

April 10, 1957

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Memo To: Mr. W. Buchholz

Subject: 6-8 Bit Byte Converter

Reference: Our report of April 5, 1957 and your undated reply to same

Your reply indicates that you are opposed to a six to eight, or eight to six-bit byte converter in the commercial system. We are inclined to agree only if we are assured of having 8-information-bit tapes and discs as part of the system, and only if those 8-bit devices are available at such performance levels as to preclude the use of 700 series tape and disc equipment except when in communication with 700 series machines.

Should it appear likely that the basic operating tapes and discs of the commercial system will operate in the six-bit mode, then a converter\* appears to us to be highly desirable. There are several reasons for this.

1. In reading or writing pure binary information the presence of two filler bits in every 8-bit byte communicated between memory and the exchange will necessitate editing of a sort for which the commercial machine is ill-equipped. That is, the editing of binary information will require the handling of six-bit bytes in an otherwise four and eight-bit byte machine.
2. Programs themselves consist of binary information and would constitute a source of difficulty and inefficiency in requiring editing as under point 1 above.
3. It would be virtually impossible to perform program loading from tape alone since loading instructions could not operate in memory without editing which in turn assumes the presence of instructions prior to the loading program.
4. The volume of binary input data may be larger in this system than has been supposed. For example, APR's may input such binary information.

Of course, for the inputting of certain data which will be subject to table-look up and other processing, conversion would be a hindrance in the 1-4-8 byte size machine, since each character can be handled best as a distinct byte. Hence, it will be necessary to make the choice of whether or not to convert subject to program control.

\*(in the exchange preferably, rather than with each device, and activated or not under program control).

April 10, 1957

We believe that these arguments apply in general to other machines as well whenever the external and internal storage bytes are not identical. The issue is one of converting information in transit or requiring the computer to do it through programming. We believe the former to be the better choice, if conversion is to occur at all.

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cc: Mr. S. W. Dunwell  
Mr. J. C. Gibson  
Mr. B. L. Sarahan