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Memorandum M-1420

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Digital Computer Laboratory  
Massachusetts Institute of Technology  
Cambridge 39, Massachusetts

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By: R. R. Everett  
Date: 2-1-60

SUBJECT: WHIRLWIND II MEETING OF MARCH 7, 1952

To: Whirlwind II Planning Group

From: N.H. Taylor and R.P. Mayer

Date: March 10, 1952

Members

Present:	D. Brown	R. Jeffrey
	H. Grosch	W. Linvill
	W. Hosier	R. Mayer
	J. Jacobs	N. Taylor

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This meeting was conducted very informally because several members had not returned from New York.

A large part of the meeting concerned the possibility of building a "passive" computer. For the purposes of the meeting, it was agreed that "active" elements insert energy into the system while "passive" ones do not, and that "static" elements do not contain changing memory units while "dynamic" ones do. A block diagram does not show which elements are active or passive (but should be drawn with the electronic elements in mind), but it does show which are dynamic or static.

A static multiplier (or any other operator) could be built by the "table" method of wiring crystals in a matrix according to the multiplication (or other operation) table, but this usually requires an astronomical number of crystals. H. Grosch proposed a static multiplier which statically adds statically-shifted partial products. This multiplier still uses a great many crystals. Although it would be nice to have a one-microsecond multiplier, such as this, it is not necessary because multiplication is hardly common enough to justify the hardware involved. It was suggested that a good static multiplier might be operated "backwards" as a static divider.

It might be practical, on the other hand, to make use of a small static element (such as an octal multiply "table") by time-sharing it in a dynamic system. The problem, then, would be to find the optimum size for the static elements.

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D. Brown briefly described D. Buck's ferro-electric switch, which is somewhat similar, logically, to K. Olsen's ferro-magnetic switch.

The following system has not been worked out, but was suggested by R. Mayer as a possibility: Not only could the control matrix be placed in storage (see M-1407), but the whole computer could. This might be visualized as a complete block diagram drawn on a magnetic drum with magnetic signals. As the drum revolves, various parts of the block diagram come under the heads (which are interconnected in a very simple way) and perform as the drum dictates. Visualized in this way, it would probably be too slow for WWII, but would provide a very convenient battlefield for working out logical connections for any future machine (computer or otherwise).

It was suggested that symbols for ferro-magnetic circuits should be discussed at some future meeting.

Rollin P. Mayer  
(Rollin P. Mayer)

NHT  
(Norman H. Taylor)

RPM:ap

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