

## **Lecture 16**

### **Social Legitimation**

Science claims a method that is objective and nonpolitical, true for all time. Scientists truly believe that except for the unwanted intrusions of ignorant politicians, science is above the social fray. Theodosius Dobzhansky, a famous scientist who was a refugee from the Bolshevik Revolution and who detested the Bolsheviks, devoted a great deal of energy to pointing out the serious scientific errors that were being made in the Soviet Union in biology and genetics as a consequence of the unorthodox biological doctrines of T.D. Lysenko. It was pointed out to him that, given his own political convictions, he should not carry on that campaign against Lysenko. After all, he believed that sooner or later a global conflict would occur with the United States and the Soviet Union on opposite sides, and he also believed that Lysenko's false scientific doctrines were severely weakening Soviet agricultural production. Why did he then not simply remain quiet about Lysenko's errors so that the Soviet Union would be weakened and compromised in the conflict that was to come? His answer was that his obligation to speak the truth about science was superior to all other obligations and that a scientist must never allow a political consideration to prevent him from saying what he believes to be true.

Not only the methods and institutions of science are said to be above ordinary human relations but, of course, the product of science is claimed to be a kind of universal truth. The secrets of nature are unlocked. Once the truth about nature is revealed, one must accept the facts of life. When science speaks, let no dog bark. Finally, science speaks in mysterious words. No one except an expert can understand what scientists say and do, and we require the mediation of special people -- science journalists, for example, or professors who speak on the radio -- to explain the mysteries of nature because otherwise there is nothing but indecipherable formulas. Nor can one scientist always understand the formulas of another.

Despite its claims to be above society, science, like the Church before it, is a supremely social institution, reflecting and reinforcing the dominant values and views of society at each historical epoch. Sometimes the source in social experience of a scientific theory and the way in which that scientific theory is a direct translation of social experience are completely evident, even at a detailed level. The most famous case is Darwin's theory of evolution by natural selection. No scientist doubts that the organisms on earth today have evolved over billions of years from organisms that were very unlike them and that nearly all types of organisms have long since gone extinct. Moreover, we know this to be a natural process resulting from the differential survivorship of different forms. In this sense, we all accept Darwinism as true.

But Darwin's explanation for that evolution is another matter. He claimed that there was a universal struggle for existence because more organisms were born than could survive and reproduce, and that in the course of that struggle for existence, those organisms who were more efficient, better designed, cleverer, and generally better built for the struggle would leave more offspring than the inferior kinds. As a consequence of this victory in the struggle for existence, evolutionary change occurred.

Yet Darwin himself was conscious of the source of his ideas about the struggle for existence. He claimed that the idea for evolution by natural selection occurred to him after reading the famous "Essay on Population" by Thomas Malthus, a late eighteenth-century parson and economist. The essay was an argument against the old English Poor Law, which Malthus thought too liberal, and in favor of a much stricter control of the poor so they would not breed and create social unrest. In fact, Darwin's whole theory of evolution by natural selection bears an uncanny resemblance to the political economic theory of early capitalism as developed by the Scottish economists. Darwin had some knowledge of the economic survival of the fittest because he earned his living from investment in shares he followed daily in the newspapers. What Darwin did was take early-nineteenth-century political economy and expand it to include all of natural economy. Moreover, he developed a theory of sexual selection in evolution (about which more will be said in Chapter 4), in which the chief force is the competition among males to be more appealing to discriminating females. This theory was meant to explain why male animals often display bright colors or complex mating dances. It is not clear that Darwin was conscious of how similar his view of sexual selection was to the standard Victorian view of the relationship between middle-class males and females. In reading Darwin's theory, one can see the proper young lady seated on her sofa while the swain on his knees before her begs for her hand, having already told her father how many hundreds a year he has in income.

Most of the Ideological influence from society that permeates science is a great deal more subtle. It comes in the form of basic assumptions of which scientists themselves are usually not aware yet which have profound effect on the forms of explanations and which, in turn, serve to reinforce the social attitudes that gave rise to those assumptions in the first place. One of the assumptions is the relation of individual to collectivity, the famous problem of part and whole. Before the eighteenth century, European society placed little or no emphasis on the importance of the individual. Rather, the activity of people was determined for the most part by the social class into which they were born, and individuals confronted each other as representatives of their social group. In a dispute, for example, between a priest and a merchant over a commercial matter, the priest would make his case in an ecclesiastical court and the merchant in the court of his own lord rather than both being subject to the same judgment. Individuals were seen not as the causes of social arrangements but as their consequence.

Moreover, people were not free to move in the economic hierarchy. Peasants and lords alike had mutual obligations and were bound to each other by those obligations. There was no freely moving competitive labor force where each person had the power to sell his or her labor power in a labor market. These relations made it quite impossible to develop the kind of productive capitalism that marks our own era, in which freedom for individuals to move from place to place, from task to task, from status to status, to confront each other sometimes as tenants, sometimes as producers and sometimes as consumers, is an absolute necessity. For example, serfdom had to be abolished in Russia in the middle of the nineteenth century because there was a shortage of factory labor and serfs were legally prohibited from being sent to factories. Sometimes, in fact, serf owners illegally shipped their peasants into factories, and serfs petitioned the czar for relief.

The developing science of the Middle Ages and Renaissance was characterized by seeing all of nature as a kind of indissoluble whole. Living and dead could be transformed one into the other, provided one knew the mystical formula. Nature could not be understood by taking it into pieces because by doing so one destroyed what was essential to it. Alexander Pope said it was "like following life through creatures you dissect. You lose it in the moment you detect." Just as social organization was seen as an indissoluble whole, so was nature.

With the change in social organization that was wrought by developing industrial capitalism, a whole new view of society has arisen, one in which the individual is primary and independent, a kind of autonomous social atom that can move from place to place and role to role. Society is now thought to be the consequence, not the cause, of individual properties. It is individuals who make society. Modern economics is grounded in the theory of consumer preference. Individual autonomous firms compete with each other and replace each other. Individuals have power over their own bodies and labor power, in what Macpherson called "possessive individualism." This atomized society is matched by a new view of nature, the reductionist view. Now it is believed that the whole is to be understood only by taking it into pieces, that the individual bits and pieces, the atoms, molecules, cells, and genes, are the causes of the properties of the whole objects and must be separately studied if we are to understand complex nature. Darwin's theory of evolution was a theory of the differential reproductive rate of individuals, and all of the phenomena of evolution were to be understood at this individual causal level. All of modern biology and, indeed, all of modern science takes as its informing metaphor the clock mechanism described by Rene Descartes in Part V of his Discourses. Descartes, being religious, excluded the human soul from the *bete machine*, but that very soon became included as well to make the *homme machine* of the present view. Modern science sees the world, both living and dead, as a large and complicated system of gears and levers.

A second feature of the transformation of scientific views has been the clear distinction between causes and effects. Things are supposed to be either one or the other. Again, in Darwin's view, organisms were acted upon by the environment; they were the passive objects and the external world was the active subject. This alienation of the organism from its outside world means that the outside world has its own laws that are independent of the organisms and so cannot be changed by those organisms. Organisms find the world as it is, and they must either adapt or die. "Nature--love it or leave it." It is the natural analog of the old saw that you can't fight city hall. As I shall show in Chapter 5, this is an impoverished and incorrect view of the actual relationship between organisms and the world they occupy, a world that living organisms by and large create by their own living activities.

So, the ideology of modern science, including modern biology, makes the atom or individual the causal source of all the properties of larger collections. It prescribes a way of studying the world, which is to cut it up into the individual bits that cause it and to study the properties of these isolated bits. It breaks the world down into independent autonomous domains, the internal and the external. Causes are either internal or external, and there is no mutual dependency between them.

For biology, this world view has resulted in a particular picture of organisms and their total life activity. Living beings are seen as being determined by internal factors, the genes. Our genes and the DNA molecules that make them up are the modern form of fate, and in this view we will understand what we are when we know what our genes are made of. The world outside us poses certain problems, which we do not create but only experience as objects. The problems are to find a mate, to find food, to win out in competition over others, to acquire a large part of the world resources as our own, and if we have the right kinds of genes we will be able to solve the problems and leave more offspring. So in this view, it is really our genes that are propagating themselves through us. We are only their instruments, their temporary vehicles through which the self-replicating molecules that make us up either succeed or fail to spread through the world. In the words of Richard Dawkins, one of the leading proponents of this biological view, we are "lumbering robots" whose genes "created us body and mind."

Just as at one level genes determine individuals, so at another level it is individuals who determine collectivities. If we want to understand why an ant colony has a particular division of tasks or a flock of birds flies in a particular way, we need only look at the individual ants and individual birds, because the behavior of the group is a consequence of the behaviors of the individual organisms; the behavior is in turn determined by genes. For human beings that means that the structure of our society is nothing but a result of the collection of individual behaviors. If our country goes to war, we are told it is because we feel aggressive as individuals. If we live in a competitive entrepreneurial society, it is because, in this view, each one of us, as an individual has a drive to be competitive and entrepreneurial.

Genes make individuals and individuals make society, and so genes make society. If one society is different from another, that is because the genes of the individuals in one society are different from those in another. Different races are thought to be genetically different in how aggressive or creative or musical they are. Indeed, culture as a whole is seen as made up of little bits and pieces of cultural bric-a-brac, what some sociobiologists call *culturgens*. In this view, a culture is a sack of bits and pieces such as aesthetic preferences, mating preferences, work and leisure preferences. Dump out the sack and culture will be displayed before you. Thus, the hierarchy is complete. Genes make individuals, individuals have particular preferences and behaviors, the collection of preferences and behaviors makes a culture, and so genes make culture. That is why molecular biologists urge us to spend as much money as necessary to discover the sequence of the DNA of a human being. They say that when we know the sequence of the molecule that makes up all our genes, we will know what it is to be human. When we know what our DNA look like, we will know why some of us are rich and some poor, some healthy and some sick, some powerful and some weak. We will also know why some societies are powerful and rich and others are weak and poor, why one nation, one sex, one race dominates another. Indeed, we will know why there is such a thing as a science of biology, which itself is one of the bits and pieces of culture lying at the bottom of the sack.

We have become so used to the atomistic machine view of the world that originated with Descartes that we have forgotten that it is a metaphor. We no longer think, as Descartes did, that the world is like a clock. We think it is a clock. We cannot imagine an alternative view unless it be one that goes back to a prescientific era. For those who are dissatisfied with the modern world and dislike the artifacts of science, the pollution, the noise, the industrial world, the overmechanized medical care that seems not to make us feel better much of the time -- for people who want to go back to nature and the good old ways, the response has been to return to a description of the world as an indissoluble whole that we murder to dissect. For them, there is no use in trying to break anything down into parts because we inevitably lose the essence, and the best we can do is treat the world holistically.

But this holistic world view is untenable. It is simply another form of mysticism and does not make it possible to manipulate the world for our own benefit. An obscurantist holism has been tried and it has failed. The world is not one huge organism that regulates itself to some good end as the believers in the Gaia hypothesis believe. While in some theoretical sense "the trembling of a flower is felt on the farthest star," in practice my gardening has no effect on the orbit of Neptune because the force of gravitation is extremely weak and falls off very rapidly with distance. So there is clearly truth in the belief that the world can be broken up into independent parts. But that is not a universal direction for the study of all nature. A lot of nature, as we shall see, cannot be broken up into independent parts to be studied in isolation, and it is pure ideology to suppose that it can.

The problem is to construct a third view, one that sees the, entire world neither as an indissoluble whole nor with the equally incorrect, but currently dominant, view that at every level the world is made up of bits and pieces that can be isolated and that have properties that can be studied in isolation. Both ideologies, one that mirrors the premodern feudal social world, and the other that mirrors the modern competitive individualist entrepreneurial one, prevent us from seeing the full richness of interaction in nature. In the end, they prevent a rich understanding of nature and prevent us from solving the problems to which science is supposed to apply itself.

In the ensuing chapters, we will look in some detail at particular manifestations of the modern scientific ideology and the false paths down which it has led us. We will consider how biological determinism has been used to explain and justify inequalities within and between societies and to claim that those inequalities can never be changed. We will see how a theory of human nature has been developed using Darwin's theory of evolution by natural selection to claim that social organization is also unchangeable because it is natural. We will see how problems of health and disease have been located within the individual so that the individual becomes a problem for society to cope with rather than society becoming a problem for the individual. And we will see how simple economic relationships masquerading as facts of nature can drive the entire direction of biological research and technology.

While these examples are meant to disillusion the reader about the objectivity and vision of transcendent truth claimed by scientists, they are not intended to be antiscientific or to suggest that we should give up science in favor of, say, astrology or thinking beautiful thoughts. Rather, they are meant to acquaint the reader with the truth about science as a social activity and to promote a reasonable skepticism about the sweeping claims that modern science makes to an understanding of human existence. There is a difference between skepticism and cynicism, for the former can lead to action and the latter only to passivity. So these pages have a political end, too, which is to encourage the readers not to leave science to the experts, not to be mystified by it, but to demand a sophisticated scientific understanding in which everyone can share.