

Keynote Speech

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It is a great honor to be here to talk to PATRAM '95. This is an area of the nuclear energy industry about which I probably know the least, but as I am from Washington, I find that I have no inhibition and do it with some relish. These are better auspices than the last time I spoke at this hotel, which was for a nuclear waste meeting. The organizers succeeded in persuading the mayor of Las Vegas to speak. Her message was: "We don't like you; we don't like nuclear energy; we hate Yucca Mountain; we loathe the test site; what we need is more hotels like this one." Clearly, in her philosophy, hotels like this one advance the human agenda more so than disposing of nuclear waste. I wonder if we couldn't put some waste in hotels like this one and then entomb them, having achieved two great social goals in one stellar action.

I agree with what Mr. Rasin said this morning about "Let us not be so pushed by public policy that we become experts at producing elegant solutions to non-problems." In every aspect of the nuclear industry, because of the victimization that the industry has endured for nearly 30 years, that has become a standard situation. We are often in the position of putting one more angel on the pinhead, but because we are brilliant engineers, we sharpen the pinhead first to make it somewhat more challenging. And the use alas, is very slight.

The problem—and there is an enormous one—is the terrible public reception that all forms of nuclear have received. It has gone on for nearly 3 decades. It started in the 60s as a relatively low murmur, and it grew and grew, and the decibels increased, the disinformation mounted, the total dishonesty became accepted. And nuclear—this precious, important, vital technology, this very cutting-edge of man's possibilities of man's living eternally on the earth—received the worst battering that any technology ever has. I can think of nothing that has been so badly treated, has been the victim of such disinformation from a very small clique of people who have found it a fabulous way to advance themselves at the expense of many nations' well-being, at the expense, ultimately, of the environment. The shabby thing is that many who oppose nuclear power, nuclear energy, nuclear medicine, the radiation of food, are doing no service to the constituency they purport to serve. The ubiquitous and frequently dishonest Greenpeace, for example, ultimately admitted in another area that it was wrong in prohibiting the disposal of an oil rig at sea. But, so great was the political pressure they were able to bear, that Chancellor Kohl of Germany reversed himself, and other European politicians did likewise.

In nuclear, it is not just opposing this or that, it is a pathological hatred of a technology. It has no logic and it cannot be met with scientific argument because it is unscientific. As a consequence, all these arguments are asymmetrical. If you are shipping some plutonium oxide fuel, and you appear on television (alas, so many

of these things are decided in the fight for the public interest) and the journalist asks whether this is absolutely safe, the conscientious scientist or engineer says "Well, safety is a relative concept, but...." And you have lost, because your opponent, who says that it is the most dangerous thing we have ever done, is going to win. An asymmetrical argument against an emotional, irrational fear cannot be decided in argument.

I used to debate all sorts of people, from Ralph Nader to a 16-year-old boy who thought he could make a nuclear bomb in his basement (he couldn't, but I was foolish enough to debate him). There was this rather good-looking young man, and there was I, clearly the agent of the venal and foul nuclear industry with hair growing out of my hands, determined to despoil the world and put it in danger for whatever gain I was getting from it. On another occasion I debated Amery Lovins (he's the folk hero of the irrational) in front of the Jacques Cousteau Society in Seattle. It was shortly after he had done his genuinely seminal piece on "pause not taken" (using Robert Frost's poem) that appeared in *Foreign Affairs* magazine. It was in the early days of pocket calculators; he had one that he wore on his belt. In all disputes, he pulled it out with a flourish, punched some numbers into it, and read out the conclusion. I said, "Amery, what are you punching in, your home telephone number?" The public is often a little wiser, happily. We were discussing solar power. He said "I have just calculated that Japan can be 97 percent self-sufficient through solar." He overdid it by about 10 percent; not even that audience believed that the Japanese would turn their backs on so ready a source of energy.

This is what we are up against. The result is that we have changed. We have lost some of the energy and the fire for the battle. We have become victims and accepted a victim's status. The truth is our private burden. It is a very tragic and terrible thing that technology, that engineering, should be treated as a private religion that cannot win a hearing in public. It is a sad and a wrong state of affairs. Meanwhile, most advanced countries are not going to build any more nuclear power plants in the foreseeable future, if in our lifetimes. We will build some in Asia because of the tremendous need for power there, but we are now fighting a rear-guard action to do the decent thing with the waste and to preserve this great scientific frontier.

Equally sadly, one of the great hospitals in New York has closed its nuclear medicine department because it cannot dispose of those wastes—a terrible thing to do to humanity. A terrible thing the antinuclear people have done in cutting off lifesaving technology, environment-saving technology—cutting-edge nuclear technologies used in powering space stations, attacking cancer, saving the air with a clean generation of electricity. An horrendous misturn. And yet, the disinformation experts—the people who loathe nuclear power—continue unabated. You would have thought that at some point they would have declared a victory.

Nobody has ordered a nuclear power plant in the United States since 1972, and, with a single exception (France), there has been very little activity in Europe, which is caught in the same bind. And yet the opponents are relentless; they not only want to destroy all nuclear technology because of this pathological hatred, but they also want to punish

its perpetrators in every way they can. The easy way is financially. So we argue about this and that and there is another study and another hearing, and another court case, and so on, as we have seen at Yucca Mountain and at many other sites, such as Ward Valley in California or upstate New York, or cleaning up the very real problems that exist at Hanford and Savannah River. We are taking all of our resources and putting them into a debate. It parallels what happened with the Superfund, when \$10 billion was spent almost entirely on lawyers; very few sites were cleaned up—an atrocious theft of the public's money. And while we are doing this, we are doing damage. The waste is in the wrong places; it is being stored where it should not be; it is not being treated as it should be.

The technologies have been extant for 30 years, but they are frozen in time because we have such a plethora of regulations, laws, and statutes that prohibit innovation in dealing with waste in the United States (and they have been copied around the world). Talk to the people from Hanford. No better way of doing something can be employed because it has not been proven. If we had done that with computers or airplanes or another great advance of mankind, there would have been no great advances. You cannot freeze a technology in time; you cannot freeze remediation in time. This dreadful, pointless debate is freezing them in time—wasting money by the tens of billions as it has wasted money by the tens of billions for decades, but more so.

I can understand some of the opponents. It is quite fun to oppose. The Walt Disney company wanted to build a theme park in my backyard last year, so I went to the barricades. It was lovely fun, especially as we won and sent them back to Florida (they should come here). It is very exciting; it builds up a great head of steam and moral justification. But when you do it to essential things on national agendas like the safe disposal and transportation of waste, you are interfering not only with commerce and free trade, you are stultifying science and ultimately endangering the people you are helping. Environmentalism run amuck hurts the environment. If you hurt the environment, you hurt the people of the earth. Because you have chosen to declare yourself a proponent of the environment, that does not make you such—it makes you a proponent of your ideas about the environment, your political and national agenda. This technology has been the victim.

Now up in New York, they like to say that no good deed shall go unpunished. I think that many of the problems of nuclear are the consequences of a fabulous good deed. With the Atomic Energy Act of 1954, the idea arose that nuclear undertakings should be subject to public hearings. It was thought they lost a day and a half; it was thought it was a way for local people to learn, to stop by and see what was happening. It was morally defensible in every conceivable way, except it exposed a whole technology to a set of vulgarian, barbarian wreckers, persons who found, through this procedure, that they could grab on to levers of power that they did not have in any other context. They could not tell Airbus how to design its airplane, but they could tell a whole industry what was safe and what was not safe, and because of their ability to exercise that simple procedure, they became empowered with totally irrational power. This was the biggest dog wagged by the smallest tail. And it set into motion the whole concept that these decisions had to be made by the public and, of course, by the lawyers.

Years ago—I used to call this the Bonsai garden club syndrome—if you didn't like it, five of you got together and said "We don't like it," you got a lawyer. As in the United States one in five people is a lawyer, this all worked very well. And nuclear began the slippery slope and it rewarded its promise, served its potential, and is not decently allowed to clean up after itself.

We do not have hearings on how to design very much. We in the liberal democracies believe that those decisions are made by our elected representatives, not by the strange extracurricular branch of government that the hearing procedure invented. Alas, we exported it with great skill, first to Europe and then to the rest of the world. We exported the antinuclear feeling. What has happened since then is that the general view is that nuclear is no good, dangerous, expensive. Every part of it we exported globally, and it has become now a part of the conventional wisdom. It is no longer the few self-aggrandizing antinuclear activists that control the debate; it has passed into the great public deception in the world that nuclear is too difficult to handle, and that for some reason it is executed by the greatest technological cretins ever.

If you discuss the transportation of radioactive materials outside of hallowed places like this one, people actually believe that these things are actually thrown into the back of a truck together with all sorts of other things, and then it is driven across country at a high speed by a drug addict. We are not taking here—or in the U.K. or in Germany, but especially here—the decisions we should be taking. I want to remind you that Winston Churchill said that a decision not taken is nonetheless a decision. In nuclear waste, we are taking those decisions by not taking them. In nuclear transportation, we are taking those decisions by not taking them.

Unfortunately, we cannot or have not found a great booming coherent voice to bellow our rage at these injustices. We have fallen into "If that is what they want, that is what we will do." It is illogical, it is stupid, but we will do it. And so, we are tied down as an industry, as a science, like Gulliver by the Lilliputians, by a thousand little strings. And we are turning to the other, less effective technologies in medicine, in food preservation, and in the generation of power. We have had a nuclear weapons program that has produced 50 years of peace, and we must pay some small price for that enormous benefit in military waste cleanup. However, it has entered into the same debate. And if nothing changes, nuclear waste will remain where it is. It will remain at power plants, at Savannah River, at Hanford. The classic concept of a central waste repository will not come about, quite possibly, because you will not be allowed to take the waste there. The transportation may be the final straw that prevents the orderly, safe resolution of these issues.

In a funny way, a similar problem affects future power reactors—that is, electromagnetic fields. If you were to build a 1,380-megawatt nuclear power plant today in the United States or in most of Europe, you would not get the permission to put the power lines in to take the electricity out. And there is gas technology—gas turbines that can be scattered around—but not without environmental price for all the wishful thinking that they are. If we do not, at some point, find a coherent voice to hammer out a solution, mankind will lose possibly its most promising-ever technology.

There was a professor at Cambridge at the turn of the century who wrote a little volume to another starting-out professor on the politics of academia. He said, "You will find that nothing is ever done until everybody is totally agreed that it ought to be done and has agreed for so long that it is now time to do something else." Well, we see a lot of that. I have consistently believed that we do not solve complex problems with simple answers unless the problem and the answers both become so complex that the only solution is a simple one. I believe that within 2 to 5 years, the world will wake up to this gridlock in nuclear. I don't think it will change its position about power reactors, but it will wake up because it has to wake up to the gridlock of waste disposal, of reprocessing, of advancing nuclear technologies, and of finally disposing of nuclear wastes. Only with large, sweeping, simple solutions, a preemptive policy and legislation, can it now be done. Here in the United States, we are quite good at that. When we really believe that it has to be done, we have done it. The classic case is the Alaska Oil Pipeline in Prudhoe Bay to Valdez. It was tied up in a thousand environmental concerns, and then it was freed totally, for national security reasons, by preemptive legislation.

It is time for the entire nuclear establishment, every piece of it—including the medical doctors (they may be the most articulate and believable)—to come forth with the clearly defined document on what needs to be done. I think we should borrow from the success of the Contract with America and produce a "Global Nuclear Contract" that addresses these issues so that it can enter the political debate. Nuclear is not in the political debate today. It is not the first concern of any government, with the possible exception of the Chirac government. It is not even the first concern, as it once was, in Japan. It has sunk down to a lower order of visibility, where it is choking itself in politics and litigation. Otherwise, little by little, inadequately and clumsily, the great dismembering of this technology will take place—bad storage, lack of transportation, lack of new science.

The nuclear engineering colleges are empty, and if you go to a purely dedicated nuclear meeting, you will notice that the average age is getting older. This is not true in computers, or in geology. This is an industry in the death throes when it should be starting a great and brilliant life because it has great and brilliant and essential possibility in a world that is constantly increasing its population and needs the quantum leaps that only this kind of technology—and, probably, especially and uniquely that this technology—can deliver.

Session II-1: Sea Transport