

countless technological choices and practices in which we did not participate.

Moreover, often such spillover effects exert a structural influence that is dynamic and transformative. For instance, someone might choose not to purchase a power lawn mower to avoid its noise. However, after a few neighbors have bought theirs, this person may reconsider, thinking, “Since I’m suffering from the noise anyway, why not buy my own power mower and at least benefit from the convenience?” In this way each mower purchased contributes to a cycle that gradually transforms a neighborhood of quiet into one rent by the sound of churning engines.

Next reconsider the background conditions necessary for a technology to operate. Many of those conditions have a tremendous impact on lives even if individuals do not own the technology or use the technological service that establishes their *raison d’être*. Suppose, to state the case dramatically, that as a citizen of a modern nation a woman opts for a relatively self-sufficient mode of life: She refuses to own a car, uses solar collectors on the roof of her home, and plants a large vegetable garden in her yard. What has she accomplished? Something, certainly, but the texture of her world still reflects the existence not only of cars and their immediate culture, but of roadways, automobile manufacturing and marketing systems, oil refineries, electric generating facilities, agribusiness, the private or public bureaucracies that manage these things, and their often tumultuous politics. That is part of what it means to say that technologies are social structures. The aggregate result of a society’s many technological choices in one way or another affects every member.

Communicative and Cultural Systems

Apart from materially influencing social experience, technologies also exert symbolic and other cultural influences. This is true not only of technologies explicitly called communications devices (e.g., cellular phones, televisions, and radios), but of all technologies.

For example, modern sofas generally have two or three separate seat cushions. There is no

compelling technical or economic rationale for this design (an affordable, seamless sofa is an easily conceived alternative—as seamless mattresses and Japanese futon sofa-beds attest). Rather, separate sofa cushions define distinct personal spaces and thus respect—but also help to perpetuate—modern Western culture’s emphasis on individuality and privacy.

Technologies even play transformative roles within psychological development. For example, earlier this century Swiss psychologist Jean Piaget determined that young children distinguish living from nonliving things according to whether or not the things move, and—as the children develop psychologically—then according to whether things move by themselves or are moved by an outside force. However, more recently, social psychologist Sherry Turkle found that children who play with computer toys that appear to “talk” and “think” develop different criteria for distinguishing “alive” from “not alive.” Instead of relying on physical criteria (such as motion), they invent psychological criteria and hypotheses (“Computers are alive because they cheat” or “Computers are not alive because they don’t have feelings”). Children’s developmental trajectories, including their conceptions of self and moral reasoning, are transformed as a result of their interactions with these machines.

The process that Turkle described with respect to computer toys is a specific instance of a much more general phenomenon. As they reconfigure opportunities and constraints for action, and function simultaneously as symbols and latent communicative media, technologies also reconfigure opportunities and constraints for psychological development.

Macropolitics: Technology and Society Versus Technology as Society

Many scholars have described cases in which technologies exert a macrolevel influence on societies. Consider historians who focus on the social role of just one or two important technologies at a time. Large scale dams and irrigation systems may have played a decisive role in the creation and maintenance of states in antiquity. Lynn White, Jr. told a