Winning in the 1990s

Stephen E. Arnold

PO Box 300, Harrod's Creek, KY 40027, USA

In the US, winning is something of an obsession. Al Neuharth, a modem Machiavelli, built *USA Today* in the face of the skepticism of fellow publishers, money men, and consultancy slickies. His 'I told you so' is a book of secrets called *Confessions of an SOB.* The SOB, purchasers soon discover, is Mr Neuharth.

What does the publisher of a four-section, four-color five-day-a-week tabloid have to do with electronic libraries? Quite a bit actually. Trust me: Mr Neuharth speaks directly to legions of business people who like what they hear.

What I have set out to do in this essay is capture the pulse of the 1990s. Firstly I revisit the halcyon years of the first two decades of electronic publishing, and then offer for the reader's consideration my view of the attributes which many of the successful information companies will share in 1999. As a New Year's gift, I deliver my list of 12 hot information companies for the 1990s. Flipping directly to the list is not allowed.

Mr Neuharth's rules for winning

Mr Neuharth mashes out philosophy with a steam-roller subtlety:

> Winning is the single, most important thing in life.
> Steal good ideas.
> Cover your after parts because others will do to you what you will do to them.
> If niceness doesn't work, try nastiness.
> Sell yourself relentlessly.
> Fail but don't quit.
> Keep in touch with your adversaries so you know when they make fatal errors. Strike then.
> Ignore anyone who is negative.
> Make work 'fun'; that is, winning feels great, losing is less filling.

I wish to apologize to Mr Neuharth and his editors. My précis does not do justice to the tone, sweep, and grandeur of the original. Mr Neuharth wields a prose blunt enough to pound the book's intellectual thunderbolts into a poor reader.

A sporting metaphor

Wisdom like Mr Neuharth's automatically brings professional sport to my mind. As I write this, FIFA officials, assisted by Mr Pavarotti, opera star, have completed the draw for the World Cup battles in Italy. It occurs to me as I watch the glitz and glitter of the draw, that football has changed off and on the pitch. In the 1970s, the draw was an efficient, quiet affair, not star-studded prime time. More bittersweet is my thought that the magic of the Brazilian teams of that era has been de-wizardized by Italy's 'little chain'. Has this graceful, old style headed South to escape show biz razzle-dazzle and bone- snapping blind-side tackles? Yes, I think so. Still a few romantics will watch 1990's matches and think it is still springtime. They see dark clouds through the lens of wishful thinking.

There is, I believe, a parallel between those good old days of both football and electronic publishing in the 1990s. Electronic publishers at the end of the 1970s were Pathfinders, not Mike Tysons. Their electronic constructions bore the fingerprints of crafts people who turned their concepts into 1s and 0s. Names which come to mind are Dick Kollin, Loene Trubkin, Sam Wolpert, and a handful of others. One of deans of the industry, Carlos Cuadra, said something to me years ago when I told him that I had never met a legend before. His comments speaks for his peers in the early 1970s: 'It wasn't anything, really'.

Really. Come on, Dr Cuadra, accept the responsibility for creating the industry which promises to dominate the next decade. What Carlos Cuadra's remark reveals is that the creators of electronic publishing see themselves as technologists or information professionals, not gurus, Trumps, or marketing aces. I cannot think of one who would say, 'I am like Mr Neuharth'. That turn away from Mr Neuharth's philosophy and toward a more academic, intellectual orientation to information influenced the style of the 1970s and early 1980s.

When I listen to presentations at conferences, I have become more aware of the lack of historical perspective which finds its way out of talks. Quite rare are references to the 'database motherships' and the individuals who built these online Death Stars. Listening to speakers at a conference in the last two years of the 1980s, one concludes that user-friendly interfaces and full-text databases are products of spontaneous generation. In fact, at the first-rate Canada Online III, held in December 1989, none of the talks which I heard acknowledged the roots of online, roots deep in technical libraries and hard-science research. Maybe in today's world it is no longer necessary to know about origins? Maybe the real-time search for end users is more important than past lessons?

I have long argued against chicken-and-egg reasoning in trying to make sense out of electronic publishing. The unique attribute of electronic information is its complexity, its roller-coaster twists and turns. At Rutgers University, I suggested that from the moment the first commercial electronic message flowed over telegraph lines more than 100 years ago, technology and data hit it off like love-struck teenagers. They have been making digital babies with shorter and shorter intervals between each gestation. The fact of the 1990s is that data and technology are 20th-century gerbils procreating 24 hours each and every day. [1]

Winners in the early days

It is my perception that the electronic information industry has not been Machiavellian, although a few of Mr Neuharth's kin call attention to themselves.

Do you remember John Kuranz, an innovator largely ignored outside of a small, select circle of experts? Mr Kuranz conceived and created Management Contents, the first business database to index publications cover-to-cover and use controlled vocabulary terms. Before Mr Kuranz, controlled vocabularies implied scientific, medical, and engineering databases, not soft, fuzzy subjective databases covering management topics. Mr Kuranz's experience told him that his colleagues at the pharmaceutical company where he worked needed access to every article in key management journals, not a few, which someone unknown and unseen selected. He wanted a database that provided the complete contents of the most important publications, and he wanted them indexed with a standardized business vocabulary.

Alone, Mr Kuranz set out to create this product. He developed the vocabulary and the list of journals. There are many wonderful stories of Mr Kuranz's commitment to this product. The one I enjoy the most is the tale of his indexing articles while trapped with other commuters in Chicago's rush hour traffic. He believed. He did not, I know for a fact, ponder Mr Neuharth's rules. The 1970s were not a time for beating the other guy to death. They were a time for discovering.

What do you know about Jerry 'Data Maverick' Rubin? Can you name his two strategic contributions to electronic publishing in the 1970s? His first benchmark comes quickly to mind-full-text databases.

What is his second accomplishment? For me it was that he built full text within a large, diversified corporation Mead Paper Company. That he could create an alternative to index-and-abstracting information products within a mega-bureaucracy boggles my mind. One industry leader toldmein 1981:

> 'At first Mead supported Jerry [Rubin] because the output was on paper. Mead execs didn't have a solid notion of data, but they knew paper. And they had the sense to realize that this thing called 'electronic publishing' would require paper. Printing the full text of legal decisions and cases on those red machines would sell lots of paper.' [2]

The ubiquitous UBIQ terminals fulfilled their destiny and helped deforest acres of the western US and Canada. Fifteen years later lawyers use *mucho* paper.

Jump to 1985. After a slow start, the rate of product introductions began to increase. Going faster, of course, cost more money: for product design and testing, staff, and marketing. By the middle of the 1980s, the membership of the US Information Industry Association included little fellows like Data Courier amidst the Goliaths like Dun & Bradstreet. Each trade show brought new names and faces. Each sought a Golden Goose like the one Mr Rubin paraded at the fairs. Each failure like InnerLine became a case study in what not to do. Instantly electronic publishing was MBAized.

Approaching the 1990s

Overnight the number of databases rose steadily. In the mid-1980s there were about 600 commercial databases. By 1989, there were more than 3,000, a figure which does not include proprietary, non-English, or government databases. A similar expansion took place in commercial timesharing services which rose from fewer than 100 in 1985 to more than 500 in 1989 [3]. According to Peter J. Lowry of CD-ROM Publishing Service Inc., the number of commercial CD-ROM information products rose from zero in 1984 to nearly 1,000 at the end of 1989. [4]

Despite this growth in products and delivery channels, revenues routinely seem to disappoint. Let me cite one example: tallying all of the estimated revenue from online and timesharing reported in Information Market Indicators, most recent four quarterly reports, I figure an aggregate revenue for online of about $1 billion [5]. This is a big number. Now compare this billion to the 1989 revenue from Nintendo's electronic game systems and cartridges: $2.7 billion [6]. We must come to grips with this fact: online is an *industry*. Nintendo is a *single company*. Earlier this year, Nintendo announced an online deal with AT&T [7].

By the end of the 1980s, electronic publishing had become so commonplace that if one were to attend a meeting of newspaper, book, and magazine publishers and wanted to find the database set, the easiest way would be to ask: 'Who in this room is not a database producer?' Everybody is an electronic publisher, database producer, timesharing maven, or 'CD-ROM evangelist. The single most significant change in electronic publishing from 1985 to 1989 is the fact that the once-lonely pursuit of a few zealots has become the growth business of the 1990s. As I was editing this essay in the offices of Information Access in Foster City, California, I heard on the local rock-and-roll station's news update that Oracle, a DBMS software company and the occupants of the building next to the one in which I was sitting, formed Oracle Data Publishing (ODP). Richard Brass, ODP's freshly-loaded president, has experience in running a publishing company which markets directory products on magnetic media [8]. First Lotus Corp. Then Microsoft. Now Oracle. I think I see a trend here. Do you?

Oracle is one more example of the new players in the information game. That a DBMS software shop would pursue electronic information is not surprising. Earlier in 1989, Allied Van Lines, a trucking company, purchased FileNet, a company marketing optical storage systems to banks, hospitals and insurance companies. Allied Van Lines stores paper; FileNet stores 'data'. Ergo, a logical match. A manufacturer of mail inserters gobbled up a small electronic publishing company in Louisville, giving the reason for the purchase as synergy between database production and producing microfilm.

Not even a Dadaesque business rationale seems silly when electronic publishing is invoked. This ill-defined and little understood business attracts the interest of companies, large and small, from all over the world and from every conceivable business sector. Not surprisingly the stakes rise with each passing day. The successful companies of the 1970s and 1980s may not possess the money, skills, and luck to duplicate today their past achievements. The winners (perhaps I should say the dominant companies) in the 1990s will certainly have a different blend of characteristics than yesterday's heroes. Successful companies share many basic virtues, including good financial management, a solid management team, and effective organization. However, it is my firm belief that the most successful companies at the end of the next decade will place a different emphasis on the attributes important to their success. Hence, the remainder of this essay highlights the eleven most important characteristics of a winner. The 1990s will be more competitive for electronic publishing than at any other time. For some, their electronic publishing life will be nasty, brutish, and short. The challenge is to make that life more pleasant, more humane, and longer.

Important recent changes

The 1980s may have disappointed many who measure success by market share. Electronic publishing has generated one product in abundance: confusion. Although electronic publishing is everywhere in ATMs, telephone calls, and cable tv, no one knows exactly what it is, nor how to separate 'electronic publishing' from its proliferating cousins: software, facsimile publishing, images, HDTV, *et al.* One thing is certain: electronic information permeates life in the US. The volume and variety of data in this country have transformed the US into an electronic environment, or what I have called a 'datasphere'. In the datasphere, information proliferates. Americans live in information, and the datasphere is diffusing throughout the world.

The ingredients for businesses in the 1990s are explosive technology changes, continuous and rapid data proliferation, and heightened competition for any available revenue. Mr Neuharth's book is hard-wired into the hearts and minds of the electronic information executives. Mr Neuharth says that it is a normal business practice to be ruthless. As I see it, no more of this nice-guy twaddle because:

First, no timesharer, database producer or CD-ROM publisher has had a Nintendo-scale product success. Successful electronic publishers face slow or no-growth revenue from their traditional market. The newcomers have learned that getting new customers who habitually spend large sums for electronic information is neither fast, easy nor cheap.

Second, information companies have not been leaders in electronic-product innovation. New ideas flow from such unlikely places as credit-card companies like American Express, the 'Don't leave home without it'group. AMEX has used optical storage devices to cut their costs and simultaneously generate new revenue from credit and billing information. One example is their entry in the mailing list business, providing list renters with names linked with specific purchases and customer buying patterns [9]. To cite another example: AST, a PC manufacturer in Irvine, California, uses an electronic information service to provide individualized support to customers in the US and Europe. AST recently unveiled two 24-hour online systems: one in the United States and one in the United Kingdom [10]. Unlike the major timesharing services, AST seems to recognize that enough differences exist between North American and European customers to warrant two separate systems. AST departs from the one-size-fits-all approach of the US online and CD-ROM companies.

Third, in the waning months of 1989, a frenzy of commercial liaisons created headlines. IBM nuzzles both Bill Gates and Steve Jobs. Two 'standards' in office software started snuggling up to one another. The Mormon-hued WordPerfect of Orem, Utah, and the shark-skinned lotus Corp. said they would co-operate and exchange file formats. The goal is to make it possible for each company's software products to access files created by the other company's software. Less well-known Softsel and Microamerica, two of the largest hardware and software distribution companies in the US, merged. The value of the deal: $1.1 billion. Both firms have experimented with electronic delivery of software [11].

But the killer-deal involves Sears (a giant US Rust-Belt retailer struggling to hang on to market share) and IBM (a big computer company forcing 10,000 people to retire this Christmas season) who have wed. The result is the decade's biggest online-information marketing blitz. The product is the Prodigy videotex service. Prodigy's backers hope to capture a consumer online market, known better as IBM- compatible PC owners who do not know how to operate their computer. The marketing angle is upbeat, hip, and designed to get millions of IBM-compatible PC owners logged on for $9.95 per month for as much data as the user wants [12].

Fourth and finally, barrels of ink have been spilled about the surrealistic acquisitions in the information industry. Companies have ponied as much as 18 times the target's annual turnover for database producers comparable to Data Courier and online timesharing companies comparable to Dialog Information Services. Managers at these companies will be expected to walk on water, which means three things:

(a) make money to pay the interest on the money borrowed to buy the company at the crazy price in the first place,
(b) grow the business so it matches the acquisition analysis cranked out by a wild-eyed MBA in the wee hours of frantic pre- bid mom, and
(c) turn a profit in the 12–16% range.

Mr Neuharth may have to stop writing books and take over an information company to achieve these modest targets.

Overall the 1980s ended satisfactorily. Not really a bad decade as decades go. But some American observers think that the US must recapture its commercial zing. Writing in the October 1989 *Scientific American*, Robert Reich, a professor at Harvard University, outlines a six-step program which, if followed, will lead the US back to technological pre-eminence:

— Scan the globe for new insights
— Integrate government-funded research and development with commercial production
— Integrate corporate research and development with commercial production
— Establish technological standards
— Invest in technological learning
— Provide a good basic education to all citizens. [13]

If electronic publishing is technology-based, is Professor Reich unintentionally reminding us that US information companies have a more difficult task in the 1990s too?

Just a diskette's throw from Professor Reich's office is the Massachusetts Institute of Technology. Dr. Lester Thurow, distinguished professor and best-selling author, said in a recent interview in *Computerworld* that:

> 'I think Americans think *(sic)* that more information is always better than less information. And since information costs money to get, it isn't true. My impression is that most universities and most companies carry enormous amounts of information that has no positive value whatsoever. They more or less keep records for the sake of keeping records just in case they might need them.' [14]

There you have it. A more competitive environment and a surplus of product. Nifty set of parameters with which to work. So electronic publishers who see the 1990s like the 1970s and 1980s are spiritually allied to the aficionados of football who think that the game is the same one played by Pele in his salad days. They are wrong. Dead wrong.

Winning in the 1990s

What will it take to build a highly-successful, thriving electronic information company in the next decade? Just as the pioneer spirit has yielded to the run-and-gun, merger-and- acquisitionclimate of the 1980s, adifferent set of principles will be needed. Here is my list of the eleven significant attributes a successful information company will possess. It is unlikely that one firm will have all eleven characteristics:

1. *A winner in the 1990s will organize itselfaround the idea that information is a strategic business.*
   Recently Sony Corporation purchased a motion-picture production company. Such an acquisition by a manufacturer sends a message to Sony's competitors. It says, 'We will make the video which plays in our VCRs'. It is upstream integration driven by an information strategy.
   Said another way, today's electronic winners will be competing with companies whose principal revenue comes from a non-information source. When a manufacturer moves into information, that firm's strategy is likely to be structured from premises different from those of newspaper publishers' or a software company's. To cite another example, an engineering and technology company like AT&T, for example, advancing into electronic information may perceive data as a way to fill bandwidth. Fibers provide AT&T with data super-highways and invite image-based information, not just ASCII or voice comms.
   The most successful companies, of course, will exploit their strategic advantages. Who knows more about moving data than AT&T or Nippon Telephone & Telegraph? How do these companies perceive electronic information? Answering this type of question at CompuServe or Mead Data may help identify tomorrow's competitive threats.

2. *Winners will take a longer-term view toward investment payback.*
   The amount of time necessary to develop, test, and market an information product is often significantly greater than anticipated. Despite textbook predictions, a new database may not become profitable until its third or fourth year of operation. That's three to four times longer than investment gurus are willing to wait for a pay day.
   Winners in the 1990s will have the resources, guts, and clout to make decisions which will pay rich dividends over a longer term. Companies which scurry to meet their payroll every month or grovel before demanding investors who want fat checks every 90 days will enter the race with a 30-pound handicap. These firms simply may not be able to stay in business more than 12 to 18 months before the money folks sell the PCs and fire anybody who is still sitting at his desk on D Day.
   We are not talking cash flow and dividend payments. The winners marshal the operations of the company to fund, test, introduce, and market their product for several years without generating significant revenue. Companies unable to endure cannot complete the game.

3 *The winning company will work to create or capture important advantages.*
   Without trivializing the notion of competitive advantage, let me suggest that there are two significant competitive strengths the winners will create as a basic way of doing business.
   Winners will control information. They can make it or license it. The key is that they have a source of supply. Without this control of information, a company is not able to cut back the supply of this information, thereby driving up prices. The winners in the 1990s will not let the tail wag the dog. Companies which create original information, not recycle articles in *Playboy* and *Dog World*, have a more superior position than companies that use other publishers' information. Information is the raw material of the products and services of the 1990s. A company which manufactures its own information has the greater strategic advantage.
   Next, successful companies will know what to do with ideas. Ideas, of course, are everywhere. Having an idea is not the problem. Implementing it to make money is. Information winners will have highly effective idea-gener-

ation and idea-scanning procedures. The techniques which I see as common to the most effective organizations are:

— Applying technology in unexpected ways. An explosion of new products will flow from combining various graphic technologies. There are dozens of databases crippled because their producers cannot (or will not) include images and tabular data with their data. Products developed from applying several unrelated technologies will require significant technical expertise. Individuai entrepreneurs or start-ups will make the breakthrough, then the information winner will acquire the product at the optimum moment. Winners have great timing.
— Blending different data types in single information products, which I call hybrid databases. What works in agriculture works in dataculture too. A glimpse of tomorrow's databases may be found in two new databases from Information Access Co. — Company Intelligence on Dialog Information Services and the Health Reference Center on CompuServe. Traditional directory data and encyclopedic information is enriched with current articles, and, in the future, illustrations. Conceptualizing a hybrid file is trivial. But the winners will have a database portfolio which will let them easily cross-fertilize their information to benefit their customers.
— Transforming data. Visit a government agency, and you can find important public-domain information, usually in paper form. In Louisville, Kentucky, for example, extensive information about the city's financial health has been collected to help justify a new research park. These data, however, are not available unless one goes to the Chamber of Commerce and asks. Winning information companies will exploit reserves of information trapped in paper by putting data into more accessible electronic forms.
— Licensing or buying products. Winners will know when to pay for a good idea. They will have the resources and business savvy to know when it is smart to make a deal.

4. *Winners will cultivate entrepreneurial freedom within a large- scale organization.*

The 1990s belong to two ends of the entrepreneurial spectrum: the data conglomerates and individual entrepreneurs. Today finding such odd bedfellows is difficult, but in the next few years, winners will develop organizations which nourish and protect these two anathemic elements.

By the closing months of the 1990s, fewer individuals will have the resources to bring new information products to market. Within their formidable bureaucracies, a thirst for the new and imaginative idea will lead to acquisition of the budding product at increasingly earlier stages of its development. The winners will be active seekers of the best before the also-rans knew it existed. The sums paid to individuals or small start-ups will dwarf some of the figures paid recently for information properties.

5. *Winners will have an instinct for positioning a product and selling people on the benefits of that product.*

Winners will deliver 20-megaton marketing salvos. Psycho demographics, niche mapping, and the various other esoterica already used by marketers of consumer products in the US will influence global and multi-market information promotions.

I am hesitant to say that marketing alone can make a company a winner in the information business. But without sophisticated marketing, an excellent provice will have a tough row to hoe. (I use the *termprovice* to convey the duality of electronic information products and services. In general, electronic information products may appear to be a service provided to a customer when viewed from the producer's point of view. The customer's perception is that he or she is buying a specific product. Thus, a database producer like Information Access Co. offers a service: indexing of national US newspapers. The customer buys a product: five citations on a specific topic.)

The inverse and less positive aspect of this assertion is that a company with an acceptable, but not superior information provice, can make a winner with marketing.

By the end of the next decade, confusing and costly marketing programs that many of today's winners use will alert customers that a second-string company has entered the fray. Unsophisticated smoke-and-mirror techniques will have little impact.

6. *Winners will form strategic relationships, looking beyondshort-term competition toward larger, potentially more lucrative long-term goals.*

The concept of strategic alliances is nothing new. Even the serpent in the Garden of Eden needed another person to kick-start sin. Two medium-sized information companies may increase their chances for success if they join forces. Why risk the loss of two companies in a struggle with a Hulk Hogan?

Companies competing in the same market segment but with complementary technologies will have to co-operate if only to keep pace with unfamiliar technologies. The uneasy truce between IBM and Microsoft in the Great Windows-OS/2 War demonstrates that giants can adapt when enough money is on the table. Technological alliances will be increasingly important because of long-learning curve some technologies demand. If one firm can fabricate digital video interactive data structure, another may be able to contribute to the speed of the decompression processes. The reasons for working together will be as varied as the firms involved, but both companies benefit. Technologies enrich one another, so engineers from both parties get increased opportunities to contribute to their employer.

Dissimilar companies will co-operate for non-rational reasons. When Dave Roux, the founder of Datext, received backing from Cox Broadcasting, do we know what the broadcaster wanted — technology, CD-ROM products, a tax write-off? No one knows the real reasons.

In the 1990s, information will make strange bedfellows. By the end of the 1990s the majority of the database producers whose names are household words will no longer exist. They will have been swallowed by a wide range of more adept and astute organizations.

7. *Winners will not meet needs; they will stimulate them and make them more intense in order to sell more products.*
Today marketing tyros jabber about meeting needs. Tomorrow's winners will conceive, nurture, and direct needs. Only a fool wants a need to go away. When a need is satisfied, the demand is lessened. In the 1990s, managers will work to ensure that needs stay potent and never fully satisfied.

8. *Winners will find it neither desirable nor necessary to concentrate their resources in one facility, region, or nation.*
Winners will decentralize their operations. Geographic distribution allows the winners access to local and regional markets while adding flexibility to operations. Local information companies can and will continue to exist, but information winners will transcend political boundaries.

9. *Winners will use any medium of distribution which makes financial sense.*
Many of today's information super companies operate within the assumptions and structures of an outmoded technology. Think of the newspaper chains laboring to deliver an electronic product and at the same time working harder than ever before to protect their print advertising revenue. What about timesharing companies which price their product without compensating for the higher transmission speeds achieved by MNP Level 5 error-correcting modems?
The winners emerging in the next decade will cross, redefine, and reshape the boundaries fencing print, video, online today. Technologies will meet the requirements of the information the customer needs and wants. One-trick ponies cutting prices to make their sales quotas carry a competitive disadvantage on every sales call.

10. *Winners will be committed to growth and retention of their human resources.*
Winners will find, recruit, reward, and retain their employees. Period. Losers will treat people like paper napkins. Companies which create work environments which have high rates of turnover cannot compete effectively today. In the more challenging decade ahead, these companies will be among the first to go out of business. In the next decade, winners will automate certain jobs to reduce the cost of training and provide a more challenging, interesting workplace.

11. *Winners in the 1990s will work with governmental bodies.*
Favorable loans, patent protection, and legislative support are three of the tools in the arsenal of the winner. Increasingly winners will embody a country's information prowess. Patent protection and hassle-free acquisitions are two advantages yielded by a close relationship with official agencies.

These 10 factors underscore my belief that many of today's business truisms will be inappropriate for the 1990s. Financial analysts will need new techniques to quantify and analyze the information businesses. Many of today's cherished business maxims and rules will not be relevant in the next decade. Winners, it goes without saying, will develop proprietary methodologies which let them routinize many intellectual processes that baffle the uninformed.

Outlook from the limb

Let me offer a list of the 12 companies which I think those interested in electronic publishing should watch. Most of these companies which I have selected for this list will thrive in the 1990s and most, if not all, of them will take leadership roles in the global information industry. I assure you that if I am still online in 1999, I will revisit this list and tally my PQ or prescience quota. To justify my belief in each company, I've offered a brief annotation, summarizing my view of the winners strengths. These are presented in alphabetical order, not in order of revenue nor by country. If your company is not listed, prove me wrong. You have nine years. Go:

Dénoument

Let me end by making yet one more prediction: winning companies will have a steadily increasingly impact on our lives in the 1990s. Unlike those who fear giant companies, I see them as creating work space for individuals.

Has the hawk-eyed reader caught me in a contradiction? More individual freedom in a bureaucracy? Rubbish, you say. I say, Maybe. As the winners ascend on ever-growing flows of data and technology, I think the individual becomes more of an asset. From my angle of view, the most successful companies will find that varied work environments and a diverse work force are essential to the organization's vitality and flexibility.

From the healthy, imaginative organizations will come the new. Multimedia, graphical user interfaces, and distributive processing will be antiquated methodologies compared with three- dimensional holographic imaging and real-time virtual realities the winners will get to market.

I do not see stultification ahead. I see excitement and opportunity. The problem will be keeping pace with the opportunities and figuring out what to do with those who cannot keep up. I am particularly concerned about the old, rotten Rust Belt companies and their managers. From Ann Arbor to Zagreb, there will be dislocations and discontinuities. Most of these companies will be forgotten. The more notable the inability to adapt, the greater the likelihood is that these firms will be fodder for dissertations in the 1990s.

The 1990s belong to the bold, not the timid, to the innovators who embrace technology, not the imitators who pirate another's insight, to the global thinkers, not the parochial whiners who want the past on a Paul Revere platter.

Table 1: *The Top 12 in 1999*

COMPANY	COMMENT
American Telephone & Telegraph	A broken Ma Bell is tougher than Judge Green and almost everybody thinks.
Bertelsman	Apublisher for both Germanies in a wide range of media.
Elsevier	The Dutch remember their place in managing the New World in the 16th Century and will get in the 21 st.
Fujitsu	Who? Tomorrow's IBM that's who. These fellows are into bullet-proof reliability and global thinking.
Hachette S.A.	The French have information style, and the Francophone nations can teach the world a thing or two about electronic information. C'est vrai.
IBM	Big Blue's into DVI, networks, and most of the companies on this list. Blue Blood doesn't mean just any royalty, you know.
Ital Cable	Italy does more than play good football. Maybe that's why there are more CD-ROM players per capita in this country than in any other.
Microsoft	The first Honda of software even if OS/2 is the first Edsel in shrink wrap.
Reed International	A company that can acquire and implement, acquire and implement, acquire...well, you get the idea.
Sony	What do music companies and movies have in common? Stuff to go in the little boxes with Sony logos. GE looked at the radio and said, 'Loser'. Sony looked at GE and said, 'Thanks for themarket and the millions'.
Thompson Organisation	If a company has a chance to deliver business information to the managers of the world, this is the one. Newspapers, data, money, software smarts, and many, many intelligent people.
Ziff Communications Co.	A quiet, unobtrusive innovator which dominates computer information and will dominate other segments just as unobtrusively and quietly.

Suck in that stomach. Get tough. We are playing in the rain on a muddy pitch against an opponent known for rough play. It's the 1990s. Hooray.

References

[1] Stephen E. Arnold, 'Ethics and the New Information Technology', New Jersey ASIS/Rutgers University Distinguished Lectureship, 10 October 1989.

[2] Informal conversation with a former officer of Data Courier, Louisville, Kentucky, April 1981.

[3] Carlos Cuadra, *Cuadra/Elsevier Directory of Databases*, Elsevier, 1989.

[4] Conversation with Peter J. Lowry, CD-ROM Publishing Service Inc., 200 Consumers Road, Suite 200, North York, Ontario, Canada M2J 4R4 at Canada Online III, 6 December 1989.

[5] Martha Williams (ed.), *Information Market Indicators*, Monticello, Illinois. Contact Professor Williams c/o Learned Information, Ltd, Woodside, Hinksey Hill; Oxford OX1 5AU, England. Data for the full 1989 calendar year are not yet available because of the cycle of data collection and processing.

[6] Anthony Ramirez, 'The Games Played for Nintendo's *Sales', New York Times* (National Edition), 21 December 1989, pp. 33, 49.

[7] For more on the Nintendo/AT&T deal see Amy D. Wohl, 'Curious Alliances for Information', *Computer-world, 2* 1 August 1989, p. 21.

[8] This story was subsequently reported in *PC Week*, 11 December 1989.

[9] John Markoff, 'American Express Goes High-Tech', *New York Times* (National Edition), 31 July 1988, pp. 1 and 6.

[10] Anonymous, 'AST Adds International Online Support System', *Computer Reseller* News, 20 November 1989, p. 169.

[1 1] Kathleen Doler, 'Softsel, Microamerica in $1.1 Billion Merger', *PC Week*, 4 December 1989, p. 125.

[12] John Markoff, 'Betting on a Different Videotex Idea', *New York Times* (National Edition), 12 July 1989, p. 27.

[13] Robert B. Reich, 'The Quiet Path to Technological Preeminence', *Scientific American*, October 1989, pp. 41–47.

[14] Lester Thurow, 'An Unvarnished View of IS Efficacy', *Computer-world*, 13 November 1989, pp. 87, 90, and 91.