

KEN OLSON: ULTIMATE ENTREPRENEUR?

by

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“When I finally met Ken Olson, he was no longer Ken Olson.” ~attributed to Bill Gates

When Bill Gates spoke or published this quotation, he was referring to one of the founders of the computer industry. Ken Olson was the founding CEO of Digital Equipment Corporation. When young computer scientists of today look at Bill Gates or Larry Ellison or Steve Jobs, they have the same admiration that Bill Gates and a generation of other students and would-be entrepreneurs at one time had for Ken Olson. In its heyday, Digital Equipment was the company to work for with a workforce of 100,000, many imitators, and credit for the high tech booming economy of Route 128 which circles the Boston area.

Today Digital Equipment and Ken Olson are a closed chapter in computer industry lore. But they are an important chapter with important lessons that should not be dismissed. The essay which follows draws primarily from Rifken and Harrar, The Ultimate Entrepreneur (1990).

DEC- THE BIG PICTURE

From its inception in 1958 until its purchase by Compaq in 1998, Digital Equipment Corporation (DEC) was a major factor in the world computer industry. CEO Ken Olson from its inception until the early 1990s proudly pointed out that when the Soviet Union stole or reverse engineered computers it wanted DEC systems...not the oversized, temperamental systems offered by IBM.

In the 1960s DEC pioneered the mini-computer, creating a new computer category. These smaller systems brought the computer

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out of the glass enclosed room and onto users' desks. Digital became the largest producer of computer terminals. For the next 20 years the DEC VT-100 was the standard terminal protocol. In the 1970s competitors mimicked DEC's products (often with defecting engineers) and DEC created the 32 bit super mini-computer known as VAX. The super-mini offered mainframe capabilities at a fraction of the price of the big iron. Digital Equipment had missed the personal computer revolution (and embarrassed itself with inferior products) but prospered with its more and more powerful VAX line. In the 1980s as other computer manufacturers started to match the power of VAX Digital provided the backbone concept of a local area network. The ability to network DEC computers together provided the third resurgence of a product line and the company's fortunes.

However, there were only three charms. In the 1990s Digital Equipment lost its networking advantage, was undercut by the increasing power of Intel processors at commodity prices and the success of Microsoft's Windows.

The management skills of Ken Olson which were the right skills at the beginning ultimately proved the wrong set of talents for the changing computer manufacturing environment. The stories and lessons of Digital Equipment are many:

- 1) The top manager who may have unprecedented success for many years may eventually need to be replaced at exactly the time that he may be most reluctant to give up control.
- 2) The vision of providing a new product category may blind the organization to the market's readiness for the next product category.
- 3) A company's culture must change with the business environment. This may be very difficult when the culture is tied to a chief executive who is still in control.

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DEC - THE FOUNDING

In 1957, Ken Olson, a thirty-one year old electrical engineer from MIT, his brother Stan Olson and Arlan Anderson, a twenty-eight year old electrical engineer from the University of Illinois decided that they were tired of working in the Lincoln Labs of MIT with its bureaucracy and government contracts. They had decided that as IBM was reaching revenue of one billion dollars, they could build a smaller general purpose computer that would be affordable by someone other than the government or the largest corporations.

At that time there was one firm in town known as a 'venture capitalist', American Research & Development. Its leader, General George Doriot, received a letter from the young entrepreneurs, met with them and embraced them as dedicated, smart young men with a passion for building computers. Their business plan was in their heads, but it was simple and understandable. Build computers cheaper and easier to use than IBM's machines.

In coaching Olson and Anderson on selling the concept to his board, Doriot suggested three items:

- 1) Don't use the word 'computer'. Big companies were losing money on computers. No one will believe two young graduates can make money in a field big business finds difficult. Instead use the term, 'printed circuit modules'.
- 2) Promise a return over five percent. Otherwise, they could just buy RCA.
- 3) Promise a quick profit.

Olson and the company received funding~\$70,000 in exchange for seventy percent of the company. These terms would be considered onerous today but in 1957 there were only three venture firms in the country. Doriot advised the board and was an advisor to Olson for the next thirty years.

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THE START-UP

The first products of Digital Equipment Corporation were transistorized logic modules. These were used by other computer labs for memory testing. In the first year the company sold \$94,000 worth of memory modules and reported a profit. During this time Olson leased space in Maynard, Massachusetts at an old woolen mill. In time this would become the world headquarters of DEC. Olson also added a number of engineers much like himself-smart, young and anxious to change the face of computing. Many came from the Lincoln Lab at MIT where Olson had worked. One of these engineers was Gordon Bell.

Gordon Bell grew up in Kirksville, Missouri. An electronic tinkerer from the single digit ages, Bell earned his masters degree from MIT in 1956. After a time in Australia he returned to a Ph.D. program at MIT but left that in 1958 to join Olson. Like Olson, Bell wanted to design the best computers in the world and didn't want them to be designed by committee. In the history of DEC the main engineering credit must go to Gordon Bell.

In 1959 the first Digital Equipment Corporate computer was produced. It was known as the Programmed Data Processor or PDP-1. Although it was a general-purpose computer by calling it a processor DEC kept it out of sight of the industry giants. It had a price tag of \$120,000. This was a transistorized computer made using the same technology that had been used to build the earlier memory modules. Gordon Bell was the lead design engineer.

OLSON'S LEADERSHIP STYLE

As an engineer Ken Olson didn't like projects with multiple layers of bureaucracy. He felt an engineer should be able to conceive, build and test his own projects. A well engineered organization should run itself. He had a belief that if you put a few brilliant people together, let them argue and hash out technical details, the truth about the best method to produce the product would become self-

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evident. This non-centralized management style would provide a Mecca for engineers and innovation in the early years. Olson also felt that high pressure sales was a method to move inferior product. He put his salesmen on salary so they would have no incentive to provide the wrong solution to a problem. In the later years of DEC's existence both of these policies would be blamed for it's failures.

Without formal business training, Ken Olson happened on business readings shortly before he started Digital Equipment Corporation. In attempting to help manage the Sunday school at the Park Street Church in Boston. Olson read numerous management books to help him organize the school. He was successful with this first brush at management.

THE FIRST BIG MACHINES

After the development of the PDP-4 which sold in modest numbers, a more powerful, 12 bit computer, the PDP-8 was produced. Throughout the 1960's this would be the big revenue producer at the small end of the computer market. A general purpose computer, the PDP-8 was used in scientific, engineering and business applications. DEC considered itself a hardware company so it allowed outside vendors (VARs) to purchase the PDP-8, add their own software and market the combination as one package. With its own operating system and language, the PDP-8 lived from the 1960s to 1979. The PDP-8 was a cash cow for DEC. It had been designed by an engineer named Edward de Castro.

Edward de Castro was a brilliant engineer who, like Olson, didn't feel the need to have management watch his every move and certainly didn't need Olson criticizing his engineering. When de Castro designed the PDP-X, a sixteen bit computer to replace the PDP-8, the project was canceled and de Castro eventually left Digital to form Data General Corporation. Now there were many venture capitalists hoping to repeat the success that came to the firm that bankrolled DEC so de Castro had no problem founding Data

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General. DG prospered for many years and continued to be a burr in Olson's side. Eventually it succumbed to the end of the mini-computer era. Its race with DEC to create the 32 bit system was chronicled in Tracy Kidder's 1981 book. The Soul of a New Machine.

In 1967, the DEC system-10 with a 32 bit processor based on the PDP-6 model was introduced. As a high end machine packaged with several scientific languages the DEC-10 would be produced for sixteen years. This was a strong, time-sharing machine built in a modular format so extensions could help it live those sixteen years.

In 1969 Digital had a 12-bit platform and a 32 bit platform. But there was demand for the space in between. The answer became the PDP-11, a 16 bit box that fed Digital's revenue during the 1970s. The best computer designers had left for Data General with de Castro so the job of heading up the PDP-11 project fell to Gordon Bell.

Although introduced after the 16 bit product of Data General, Gordon Bell provided a computer that put DEC back at the top of the mini-computer market. The PDP-11 was selected by Industrial Research as one of the most significant technical products introduced in 1970. After some time Bell again left Digital but when he left it was as an unidentified 'leave' instead of a resignation.

Bell returned to write the next engineering tale of Digital Equipment. He headed up the VAX line, a 32 bit super-minicomputer that would start a line that lasted into the 1990s. Previously, the amount of memory available had been a limiting factor for programmers of DEC computers. But the VAX came with VMS-- Virtual Memory System. The VMS operating system allowed 'core' memory to expand almost indefinitely as core memory could be 'swapped' out to disk then re-entered onto disk in an operation transparent to the operator. Now common even in personal computer operating systems, this was a major technical breakthrough for DEC. Also, this was an expandable line at just the time the DEC System-10

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had been expanded to its limit. The next stage of computer development would be as big a disaster as VAX was a winner.

THE PC DEBACLE

The computer industry environment in the early 1980s was one of transition. Everyone seemed to know that the world was changing but no one really knew who would win. Digital Equipment Corporation was very much without a clue. This company had pioneered the concept of computers that could be used by an individual who had a terminal connected to a central system. However, it couldn't really understand the concept of a cheap, poorly engineered computer that could be assigned to one desk. Ken Olson himself famously indicated that, "The personal computer will fall flat on its face in business". DEC considered itself a manufacturer of scientific and engineering computers instead of business computers.

In 1978 a computer programmer(who had worked for DEC) named Dan Bricklin conceived of a program to automate the green multi-column spreadsheets used by business. Bricklin noticed that DEC had developed a PDT or Personal Digital Terminal. This had a display, keyboard and processor-a personal computer. But at that time DEC thought computers should have terminals hanging from them. They didn't pursue selling a PDT to Dan Bricklin because he was a student with a sales potential of one. Bricklin instead bought an Apple II. Visicalc became the first killer application for Apple.

Once DEC decided to build a personal computer (the market was growing so fast it could no longer be ignored) Olson allowed development to move forward but gave different divisions of the company the charge to produce the best product. When three systems emerged DEC marketed all three instead of the one most likely to be successful.

Three DEC personal computers and four operating systems were a recipe for disaster. Within the industry there were three

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operating systems competing for dominance on personal computers. Apple had its proprietary system, and CP/M and DOS were competing for the Intel chip machines. Bill Gates visited DEC and convinced Olson to use DOS on one of the DEC machines. This should have made it compatible with the IBM PC but Digital used an in house designed diskette drive. It was elegant, worked fine but was not compatible with the IBM system. The market soon rejected any PC not Apple or IBM compatible and DEC was out in the cold.

During this time Olson considered himself a design specialist and therefore delayed the introduction of DEC's PCs. The triangular monitor designed by DEC was a quiet, no fan model. It was used by all three models of the DEC PCs. It looks amazingly like the new, modern enclosure of the iMac introduced by Apple in 1998.

Introduced in 1982, the DEC PCs were dead in the water by 1984. By 1985 DEC was out of the PC business. When it would re-enter the business it would be with IBM compatible systems made by Olivetti and marketed by DEC.

NETWORKING-THE LAST BIG BREAK

In the 1980s VAX was a strong product. But it became much stronger when Gordon Bell promoted the development of Ethernet. Ethernet, now known as local area networking, allowed compatible computers to work together. Sharing files, resources and programs would be the next big thing. The development of the Ethernet standard by DEC, Xerox and Intel became the strength of the VAX line because IBM did not have a line of computers that could make use of the technology. It kept DEC profitable through the 1980s. After this and a heart attack in 1983, Gordon Bell left Digital Equipment for good. There would never be another killer product for DEC.

THE LONG SLIDE DOWN

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In the stock market crash of 1988 Digital lost considerable market capitalization. It never really recovered from that time. As networking became available to new competitors like Sun Microsystems, the Intel chips such as the 386, 486 and Pentium became more powerful and software became more of a strategic issue than hardware. DEC lost market leadership position. The headlines in Business Week tell the story:

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| May 16, 1988 | What Next for Digital?- DEC has cooled off-But Ken Olson has Confounded the Skeptics Before |
| May 4, 1992 | Crunch Time at DEC - America's No. 2 Computer Maker is Floundering. Will RISC machines save the Day? |
| April 2, 1993 | Robert Palmer - A tough-minded Texan has taken the reins at Digital, the hemorrhaging computer maker. |
| May 9, 1994 | Desperate Hours at DEC - Two years after a management shakeup, it's in ever worse shape |
| July 11, 1994 | The Time, DEC cuts Deeper |

From a high of nearly \$200 a share in 1988, DEC stock was trading at less than \$40 a share by 1994.

DEC did try to come up with a new technological fix in the early 1990s. The Reduced Instruction Set Chip (RISC) branded as Alpha was the long sought after VAX on a chip. But it relied on the VMS operating system or the still buggy NT operating system from Microsoft. Consequently, it never reached production volumes large enough to become competitive with the more powerful chips coming on. In part, the Ethernet, developed by DEC years earlier had become

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a standard networking protocol making competitors' systems stronger products when compared to DEC's product line.

As the headline suggests, in 1992 DEC's board ousted Olson after a \$2.8 billion loss. The board was simply tired of the loss in the stock's market value. In his place the board selected Robert Palmer. Two years later the company was in still worse shape. On May 9, 1994 Gordon Bell, one time head of DEC engineering said, "DEC bet the company on Alpha, and I believe it lost." Another factor was that DEC had lived most of its life selling low-volume, high margin products. But in the 1990s, the computer field became all high volume, low margin products.

After four more years of disappointing results, in June, 1998 Digital was acquired by Compaq Computer Corporation. Compaq CEO Pfeiffer's goal was to create efficiencies by combining the two businesses...especially the service portion of Digital which still showed strong revenues. Compaq became the number two computer manufacturer behind IBM. But Pfeiffer was ousted from his position as CEO of Compaq after he failed to realize the savings he had predicted.

OLSON'S SOCIAL RESPONSIBILITY OUTLOOK

Olson's upbringing included a conservative, moral, puritanical background. It has been said that his penchant for unadorned simplicity created an egalitarian state. Andy Knowles, a member of DEC's Operations committee once said, "You'll never find anything in Digital that smacks of anything illegal, immoral or irrational. That comes from the man." For years a story of Ken Olson one time inadvertently walking into an office circulated around headquarters. It seems he found two employees in the advanced stages of an amorous affair. Soon afterward all doors at DEC offices included windows.

Olson was also known for disdaining ostentation. One time Olson was seen driving a gold Mercedes. When this was brought up

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to him as a complement he indicated that it was his wife's car. Olson tended to drive an older compact Ford vehicle, including when he was on the Board of Directors of Ford Motor Company.

In the 1970's Ken Olson listed fifteen tenets of the DEC Corporate Philosophy. The last one summed up the other fourteen with, "When dealing with a customer, a vendor or an employee, do what is right to do in each situation."

In Ken Olson's view, the business person who serves his fellow men best is the one that provides opportunity. Then, those who are willing to work can lift themselves up. If management starts solving all of society's ills, the business will suffer and the ability to provide opportunity will be impeded.

Ken Olson believes in the hand-up method of helping people or organizations as opposed to the hand-out method. During its lifetime DEC gave millions to organizations such as Freedom House, NAACP, public television, Boston Museum of Fine Arts, Massachusetts General Hospital and others. DEC was also, along with IBM, a great contributor of computer equipment to educational institutions including MIT, Carnegie-Mellon and Purdue. It is worth noting that Olson believes contributions also should be without publicity.

CONCLUSION

The story of Digital and Ken Olson is the story of the beginning of the computer age. It includes the founding of both a company and a method of financing new, high tech businesses that first require engineering talent more than business experience. The venture capital industry we know today was in the incubator stage when Olson gave up 70% of his new company for \$70,000.

DEC's history also warns us that the truly big firms can falter and lose quicker than we expect. DEC prospered for thirty years but

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faltered in less than ten. Today Microsoft, Sun and Cisco look as invisible as the Department of Justice. But, any of them may falter. If we are living in 'internet time' we can rise quickly but the trip down can also be a fast ride.

At age 30 Ken Olson was a man ahead of his time. By having the vision of smaller computers that could be used by engineers and business Olson changed computing. But he didn't see that it could go one more step to personal computing. His strength became his weakness. It was left to Apple Computer's Jobs and Wozniak to move his vision to the next level. And it was IBM which understood that the consumer wanted an inexpensive machine that worked instead of an expensive engineer's dream machine. At age 50 Olson was a man behind his time.

Olson's other blind side was about the relationship of hardware and software. Initially engineers and scientists who bought the machines would write their own software. But the market changed to the point software availability became more important than hardware. That was a major flaw in DEC's failed PC initiative.

A lesson comes from Olson's own admonition that success early is dangerous. It leads to arrogance. DEC fell prey to its own arrogance in the PC marketplace.

REFERENCES

1. Rifken, Glenn, and George Harrar. The Ultimate Entrepreneur, Rocklin, CA: Prima Publishing and Communications, 1990.
2. Various issues of Business Week, as indicated in the text.