PLAIN TALK about the HUMAN GENOME PROJECT

A Tuskegee University Conference
on Its Promise and Perils
... and Matters of Race

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TECHNOCRACY AND DEMOCRACY

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The title of my presentation is *Technocracy and Democracy*. Democracy of course is rule by the people, and technocracy literally means rule by the technical elite.

The field of genetics is one in which more traditional notions of science and technology are really collapsing in upon themselves because you have such rapid attempts to implement or to utilize relatively new discoveries that we do not have the kind of lag or differentiation in terms of institutional infrastructure. So I will just use the term technology. Whether one considers the Human Genome Project science or technology, I want to lay out the position that technology, for want of a better term, is not neutral. Although the dominant ideology in this society claims that science and technology are neutral activities, I want to maintain that they are not.

What is technology? If you went out and asked people on the street, you would get examples that are very thing-oriented—like computers or automobiles. Certainly technology does encompass things, even things a little less tangible like credit cards and financial systems. There are some people who would say the insurance system is a form of technology. I think a broad definition of technology is most helpful for understanding the social activity or concept of technology. That is, that technology is not only the things and the processes involved in them, but it also involves the relevant institutions. In other words, it is not: here is technology and here is the social part. But, in fact, technology is a social phenomenon—the making of things, the application of things, the application of useful knowledge, bringing together those kinds of skills. Applying and utilizing them is in fact what needs to be the focus of attention. So rather than set off science and technology in one little box and social phenomenon in another, I maintain that they are entwined—as I titled a book, *Technology As A Social and Political Phenomenon* (1976).

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Paradigms

Let me suggest that one might consider the relationship between technical and social activities in a number of different ways. There is a classical paradigm that used to be dominant in this country in which technology is equated with progress. In fact, up until the post World War II era, there were numerous examples of statements that basically connect science and/or technology with the notion of progress. Progress, by the way, is of course just a statement about means rather than ends. It does not tell you progress in terms of what. This is also true of technology as a tool or instrument; it does not tell you for what. But earlier in the century people did not ask those kinds of questions very much, and the notion that technology was equal to progress meant that technology was good.

It is possible to say that, other than for a few cranks and misfits, that was basically a pretty widely shared point of view until people like Rachel Carson and Ralph Nader and others came along in the early '60s to begin to articulate what larger numbers of people were beginning to know from their own experiences. That is, there were some problems with this cornucopia of technological goodies that was being churned out by the miracle of American science and technology.

As a result of what was called "externalities" by economists, things like pollution and things which are usually unintended and certainly side effects, different conceptions of the notion of the social definition of technology have been put forward. There are very few people now who basically will maintain that technology is equal to progress. There are, however, a few of them around. They are like museum pieces in a way—a little bit antique.

But generally, if you ask a lot of people about this today, they will fall into one of three general camps. The most dominant one in this culture currently, and one which many persons attending a Human Genome Conference would embody, is a kind of view that the British commentator David Dickson (1974) called the "use/abuse model of technology." In other words, technology is neutral. It represents basically neutral factors and can be either used or abused. It is all up to human beings. I do not know if this needs any more elaboration because we are being surrounded by that view all the time. This is what any dominant ideology does. It surrounds you with that point of view.

A second category is actually a grab-bag of a couple of categories. I apologize to people who might be partisan in some of the sub-categories if you feel it is an unfortunate lumping together. But I will do that just because I want to move ahead. It is sort of either an anti-technological view or greening view or the appropriate technology point of view. Basically, this view says there is something very wrong with the dominant technological systems, the social and political aspects of technology. They say either we have got to back off, we need less and we have to somehow step back and re-configure this very, very differently.

The last view, which I personally hold and which I want to elaborate on a bit more, is what I will call the "social relations model of technology." It holds basically that technologies are developed in a society such as this one—which is a class society—reflect the underlying relationships of power since the powerful sectors in the society are able to articulate the research agendas, get the funding and the programs going, have the science performed and then have the technologies developed. There is no better example of this than the Human Genome Project—the example I always use.

I do not know how many people are really familiar with some of the early stories about how the Project got going. I only know them second, third, fourth-hand. For example, some of the earliest opponents of the Human Genome Project were other biologists, who were afraid that there would be a diversion of resources at a congressional level to this new activity, and it was not until the molecular biologists basically got together with them and said: "No, let's go in for more money, new money, and so forth," and they had the power to do it.

We are talking resource allocation. We are talking about groups that are powerful enough to lay claim on a couple of billion dollars at a time when—well, as the newspapers headlined last week—"*$45 Billion Being Taken Away from Poor Families*" and things like that. You can use whatever examples you want. We are talking about the power to get your interest, your ideas, your agenda attended to. Incidentally, this has nothing to do with intrinsic worth or non-intrinsic worth. The issue here is political power and the power to use certain ideological configurations to sell it, to get members of Congress who know nothing about biology interested in and excited about the work you want to do, or whatever the technology is, or the science.

I want us to focus in on power. That is what this talk is about. I will use the term a lot, because I think it is at the root of a number of things that have been talked about today, a great group of presentations in terms of the variety and richness of where the viewpoints originated. I am not sure if anyone actually used the word "power" or not; maybe they did and I just did not catch it. But I want to talk about some of the elements of power that I think you will see were, in fact, reflected a lot in the talks that were given today.

To do that, and to make my point a little more concretely, another example that I think the social relations model of technology is the only one that really helps us understand is how technologies such as nuclear power get developed (and get special laws that shield it from liability, like the Price-Anderson Law) when other forms of power, such as solar power, go withering. This model helps us understand how patent law gets changed to accommodate the new genetic engineering even after 220 years of it being understood by everyone—by the way, I studied patent law and worked in a patent law firm—that living organisms could not be patented. That is why you had to have special legislation for plants, the Plant Patent Acts. All of a sudden, by one vote in the Supreme Court, the law gets changed, and with no further congressional action, no further court action, the Patent Office becomes the reflector and the propagator of the ideol-

ogy that says the development of this technology is necessary for the economic well-being of this country. Therefore, that requires the patentability of this activity and a whole host of things.

Even at the time of the Chakrabarti case upholding the patenting of genetically-engineered organisms, I think you could hardly have found a patent attorney in the world who would have believed that human genes were patentable, or that a whole genome like that of the Hagahai of New Guinea would be patentable, and so forth. Now we are seeing the organs of the society facilitate this. This is what power brings about in my view.

To better understand it, I think we need to step back critically to look at the dominant ideology and how it facilitates these sorts of things. In my classes, I usually call it "corporate liberalism," not because it is liberalism as opposed to a Newt Gingrich kind of conservatism or whatever—a lot of conservatives in fact embody corporate liberalism—but because it grew out of a form of liberalism, as I understand that factor. I will give you several general principles—and you will recognize them all—but it is a way of trying to deconstruct the general notion of our dominant ideology. You know, the fish is in the water but the fish doesn't know it is in the water. Since we are so immersed in this ideology, sometimes it is helpful to try and step back and think about what this is all about.

Corporate Liberalism

The first kind of principle—and I am using it in regard to technological phenomena—is that *technology increases human options and hence human freedom*. The definition of human freedom is having more options to choose from, which is of course a market-based theory, consistent with capitalist ideology. Now the reality is that technology invariably can close off options, but that is not really talked about very much. It is very hard to buy an electric car or a steam-powered automobile, but those were real technological options 90 years ago. But technology is about institutions fighting for power. In that example, the institutions including Rockefeller at Standard Oil and so forth were able to assure the dominance of the internal combustion engine and to have the other forms of automotive propulsion atrophy as a result. But the dominant ideology just teaches us that: Technology increases human options and hence human freedom. By the way, if you just check out an elementary, junior high and high school curricula, insofar as they deal with any of this, you will see this ideology really reflected there. It is a little frightening from my point of view.

The second principle, as I began to state earlier, is that—*technology is neutral, objective and value free*—except for externalities and things which, by the way, can often be corrected by the use of more technology. We are worried about pollution. The answer to pollution is not to change our social ways, not to change, for example, our transportation system, but let us develop catalytic converters. I am not against catalytic converters, I am just against pollution. I used

to work in the federal air pollution agency. I am just saying that this is the approach the ideology fosters: that the solution to technological problems will be technological. By the way, we are hearing a lot about that in regard to human genetic engineering. Rather than the majority accommodating to people, we are going to develop technological fixes. I was not here but the discussion of "the perfect baby" must have given many examples of this.

In my observation, the third principle is that—*no theory of social change, social causation or social reality is necessary in order to be an expert at discussing these things*. If you look at the dominant ideology, where they will say, for example, we have to support this industry for our economic well-being or whatever, there is never any theoretical construct laid out about how social change occurs. All the things having to do with relationships—you can pick anything, even non-technological things like increase in crime, decrease in crime—no one in this society feels obligated to start or reference or frame a discussion of these sorts of things in any kind of theoretical construct. I am talking in terms of the media and people talking on the streets about this. So when you hear all of these claims about technology, there is never any reference to the speaker's belief about how technological change relates to social change, or how social change comes about, etc. It is just: this will be good.

Fourth is that—*the relationship between social change and technology is usually presented as being unidirectional*. You may remember a television series a number of years ago called "Connections," which purported to show how all kinds of bizarre results flow from a single cause. This view presents social processes as a kind of one way street. I actually think it is obvious, if one really looks at it, that what you have is an interaction. It is much more dialectical. Social processes shape and form new technologies in just the way that technologies shape and influence social realities. The reason that this is presented as one way is that this is a very good shield for groups in power; it suggests that the technologies are inevitable.

Again, the Human Genome Project is about one of the very best examples one could use. By the way, I must say to the people here who have put lots of good years, time and energy into ELSI, that I think to some extent—I was asked to be provocative—ELSI serves as a cover for the Human Genome Project in exactly this way. It says, "Yes, indeed, there may be some problems coming out of this new technology. Let's see how we can address them," rather than dealing with, or suggesting that the public at large deal with, how this new science and technology got going to begin with? The problems and the relations that we are dealing with now have to be understood as a kind of dialectic in which powerful biological and economic interests, including venture capitalists, saw situations to push for what they wanted. They did not care about genetic discrimination. They did not care about problems of definitions of race that Professor Jackson and others talked about this morning. What they cared about was making a buck, and they saw a very good way. I am not saying that there is anything wrong with making a buck; I make a buck too. But what I am saying is I try to

do it in a more dialectically conscious manner.

So we have this principle operating with almost all technological phenomena in this society because this is what the dominant ideology does. It disconnects the social, political and economic realities which create science and technologies and say: "Oh, if there is a problem, you start with the technology and then we see if there are any problems and how we can deal with them" rather than dealing with an organic, living, breathing interactive system, because this is a nice shield for the groups in power that are behind this. It is a disconnect in terms of following the path of power.

Fifth, most of the discussion about technology and social impact analysis—certainly technological impact analysis—deals with society either as an undifferentiated whole or else looks at the level of the individual, rather than dealing more appropriately with social groups and more organic structures that are intermediate in size. Again, I am talking more about a very general literature—the discussions and discourse that are out there. In meetings such as this, in fact, and that is one of the things that I really enjoyed this morning, there was focus on different levels, for example, racial or ethnic groups and whether those categories have any meaning, what they might mean, and how they relate to this kind of phenomenon. But basically, most of the discussions out there say: "This is good for society." Society is always discussed by a lot of these speakers as if it were some kind of independent organic actor with one mind, one kind of set of interests and so forth.

At the other extreme, we talk about individuals: "Oh, you are being discriminated against. Your genetic information might be known. What should you do about it?" Or: "You are using up too much water or electricity. You should drive less, or you should heat your house less." All these things are either some kind of grand social scheme which no one can get a hold of because how can any individual, especially non-elite individuals, affect society? Or they are devolved into highly atomistic, highly individualistic kinds of problems, in which it suggests to people that you are isolated in your alienation and your frustrations. Everybody else is able to manage two jobs and take care of the kids and everything. You must be a failure or are having some problems, rather than the problem being structural and organic.

What this does in much of the literature that analyzes technological impacts and tries to deal with the social reality of them is to fail to disaggregate. When talking about benefits, the better analyses acknowledge that there are risks and costs, as well as benefits. They don't just talk about benefits. But they fail even there, many of them, to disaggregate into these kinds of intermediate social groupings and to realize that very often the benefits fall on certain groups in society, and the risks and costs fall on other groups in society. To my mind, this is very, very close to the definition of power and the ability to set up a situation where you and your buddies benefit and other people pay the tabs.

We see this all the time with technological phenomenon, particularly among communities. For example, indigenous communities all around the world whose tundra is being torn up, whose resources, whether it is the people in Nigeria where there were the recent hangings because of the oil company exploitation and attempts to oppose that. Whether it be—someone referred earlier to the Human Genome Diversity Project—the belief among most indigenous peoples that, after mining their earth and taking all of their other resources, now people are going to come from the First World and seek the very people themselves as resources to be tapped, examined, banked and maybe exploited. This is an example of the failure to examine the disaggregation of the costs, benefits, and risks and see that they fall on different people and how peoples react to that. This is a reality, whether you agree with it or not. This is how most indigenous people who are addressing this issue feel about it—whether it is true or not. I need to make that clear.

Conclusion

So I will wrap up now. I think I have made my major points: that certain technologies, at least in some of their aspects—or someone could argue in almost all their aspects—are not neutral, because technologies are the result of human activity and purpose. They are intentional interventions into the environment that would not otherwise occur. They embody and manifest human purpose and intentionality and, as such, they embody ideas and goals. There is nothing neutral about this at all; the question is whose goals, what goals, what values are embodied and transformed.

Whose purposes or intentions? We are not all in this together. The Pogo cartoon of the early 1960s, that was very powerful in the environmental movement, was of course incorrect. It was put forward as: "I met the enemy and it was us" as a way to diffuse an analysis that would point the finger of responsibility for pollution to people whose decisions were really responsible for it. The decisions of a relatively small number of people—they were probably men, they were probably white, they probably could all sit around one table—for example, to develop the one-way non-returnable bottle and then spend billions of dollars marketing it to us to show us that this was *our* real desire, because we could then go to the beach, have a Pepsi and then just toss the bottle away and frolic in the sand without worrying about returning it to the supermarket or grocery store.

The non-returnable bottle is a slightly different technological phenomenon from the returnable bottle. I do not know if people notice this. Anyway, that change was made by a small number of people, each of whom realized that their corporation—Libby-Owens-Ford making the glass, Coca-Cola making the syrup—each of them could make a fraction of a cent more on, what is it, eight billion bottles a day, or is it not that large? But there was some extraordinary number of soda pop bottles that were out there. This is exactly what I am talking about. Those kinds of technological decisions were made to advance certain kinds of interests and, of course, those people who stepped on broken bottles on

the beach or people who had to endure the aesthetic problem of the litter were the ones picking up, very literally, after those profiting from it.

That kind of a pattern is what we are talking about. How that relates to the Human Genome Project, I hope, is a subject of discussion. How did we make the choice that this is the most important biology problem facing us in the society? Also, is the attack on these genetic diseases worth the allocation of $5 billion when this country is about twentieth in the world in infant mortality, when for a fraction of the expenditure, we could be saving many more lives than we ever can realistically hope to save in certainly the near term from the Human Genome Project—if that is what it is about? I can do utilitarian calculus too; I am not so removed from reality to not be able to do that. Those sorts of questions about the relationship of power and how the Human Genome Project expresses and manifests power and *whose* power will, I hope, move more to the center of these kinds of meetings and discussions.

References

Bereano, Philip. 1976. Technology As A Social and Political Phenomenon. John Wiley & Sons, New York.

Dickson, David. 1974. The Politics of Alternative Technology. Universe Books, New York.