An Overture

The Second Industrial Revolution Is Here

We are currently experiencing a revolution in industry far more rapid and far more overwhelming in its effects than was the first industrial revolution. The present Microelectronics Revolution, starting as a ripple during the 1970s, has now gained sufficient mass and momentum to qualify as a full-fledged New Wave for our generation.

During the 1980s, computer sizes will continue to shrink while storage capacities will increase and costs will decrease. Microelectronics will become the world's leading and most profitable industry. By the end of this decade, we may see books "printed" on microchips and reduced to the size of playing cards. Students will read these "books" by inserting their card-sized information storage units into a small portable electronic "Elektrabook" that will rest comfortably on lap or desk. Pages of the "book" can then be studied as they flash on Elektrabook's screen. Since Elektrabook will be about the size of an old-fashioned paper textbook, an entire student library would require the space now occupied by one textbook and one or two decks of poker cards.

Another casualty of the New Wave will be cash. Computer-compatible credit cards will be equipped with a microchip keyed to the credit card owner's fingerprint or voiceprint. With these cards, funds will be computer-transferred efficiently and accurately without the inconvenience of hard cash exchanges.

The New Wave will profoundly improve personal health care. Wristwatch-like devices will be minute computers that monitor body processes and scream a warning signal when some function is biologically amiss. Implanted microprocessors may even provide early warning of developing malignant cells.

Precisely how the microelectronics New Wave will affect education in biology is totally open to speculation. It seems likely that students may spend less time in formal classrooms and more time in microelectronic-facilitated learning in their own homes. Today's high schools often seem more oriented toward preservation of regimentation than the process of learning. My dream is that the New Wave will bring with it a vigorous challenge to educational axioms and traditions. Our current system evolved about a century ago, and hasn't changed very much. As has been the case in industry, an overhaul was not good enough: really important changes happen through revolution. Education truly needs a New Wave.

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