What is the image on the computer screen?

The computer shows us an image which is composed of pixels on its screen. We can easily draw, write, delete and copy & paste this image with the touch of a few buttons. My presentation clarifies why the image on the computer screen has become so flexible. For that purpose, and to make clear what is the image on the computer screen is, I investigate Ivan Sutherland's Sketchpad program, made in 1963. His program was the first practical computer graphical program still has great influence on computer interface design.

The Sketchpad user draws an image on the computer screen with a lightpen. However, the user can not draw the image on the screen directly. Under idea of "constraint", He made the computer interpret marks which the user whould have normally inscribed directly into a surface and project a new image onto its screen. "Unlike an ordinary pencil", he said, "the stylus itself does not make any direct mark on the display". Therefore, Sutherland may think that the user makes a mark not on the screen, but on the computer's memory in order to draw the image on the computer screen. From this view point, the image on the computer screen is projected from memory, like the movie image is projected from film. Differing from film, however, the mark on memory is re-writable. Moreover, Sutherland considered the screen not just as an information channel but also as a processor. By connecting these two points (re-writable memory and the screen as a processor), he made it possible to re-write marks on the memory via the image on the screen. In conclusion, Sutherland wanted to let the image on the computer screen change freely. He achieved this by connecting the projected image, without inscribing any marks directly on the screen, to the computer's memory, which allows the re-writing of the marks.

Focusing on Sutherland's Sketchpad, I consider the image on the computer screen from the view point of the mark. As a result, my presentation may show the difference between images on the computer screen and on other media.

References

1. Bolter, J.D. (2001). Writing space
2. Manovich, L. (2001). The Language of New Media
3. Sutherland, I. (1966). Computer inputs and outputs
4. Sutherland, I. (1963). Sketchpad
5. Sutherland, I. (1966). Computer inputs and outputs
6. Myer T. and Sutherland, I. (1968). On the design of display processors