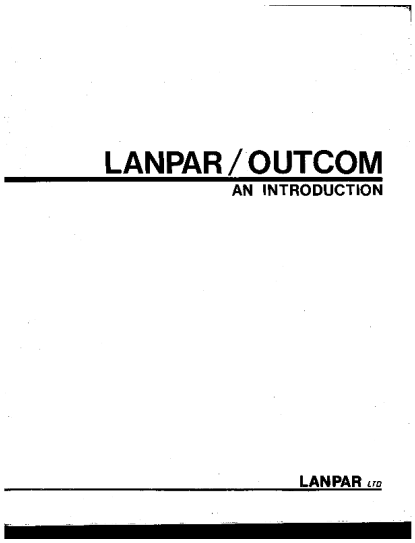
The World's First Electronic Spreadsheet



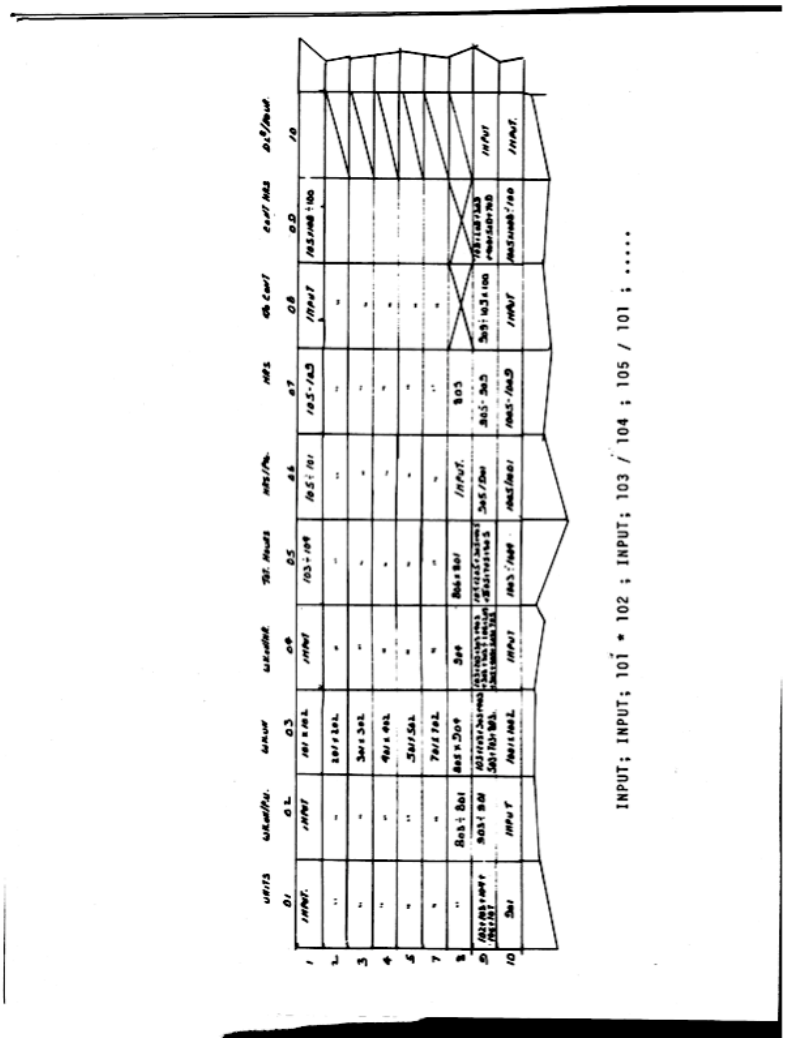
"LANPAR" – LANguage for Programming Arrays at Random is the world's first electronic spreadsheet.

Co-invented and developed by Rene Pardo and Remy Landau this software was created in 1969 and it's use sold to the Plant Budgeting Divisions of Bell Canada, AT&T and the 18 Operating Telephone Companies across the U.S. and Long Lines- in addition to General Motors in Warren Michigan.

It was invented at the time because Bell Canada and AT&T had the problem that in changing the 2000 cells in their budgeting forms, the lead time for the MIS groups to re-write the software in Fortran was 6 months to 2 years.

Pardo and Landau felt strongly that programming should be in the hands of the users rather than the MIS group.

Using LANPAR, Mr. Art Smith at Bell Canada was able to program the calculations of the entire application by himself over a weekend.



In 1969, LANPAR already foresaw and included the features which are the cornerstone of the modern spreadsheet – namely Forward Referencing & Natural Order Recalculation.

LANPAR operated on the General Electric 400 On-Line Time Sharing Series on several computers in North America.

Forecasting: Whatever Happened to the Crystal Ball?

The crystal balls are gone —if there ever were any. The educated guesses have been put to pasture, and the plain, good ole hunch is just relic of some distant past.

Today, computers grind out forecasts—all over the Bell System. In fact, computers sometimes seem more omni-present in the System than headsets and soldering irons.

But, like headsets, and even more so, soldering irons, computers have this slight problem: you have to know how to use a computer if you want to get anything done with it. And using a computer means talking to it.

So, for the past four months, small groups of men and women have been gathering in a room at the Middle Pincher Inn in Red Bank, New Jersey to put their "hands on" this business of talking to computers.

"Look," says Wes Vaughan—almost loudly—"we Plant people aren't the first people to use computers. We may even be among the last getting into the game, but holding hands with an E-3300 is a lot more pleasant when you're doing it by computer."

Needless to say, the E-3300 "General Plant Cost Results Summary" (Plant's omnibus report on costs including maintenance and expense items) isn't something you exactly hold hands with. Some people have even been known to pray over it. But, probably no other report reflects so quickly the absolute standings of how the Bell System is doing in controlling costs.

Basically, Wes Vaughan and the operating company people he works with and trains are in the business of living with E-3300's.

"In training-school language, we are using Mechanized Forecasting and Analysis Procedures that consist of time-shared computer programs and associated manual operations for accumulating historical cost results data, updating this data and forecasting and analyzing future periods. Boiled down to plain old language, that means that we've committed all that data on E-3300's to a computer memory bank, and we've developed programs to utilize that data for forecasting, etc."

Sounds simple? Well, the key to the programs and getting use from them is a five-day training session that Vaughan runs. Operating company people involved in cost forecasting come to the sessions for "hands-on" exposure to the computer programs. They basically sit themselves down and using a teletypewriter that's hooked up to the Fulton time-sharing computer in Atlanta begin to talk to the computer.

"The trainees use actual data from their own companies and they work on actual problems," Vaughan points out. "You wouldn't believe the excitement this type of training can generate. People get involved in problems and they work and work on them. The very reason why we set up shop in a hotel is because most of the people involved will work all hours with the training. That's the beauty of being actually hooked up with the real thing."

The real key to the success of the Mechanized Forecasting and Analysis Procedures—as Vaughan is quick to point out—is the use of a central computer with access available to all Companies and their Areas and the simplified computer language used for the programs.

"You see," Vaughan explains, "what we've done with this operation is to take the same person who knows the problem, and teach him how to program the problem—how to talk to the computer." In this application, Vaughan says the problem, as it was quite natural that he talk to the computer—wrote the program.

The benefits of using a central computer for the entire System include the advantage of providing standardization, and the maintenance and storage of only one set of programs. Vaughan can respond to field requests for program changes or modifications almost instantaneously. To add to this, it means paying the storage for only one set of programs versus a set for at least each Company and possibly each Area. Also, by using the same computer, the "193" plant operations staff has a collection capability. This allows Vaughan's counterpart in the analysis side of the shop to "press a button" and have the computer present him with a System summary.

All this may sound like computer talk itself, but the results are simple and clear. Plant people now have the ability and knowledge to ask questions and get quick answers about cost problems. For example, a company may have worked out a reasonable cost forecast for central office maintenance—the costs involved with keeping a central office running—but the actual results may be well above the forecast. Why? What are the relationships involved? What's labor been doing? Load? Price? Productivity? Question after question can be asked and answered.

"This is the best training I've ever had," says Ed Ritter, "You know, I never thought I'd be talking to a computer. But I am." A plant cost man with Bell of Pennsylvania in Philadelphia, Ritter is a good example of the type of Plant man who's involved in the Mechanized Forecasting Procedures. As a cost man, he's responsible for providing quick, accurate data on plant operation to his home Area.

To date, some 70 people from the operating companies have passed through the Mechanized Procedures training, and when the training sessions are completed in February some 100 Plant people from across the System will be back on their jobs talking to a computer in the kind of language they understand.

"The real success of our entire operations will come in the next few years ahead," Vaughan predicts. "If you can imagine what it's like to have a complicated and important process such as forecasting and analyzing costs now computerized and available across the Bell System on an operating area basis, then you've imagined reality because that's just what we have today—with this training. We've got a tool that can be used to give management better information—faster about how money's being spent. So, using this tool in the years ahead should be the success story of the whole operation."

Still computer talk? Well, look at it this way. Today there's one centralized set of programs and data that is available to every single Bell System operating area for forecasting and analyzing Plant costs. Last year, Plant maintenance costs amounted to almost $3.5 billion dollars. Imagine what it would be like to save even one-tenth of one per cent of that money by better management analysis and forecasting. That's dollars —not computer talk.

The Men Behind it All

They don't appear complical—confused or particularly demonstrative —but if you put them talking about plant maintenance expenses and their computer programs—look out.

"We just believe in it—that's all," says Herb Wertheim, plant operations manager, and a leading hand in promoting a centralized System computer operation which has greatly reduced the cost of program writing, maintenance and storage for operating companies. In addition, a new simplified computer language, LANPAR, has put the computer programing into the hands of plant people.

Wes Vaughan, plant operations supervisor, has written many of the programs now in use with Mechanized Forecasting and Analysis, and handled most of the training. Now, he's on his way back to Pacific Telephone (now Fabruary 1, and he's being followed on the job by Bob Eastwood. Vaughan, by the way, is returning to an interdepartmental job at regional forecasting supervisor. Chances are he'll be on the phone with the computer most of his time.

Wes Vaughan, plant operations supervisor and training leader, answers a question posed by Ed Ritter, Bell of Pa. Ed, like most trainees, is a second-line Plant forecaster.

Hank Anderson, New Jersey Bell, scans a print-out for those all-important answers.

AT&T's men behind the training, Wes Vaughan (left), Herb Wertheim (center) and Bob Eastwood check out an answer from the computer.

George Retelle, Illinois Bell, folds a strip of the ever present paper tape.

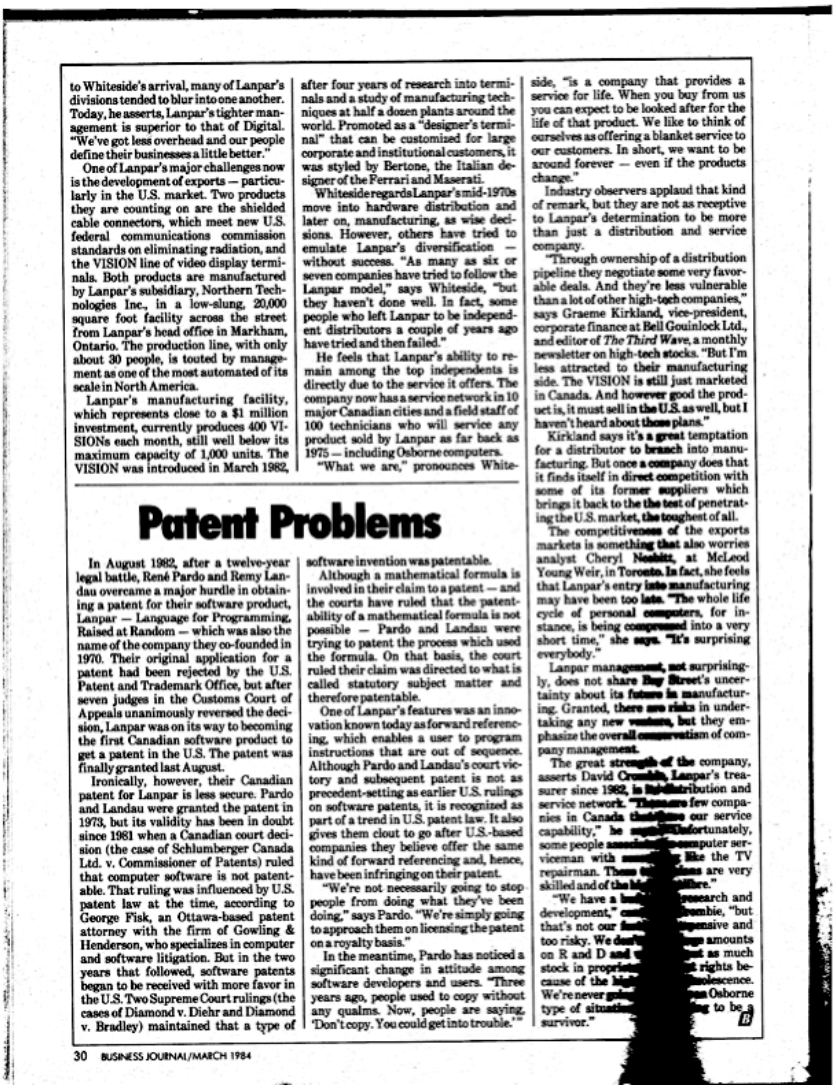
Jack Shockey, New Jersey Bell, keys in a computer question.

Vaughan flips another sheet during a classroom discussion of mechanized forecasting.

Some 10 years later on personal computers, the subsequent popular spreadsheets Visicalc, TKSolver, and Supercalc did not allow for forward referencing or natural order recalc. The user had to click on the "manual recalc" function key to refresh the screen sufficient times until the cell values no longer changed indicating that there were no more forward references of cells.

LANPAR features also included sophisticated mathematical function capability within cells as well as True/False decision making calculations affecting the calculations to be performed in cells.

Pardo & Landau were among the first to obtain a software patent, following a decade of appeals in the U.S. courts.



to Whiteside's arrival, many of Lanpar's divisions tended to blur into one another. Today, he asserts, Lanpar's tighter management is superior to that of Digital. "We've got less overhead and our people define their businesses a little better."

One of Lanpar's major challenges now is the development of exports — particularly in the U.S. market. Two products they are counting on are the shielded cable connectors, which meet new U.S. federal communications commission standards on eliminating radiation, and the VISION line of video display terminals. Both products are manufactured by Lanpar's subsidiary, Northern Technologies Inc., in a low-slung, 20,000 square foot facility across the street from Lanpar's head office in Markham, Ontario. The production line, with only about 30 people, is touted by management as one of the most automated of its scale in North America.

Lanpar's manufacturing facility, which represents close to a $1 million investment, currently produces 400 VISIONs each month, still well below its maximum capacity of 1,000 units. The VISION was introduced in March 1982, after four years of research into terminals and a study of manufacturing techniques at half a dozen plants around the world. Promoted as a "designer's terminal" that can be customized for large corporate and institutional customers, it was styled by Bertone, the Italian designer of the Ferrari and Maserati.

Whiteside regards Lanpar's mid-1970s move into hardware distribution and later on, manufacturing, as wise decisions. However, others have tried to emulate Lanpar's diversification — without success. "As many as six or seven companies have tried to follow the Lanpar model," says Whiteside, "but they haven't done well. In fact, some people who left Lanpar to be independent distributors a couple of years ago have tried and then failed."

He feels that Lanpar's ability to remain among the top independents is directly due to the service it offers. The company now has a service network in 10 major Canadian cities and a field staff of 100 technicians who will service any product sold by Lanpar as far back as 1975 — including Osborne computers.

"What we are," pronounces Whiteside, "is a company that provides a service for life. When you buy from us you can expect to be looked after for the life of that product. We like to think of ourselves as offering a blanket service to our customers. In short, we want to be around forever — even if the products change."

Industry observers applaud that kind of remark, but they are not as receptive to Lanpar's determination to be more than just a distribution and service company.

"Through ownership of a distribution pipeline they negotiate some very favorable deals. And they're less vulnerable than a lot of other high-tech companies," says Graeme Kirkland, vice-president, corporate finance at Bell Gouinlock Ltd., and editor of *The Third Wave*, a monthly newsletter on high-tech stocks. "But I'm less attracted to their manufacturing side. The VISION is still just marketed in Canada. And however good the product is, it must sell in the U.S. as well, but I haven't heard about those plans."

Kirkland says it's a great temptation for a distributor to branch into manufacturing. But once a company does that it finds itself in direct competition with some of its former suppliers which brings it back to the the test of penetrating the U.S. market, the toughest of all.

The competitiveness of the exports markets is something that also worries analyst Cheryl Noshitz, at McLeod Young Weir, in Toronto. In fact, she feels that Lanpar's entry into manufacturing may have been too late. "The whole life cycle of personal computers, for instance, is being compressed into a very short time," she says. "It's surprising everybody."

Lanpar management, not surprisingly, does not share Bay Street's uncertainty about its future in manufacturing. Granted, there are risks in undertaking any new venture, but they emphasize the overall conservatism of company management.

The great strength of the company, asserts David Crumble, Lanpar's treasurer since 1982, is its distribution and service network. "There are few companies in Canada that have our service capability," he says. Unfortunately, some people associate computer serviceman with [illegible] like the TV repairman. These [illegible] are very skilled and of the hig[illegible]here."

"We have a hu[illegible] research and development," [illegible]mble, "but that's not our [illegible] expensive and too risky. We don't [illegible] amounts on R and D and [illegible] as much stock in proprietar[illegible] rights because of the hig[illegible] obsolescence. We're never go[illegible] an Osborne type of situation[illegible] to be a survivor."

Patent Problems

In August 1982, after a twelve-year legal battle, René Pardo and Remy Landau overcame a major hurdle in obtaining a patent for their software product, Lanpar — Language for Programming, Raised at Random — which was also the name of the company they co-founded in 1970. Their original application for a patent had been rejected by the U.S. Patent and Trademark Office, but after seven judges in the Customs Court of Appeals unanimously reversed the decision, Lanpar was on its way to becoming the first Canadian software product to get a patent in the U.S. The patent was finally granted last August.

Ironically, however, their Canadian patent for Lanpar is less secure. Pardo and Landau were granted the patent in 1973, but its validity has been in doubt since 1981 when a Canadian court decision (the case of Schlumberger Canada Ltd. v. Commissioner of Patents) ruled that computer software is not patentable. That ruling was influenced by U.S. patent law at the time, according to George Fisk, an Ottawa-based patent attorney with the firm of Gowling & Henderson, who specializes in computer and software litigation. But in the two years that followed, software patents began to be received with more favor in the U.S. Two Supreme Court rulings (the cases of Diamond v. Diehr and Diamond v. Bradley) maintained that a type of software invention was patentable.

Although a mathematical formula is involved in their claim to a patent — and the courts have ruled that the patentability of a mathematical formula is not possible — Pardo and Landau were trying to patent the process which used the formula. On that basis, the court ruled their claim was directed to what is called statutory subject matter and therefore patentable.

One of Lanpar's features was an innovation known today as forward referencing, which enables a user to program instructions that are out of sequence. Although Pardo and Landau's court victory and subsequent patent is not as precedent-setting as earlier U.S. rulings on software patents, it is recognized as part of a trend in U.S. patent law. It also gives them clout to go after U.S.-based companies they believe offer the same kind of forward referencing and, hence, have been infringing on their patent.

"We're not necessarily going to stop people from doing what they've been doing," says Pardo. "We're simply going to approach them on licensing the patent on a royalty basis."

In the meantime, Pardo has noticed a significant change in attitude among software developers and users. "Three years ago, people used to copy without any qualms. Now, people are saying, 'Don't copy. You could get into trouble.'"

Lanpar Technologies licenced Apple Computer within 90 days of the patent's issuance in 1983. Pardo & Landau pursued Lotus in 1989 through 1996 for retroactive infringement and potential treble damages in the order of $300 - $500 million.

They lost their case, heavily influenced by Lotus' attorneys hiring as their expert witness the patent lawyer Gale Rhodes who Pardo & Landau had fired in 1971 as they pursued the case on their own for the next 10 years. The judge believed the testimony of Mr. Rhodes who testified against his former client, rather than that of Pardo & Landau. There was no prior art established as the invention was over 10 years preceding popular spreadsheets on personal computers; there was established patent validity by the CCPA (Predecessor Court of the Federal Circuit – Custom Court of Patent Appeals), and proof of

infringement. Pardo, Landau and their litigation attorneys were not aware at the time of the lawsuit against Lotus of other criticisms by the Law Society against Gale Rhodes. Mr. Pardo's conclusion regarding patents and the legal system is that "You can be right and lose – and wrong and win. Perception is reality."