

## The roles of image in the development of GUI

Douglas Engelbart invented the mouse; Alan Kay, the overlapping window system. Both of which are essential to the graphical user interface (GUI). Now almost all personal computers have adopted GUI to communicate with users. This paper shows the role played by the image in the development of GUI.

Engelbart, since the 1960's, has always argued for the augmentation of man's intellect by using computers. T. Bardini points out that B.L. Whorf's idea- a feedback circuit between bodily senses and language- has had a strong influence on Engelbart. Whorf thought that:

It would seem as if kinesthesia, or the sensing of muscular movement, thought arising before language, should be made more highly conscious by linguistic use of imaginary space and metaphorical images of motion.

Based on this idea, Engelbart might have invented the mouse, whereby the user's computer-controlling actions are transformed into the image on the computer screen. In his system, he employed the feedback circuit: action - image - looking. Therefore, the image was strongly connected with the user's body and actions. Further, the image on the screen began to play an important role for the confirmation of a user's actions.

Alan Kay coined the slogan, "Doing with images makes symbols" while developing a different computer interface from Engelbart's. Kay was affected by J. Bruner and focused on a link between images and looking as a thinking process. Bruner said:

What comes out of this picture, rough though I have sketched it, is a view of human beings who have developed three parallel systems for processing information and for representing it --- one through manipulation and action, one through perceptual organization and imagery, and one through symbolic apparatus. It is not that these are "stage" in any sense; they are rather emphases in development.

Alan Kay invented a system of overlapping windows as an intuitive way to use a computer to fulfill his "Doing with images makes symbols" goal. To change between computer modes or applications, the user need only bring the desired window to the top of the stack. Therefore, the image executes action. The image was strongly connected not with the user's body and actions, but with the logic circuit of the computer. As a result, the image began to play an important role in controlling the computer.

### Refereces

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