the contribution of a species which has often regarded itself as the pinnacle of evolution.

That's the great message I was talking about when I began this speech. It's a grim picture-if the Bomb doesn't get us, our dependence on oil will. But if all I had to tell you was this massively pessimistic prognosis for our culture, I'd have no right to be standing here talking to you at all. This convocation is a celebration of our achievement as honors students at the University of Wisconsin. As such we are among the most educated and most powerful human beings on the planet. I have spoken of the things I have precisely because we are who we are. We are the people who are inheriting this problem and this planet, and it is we who will destroy or save us. When and if these things happen, we will not be able to

blame them on the system or on the world we never made. Our own children will be blaming them on us.

I chose to emphasize the petroleum base of our food supply for a very specific reason. Quite simply, we all eat. And when we eat, whether we admit it

or not, we depend on and in a very real sense, we condone the system which brings our food to us. Eating is a moral act. It's been very popular in our lifetimes for us members of the younger generation to reject this corrupt and decadent society which raised us. We believed that we were somehow morally above that system because we recognized Vietnam for the obscenity it was, because we knew the cancer insecticides were starting in our flesh, because we saw the covert repressions of our economic and educational systems. And yet oddly enough, we kept on eating the food those systems provided us. We're a generation that is always moving on because we're so terribly afraid of settling down and becoming old. If we enter the system at all it is as peripheral workers without committing the full of our energies to the task at hand, for we desperately want to maintain our own moral innocence. Everyone else-them, the system, the establishment-is evil and misguided. Not us. We believe in love. We want everyone to be free. We want to stop repression. We want to be like children again.

And that, my friends, is bullshit. What's more, it's exactly the kind of thinking that will bring about the end of the planet. As soon as the members of a culture cease to take responsibility for that culture's acts, even as they continue to reap its benefits, the thing is doomed. We're a society of specialists. One of us makes food, one washes dishes, one builds bridges, one grows crops, and we lose all sense that we are engaged in a collective act called civilization. Because we specialize, we remove ourselves from the results of what we do. If we pull the lever to drop napalm from the jet we are flying, we make a point of not looking back to see the children in flames. If we believe that 7% unemployment is in some sense "normal," whatever "normal" means, we make a point of not driving too often in the slums, not looking too closely at the faces of the poor, not sleeping with the cockroaches. If we eat the steak that was raised in a feed-lot, we make a point of not knowing how many calories of grain were consumed to produce it, not imagining what those calories might have done elsewhere in the world. Yet no matter how much we hide it from ourselves, it's us. *We're* doing it. No one else. *We* are the system. The counter culture is just as culpable as everyone else. The marijuana we smoke came from Mexico in petroleum-based trucks or planes. The contraceptives which keep us from conceiving children as we enjoy the physical passion of love are the direct products of a highly technological-and unnatural-drug industry. We travel to the wilderness in highly inefficient and wasteful automobiles, whether we drive or hitch-hike. There's no escaping it. The system, "they," are us.

What's the point? Simply this: if we're to survive this mess-and I think we can-we have to reinvigorate our sense of collectivity. We must accept full responsibility for the acts of our culture, and become civilized men and women again. Drastic changes will take place in our lifetimes, and we have to be prepared to face those changes. We have to consider decreasing our standard of living enormously in order to spread the energy resources of the planet more evenly across the world. If we do not, our enemies will grow and, as they begin

to starve, they will remember what can be done with 20 kilograms of plutonium. We have to think about the possibilities of a steady-state economy. Our expansion cannot continue indefinitely, and we have as yet no viable economic model for a non-growing population. Capitalism is blind to the long-term results of its acts; socialism is wildly inefficient. Neither will do. Other solutions must be found.

There are no guarantees, and it will not be easy. The temptation to simply give up and enjoy the time we have left as the richest nation in the world will be enormous. We are gambling in a game whose stakes are higher than they have ever been before. If we can devise a way to feed the planet, preserve our ideals of human freedom, and somehow convince ourselves that we owe responsibility not to ourselves and America but to humanity and the entire earth, we will quite literally enter a new age of the world. If we cannot, there will be no new age at all.

The only question left is how. It's one I can't really answer. The solution will be collective, and no individual will show us the way single-handedly. But what I can do is point you a direction, and that is this: there is no escaping specialization. Our culture is far too complex to be comprehended in detail by each of its members. Some of us will leave this room to become engineers, some scientists, some farmers, some doctors, some teachers. There is nothing wrong with that, and there is no reason for us to fear that kind of engagement in the system. The danger lies elsewhere. We must not let ourselves conceive of our specialties as the entire world, just as we must not see ourselves as Americans before we remember we *are Homo sapiens*. *Each specialty and each culture* has its own viewpoint on the race, and its members frequently come to think that their viewpoint is the only one. They believe in it so much that they cease to explore the full range of thoughts and feelings which lie outside their discipline or their culture. At best they see their opponents as wrong-headed; at *worst, as evil incarnate*. *And that is the way the world will end*.

For, when we are finally honest about it, behind all those conflicting viewpoints, nothing is more important than the fact that all of us are human, that we like to laugh and make love, that we can be hurt and be angry, that we are alive and must someday die. That ought to be enough for us to recognize each other as friends. There is no turning back from the technological disaster that faces us. We must eat, and we have committed ourselves by our dreams and by our sheer numbers to the system which feeds us. Holding hands and telling each other we love one another will not feed the starving children. But a sense of collective responsibility will at least turn us to caring for those children, and that is where we have to start. If we can employ our talents and our learning toward technological and human solutions to the world we have created, we'll be headed in the right direction. That will only happen when we look in each other's eyes and realize the magnitude of our inter-connectedness.

I said that I would end this talk with a very tiny message, and this is it: simple touching. Opening oneself to one's absolute interconnectedness with the universe and the rest of humanity disallows selfishness. The instant one does that, it becomes infinitely harder to argue that America should enjoy some special privileged position in relation to the rest of the world by virtue of its inventiveness or technology. If we can think of no way to turn our cleverness towards saving the rest of the planet, we don't deserve to be saved ourselves. And I don't mean doling out excess grain to third world nations; I mean devising a system in which technology and western culture will enhance rather than destroy each nation's and each person's individuality, creativity, and health. The change will have to take place in our entire society, and more significantly still, in each of our minds. Making the effort to understand and touch gently each person you meet is at one and the same time not enough to save the world—we cannot avoid our technology—and enough to allow us the generosity we need to see each other through. Forgiving another person's face as you would forgive the face in the mirror—whether that other person is called Richard Nixon or Jesus Christ—is the beginning of the process. It's touching, and nothing else, that stops us from burning the flesh of children with napalm and allows us to go hungry so that they might eat. This is not mysticism. It is called sharing existence, and there is nothing more pragmatic than that.

It strikes me that the solution to our dilemma will be a religious one. By religion I do and do not mean Christianity, Judaism, Islam, or any of the others.

I mean the simple faith which allows men and women to see themselves as the elements of an enormous and beautiful process, a process which we can call consciousness, or the universe, or God. The One and the All of which the mystics speak is just a way of looking at the world, but it is a way which allows the individual to subsume his ego and his pride to the beauty of the universe and to the very necessary tasks at hand. Once the individual can reduce his own selfishness, then at last his nation can do the same, and that must happen to America. Fighting for our self-interests against the self-interests of others from this point on is madness, and will move

us ever closer to the final holocaust. There is only one world, and we are its people. When we know that, and when we know that God is within us and is created by the gentleness of our acts, we'll have made it through the crisis.

So let me end with a long quotation from Loren Eiseley. In it he speaks of God and civilization and the meaning of being human. Nothing I have said tonight is more important than those three beings.

The Russians, Eiseley writes, in their early penetration of space saw fit to observe irreverently that they had not seen heaven or glimpsed the face of God. As for the Americans, in our first effort we could only clamorously

exclaim, "Boy, what a ride!" During those words on a newscast I had opened a window on the night air. It was moonrise. In spite of the cynical Russian pronouncement, my small nephew had just told me solemnly that he had seen God out walking. Concerned as adults always are lest children see something better left unseen, I consulted his

mother. She thought a moment. Then a smile lighted her face. "I told him God made the sun and the stars," she explained. "Now he thinks the moon is God."

I went and reasoned gravely with him. The gist of my extemporized remarks came from the medieval seer. "Not up, or down," I cautioned, "nor walking in the sun, nor in the night-above all not that."

There was a moment of deep concentration. An uncertain childish voice reached up to me suddenly. "Then where did God get all the dirt?"

I, in my turn, grew quiet and considered.

"out it of a dark hat in a closet called Night," I parried. "We, too, come from there." . .

"Then how do we see Him?" the dubious little voice trailed up to me. "Where is he then?"

"He is better felt than seen," I repeated. "We do riot look up or down but in here." I touched the boy's heart lightly. "In here is what a great man called simply, "All". The rest is out there"-I gestured"and roundabout. It is not nearly so important."

The world was suddenly full of a vast silence. Then upon my ear came a sound of galloping, infinitely remote, as though a great coach passed, sustained upon the air. I touched the child's head gently. "We are in something called a civilization," I said, "a kind of wagon with horses. It is running over the black bridge of nothing. If it falls, we fall." . .

"I saw Him. I did so," said the child.

"We will go and look all about," I comforted, "for that is good to do. But mostly we will look inside, for that is where we ache and where we laugh and where at last we die. I think it is mostly there that He is very close."

That's the end of Eiseley's story, and it is time for me to bring this over-long speech to a close, But try to remember, when you look inside to the aching laughing place where Eiseley spoke of touching God, the person next to you is

doing the same thing too, as are the children in Biafra and everyone else in the world. Try letting yourself share it with them. Gentleness lies that way, and there is no better religion than that.

We are in something called a civilization. If it falls, we fall. Don't pretend to yourself that that isn't true. If we cannot discover the gentleness of which I am speaking, if we cannot bring about the horribly painful alterations in our society which must take place, if we cannot convert to alternate power sources before our oil is gone, most assuredly we will die. We are the generation which is about to destroy the planet, and it is essential that each of us know that. The chances against us are staggering, and we need each other desperately to stop the almost inevitable collapse. If you're an artist, don't pretend that you don't need the scientists and engineers who give you the leisure to practice your art. If you're a scientist, don't imagine that you can get around human feeling or psychology, for they will foil your every attempt at rational order if you ignore them. Beauty in a human culture, whether it is the beauty of a finely built machine, a well-fed child, or an untouched wilderness, is the product of beauty and energy and faith in order within the human mind. If all of us seek after these things-after humanity, after civilization, after the God that dwells within us and within the universe-if we can do that, we'll make it, and we'll enjoy the trip. I for one am glad we're in it together. Good luck to us all, and be happy.

