DEL SESTO

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The wonder atom was really part of a much broader ideology of technology that emerged right after the war. In order really to understand it, I think the best way to approach it is to realize that there were many social, political, psychological, and economic factors tied together which converged really all about the same time to create this ideology. Now remember the world had come out of a very severe depression in the 30's, a very painful world war and it culminated with the dropping of the bombs on Hiroshima and Nagasaki. The world wanted several things at that time. The world wanted new hopes. They wanted new dreams. They had seen what technology had done during the war, particularly nuclear technology and people were in the mood to believe that the world could be made better by science and technology. After all they were tired of the war. They were tired of the depression that had preceded that. Some of the atrocities that had come up, so you see, people wanted to believe that there was a way to a better life. And technology was going to be the answer to this.

Now the Wonder Atom fit wonderfully into that. Because people had seen what the atom had done vis a vis the bomb. And also, recall that some of the smartest scientists and technicians in the world had worked on this project. so you had very strong backing from the academic community on the one hand and on the other hand you already had the military in there who was very interested in maintaining control of the atom. So you see, somehow this ideology that emerged after the war, together with the strong scientific backing and the military establishment being in there, people began to think, "how can we turn this evil, namely what the bomb has done into practical useful purposes?" And indeed if you look at the beginning phrases of the Atomic Energy Act of 1946 you will see right in there in the statement of purpose, they talk about the atom making life, liberty and the per suit of happiness possible. Bringing all good things to life etc...Robert Hutchins said, I believe, "it was the greatest single invention since the discovery of fire."

And if you would read some of the early proclamations, and these weren't wild eyed soothsayers or prophesier, these were intelligent people believing that somehow they could take this atom and move it into a peaceful application. so what did they do? They said OK, one of the uses of this is that we can create steam to generate electricity. Now knowing what could be done with the fission because of the bomb, what people began to realize is that the atom had, some people said, limitless energy. This resulted in things such as power that would be too cheap to meter. It resulted in images of atomic fission being useable in any place where you could use steam. They said that, for example, one writer wrote about atomic automobiles that would have small power packs about the size of a package of cigarettes. You could go back and forth across the country in these, so called, nuclear eight sedans. Other people talked about, in some of the popular magazines, some people talked about how nuclear energy could be tamed for flight. That it would be supersonic speeds, the cost would be near to zero. I mean you can go on and on about nuclear cars, planes and rockets and indeed some of these proclamations even got to serious circles.

The US congress had several programs whereby they spent hundreds of millions of dollars whereby they tried to get a nuclear plane and a nuclear rocket program. Not very much was really done with a nuclear car simply because some people realized that there were a number of

significant problems involved with shielding the occupants from radiation and things of that sort. You see all of these things converged at about the same time to create this image that the atom could basically do anything. ANd if enough science and technology resources were poured into research and development programs that somehow we could turn this atom to peaceful purposes. Have they been able to do it? Well nuclear power, I think, the jury is still out on that to some extent. But it appears so far that that has been the major use and of course that has not been without its problems.

ANTONELLO: WHAT ARE THE SOCIAL CONSEQUENCES OF THIS TECHNOLOGY??

Well, some of the consequences I think have been that people have come to believe that science and technology can do some things that perhaps it cannot do. For example, you take the debate over nuclear wastes, the problem still has not been solved. That problem was brought up as early as the in the early 1940's about what were we going to do with the waste? they talked about everything. Shooting it out into space, via rockets. Burying it in salt dumps. Using chemical reactions to turn it into solid material. They still have not solved this problem yet the same ideology which created many of the nuclear power programs, namely the faith in science and technology persist today in the sense that people believe that eventually scientists and technologists will find a way to deal with this nuclear waste. So far nothing has happened.

So I think one of the consequences is there tends to be an over enthusiasm. More optimism than surely is warranted in terms of what science and technology can do with respect to the atom. Its still a very complicated process and still needs much more work done on it. But, I mean, I think you can take that same argument and bring it into other fields such as bio-technology, such as perhaps computers. Where people tend to think, they dream a bit, which is natural, where people tend to think that more can be done than is actually done. Some of the social consequences of this probably are being overly optimistic of what the future can be. I mean is the future now, with nuclear power, significantly different than what it was 20 years ago? Probably not that much. Its just now that I believe General Electric and Westinghouse are getting new orders for nuclear power plants. So you see we've come 40 years, almost more than 50 years since the bomb, since the beginning of the nuclear age. Have we progressed much with the civilian use of nuclear power? Well, we basically know what we knew 10 - 20 years ago. so some of the consequences have not been as grandiose certainly not as grandiose as the adherents and the optimists had believed.

ANTONELLO: WHAT ABOUT THE EARLY CONGRESSIONAL HEARINGS ON THE POSSIBLE USES OF THE ATOM??

Part of what my work involved was I actually went in and analyzed the hearings before the US congress where the nuclear energy policy was set. ANd one of the things that came out of that was that the hearings, you would think, would try to get at some realities, would try to get at some truth, but instead what would happen at the hearings is people would walk into the hearings with their preconceived notions. And try to convince the committee that they were correct. So the hearings really were not the informational forum that one would expect them to be in a situation as important as this. But really they were strictly policy and political forums. Where people came in with preconceived notions, such notions, for example, as faith in science and technology that I had mentioned earlier. Other notions, for example, like a for example the environmentally oriented people worried about posterity and future

generations. What did nuclear power mean for that and these vast amounts of nuclear waste? So you see what would happen at the hearings and in the policy forums is that people would debate their preconceived notions rather than, and that to me was part of the problem, than having a forum where different opinions could be evaluated. And new knowledge, new information could come out of this.

So one of the things that came out of the hearings, in my work, was simply that the policies that were already in motion, namely vis a vie the military, vis a vie this peaceful utilization of atomic energy. Tended to be pushed forward. And some of the debate that the environmentalists, for example, brought early on which is very relevant today, this mess that they have cleaning up the nuclear weapons plants. This concern has been around for 35 years. Now, all of a sudden, congress and the public is worried about them. These concerns were around in the 40's. So you see they were never properly addressed. Rather, the hearings that I studied just promoted the existing policies. Push them forward with the powerful members on the various committees, and the various lobbies the nuclear industry, the military, the submarine builders, the weapons builders etc...

So that, to me, showed that once a policy such as this, and once an ideology such as the peaceful utilization of atomic energy, once these become em planted they are very, very hard to stop. They are very, very hard to turn around. Its kind of like a super tanker, once you get it up to full speed, its very hard to slow it down. Its the same kind of thing. So the policies in the early days tended to be pushed forward and promulgated for many many years. I think really now, for the first time, we're beginning to get the kind of give and take policy debate that is needed.

ANTONELLO: WILL IT BE POSSIBLE TO MAKE A CHANGE WITH THE END OF THE COLD WAR?? DO PEOPLE BELIEVE IN SCIENCE AND TECHNOLOGY AS THEY BELIEVE IN GOD, OR THEY HAVE BEEN TRAINED TO BELIEVE BY THE MEDIA ETC...

I think more the latter than the former. Some people do believe in science and technology as god. But really the media, they're interested in selling papers, they're interested in selling papers, they're interested in having a lot of viewers watch their programs. So, some of my work shows that they actually sensationalized what science and technology could actually deliver. My own feeling is, I have faith in science and technology, however I do not think it can work as quickly or in such an optimistic fashion as some of the sensationalizers believe. Because technology resides within social institutions which sometimes are very, very difficult to change people's attitudes. Let me give you an example, I would say that people who grew up in the 40's and the 50's, from my observation, have a harder time with personal computers than people who grew up in the 60's and 70's. They don't think they are useful in many cases. They have a sort of a wariness towards them. For no reason, for you see many computers are very easy to use now. But you see they're attitudes are such that they did not grow up with it. They were not socialized in that kind of an environment. It's very difficult to change their mind, whether they should own a personal computer, for example. Just a small example but, that's why I think technology actually moves much slower than people believe. Because technology is embedded within social, political and economic institutions which are very hard to change. As many people within those institutions and organizations within those institutions have great stakes in leaving things the way they are. So you see, my feeling is that technology is

good, I do have faith in it. But, I think it moves slower in changing things than people believe.

ANTONELLO: WHAT IS THE INFLUENCE OF THE MILITARY STRUCTURE AFTER WWII???

Well I think in the case of the nuclear, you know the atomic vision, I think the

I think in terms of the atomic vision, the vision we had of the atom, I mean its clear, there's no doubt about it, the military needed some kind of practical utilization of atomic power. Call it guilt over dropping the bombs, call it groping for some kind of social responsibility, they had to come up with some kind of legitimation for atomic power. They knew, as far as weapons systems, it was here to stay. They knew the Russians were developing, for example in the early 50's. So they realized that once it is here to stay, in order to get the public to feel less threatened by it, to get less public opposition about to it, they had to come up with some way to legitimate the whole nuclear enterprise. And indeed that's what the whole peaceful uses of nuclear energy was about. Nuclear energy was going to generate electricity. People said it could help in agriculture. There were theories, as I said earlier, about the nuclear plane and the nuclear car. How transportation would be free. There were theories about how you could use nuclear energy to dig canals for waterways. I could go on and on. There were probably 10 or 12 grandiose things that people thought the nuclear genie could do. Almost none of which have been really done. And even today I hear, I believe in the NYT recently, people are now pressing ahead again for a nuclear plane. This debate came up at least 3 or 4 times in the past. So you see, the military stood a lot, had a lot to gain in the peaceful uses of atomic energy. Simply because they were going to go forward with their plans anyhow. They felt they had to. So if they could somehow lessen public opposition, it would be in their benefit. And I think that's what happened.

Indeed, I think we had spoken earlier about Eisenhower sending a letter at one point to try and down play the effects of radiation. I mean, I don't think it was until probably the 60's, was it not, the open nuclear tests were eliminated. People finally started to realize that radiation is harmful. But you want to know something, people knew in the late 40's early 50's, scientists knew just how harmful it was. The military, it was in their interest to come up with a civilian use of the atom. Simply to quell opposition to some of their activities.

ANTONELLO: WHAT'S THE RELATIONSHIP BETWEEN WAR AND TECHNOLOGY??

If you have the technologies of destruction, if you, and I think some of the Persian Gulf war might have shown that, the generals want to use them. I don't think any of them want to use the nuclear bombs. I think everybody realizes that that would be a disaster. But does technology create wars?? Certainly not. But technology, I think, brings people to believe that wars can be less costly in terms of human lives. That's of course only if you're on the winning side. I think for the losing side, for example in the Iraq war, technology meant lots of lost lives. On our side it meant fewer lost lives. I don't think technology creates wars but I certainly think that if the technology is there the military at some point in time would like to use it.

ANTONELLO: DO PEOPLE BELIEVE IN TECHNOLOGY TODAY AS MUCH AS THEY DID IN THE PAST??

I think in some cases maybe more. What I tried to do in my work was temper that down a bit. Tried to show people that technology and science are good. They can work for the human good. They're not going to provide the sort of utopian existences that many people say they are. People are saying things similar that they said about atomic power about bio-technology right now. About how this will revolutionize things. But remember what I said earlier, Technology works within human institutions. It's very difficult for it to move as quickly as people think. I think technology, people do today view it as positive. I think we have no choice. A lot of our problems we need some technological solutions to. But I think, hopefully at least they are more educated to the fact, the types of visions we saw for nuclear energy are probably false, many of them. And hopefully they see that for other technologies such as computers or bio-technology. That some of these grandiose schemes are not going to work.