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CSE 498

### **Review of Bush paper**

In his article "As We May Think" published in 1945, Vannevar Bush describes the problems inherent in a glut of information and some ways that trends in technology of the times were beginning to solve those problems. He also ventured some proposals on how future technological advancement might further the ability of humans to contribute to, access and comprehend the collective pool of knowledge.

Much of the discussion focused on technology that seemed prevalent at the time. Micro-filming and dry photography techniques along with photocell scanning are presented as the technologies that would enable humans to store and access more information more quickly. Bush imagines a system, which he calls a "memex," that includes the ability to store, display and link practically limitless information on microfilm. The system would store microfilm in such a way as to be able to quickly find any portion of the stored data given the appropriate code. The requested information would then be displayed on any of several projection screens connected to the system. New information could be added to the system either by simply adding new microfilm or directly entered by hand and added via dry photography or photocell scanning techniques. Once the system has many documents stored, the user could call up multiple documents simultaneously and if he decided that there was some link between two or more of the documents visible, could connect them permanently so that future references to one of the documents would retrieve the others as well. This ability to create "trails" through the vast

information in the memex is key to the goal of making information easier to retrieve and comprehend. The trails make document relations explicit and obvious.

Although he focuses most of the discussion on mechanical technologies, Bush briefly mentions some of the electrical technologies of the day, including cathode ray tubes and electromagnetic storage. He even touches on the possibility of bypassing mechanical interaction to directly stimulate and respond to signals in the human body. Unfortunately, very little time is spent discussing any of the electrical technologies or direct interaction with the human body. Perhaps expounding on these ideas would have seemed too much like science fiction to an audience of 1945.

Overall, this is a well written article. Given the time in which it was written, it is appropriately forward-looking without being too fantastic. Some of his ideas about linking together vast amounts of information in a quickly accessible system seem to have been at least partially realized by the hypertext world wide web. The "memex" is essentially available as a desktop computer. His ideas about the technology that would drive advancement are somewhat dated, being too mechanical in nature. However, the basic principles for storing, accessing and comprehending a large pool of knowledge are just as important today as the amount of information available increases more and more rapidly every day.