

Person :Nader, Laura

Date :26/1/90

Tape N# :79A, 80A

Time code :00:00:36:02

Subject :Technology

00:00:36:02P

NADER

The idea of progress is something that anthropologist use to talk about in the nineteenth century, because we thought that we could arrange societies along a line of evolution from those with the least amount of progress to European society, which was the pinnacle of progress. And we debated the logic of this, it wasn't very a smart thing to do, because it was not recognized in that there were many contributions that societies were making in the world. Besides, that's not the way it went.

But when I first went to my conferences on energy and began to work on the whole question of energy, I realized that the scientist at these conferences was using the concept of progress exactly the way they used it in the nineteenth century. As if it was a driving force and progress to them meant technological progress. It wasn't like Thomas Jefferson in the 1830's, who was talking about progress as social progress, they were talking about machinery being an indicator of progress.

00:01:42:12P

When you're talking about energy and you think that bigger is better, and bigger is more progress, then certain technologies come out first. For example, nuclear power becomes very important technology. An important indicator

and we begin to see, that to buy a technology as an indicator of progress without looking at its consequences and without looking at what it meant socially and without looking at what it meant in terms of political organization was a very foolish thing to do. So we begin to break down the concept of progress, so that we could at least see that it meant different things to different people. And something that one scientist would call progress, another person might think was detrimental to survival. So if survival was high on your value rate, then you might not consider certain technologies viable at all.

00:02:39:08P

So we begin to link technologies with consequences. And then we begin to also ask the question, is this a necessary technology? Just because its big and complicated, exciting and hazardous and so forth, is there something that could do the job better? And before we finished in that energy research, we had a whole panoply of technologies that we could choose from.

Now many of the scientist didn't think that they were possible, they kept saying, we have to go nuclear. Not because, because that's all there is, we can't go solar, we can't go in all of these other directions, conservation and so forth. And what I was interested in was getting them to realize that they were choosing nuclear because they liked it, not because we had to have it. They were making a choice, and I began to realize, they didn't think they had a choice.

Anthropologists study societies that are zero commercial quad, that don't use any commercial energy at all. So when they tell me it's not possible, I say to them, yes it's

possible, you don't like it. So if you're making your judgements on values, you're not making science. You're just telling me what your value judgement is, and that way we begin to get some of the scientists to think about how they make decisions. And to what degree they're in fact, being scientists at all. So, to develop a kind of introspective mode amongst scientists .

---

NADER 79A

00:04:11:20

Antonello: So what about the concept of science. What about science being sold on the market to make a better living for everybody?

I think the way science has been portrayed in the west, is a tragedy because it has been pedalled as if it were going to be a solution to everything and not cause problems to anything. It's been sold as if it were a monolithic, one thing. They talk about science they don't talk about sciences, in the plural, They talk about the scientific method not the many ways in which you could come to know and they've defined science in such a narrow way and increasingly, especially after WW2 in a way that is comfortable in a military model of science. They've defined it in such a narrow way that they have pushed away possible new ideas for living, for exploring, for new knowledge and so forth. And in a way in the process they've destroyed systems of knowledge that an anthropologist would consider systems of scientific knowledge.

00:05:30:13P

Because you take this monolithic European concept of what science is, you go around the world and you're going to develop the world in a model of this science and technology. You portray these parts of the world

as if there were nothing there. There's no science there, there's no knowledge there, there's no technology there; in all of these parts of the world, in quotes, as primitive as they may be, had knowledge. They had knowledge in the botanical system, they had knowledge how to cure themselves, they had knowledge of how to sail the seven seas. They had a knowledge that we acted as if it wasn't there, because it wasn't in the western very narrow sense of what a scientific model should be.

So I think we've used this monolithic model, not only to destroy other scientific systems of knowledge, but we've used it to hold back an exploration of systems within the European Western world. I don't think this is any more... it couldn't be any clearer than in the national laboratories in the US.

00:06:39:00P

National laboratories in the US are built and organized along the military model. They're basically pyramids, they're filled with very smart scientists, who are supposed to do certain things they are told to do. The questions are posed to them and they're supposed to handle and do whatever research they can to accomplish the targeted task. If you deviate, from the targeted task in these national laboratories, you're out. You're an outsider, then you're ousted, you're fired. These scientists in American laboratories don't have the rights of blue collar workers. And it's no surprise you don't find any dissent in the labs.

For example, in the US when you have, a group of scientists when you decide to put an ad in the NY Times, you never find scientists, very rarely, from

Livermore, from Los Alamos, from San Dia, they don't sign those ads expressing themselves on science policy. They don't dare, there is no dissent in the labs, it's not tolerated. Then you ask yourself, what kind of creativity can you have in science and technology, if dissent is not tolerated.

Some years ago I wrote a piece that was published in Physics Today, called "Barriers to Thinking New About Energy," and the response to that piece from scientists all over the country was very interesting to me. Because basically they were saying, they were older men, they were all men, some of them were nobel laureates, some of them were heads of laboratories, some were heads of physics departments, they weren't just nobody, they were people who cared and who had many years of experience in science. They were very distressed about censorship in science. About the degree in which science had become an ideological structure that did not tolerate dissent. These men had a long life of experience, so they could see what it was like before WW2, and science before WW2 was a different animal than after WW2 when it got completely militarized.

So, I think that there is a consciousness amongst some scientists and a sense of powerlessness about what to do about it. And this leads me to believe, that science in...., once you get on a track, it's hard to get off of it. And even though these were sensitive people, who realized what was going on in their world, the inability they had to dissent, they didn't know what to do about it. And some of them were powerful people.

The second point they made to me in these letters was related to creativity. People who run laboratories understand that they, you don't have science if you don't have a possibility for creative work. And where you have a very tight censorship, where dissent is not tolerated, where the imagination is not allowed to flow, where you're not able to critique. I mean when I was speaking at Los Alamos, a couple of years ago, I suggested to the director that they should have one or two days a month, where the workers, and I'm talking about science workers could say what they wanted without getting fired. And if they had to do it anonymously, they could do it anonymously.

But these labs are tight authoritarian structures, that control the direction, they control the question that the researchers are working on, they want certain conclusions and if they don't get it they get fired. The classic case for Livermore is, (Gofman Tample)?? case over low level radiation. Seeborg was head of the AEC in Washington, he didn't like their findings. They said that it was more serious than they expected to find, that they didn't expect to find what they found about the effects of low level radiation. They were told to can it. If that had happened in the Soviet Union, the scientists in the US would all be signing petitions to do something about this authoritarian science structure in the Soviet Union. What was interesting about that case is not one scientist, not one scientist stood up to defend Gofman and Tample. Not one scientist at Livermore or Berkeley lab said, there but for the grace of God go I. When you got that kind of a workplace, it's a problem, you can't expect more than what we're getting out of science. Which is, twenty different ways to build warheads, not twenty different ideas as to what to do for peace and defense.

00:11:23:11P

Defense is a social problem, that's being answered, being dealt with through technology. And a very narrow conception of defense, twenty different kinds of warheads is not very imaginative.

---

NADER 79A

00:11:45:01

Antonello: The concept of science was very different before WWII?

I think that the scientists, if you were to ask scientists who lived and worked as scientists from the turn of the century to the second world war, they would probably say yes it was different. They did say that in these letters, you could also say that that's the rosy colored glasses view, but I think that they may be right, it is quite different they weren't so dependent on big money. They're extremely dependent on big money now to do their science. And I think that the major complaint I've heard from physicists is that they can't ask the questions anymore, somebody else ask the question and they hire a bunch of physicists to work on finding the answer. That's not very creative structure in the workplace.

---

NADER 79A

00:12:44:08P

Antonello: Do you also believe that scientists became more like engineers after the second world war?

They're becoming technicians and some of the letters that were written to me spoke about that. They said that, as a matter of fact, I. A. Robbi(?) said this some years ago, at the San Francisco Physical Meetings. He said the age of

physicists is over. Physics today is not being done by individuals, it's being done by laboratories. Berkeley, Cern(?), Los Alamos, Livermore, but not by individuals, the age of physicists is over. I think the oldtimers understand that and the young people, very few of whom wrote to me by the way, an answer to a comment that was interesting to me that the age level was so old, of people who wrote. They don't know the difference, cause they don't remember a science other than the present very structured, narrow, technical type of scientific work.

00:13:51:09P

There's a group at Livermore that's been meaning to push for the right of the scientist to ask his own question. That's kind of interesting, I mean it's interesting that it's being done. So the right of the scientist to ask the question that he wants or she wants the answer. What happens when you have this kind of a workplace, in these large national laboratories, is you get standardized thinking. The more standardized the thinking, the more intolerant of deviants. Look at Barbara McClintock's life, she was working on genetics, corn genetics, and she discovered the jumping genes, she was looking not at the corn that fit the pattern, she was looking at the oddball corn. And from this she developed a theory of transposition, of genetic mobility. This idea of hers was not tolerated until thirty years later. It didn't fit the mold of what she was supposed to be doing, and what she was supposed to be finding. It was a very creative discovery on her part. I think that's what we're talking about as far as one part.

00:15:17:17P

The other part has to do with non-European science. I mention that in terms of the kind of knowledge that's

available, that used to be available before we destroyed the cultures and societies of the fourth world. There are many possibilities for science that are not necessarily in the European model. Islamic science is a different kind of science, they claim that it was a more human oriented science. Women today who are involved in critiquing science, philosophers like Paul Flyrobbin(?), who wrote this book about science in a democratic society; these are people who are looking for a different science. Lynne White the historian of science at UCLA, he's looking for a different model than the lineal model, the laboratory model that excludes the ecological model, the holistic view. Trying to see things that are intertwined, happening all at once, not just looking at cause and effect between two things.

So that even within the concept of science a tolerance for many different kinds of science, many different kinds of methodology should qualify and I think would open up, all kinds of possibilities in this world. We're kind of at a point in the world, even if we had the biggest technology, the best technology, the most energy that could be used forever, we don't have the resources in the world to make use of all of that energy and those machinery and all that stuff. We're coming to a point where we have to make some new choices. They're no less creative, they're no less interesting, in fact, I think probably more interesting, they're new avenues. And what's stopping us? That's what I was trying to get at in the paper, "Barriers to Thinking New About Energy."

00:17:13:04P

What is standing in the way of doing new and creative things? And for a long time it's been this concept of progress, a scientific group of people who didn't exhibit

any diversity, mainly in this country, White Males, very few Women, very few Blacks, very few Asians, very few a sense of diverse input that keeps something alive and vigorous .

People have asked for new ideas, women who come into the university ask new questions, they're terribly threatening.

Why are they threatening? Why are the men threatened?

Sometimes these questions get you back to the patriarchal basis of western society. And what is happening? It's often an attempt to hold on to a certain kind of society that may have been viable sometime in our history, but it's not viable today. This kind of male dominance, macho, competitive in a way that is destructive. All competition is not bad, but competitive in a way that is destructive.

And when I served on the National Academy of Sciences Canaeus(?)

Group, there were about three hundred people in that group and I was the only woman. They thought it was a diverse group, it was completely 299 men and 1 woman, all white, maybe thirty social scientists, including 15 or 20 economists and all the rest were engineers, physicists and chemists, they thought it was a very diverse group.

---

NADER 79A

00:19:03:02P

Antonello: You were talking before about knowledge and magic??

Yes, it struck me that much of what scientists do is not science at all. It's something else, it's either religion or magic. I began, I went back to Malinowsky's(?) book called, "Magic, Science and Religion," and he has a lovely example in the front of that book about the way these Chilbrean(?) islanders in the Pacific act, when they have knowledge. And he talks about how they fish in the lagoons. And when they fish in the lagoons, they know what's going to happen and they know where the fish are, and they know what

happens different seasons of the year and they use their knowledge. They apply their scientific knowledge, but when they're out in the open seas and it's unpredictable and they don't know, they have no knowledge. They use their magic.

And I feel sometimes that scientists do the same thing. Where they're projecting, look at the projections about nuclear, so much was wrong, so many wrong projections, it was magic. They would argue at the time that it was science. It wasn't science, it was magic because they did not know what the future held and they couldn't predict it.

---

NADER 79A

00:20:28:14P

Antonello: What is the relationship today between science and technology?

I think the relationship between science and technology is confused by the distinction between science and technology. I think the distinction was invented to allow the scientists....., technology is the fig leaf in the way of the scientist. The scientist can withdraw and say but I'm not in application, this is not my responsibility and so forth, I'm doing pure science. And somebody else who applies it, that's some other field and so on. I think that's not a.., I don't like to make the distinction between science and technology, although I understand the difference.

---

NADER 79A

00:21:36:24P

Antonello: Why are there so few women in science?

There are many theories about why there are so few women in science or minorities, so called minorities. And sometimes they argue around the

observation that women aren't as good in math as men are, I think that kind of argument is basically nonsense. Science has become a mens' club, just for the same kinds of reasons that you have mens' clubs in the New Guinea highlands. It's part of the patriarchal system, where the grouping of men in groups is played out. And so when you want men in groups, if you ever went up to the Lawrence Berkeley Laboratory at 12 o'clock at night, and you walk around, there are men in groups, all over the Berkeley Laboratory. And you wonder what their wives are doing at 12 o'clock at night when they're all up there, men in groups. If you want men in groups, you don't include women. If that's the function, if that's where you can group together, you don't include women, then you in fact, exclude them.

I argued that you

lose a lot by excluding. You lose talents that may come from the kind of experience that women have that men don't have. Women have babies and there's something that happens as a result of giving birth, even to the toughest woman. Women are supposed to do many different jobs all at once, and it creates a more holistic way of looking at things. It's much harder to think in terms of cause and effect and simple, without thinking of longterm consequences. Women are oriented to future and maybe men are too. It's not that women have an over-capacity, this is the way women are brought up in our culture.

Now, I once gave a talk at the

Lawrence Berkeley Lab, in which I argued that many of the problems of energy would have been analyzed from a totally different way, that we would not have spent thirty years pushing nuclear energy without other alternatives considering solar energy, wind power and conservation and so forth. If they had a wide variety of people, they would have had a wide variety of energy sources that they were

considering. And I gave examples, if you had women they would bring these in, if you had Blacks they would bring this in, if you had so and so they would bring this in. And sitting there on either side of me, this head of the environmental division on one side, and a physics and energy professor on the other side. And this gentleman passed a note across the front of me, to this one and said can't you shut this lady up? That was very threatening, to say they could have more diversity, to say that there was not an energy crisis, would seem to be threatening. To say at the same talk that scientists should have more freedom of dissent, would seem to be threatening, to the scientists. They don't like to think of themselves as workers, they don't like to think of themselves as not diverse, they don't like to think that they are censored and they like to think of single solutions.

---

NADER 79A

00:25:09:11P

Antonello: And that's because of the power structure?

I think it's because of the power structure. I wouldn't be, I wouldn't want to be at a laboratory like that if I were a man. Because they are always having to buy the competition in groups and the posturing, very hard on the scientist. I think they lead hard lives, but what's interesting, is when you tell them their lives are hard, and how it needn't be that way and how you could have more in a different, they feel a threat. They don't want to think about themselves that way, as powerless.

---

NADER 79A

00:25:52:06P

Antonello: they don't want to think of themselves as workers...

It was interesting at the Los Alamos Labs about a few years ago, the scientists used to carry a symbol on their badge that indicated they were scientists. Now they've changed that, they took it away. And that hurt, now they're just employees like everybody else. I don't know why they did that, I never asked, I never found an answer to why they took their symbol off. But now they are just employees, but they won't recognize it.

---

NADER 79A

00:26:41:05P

Antonello: Have you done any work on the change in the concept of time with the industrial revolution?

I think E.P. Thompson did a very interesting study on the whole question of time and the industrial revolution, and it got many people to thinking about what they already felt and were experiencing. In fact, I recall a famous head of the Oakridge National Laboratory, Alvin Weinberg, talking about the need for nuclear power so that we had more energy, so that we could save time. And TIME like PROGRESS was a rationale and a driving force for a lot of these new ways, and new techniques, new technologies.

If you look around

there's a marvelous Swede by the name of Linder, who wrote a book called, "The Harried Leisure Class," and he said, for all of the time saving devices we don't have time to converse with our friends and families, we don't have time to eat. We don't have time to make love, we don't have time to read-The Harried Leisure Class. So it's double-talk.

We have rationalized the development of technology in order to have more time, in fact, we have less time.

00:28:19:17P

In anthropology

there's been debate about this, because an anthropologist wrote a book called "Stoneage Economics," in which he went down to visit the bushmen and used them as an example. He actually didn't visit the bushmen, but he used the bushmen of South Africa as an example of the original leisure class. Because they did have time to converse with each other, to make love, to eat without being in a hurry and so on and so forth. There's no question that there has been a change in time and the way we use it, but we say one thing and it's the opposite is true very often.

I was in a cab in

Washington once, going to the airport and the cab driver said to me, "you know when I was a young man, they always told me that technology was going to save time." He said, "Look I don't have time to do anything I like to do. My wife doesn't even have time to do the laundry, she's out doing her income taxes all afternoon." So there is a sense that we don't have time. And yet our civilization developed the argument that if you had more machinery, more of this and more of that, then we'd all have more time.

00:29:34:01P

The computer was

going to save us time, but we didn't count that the computer would be broken down or that it would be so complicated that we would have to take a year to learn it, in such a way that we'd be able to use it, or, or, or.... . So I think certainly there's been a change in time, there's been a change in in in not only in the way we use time, what is said about time. What is said about time, is that we are saving time and we in fact have no time.

00:30:19:21

But, the managers are workers, we now find, no matter. Who isn't a worker? But this is very important to see who is a worker, and who is a self-employed. And if you look at the self-employment figures with industrialization, we've moved in this country from I guess 1840, must have been 40% self-employed. By 1940 it was 20% self-employed, by 1970 it was 7% self-employed. It's probably less now or if it's more, the people who are unemployed are calling themselves self-employed. So again that's industrialization. and if you were to compare, let's say the self-employed in Egypt with the US, they have a high degree of self-employed. One of the interesting things about that is that the studies of the self-employed show that they're happier. They work harder, but they're happier because they're in control. So that 's another one of these things that comes in with industrialization. The employee, and the employee can be the blue collar worker, white collar worker, the managerial worker and the head of GM could be fired tomorrow. It's not the same sad story, as the blue collar worker, but he can be fired and for him that's a sad story.

---

NADER 79A

00:32:21:12P

Antonello: What are the social implications...do people believe in technology and the future?

I think that there is a wide variety of opinion, there are the true believers. They're the people that turn on the radio and think it's wonderful that we are going to the moon and it's wonderful that we may be in Mars and so on. And they are empty sometimes at the same time.

I teach a course

called, control and processes, it was invented for, to teach the young people, my students something about the world around them. It's enormously popular, because they don't understand how their lives are being controlled and directed. And they could come in with these ideas about the future, but they feel that there is something they don't understand. And I think what they don't understand that they want to understand, is there's a blueprint. And they want to understand; I want them to understand how that blueprint comes about. That it is made by human beings and that it could be unmade by human beings. There needn't be one blueprint, there needn't be somebody deciding what our future is going to be like or some system deciding what the future can be like. That they have some role in this, that they can't understand it until they decide who's making the future and how it's happening, what systems are operative. And if you were to ask the managers, they couldn't answer the question, because they're part of the system. So we have to analyze these systems, to be able to take more control over what we want our future to be. Now you may decide you want one future and I decide I want another, how do we decide when they're incompatible, which one we wish? These are things we should be discussing. If you decide you want a nuclear world, that is going to determine what my world is going to be like; without anything.

So these technologies, these vulnerable technologies, have to be..the decisions about them,

we all have to participate in these. Because they affect others whether they want to be affected or not. They interfere, and it's not only nuclear technology, it's computer technology, it's the biogenetic technology. These are all centralizing, controlling technologies, they're not benign. They may give us good things but the cost may be more than we want to pay. Because the more you blueprint the world, more people aren't

participating anymore. They're just cogs in the wheel of an industrialized world. They're just like the part that you put in a car, as you put it down as you make it and, I for one, that's not the world I want.

00:35:48:06P

The Zapotec Indians that I studied in Mexico, are sitting on top of a mountain watching television, they're watching what's happening in the world and they no longer can control it. This has never happened before in the history of human history, that you have the kinds of technologies that can decide the lives of all of us, without our participating in any part of the decision to have them or not to have them. Totally centralizing technologies, reach into peoples' homes, into peoples' minds. I think for human beings to let that happen without a commentary, would be.....

---

NADER 80A

00:00:38:03P

I often say that anthropologists have more humility than many scientists, because we study societies that used to exist and no longer do. We study the rise and fall of civilizations and we know that western civilization has been around since about 900 AD and it's not going to be around forever. The longest staying civilization was likely the Egyptian, according to Cobra's(?) definitions. And as we move closer to the modern age with highly developed technology, it looks now like we won't have civilizations that last as long as the Egyptian Civilization. So, we can't help but look at our period in time and ask ourselves, how long are we going to be around. How long is western civilization going to be here? At the

same time we look in the caves of Nevada, and we see people that were there for over 30,000 years, in the same location. And we ask ourselves, how did they last so long, in the same place. What was it about their group, about their culture, about the way they lived that allowed them such a long lasting time, without destruction of their society. Is there any way whereby, you can have what we want from civilizations and what these small hunting and gathering societies had, that would allow us to find out what it takes to survive. With or in spite of technologies we are developing.

00:02:21:05P

Well the past has a lot of wisdom to teach us about where we want to go in the future. Most of us never think about the rise and fall of peoples, the rise and fall of societies and the destruction of the way of life as we know it. We think of wars, but we don't think about the whole of western civilization disappearing and becoming archaeological fodder, not too far down the line. We know enough about the past to think about what we might want to do with the future, in relation to survival.

---

NADER 80A

00:02:57:15P

Antonello: Can you say something about the philosopher?

There's an interesting professor, in this campus, a philosopher of science, named Paul Fierrobbin(?). Fierrobbin wrote a book called, "Science in a Democratic Society;" in which he argued, he thought it was about time for us to separate science from the state, just as we separated religion from the state. Because he saw that science today was becoming religion and that it wasn't allowing for

critics. And that a science that does not allow for critics can longer be a science; it's now folklore, it's magic, it's something else.

And in the same argument he was talking about knowledge systems, other knowledge systems- not in other societies that have now disappeared, but in our own system. How do we know that the psychiatry that's practiced by the psychiatry profession, for example, is better than the psychiatry that's practiced in Africa or the neighborhood or the medical care, any number of things that we might compare with what's happening in science. Conservation, the science of conservation; so I think what Paul Firerobbin was asking for is a critical assessment of the role of science in our society today.

00:04:21:21P

The critical assessment of the role of science, the role of western science, in western society, as it's affecting the world. Because this is a way of thinking and a way of acting, of action, that's affecting everybody on the globe today. When you have technologies like nuclear, and potentially bio-technology and other technologies that are now spread totally throughout the planet, everybody's life is affected. Everybody does not get to decide how their life is to be affected. This is a tremendous responsibility, on those of us who are paying taxes to support this kind of research and who are allowing this kind of spread worldwide.

---

NADER 80A

00:05:12:11P

Antonello: In a society that is becoming more and more complex, how can we discuss the myraid possibilities???

Fulbright once wrote a book called, "The Arrogance of Power." Our knowledge in anthropology teaches us that probably the most important ingredient today has to be a sense of humility, to counter the arrogance of power. You have to have a sense of mutual respect of response,...

There's an important missing ingredient among those who are in a position, not only to make decisions, but to take responsibility for those decisions, and that's humility. If you think you are the epitome of knowledge, of science, of civilization, of development, it doesn't encourage humility. And in the absence of humility, you have an arrogance of power. Fulbright talked about this in relation to the Vietnam War. Now the arrogance of power was accompanied by the reality that there are many people who do not have power,.....I can't take it, I'm not going where I want to go...

---

NADER 80A

00:07:28:19P

Antonello: What about racism in American society...genocide of the Indians dropping of the bomb on Japan.

Racism..... actually, I think that industrial society allows people to be more destructive in relation to racist tendencies, than if it weren't an industrial society, that is, I think that you've always had people who thought they were better than others. But they had not the technologies to exercise that. Even if you look at warfare in New Guinea, you had villages that went to war with another village and they killed one person and then they stopped. And if they had machine guns, they might have done more. So, the technology has allowed us, it isn't just Westerners, who have the capacity to be racist and to kill. The Japanese certainly had the capacity and have articulated it and the

Chinese have the capacity to do it to others; racism is a feeling that is probably present worldwide. But how it's expressed is very related, you're quite right, to the kind of technology that's available to you..

00:10:17:01P

And it may be that the people who develop machines begin to think about others as objects and it's easy to destroy from a distance. What you might not do with fewer, in hand to hand combat,....In hand to hand combat, soldiers destroy each other;but for many thousands of years, millions have been relatively immune, hundreds of years anyway, from that kind of mass destruction which they aren't today. I think Troy(?) would be better to ask these kinds of questions.

---

NADER 80A

00:12:15:12P

Karen: relationship between science and gender?

There are two things that are important to note, with regard to how science progresses and it's relation to gender. In the first place, I think Ivan Ellich made one point when he warned that what was happening in the name of women's liberation, was the development of a women who are in the male mode. And if you have women scientists, who are being trained to think like the men scientists, it really doesn't matter what their sex is. Then gender doesn't matter. And that's happening in a lot of fields, that is, you're getting, in these coed colleges that used to be men's colleges, like Amherst, and Williams and so forth, you're training women to be little men. To be like the men, to have the same values, the same drive and so on and so forth, in those situations it doesn't matter whether you're male or

female, if you're buying into the male dogma. And that was a point that Evelyn Fox Keller made very well in her book on Barbara McClintock, she separated dogma, female or male dogma, from the sex of the person who is the actor. So you could be a man and have a female dogma, or a woman and have a male dogma, a male philosophy, a male ideology.

00:13:44:15P

So I think it's critically important if we're going to encourage diversity in science, to make sure that we're not simply taking a diverse group of people, and putting them through a mold, so they all come out the same way. It doesn't matter. I trained the first Ph.D. from New Guinea and when he was interviewed on a television program, he was asked how his training affected had affected him. Did he maintain his ability to think like somebody from another culture. And he looked at the cameraman and he said, "I'm afraid I'm losing my subjectivity. I've come here, I've learned a lot, but I'm losing my subjectivity." To him subjectivity was critically important, but he was learning to become objective, to lose subjectivity. And I think that is something that does come in with the way women are raised today, subjectivity is important, emotion is important. How could we have created a science of, a human science, in anthropology for example, without paying attention to emotion until the last two or three decades.

00:14:50:15P

So the gender question must not be taken as a knee-jerker reaction to say, that if we only had Blacks and Women, Asians and so forth, all doing science, ipso facto would be different. It wouldn't necessarily be different. You have to maintain the diversity, which means you have to

maintain a tolerance for difference.

00:15:14:05P

And a second point about science which is important today, that I heard in relation to Biotechnology, in the Human-Geno(?) project, is that science is now getting so, the division of labor is getting so technical, that the smart people who are attracted to science are bored in the job. And so the argument is being made, that they have to create a technology in the Human-Geno(?) Program, for example, that will take the boredom out of the job. So that the technology doesn't, the boring parts. Because if they don't, they'll lose the interest of the scientists. Well that's an interesting, because that's an example of attention to worker needs, driving the direction of the science, but it's probably also an example of distancing the science from the subject matter.

00:16:07:08P

Distancing the scientists from the subject matter and that's always been a problem in science. The more you distance, the more you don't have to take responsibility. If you can say, we have a nuclear accident and we lose three percent of the population, that's a little different than saying, we'll lose seven million people. So these are all ways in which science changes and grows, and it's not completely a part of a plan. But one thing leads to another thing and the whole structure becomes a distanced structure, from the recipients, and the acted upon.

---

NADER 80A

00:16:58:02P

Antonello: Are you saying the Mega machine....

That's right, I am saying that and

I think that's what Aldous Huxley said, in "The Brave New World," and I can see it happening. I've been doing some research on Harmony Ideology, the idea that people shouldn't be contentious. The idea that we should always compromise our differences, the idea, I hear people in the university say, this person is a very good research, but too contentious. There's too much disagreement; there's an intolerance for disagreement, for conflict. Conflict is personalized so it seems to be very threatening. And when you get that, look at what we're getting at through the media, The standardization process is a very threatening one and I think that you have to make special effort to preserve diversity. Which gets you back to the question of the intolerance for people of other races.

---

NADER 80A

00:18:18:21P

Antonello: uniformity and no differences, no imperfections...

No imperfection.... you can walk into an optometry store on Chaddick Avenue, here in Berkeley, and if you're Black with black eyes you can buy blue, whatever,, blue coloring and put it in your eyes, and look like you have blue eyes. Well at least that's part of the way towards being Caucasian. I mean this is incredible!

This course that I teach called, control and processes, that I mentioned a few minutes ago,...the first time I taught it, I thought it would be fifty people, they put me in a room for seventy, 187 people took it. It hadn't even been advertised. I teach it every other year, the second time I taught it 230 people took it,

this business of control, of standardization, of pressure is very much felt, but people don't understand it. It's not something you can attack, it's there and it's powerful and it is mega, in a way. It's part of a whole, whole, mega-machine is not a bad.....The students often say to me, "Do you believe in conspiracy, you think there's someone up there that's...?" " I say no, it would be easy if it were a conspiracy. I mean this is where Gramshee(???), is very helpful, but the whole, the idea of Hegomenies(?) and how they operate. They're systemic. But you can create counter-Hegimany, see this is what was so nice about David Noble's book, which I used. By the way he shows how it was constructed, you can get,... yeah, "America by Design." Because he shows how it was made, it gives you the feeling it can become unmade, or be made differently. I have no doubt that things are happening, but I don't know that they're happening fast enough. But nobody predicted these from Europe. I'm not sure what happened, if anything, happened from Eastern Europe, (???) and so.

00:21:09:16P

I think it's very important not to look at western civilization as if it's a monolith, because it's always been in western civilization a dialogue between those people fighting to control nature, and those people who would like to live with nature. The man, machine... the frustrations that people have felt, to so called Ludites(???), about the industrial process has been that this disagreement, this dialogue. And it's been ongoing for hundreds of years.

---

NADER 80A

00:21:50:15P

Antonello: Jeffersonian idea of nature..

Well now it's going in the US, it's clear in relation to waste and the waste disposal plants which are being taken into the rural areas. I come from a small town in Connecticut, and they wanted to build a waste disposal plant, so they had town hearings, they still have town hearings there. And the people from the company came in and they talked about the progress, the importance of doing this and so on and so forth. And then the local people told them what they thought and this Doctor said, "Look you people have a lot of intelligence, you have a lot of education behind you, you have a lot of money you can do research, you can come here and tell us all of these things in very fancy language, but out here in the country we can tell shit when we see it." And we don't like this, we don't want you to pollute our environment.

These are debates that are ongoing now all over the US, and it may be in this country that even in places where the industrial revolution flourished, or places like New England, this is a little mill town we're talking about with empty factories all over town, it's like a disaster area. It may be that in places like that, where they've already experienced the industrial revolution and its not so healthy consequences, that the final debates on this question of direction in the future is going to be taking place. Because they know what democracy is still. They have town meetings, they still have hearings; they can see it. It's human sides still, they can deal with it. Whereas in the urban areas, they can't connect with it, they don't see it, it's not in front of their eyes.

That's right.

---

00:24:11:04P

Antonello: the electronic revolution is not the same for everybody

But what's happening in this country is the decentralization into areas that weren't filled before and that's part of the debate in these small New England towns. They've been sitting quiet for the last thirty or forty years, you're all of a sudden getting urban people who don't like the urban areas, building highways to come to these little towns, so that they can commute from the little towns, and their kids can grow up in a little town environment. Of course they're changing the little town environment, by virtue of this, in the process the dialogue is starting all over again.

And that 's what's going to be interesting, the dialogue between the urban people who like what they find in the country, but destroy it, when they get there. It's like when people go to Hawaii, for vacation and they build more and more hotels. And the more hotels they build, the less it is a vacation land, because there's too much congestion, too much pollution, there's too much in too much. Somewhere along the line we're going to have to see this, and we are seeing it. Somewhere along the line it's going to have to stop.

00:25:49:05P

It's not just too many people, it's not just population, I think that's what people say, there may be too many people, but I don't think that's the problem. I think the problem is the way of life. You know if you look at Middle Eastern cities, they're enormously dense. In Egypt what we call a city here, they call a village. It's called a village because it's constructed on a different scale, it's constructed on a face to face scale. And you could take a university this big and

it could be impersonal or it could be personal. Has nothing to do with the population size, has to do with how you organize the parts. You take Arab cities, for example, they're organized into Haddas(?) small units, that are really like a cluster of villages. But that's not how New York City or Los Angeles is organized. So, the same number of people allows for different solutions. A different system you could tolerate the increase in population.

---

NADER 80A

00:27:01:04P

Antonello: how can we change the system?

During the California drought, people saved water, without being told to save water. Because they could see it wasn't raining, then they could see there wasn't any water. This was about ten years ago. And people in power are always saying, how are we going to convince the people? There comes a point where there's no return, so you stop doing it. Now some people have stopped certain ways of living, that had nothing to do with resources, because it's not satisfying. Religious groups, fundamentalism worldwide, fundamentalism in every country in the world today--that's been one answer. Well, that may not be the answer that you and I want, because you could say it's denial of the problem. But to retreat into spiritualism, is one answer to people that can't make, that can't deal with the resource problem, that don't have the resources. That can't afford to drive between homes on the coast and the city and so forth. So they're going to pull away into something else.

00:28:45:07P

No, Khomeini is another story. Khomeini was a choice between

a dictator, who is bringing in western ways and who is  
demeaning the Iranian ways. And a dictator who is promising  
the people that they could be Iranian. I think that is the  
difference.

They're unable to deal ....that's the way they are dealing.

They retreat into another way of retreat.

A value rate, then you might not consider certain  
technologies viable at all.

00:02:39:08p

of what she was supposed to be doing, and what she was supposed to be as one part. to do with non- European science. I mention that in terms of  
the kind of knowledge that's available, that used to be available before we destroyed the cultures and society