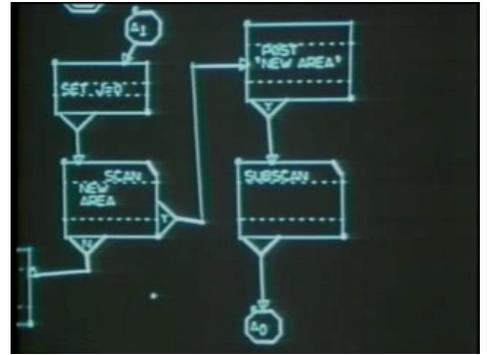
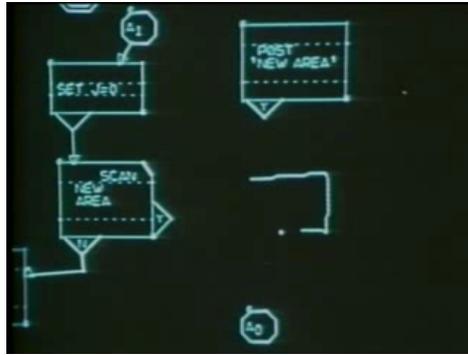
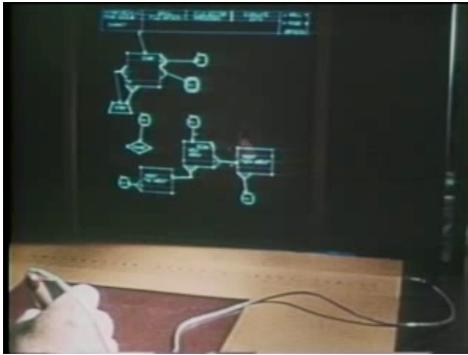


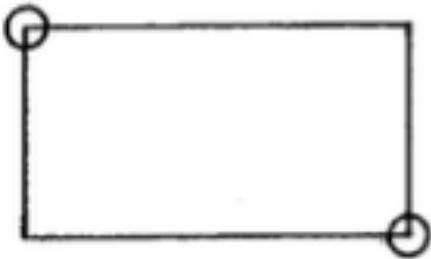
# GRAIL (Graphical Input Language)

Ellis, Heafner, Sibley, Groner, and others (1969).

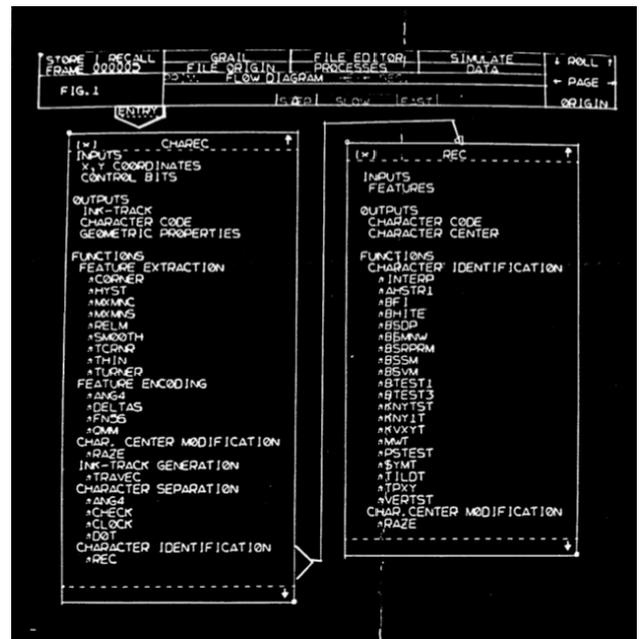
In GRAIL, users draw graphical flow-charts in order to write software. It was used to make sophisticated programs—the GRAIL system, for example, is written in itself. Users draw pictures, write characters, and manipulate virtual objects. It used a tablet and CRT, and was developed at RAND Corporation.



Programs can be compiled and run at full speed, or stepped through with a debugging interpreter that can run the program at variable speeds.



Once they have been drawn and recognized, objects can be moved (top-right handle) and resized (bottom-right handle).



A frame from Groner's real-time character recognizer program. Note how the visual design echoes formal blueprint schematics.

Kay, Alan. "Doing with Images Makes Symbols." presented at the Higher Education Marketing Group, Apple Computer, Inc., 1987. (Video stills.)

Ellis, T. O., John F. Heafner, and W. L. Sibley. "The GRAIL Project: An Experiment in Man-Machine Communications." Rand, 1969.

Ellis, Thomas O., John F. Heafner, and W. L. Sibley. "The GRAIL Language and Operations." Rand, 1969.

Groner, Gabriel F. "Real-Time Recognition of Handprinted Text." RAND, 1966.