

is replacing another. No sooner is a technological advance created, produced and applied than another is already on the drawing boards to replace it. That is how fast the world is being changed by the revolutionary process taking place in science and technology. Keeping up with this new world has become a daily challenge.

New and exotic technologies are being developed at the same time the more established ones are perfected. New technologies exploit different physical processes like biomechanics or quantum mechanics in order to create a whole new level of speed and miniaturization. Not all new technologies will be revolutionary, but we can rest assured that some will be. I think it is safe to say that the scientific and technological revolution will be felt on the same scale as the harnessing of steam, electrical and atomic energy.

WHAT IT IS

What is the nature of this new technological revolution? The basic kernel of this breakthrough was the development of the transistor and the integration of many transistors onto a microelectronic chip. The chip is made of silicone wafers imprinted with millions of transistors and other components creating vast and complex integrated circuits.

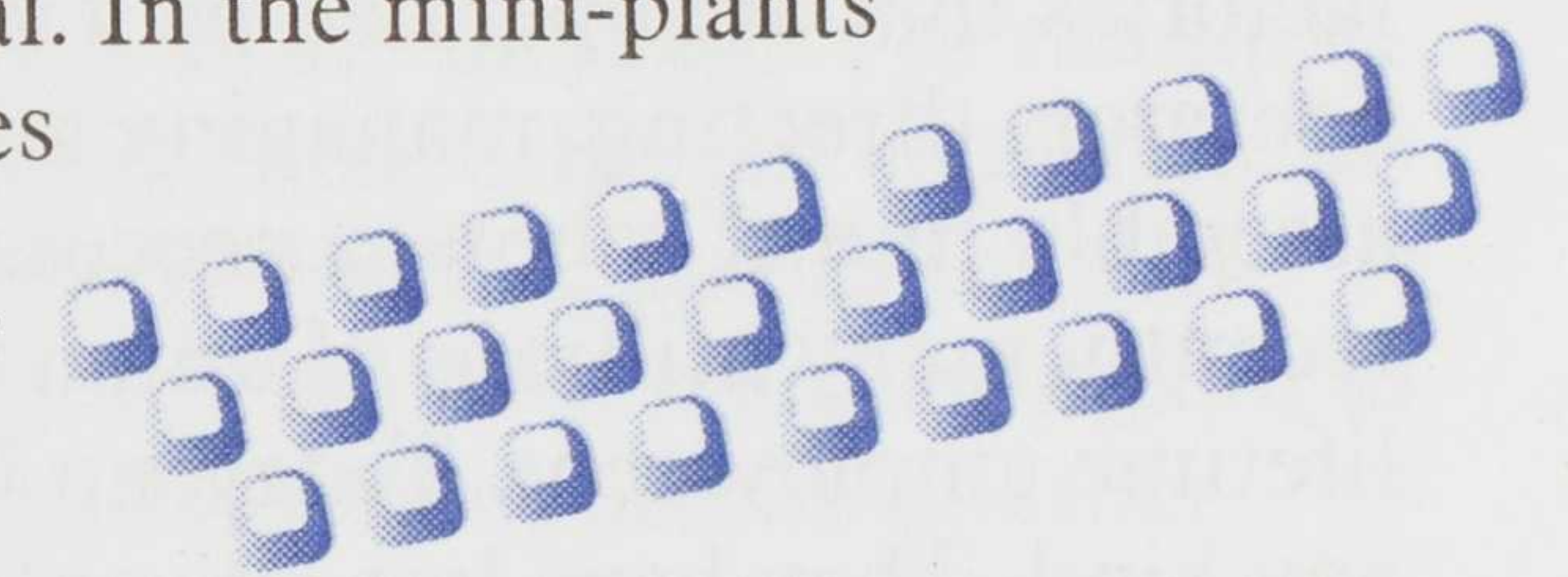
The chip is one-quarter the size and thickness of a postage stamp. It is much smaller than a dime. Today's integrated circuits, though small in physical size, can have more computational power than machines that used to occupy whole rooms and buildings. These tiny chips are revolutionizing the world of communications, production process, and of home appliances, watches, calculators, etc.

The "mighty chip" makes industrial assembly lines—without human hands—a reality. Such assembly lines have already been set up. The microprocessors automate controls, not only over production lines, but also research and design work.

For example, GM just announced that, with the use of computers they have cut six months off the 36 months it used to take to design, develop and put into production a new model car, thereby eliminating a whole layer of engineers, designers and administrators, and cutting 12 percent off the cost of producing the vehicle. Since workers never see this saving, the end result is bigger profits for the stockholders and even bigger bucks and bonuses for the executives. Furthermore by the end of this year GM projects cutting another six months in the process from the design studio to the factory floor, using even more advanced computer designs. But the U.S. is still

way behind the Japanese, who take only 18 months for the same process.

Chips and robots are making possible whole auto production facilities that are untouched by human hands, except for the very few, very highly skilled workers it takes to operate the computers. The new technology in steel is a major factor, among others, in the radical changes taking place, changes that are resulting in the phasing out of steel production in this country. For example, the basic process of making raw steel from iron ore is being phased out in the United States. This same trend is now also appearing in other countries, like Japan and Germany. This basic steel-making process is being set up in many of the developing and neo-colonial countries. It is the process that most pollutes the environment and decimates health. In the U.S., the shift is to "mini-steel plants" that produce higher quality steel from scrap metal. In the mini-plants the new microchip technology makes possible a continuous process with a much smaller labor force. Most of these mini-plants are in out-of-the-way, low-wage, nonunion areas.



This is a pattern in many of the basic industries. It is a pattern that leads to sick and dying industries, to higher chronic unemployment, and to decaying urban centers.

This new technology is a weapon in the operation of the multinational corporations. It is they who are shifting the polluting, unhealthy, low-paying type industries to developing countries.

And the chip and robot revolution is creating new problems for the developing countries generally. While it is true that some industries are being built by the multinationals to take advantage of the lower wages and better tax breaks, there is also an opposite development. Microelectronics, because it is able to replace workers, becomes a competitor even for the low-paid workers in the developing countries. Even the threat of such shifts become a factor in reducing still more the wages and living standards in the developing countries.

TECHNOLOGY AND THE GLOBAL ECONOMY

Just as capitalism misuses technology at home to increase profits at the expense of people, so too, on a global scale imperialism and capitalism pervert technology. One big example is in the flow of capital and financial manipulations