intended function. What is a hammer? It's what someone uses to pound nails into boards. What is a telephone? It's a device that enables people to converse at a distance. Some technologies, however, have more than one intended function. Hammers, for example, can pound nails into boards but can also extract them. This is the core of the contemporary view of technology. People understand technologies in terms of a primary function—or, occasionally, several functions—that each is intended to accomplish.

Beyond this, our society has in the past few decades come to acknowledge that technologies tend to produce at least two general kinds of "secondary" or "unintended" effects. First, they generate environmental consequences: pollution, resource depletion, and ecosystem modification. Each of these may, in turn, have direct or indirect effects on human life. Second, they promote unintended social consequences—consequences that are generally mediated by economic markets (e.g., the replacement of workers by machines or the emergence of boomtowns). Thus common knowledge has it that technologies perform one or perhaps a few intended functions while also producing a limited range of unintended social and environmental consequences.

Although this view of technology is straightforward, it is also incomplete and misleading. It diverts attention from many significant aspects of technology, including some of central concern to democracy. By synthesizing recent technological criticism, the alternative view of technology introduced here incorporates the accepted view's sound insights but situates these within a broader perspective that recognizes technologies as a species of social structure.

The phrase "social structure" refers to the background features that help define or regulate patterns of human interaction. Familiar examples include laws, dominant political and economic institutions, and systems of cultural belief. Technologies qualify as social structures because they function politically and culturally in a manner comparable to these other, more commonly recognized kinds of social structures.

TECHNOLOGIES AS SOCIAL STRUCTURES

Ibieca, a Spanish village, found that its indoor plumbing came at the expense of community integration. That is an instance of a technology helping to structure social relations. Upsetting a traditional pattern of water use compromised important means through which the village had previously perpetuated itself as a self-conscious community. In the United States the automobile has played a somewhat similar role in disrupting prior patterns of community life.

These are not isolated cases; technologies designed for such mundane tasks as commuting to work or cooking food also routinely help constitute social systems of cooperation, isolation, or domination.

> Technology often embodies and expresses political value choices that, in their operations and effects, are binding on individuals and groups, whether such choices have been made in political forums or elsewhere.... Technological processes in contemporary society have become the equivalent of a form of law—that is, an authoritative or binding expression of social norms and values from which the individual or a group may have no immediate recourse.

Coercive Compliance

Technologies help regulate social behavior in part because they are themselves governed by both physical and political laws. For example, the operation of many technologies—such as automobiles, medical X-ray machines, or guns—is legally regulated. Thus their misuse can entail a socially enforced penalty.

However, whether or not they are governed by legal regulations, technologies generally embody a variety of other kinds of coercive mandates. The penalty for resisting these mandates may range from an informal reprimand ("Don't lick the food off your knife!") to economic loss or systemic failure (e.g., the gears in a conveyor belt jam, or a worker's hand is injured). These latter results are akin to the consequences befalling those who ignore physical laws (e.g., when someone literally walks on thin ice). Thus physical constraints, or accompanying legal and social sanctions, are