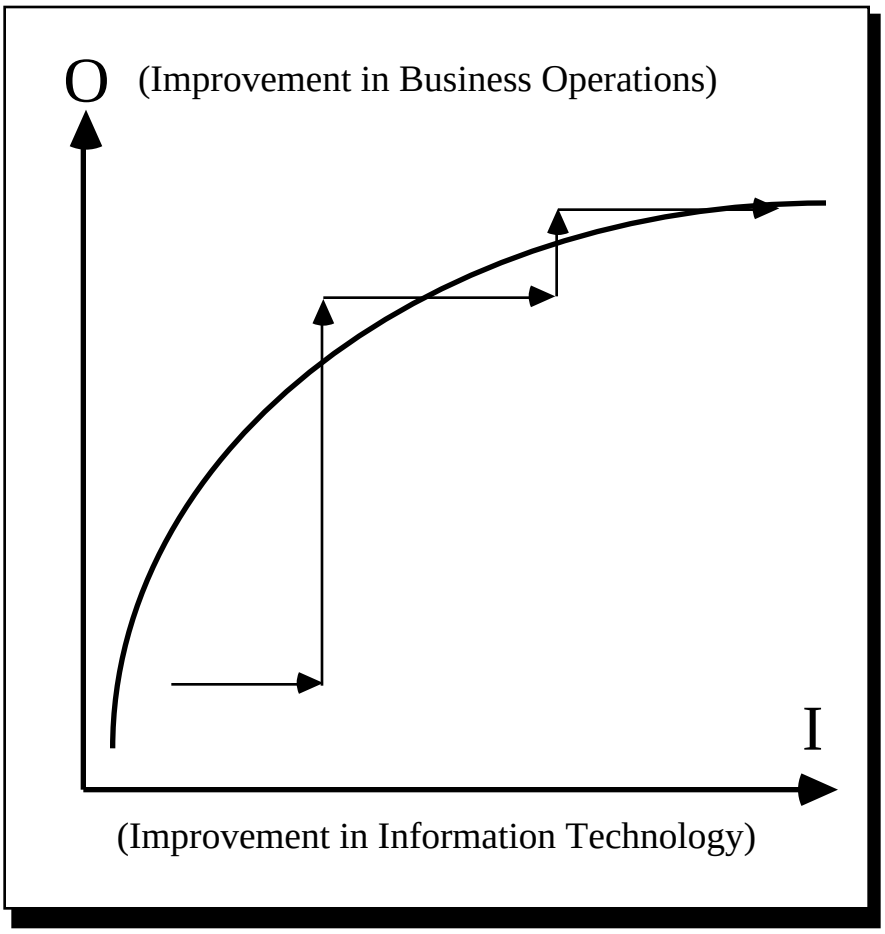
8

B.I.O. Rhythm

Competitive market forces are moving businesses toward a customer focus. Consequently, there is an increasing need to entrust control of the work process to frontline workers who deal with the customers. The rapid development of information technology is providing the opportunities for workgroups at all levels to find better ways to get things done—not just doing things faster. While these two formidable currents are bound to set our bearings into the Information Age, smooth sailing is by no means automatic or guaranteed. In fact, the two have perhaps diametrically opposite characters. Information technology is dynamic and volatile. Like waves in a rough sea, today's state-of-the-art is quickly pushed over by new standards of tomorrow. Operation of work processes, by contrast, is habit forming and routine oriented. Like ripples in a calm pond, it propagates its influence in a steadfast pattern. It should then come as little surprise that IT and business operations are unlikely to work in perfect harmony without significant efforts to ensure that the two are in sync. Moreover, as long as either party of this yin-yang relationship is evolving—as IT certainly will be—the whole must keep on changing. This precludes any static perspective for the design of business operations that rely substantially on IT. To make best use of available technology, one must rethink how work gets done. The reengineering of work, and the innovation of business processes have become popular pursuits in Corporate America in recent years. It is important to note that these should not be treated as one-time, fix-up

projects. Once a higher level of effectiveness is achieved, new demands and opportunities will in turn be open to take advantage of further advances in technology. For this reason, I call the mind-set for continual improvement—in business operations with the timely support of information technology—*B.I.O. Rhythm*. A visual aid to this concept is given in Figure 8.1. The initials stand for Business Information and Operations. That they spell out the physiological phenomenon of biorhythm is unintentional, but perhaps not altogether inappropriate. Current management thinking does accommodate the view of business enterprises as

Figure 8.1 A Graphical Display of B.I.O. Rhythm



dynamic organisms capable of growth, learning, and evolution. To minimize confusion, we will stick with the capitalized initials and pronounce this coinage as “bee-aye-oh” rhythm. In Figure 8.1, the upward sloping curve is used to represent an ideal path of balanced and effective improvement. Things are getting better and better as we move from the lower left toward the upper right of the picture. The zigzagging lines about this B.I.O. Rhythmic path indicate that typically, long-term improvement can be considered as the combined results of steps taken in both the directions of information and operations. While any sequence of steps is conceivable, those with alternating directions enveloping the ideal path reflect conscious and successful attempts to attain B.I.O. Rhythm. Through a series of examples, we are going to see how this chart can be used to describe and interpret many developments in our business environment.

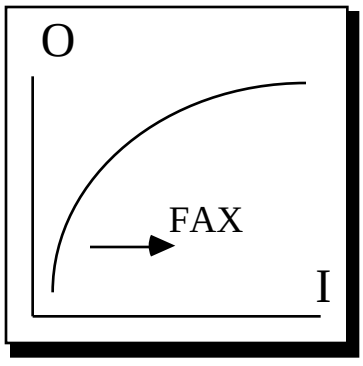
WHAT’S YOUR FAX NUMBER?

In just a matter of years, the fax machine has gained widespread use and has become a standard feature in most business offices. More people are asking directly for your fax number instead of first inquiring whether you have one or not. This must certainly be significant progress, right? Well, probably not as much as it may appear at first sight. While it helps transmit documents much faster than, say, the mail, it does not really change what we do with such documents. In most cases, business is done the same way as before. Depending on the situation, the time savings from expediting certain paper transfer may or may not be critical to the underlying work process.

I have relatives who own and operate a small manufacturing outfit for certain specialty consumer products.

For decades, they do all their accounting manually. Every time there is a change in the cost of raw materials, wages for labor, or freight rates, it will take days to prepare new price quotes. Back in the mid-1970s, when personal computers were just becoming popular, I demonstrated to the owners how easy it would be to update their price quotes with an electronic spreadsheet. Somewhat nonplused, they simply told me that given such a small and traditional operation, any fancy high-tech would be an overkill. Another ten years passed by. Prices of low-end PC clones had dropped from the thousands to a few hundred dollars. Just to prove a point, I offered one as a gift to the factory. It was very politely turned down; and so I gave up. Within a month, a note came over the fax: "…Fax machines just became available on the local market. We bought one last week and have been using it everyday. It's great!" The same people who would not have anything to do with a computer snapped up the fax. What is the difference? With the fax, they did not have to cope with any real changes in the way they worked. In our chart, this is a horizontal step without an accompanying move upward. For this reason, we should not expect much by way of advancing along the B.I.O. Rhythmic path. While our example may be a little bit extreme, the same kind of resistance to change—conscious or otherwise—can be found to various extents in most existing work processes.

Figure 8.2 Fax



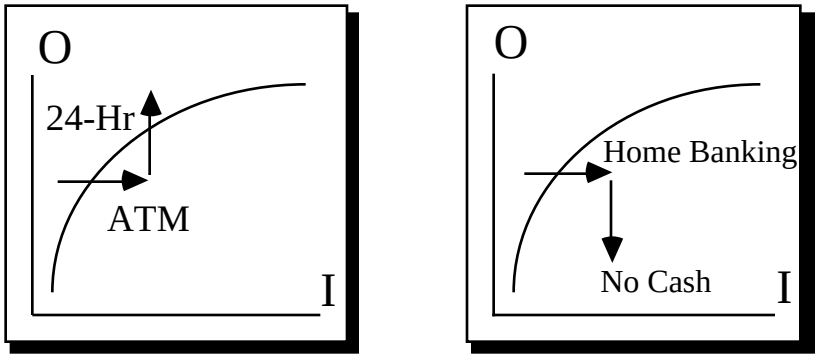
In all fairness to the fax technology, it should be pointed out that there are situations in which a step in the vertical direction can indeed be made. For instance, many

business people used to phone the corner coffee shop to order a take-out lunch. Now they can fax the same order. For the coffee shop, a fax order does not require someone to answer the phone. This is a real change in the operation and hence can be considered a move up in the O-direction. Next time you fax something, think of whether it really changes the way things get done. If not, ask yourself what it would take (even if it is pie-in-the-sky) to do a better job.

THAT'S WHERE THE MONEY IS

By the time personal computers developed a substantial user base, the banking industry was eager, willing, and able to provide home banking services. With the use of a

Figure 8.3 ATM vs Home Banking



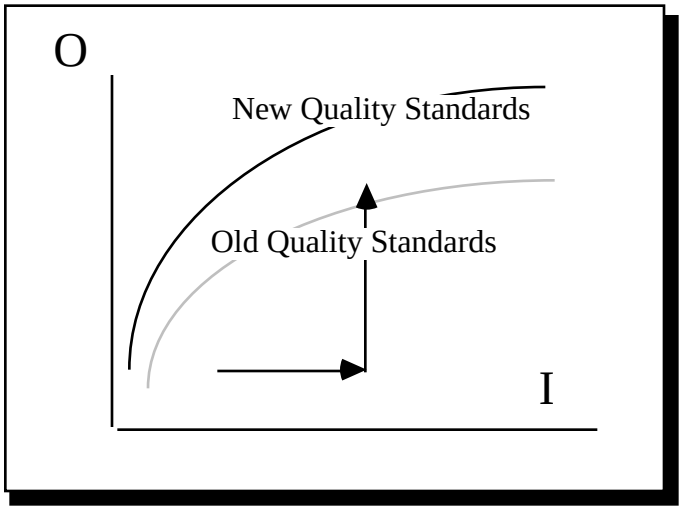
modem, one can take care of all kinds of financial transactions in the comfort and convenience of one's own home. Some banks, at one time or another, were ready to provide customers with the necessary hardware to get started. Yet, even to this day, home banking has never quite caught on. Meanwhile, automatic teller machines (ATM) have sprung up everywhere and become part of many people's regular

routine. Why would people rather get out of the house, even in foul weather, and drive up to a hole in the wall to use essentially the same technology? The only reason is that they cannot get cash over the phone line. In what is still primarily a cash-based economy, this drawback is enough to negate other operational advantages, such as round-the-clock availability, and the convenience of one's own home.

ALL THAT GLITTERS

Information technology is basically electronic. It holds the promise of eventually eliminating the use of paper at work. Apart from saving trees, this prospect will also go far in streamlining the cluttered workplace. Then came desktop publishing. It has been considered as one of the triumphs of IT. By enabling personal computer users to produce documents, presentations, newsletters, and reports, which only years ago required graphic designers and typesetters, it opened up the floodgate for creativity and expression. Does it really make us work better? That is not obvious. We do know for sure that it has raised the expectation and superficial quality of paper output. With the increasing ease of production, there is no doubt that the quantity of such output has also increased. As a professor, I am no stranger to absolutely professional-looking reports, which on closer examination, turn out to be devoid of meaningful content or signs of coherent thought. What happened is that desktop publishing has set higher quality standards for the presentation of paper output. In business correspondence, no less than laser printing, sprinkled with **bold face** and *italics* for emphasis, is expected nowadays. The B.I.O. Rhythmic curve has been raised from the dotted line to the solid one in Figure 8.4. By taking control of creativity and expres-

Figure 8.4 Desktop Publishing

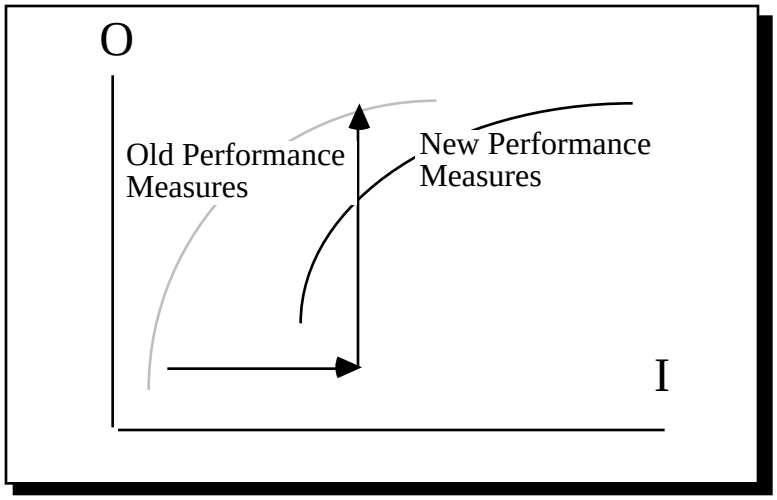


sion, we might indeed have made a move up in the O-direction. However, unless there are further changes to help us produce better *content*, we have not really gotten anywhere in terms of the new expectations. In any case, if the paperless office is to be the ultimate goal, desktop publishing could prove to be quite an engrossing detour.

TEACHING ELEPHANTS TO DANCE

We have seen how a B.I.O. Rhythm curve can shift in one direction. It can also happen in the other dimension, as shown in Figure 8.5. This is typical of projects to "modernize" venerable bureaucracies such as the Internal Revenue Service. It is not unusual to see ten-year schedules and multi-billion-dollar budgets for these tremendously complex undertakings. Apart from the IRS, agencies like the Federal Aviation Administration, the U.S. Patent and Trademark Office, and the National Weather Service have all experienced explosive cost overruns and lengthy delays

Figure 8.5 IT for Mega-Bureaucracies



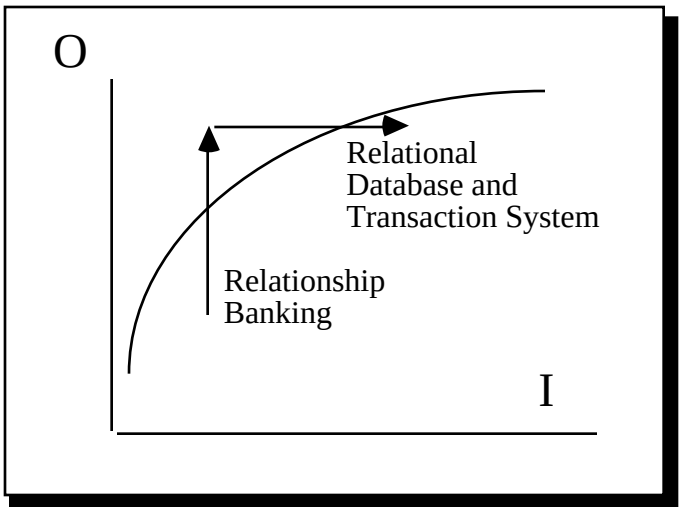
in their IT projects. Technical and managerial difficulties aside, these systems are likely to become obsolete by the time they are completed. This is due to the simple fact that ten years can easily translate into three or four generations of technology. With luck, they may still work well enough to serve their intended purposes. However, the curve for matching up the needs of the times with state-of-the-technology has changed. Another cycle of modernization will be in order. Unfortunately, the very scope of the project will again preclude the system from ever becoming truly B.I.O. Rhythmic. In the present context, we can substitute "Bureaucracy" for "Business" as the "B" in "B.I.O."

MORE BANK FOR THE BUCK

Lest you think that all efforts to improve on business processes are initiated by technology, we will look at examples where steps are taken first in the O-direction. Traditionally, banks are in the business of transactions: checking accounts,

savings deposits, loans, etc. As records are kept separately in information systems specific to different transactions, a bank does not necessarily know much about its customers—not even those who deal extensively with it. The emergence of the customer focus and the need to be responsive and

Figure 8.6 Relationship Banking



flexible to compete in the new market paradigm give rise to the concept of "relationship banking." The bank wants to keep complete profiles of its customers so that it can market individually tailored services and products. With this move up the O-direction, pioneers like Banc One Corp., the Columbus, OH-based banking conglomerate, decided that they are in the information business rather than the transaction business. The step in the I-direction involves replacing the disparate information systems with an integrated customer database and transactions processing system. The bankers may decide that customers with high balances in their checking accounts can be better served by higher-yielding savings accounts. They can now readily

generate a list of customers who qualify and who might be interested in such services.

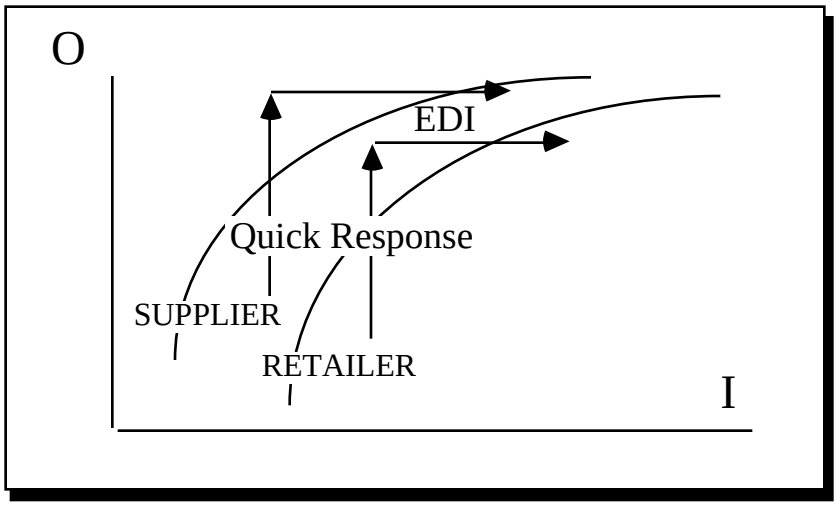
YOUR MARTINI, MR. BOND, STIRRED, NOT SHAKEN

Similar steps to attain B.I.O. Rhythm are taken by the travel and hospitality industries. As a weary business traveler, you might consider it a treat to be greeted without waiting in line at the front desk; pick up a key knowing it will be for a smoke-free room facing the courtyard; have your favorite newspaper waiting at the breakfast table; and not to have the coffee refreshed until you have finished the cup. To improve on customer service, hotel chains take a step in the O-direction so that you do not have to repeat the ritual of expressing your likes and dislikes at every stop. Instead, the frontline workers, including desk clerks, bellhops, housekeepers, operators, and waiters will know about a repeat customer's preferences and cater to them accordingly. For pioneers like Ritz-Carlton, the Atlanta, GA-based luxury hotel company, the I-step is in the form of a guest-recognition system. The employees feed back what they have learned about a customer into the system. They also have on-line access to the system for information on customers they are serving. While such level of sophistication can only be found initially at luxury hotels, lesser versions of preference tracking—more categorical than anecdotal—are already commonplace among airline frequent flyer programs and car rental agencies. They know, for example, if you prefer a window or an aisle seat, a full-size or a compact car.

YOUR SIZE IN STOCK, GUARANTEED

If not, you get one free! This paradoxical offer has actually appeared in advertisements. Whatever it means, we can sense the retailer's effort to be responsive to customer needs. Running out of an item in demand will turn away customers—with loss of sales as well as good will. Over-stocking items that are not moving is also costly—by tying up capital and taking up space. Increasingly, retailers are taking the O-step to shoot for just-in-time replenishment of merchandise. The practice has become known as Quick Response. It involves a strategic alliance with a supplier to provide frequent and timely shipments. For the I-step, sales

Figure 8.7 Quick Response



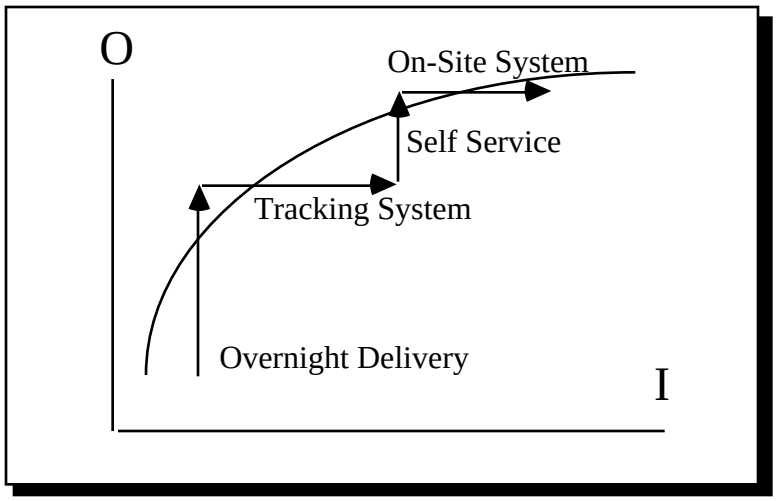
trends and inventories are continuously monitored by point-of-sale (POS) information systems. The information is shared by the supplier through electronic data inter-change (EDI). This helps the supplier with its O-step of just-in-time production planning and delivery scheduling.

In many cases, no conventional purchase orders or invoices are processed. Billings and payments are done by electronic fund transfer. VF Corp., maker of Lee and Wrangler jeans, actually manages the inventories of its products sold at JC Penney stores. Dupont, the chemical giant, works similarly with many of its suppliers. These are examples of B.I.O. Rhythm in a strategic alliance.

ARE WE THERE YET?

So far, we have seen only examples of single sequences of I- and O-steps. For something that truly begins to resemble

Figure 8.8 Overnight Couriers



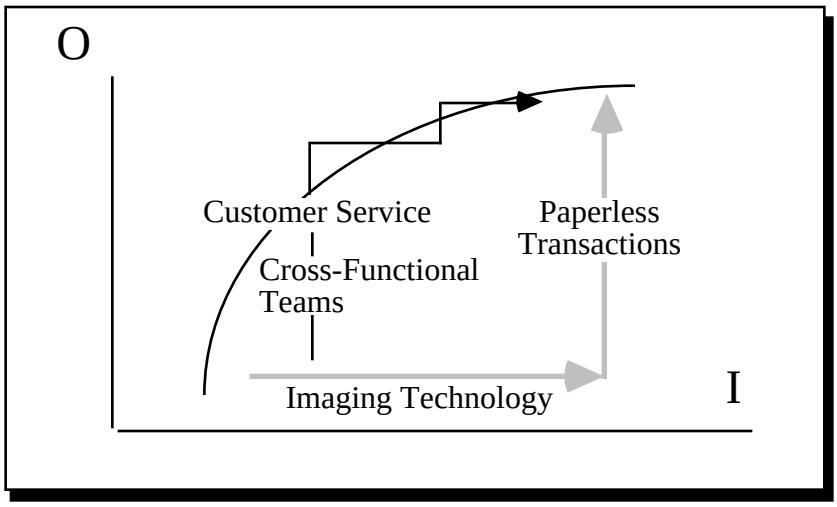
a rhythmic pattern of improvement, we can look to the most progressive overnight couriers: Federal Express, followed closely by United Parcel Service (UPS). Initially, the O-step is summed up clearly by a guarantee of delivery by 10:30 in the morning. The massive operations of package pickup and sorting, fleet scheduling and dispatching,

billing, and accounting are made possible by some of the most successful information systems in use. These tracking systems—the I-step in our chart—are a showcase of IT: incorporating bar-coding, hand-held and truck-mounted computers as well as satellite communication. Still, there is no room for complacency as alternative forms of communication, notably the fax and voice-mail of today, and the digitized video of tomorrow, can easily alter the landscape of the express mail market. This calls for continuing improvement in the standards and level of service from the standpoint of the customers. It comes in the form of another O-step that will make it easier for customers to use the delivery services. Both Federal Express and UPS can now provide customers with complete PC-based systems to store address databases, to print bar-codes and labels, to tap into the courier company's tracking systems for the status and verification of delivery, and to keep account of shipping volumes and expenses. By empowering the customers, the industry enhances its flexibility and responsiveness to their needs. With the new technology, the customer can tell instantaneously when a package was delivered, and who signed for it—should a dispute arise with the recipient. This saves an extra layer of communication by eliminating the need for the customer to make inquiries with the help of service personnel of the courier company. Apart from promoting the customer focus, this approach apparently is cost-effective enough to allow the companies to equip their customers with the hardware free of charge. It may not be easy to predict their next moves up the curve in Figure 8.8. Nevertheless, I believe we can count on these competitive enterprises to seize the moment when a new combination of opportunities arrives.

BACK TRACKING

Through the 1970s and the 1980s, the New York Life Insurance Company has been a leader in investing in information technology. For development on mainframe computers, it moved early into computer-aided software engineering (CASE). It caught one of the first PC waves. For decision support, it got a jump start on expert systems. As an even bolder initiative, it had planned to convert practically its entire business into paperless transactions through imaging technology. Every check, form, and report would be scanned and digitized to become electronically manipulatable. It is an environment that most technologists believe to be the way of the future—although estimates of when it will happen may vary significantly. In any case, as an undertaking to rebuild the business platform, it represented a wide stretch on our B.I.O. chart as depicted by the dotted arrows in Figure 8.9. By early 1992, the company decided

Figure 8.9 Overreaching vs B.I.O Rhythm

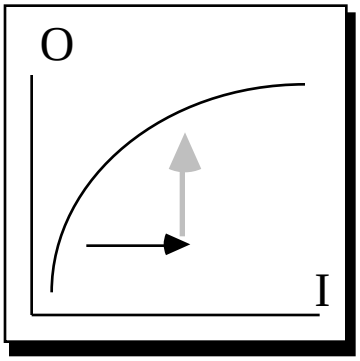


that it was overreaching in this I-step for cutting-edge technology. In the process, it may have lost sight of other critical success factors for its core business. It has since been refocusing on customer service: restructuring by empowering cross-functional teams to deliver and enhance the value of its products and services. The ambitious goal has not been abandoned though. The company is still aiming for it by taking one manageable step at a time. This change of tack can be succinctly captured as a realignment with the B.I.O. Rhythmic curve.

AHEAD OF THE GAME

In the chronicles of IT, there have been many projects that suffered from technical setbacks and managerial snafus. Not surprisingly, they eventually got smothered by runaway budgets and missed deadlines. However, there have also been some nicely done ones that nevertheless missed their mark. What could have gone wrong? In our framework, the cause of the problem is very often a dubious O-step. The nature of such missing links can vary from case to case and we should look at a few examples. The simplest one is the dust-collecting home computer. I am often approached with the question: "Which computer should we buy?" My stock response is that it depends on what you need to or wish to do. The underlying assumption is that unless you have an O-step, it may not be necessary to take an I-step. Chances are there is a need, if for nothing

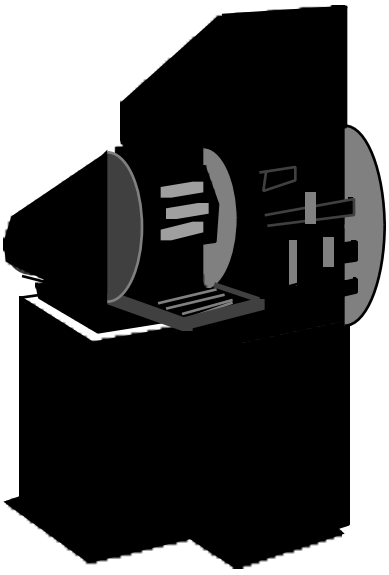
Figure 8.10 Missing Link



else, at least to become computer literate. The real question is then: What is best suited to your needs? In the early days of PC's, a decent system cost around $5,000. As new models were introduced, they still cost that much, except that one got progressively more performance for the money. By the late 1980s, both the technology and the industry have matured to a point that there began to have real choices. Today, one can set a budget of anywhere from $1,000 and up, and then find a system to fit. If you decide to splurge on a $5,000 system just to balance your check book, much of your investment will be sitting idle. Unlike a Ferrari in the garage, computer hardware depreciates rapidly. We illustrate this lack of B.I.O. Rhythm by a substantial I-step and a shadowy O-step in Figure 8.10.

Then, there is the short-lived debut of the Postal Buddy. This is an interactive, multimedia information processing kiosk that double-duties as a vending machine. Its primary purpose is to process address changes, a function of the U.S. Postal Service that costs $1.3 billion a year. It talks the customer through options on a touch-screen and gives instructions to key in the necessary information. It verifies the transaction using an internal database on a CD-ROM. The collected information is retrieved nightly by a system in San Diego, CA, that performs further verification before forwarding to USPS's National Address Information

Figure 8.11
The Postal Buddy



Center in Memphis, TN. According to the Postal Service, if the 10,000 planned installations were to handle half of the over 40 million address changes made each year, the estimated annual savings on labor for data entry alone would be around $50 million. As a vending machine, Postal Buddy also sells stamps, customized cards and stationery as well as other mailing accessories. Financially, it is a joint venture with private business, for which the Postal Service is to share revenues above $42 per kiosk per day. It is a good idea, and the choice of technology is perfectly sound and timely. The first kiosks were introduced in December 1992 and the debut went without a hitch. Indeed, the project has such a smack of showcase potential that Vice President Al Gore used it as an example of how IT can help reinvent government. This makes it all the more surprising that in the Fall of 1993, less than a year after the launch, the Postal Service terminated the venture. The reason cited—that actual revenue of $15 to $30 per kiosk per day missed the projected levels of $35 to $55—showed a muddled intent for the O-step. Was it to streamline address-change notifications, or was it a new product line? For the former, the I-step taken is indeed a laudable advance to make a nontrivial government service more user-friendly, reliable, and in our terminology, B.I.O. Rhythmic. For the latter, all that technology may indeed be an overkill for a vending machine that perhaps does not have real market demand. For the time being, we can only chalk up a shadowy arrow in the O-direction to account for the setback of the Postal Buddy.

An even more complex case is Globex—the world's only computerized, 24-hour trading system for options and futures as of 1994. It is an intercontinental network of computers and workstations developed and operated by

Reuters Holdings, the British information processing conglomerate, under contract with the Chicago Board of Trade (CBOT) and the Chicago Mercantile Exchange (Merc). The $100 million system has a network of some 400 trading screens over the globe and provides round-the-clock transactions. It is aimed at attracting financial markets worldwide to list their products on the network for a fee to the CBOT-Merc venture. Major customers include the Marché à Terme International de France (Matif) in Paris and the London International Financial Futures Exchange (LIFFE) in London. Launched on June 25, 1992, Globex has failed to generate enough business, in terms of contracts traded per day, to be profitable after 18 months of operation. In the view of CBOT chairman Patrick H. Arbor, "Computerized after-hour trading has a sexy ring to it. But before screen trading can take hold, it has to reach a critical mass." In other words, while the I-step may be a resounding success, the technology may be ahead of the game. However, Merc and Reuters believe that it is the O-step that is holding Globex back. In particular, the system is not exactly "seamless." After the day time open-cry bonds trading session is over, CBOT has its own night session and does not list contracts on Globex until 10:30 p.m. John F. Sandner, chairman of Merc as well as the Globex joint venture, also realizes the need to strengthen the alliances by making participants like Matif full-fledged members—to share the costs and profits. Meanwhile, CBOT has plans to expand its open-cry operations with a new trading facility. It also has it own electronic trading network under development. All these factors add to the murkiness of the O-step for Globex. They jeopardize its potential for B.I.O. Rhythm and cast doubts on its continuing viability.

CATCHING THE WAVE

We have seen how the concept of B.I.O. Rhythm can be used to describe many contemporary developments in business enterprises and bureaucracies. Successes and setbacks alike can be cast within our framework of interaction between business operations and information technology. These forces are so intertwined that neither alone can determine the outcome of an activity to create economic value. Since both are subject to constant changes caused by progress, politics, or plight—the timing of events becomes a crucial factor. That is why we use, at least metaphorically, the dynamics inherent in rhythms to capture the essence of their synergy. The B.I.O. Rhythmic curve that we have drawn is largely symbolic. For our present purpose, there is no need to quantify its exact form or shape. It is reasonable though to assume a curve with a diminishing upward slope. This reflects naturally the narrowing of opportunities for new benefits on successive steps down a trodden path. As Kent 'Oz' Nelson, chairman of United Parcel Service, put it in an interview with Computerworld, "We've knocked out a lot of the easier ones. The [IT projects] now are much tougher." How about steps that open up new doors? With those, we will be shifting to a new curve and start climbing there. Now, we can clarify the difference between catching the wave and missing one. In the example of unwieldy projects that become obsolete by the time they are finished, we pointed out the need to start over just to keep up. The first wave is gone and so is the opportunity to make the best of it. The most one can do is to try harder for the next one. In the success stories of the overnight couriers who are taking a second step up the curve, it is trying harder too. However, it is riding on the

same wave after catching it the first time around. This is the rhythm that will hold the key to prosperity in the Information Age.

SPELLING IT OUT

Even if we are not going to theorize about this central concept of the book, a concise definition may be helpful to fix ideas.

> B.I.O. Rhythm is seizing the moment
> to realize improvement in business operations
> with appropriate information technology;
> and the ability to do so continually
> as new opportunities for such match-ups arise.