Danny Cohen
ISI
1 April 1979

A MODERN APPLICATION OF TELEPROCESSING

by

J. Finnegian
The First National Bank of Oceanview
Oceanview, Kansas

In our modern bank, FNBO, we key the details of each transaction on Hollerith cards. Each transaction is later processed by our central computer, located in the headquarters building.

Each transaction may require a different number of characters to be keyed. On the average a transaction requires about 30 BCD characters, a few require less, some require more. A very small percentage require more than one Hollerith card, but some may even require three.

The cards are then fed into a device (we nickname it "card reader") which reads each column, and sends the appropriate code electronically to the central installation for processing.

The computer specialists have told us that each transaction has to start on a new card, or else the processing may be faulty.

Sometimes the computer, in the central installation, detects a questionable group of characters, like alphabetic characters in a numeric field. When this occurs, the computer operator calls the card reader operator, and asks him to repeat this questionable group.

In order to make this process even more efficient, each transmitted character is assigned an "ordinal number". For example, the ordinal number 23 is assigned to the character which is in the 23rd column of the first card, and the ordinal number 167 is assigned to the character which is in the 7th column of the third card. Our mathematicians, in the advanced research division, have invented a scientific formula for computing the ordinal number of each column. It goes like this:

NORDIN = 80 * KARD + KOLUMN - 80

NORDIN is the ordinal number to be computed. It corresponds to the character in the KOLUMNth column, of the KARDth card. The reason that both variables are spelled with a "K" (instead of a "C") is not that our mathematicians cannot spell, as most people believe, but that computers do not like "C"s here, as much as they like "K"s, for reasons which we failed to understand even though our computer scientists have spent hours explaining it to us. We were told also that the use of NORDIN for the "ordinal number" is due to similar reasons which probably are beyond the scope of this paper.

We have even proved and verified this scientific formula by testing it on many (at least a hundred, or so) cases. Not even a single case failed to produce the correct result. The president of our company was so impressed that he ordered us to name this formula after him. Therefore, we always refer to it as the MURPHY-formula.

We were told that there is also a mathematical method to find the KARD and the KOLUMN for a given NORDIN. Since this is not supposed to be a heavy mathematical paper, we'd rather not elaborate on it. We can guarantee the worried reader that even though this mathematics is beyond the scope of our understanding, modern computers are able to solve this problem.

This entire procedure is operational in the most successful way and we are very proud of it. We even plan to present a paper about it in the next convention of the banking industry.

It is worth mentioning that some transactions require significantly less than a full Hollerith card, or in the case of a multi-card transaction some have an L/C (this is how we refer to the "last-card") with just a few characters on it. In these cases, there are many trailing blanks at the end of the transaction.

Recently, our teleprocessing scientists discovered that we pay for the telecommunication of these trailing blanks at the same rate that we pay for good characters, even though they carry no information at all! Since we failed to correct this wrong doing, we figured a way to circumvent this problem.

In order to save this transmission of these trailing blanks we invented the EOC ("End-Of-Card") symbol, which we represent by a "$" sign, since we never use it for any other purpose.

This happened to be a great improvement. First, as planned, it reduces the communication cost significantly. In addition, it introduces another unexpected great improvement. It turned out that whenever the main computer is ready to accept more input, its operator tells the card reader operator how many characters can be sent. Since now all the transmitted characters are information carrying (unlike the way they used to be with the trailing blanks) a smaller delay occurs, which makes the entire operation even more efficient.

For example, suppose that when the receiver says: "You are now cleared to send 160 more characters", the sender already has several short transactions ready to be sent, say of 10 characters each.

Before the invention of the EOC only 2 transactions could be sent in response to this clearance. But now, thanks to the blessed EOC, the sender may send 16 transactions (assuming the 10 character length), without the need for extra delay while waiting for further clearances.

The ability to utilize these clearances to their full extent is the key for this unexpected performance improvement. We feel confident that this is the optimal utilization of the clearances because our transmission is now 100% pure information, without the burden of the information-free trailing blanks.

We are so proud of this significant scientific breakthrough that we are now considering writing a paper about it for publication in the communication literature.

However, a slight side effect was recently discovered. The Murphy formula does not work in many cases. In order to correct this catastrophic effect, a new feature was invented, the elastic-EOC.

However, the elastic-EOC happens to wipe out the unexpected side benefit to the flow control, but it keeps the Murphy formula operational. Since we never anticipated the improvements to the flow control, we decided that the elastic-EOC is a small price to pay, for the benefit of recovering the operability of the Murphy formula.