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The Next Industrial Revolution

We must have a new industrial revolution even if a few of us have to generate it. Other industrial revolutions have come about unplanned. The first was hailed as a way of ennobling human beings by substituting steam and electrical power for their muscles. This it undoubtedly did, but the generation of power brought with it side effects—including air pollution—which, far from being ennobling, were and continue to be degrading to human existence. In the second revolution the multiplication of "things" came about—"things" that at last could be mass-produced, so that people could have more and more of them. Thus was generated the solid-waste problem.

A third revolution was the tremendous growth in industrial chemistry, and the ability to tailor-make chemicals in vast quantities very cheaply, for all kinds of purposes—for example, pesticides intended to selectively destroy forms of life inimical to various groups of human beings. But these turned out not to be so selective; they have upset the little-understood ecological balance, and have polluted and poisoned the waters.

In preparation for the next industrial revolution, I suggest that we revise our vocabulary. For instance, there is no such thing, no such person, as a consumer. We merely *use* "things"; and, according to the law of the conservation of matter, exactly the same mass of material is discarded after use. Thus, as the standard of living goes up, the amount of waste and consequent pollution must go up.

I believe we must base the next industrial revolution—a planned one—on the thesis that there is no such thing as waste, that waste is simply some useful substance that we do not yet have the wit to use. Industry so far is doing only half its job. It performs magnificent feats of scientific, technological, and managerial skill to take things from the land, refine them, and mass-manufacture, mass-market, and mass-distribute them to the so-called consumer; then the same mass of material is left, after use, to the so-called public sector, to be "disposed of." By and large, in our society, the private sector makes the things *before* use and the public sector disposes of them *after* use.

In the next industrial revolution, there must be a loop back from the user to the factory, which industry must close. If American industrial genius can mass-assemble and mass-distribute, why cannot the same genius mass-collect, mass-disassemble, and massively reuse the materials? If American industry should take upon itself the task of closing this loop, then its original design of the articles would include features facilitating their return and remaking. If, on the other hand, we continue to have the private sector make things and the public sector dispose of them, designs for reuse will not easily come about.

We industrial revolutionaries must plan to move more and more into the fields of human service, and not leave such concerns to the so-called public sector. We have seen our food supply grow to abundance in the United States, with fewer and fewer people needed to grow it. We are seeing the automation of factories, with an abundance of "things" provided by fewer and fewer people. On the other hand, we have a shortage of human services and a shortage of people providing these services. It follows quite simply that, if private enterprise is not to dwindle, while the public sector grows to be an all-embracing octopus, then private enterprise must go into the fields of human service.

The next industrial revolution is on our doorstep. Let us be the revolutionaries who shape it, rather than have it happen—and shape us.

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