

Don't forget Dr. Frankenstein

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When Mickey Mouse orders the broom to do his bidding in Walt Disney's *Fantasia*, every adult knows what's going to happen. Only children are amazed. In the real world, however, it's the adults who are surprised by the

unexpected consequences of technology.

When Alexander Graham Bell invented the telephone, no one anticipated 800 numbers, telemarketing or teenage telephone addicts. When Henry Ford organized the first automobile assembly line, no one anticipated drive-in movies, suburbs or Los Angeles freeways. In each case, a technology introduced to improve efficiency led to a stream of social transformations.

It could happen to you

Computer vendors and information systems managers are today's equivalent of Mickey Mouse, Bell and Ford. The systems you develop and install to improve existing operations can

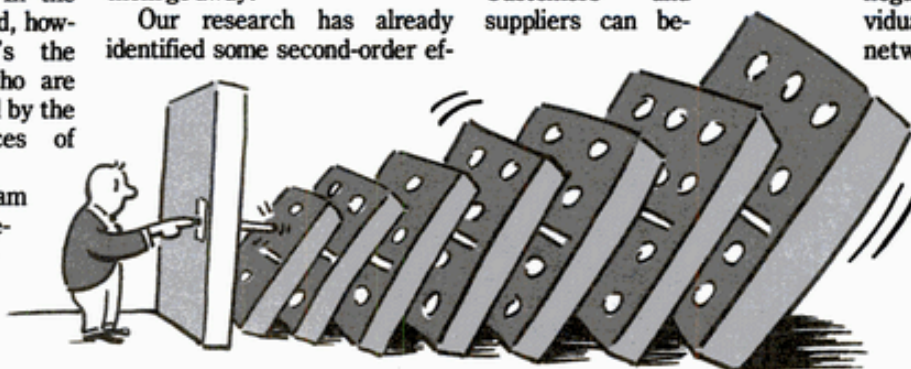
have profound second-order consequences that may eventually be more important than what you set out to accomplish.

Many of you may think that second-order consequences are not your business. After all, it's hard enough to design and install systems to do the things they're supposed to do without also having to think about unanticipated second-order effects. But ignoring these effects won't make them go away.

Our research has already identified some second-order ef-

fects change when discussions are held electronically. More people can contribute than is possible in face-to-face meetings, and people are often more willing to say what they think. Expertise, which may have developed in isolated pockets within the organization, can be shared.

Organizational structures are also affected. People can belong to many groups. Messages can bypass bureaucratic channels. Customers and suppliers can be-



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fects in networked organizations. Many of these outcomes are positive. Some are not. In either case, they are very much your business. You should be ready to capitalize on new opportunities from transformation and to mitigate its unanticipated negative consequences.

Networked systems, particularly those that support person-to-person communication, change the way people connect with each other. Group dynam-

ics come much more tightly linked.

Not all rosy

But second-order consequences are not all positive. Electronic arguments can escalate to name calling and rude remarks that would never occur in face-to-face meetings. "Junk mail" can proliferate. Snooping and unauthorized surveillance of people's mail files can occur.

Networks can also alter the conventional boundary between

work and leisure in ways that are problematic. Network activities can expand to include social discourse and entertainment that is hard for employers to justify.

In some instances, network communications are also creating a fertile ground of controversy over fundamental notions of free speech, liability and proprietary rights to intellectual discourse. If vendors and managers are not on top of these changes, lawmakers will tie their hands before they can react.

In many instances, changes that are primarily good can have negative aspects for some individuals. For example, because networks can provide low-cost, 24-hour access to almost any price and product information, they can eliminate the need for intermediaries who provide the link between buyers and sellers.

Although no one can specify the second-order consequences of any technology in advance, it is crucial, if you are designing or implementing systems, to include transformation in your vocabulary, because your real leverage could come from creating new methods of organization and new ways of working.

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