Global visualization metaphors

Vladimir L. Averbukh

Krasovskii Institute of
Mathematics and Mechanics UrB RAS
Ural Federal University
Yekaterinburg, Russia

averbukh@imm.uran.ru

Metaphor

▶ the basic idea of data presentation, the idea of convergence entities of a computer system and a source domain.

▶ the idea of interaction with the [virtual] environment created by computer systems.

Hierarchy of computer metaphors

▶ Global metaphors of design;

▶ Basic visualization and interface metaphors;

▶ Local metaphors.

Global metaphors

► Global metaphors depend on global events and changes in society, art, and science.

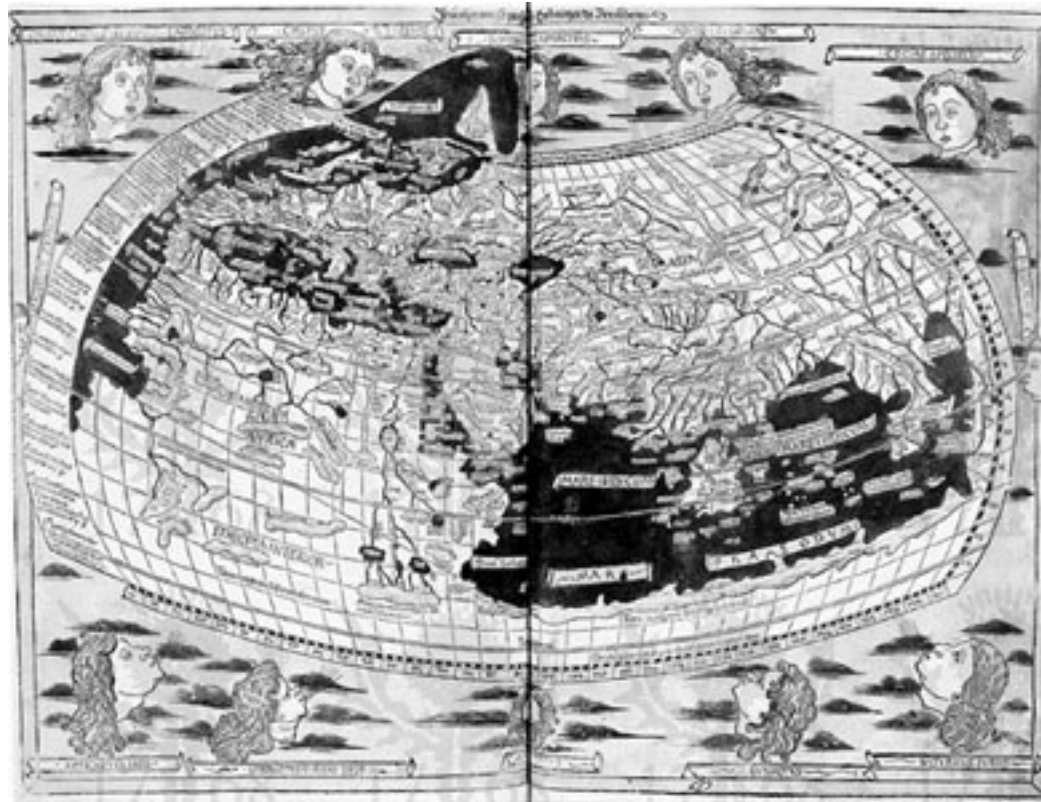► Our point of interest is global metaphors that have a visual ("pre-computer" and computer) representation.

Global metaphors. Main examples

▶ cartography,

▶ engineering drawing,

▶ drawing graphs of functions on the Cartesian plane
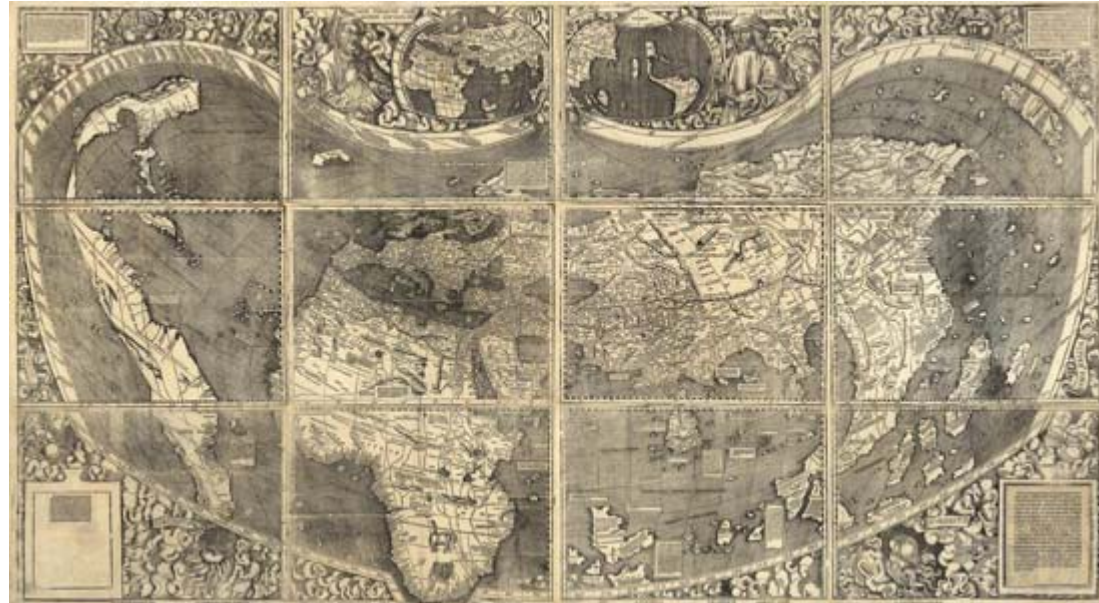
Modern cartography

The use in Modern Age the Mercator projection and grid of parallels and meridians is a great achievement in the visualization of geographical and navigation data.

Cartography

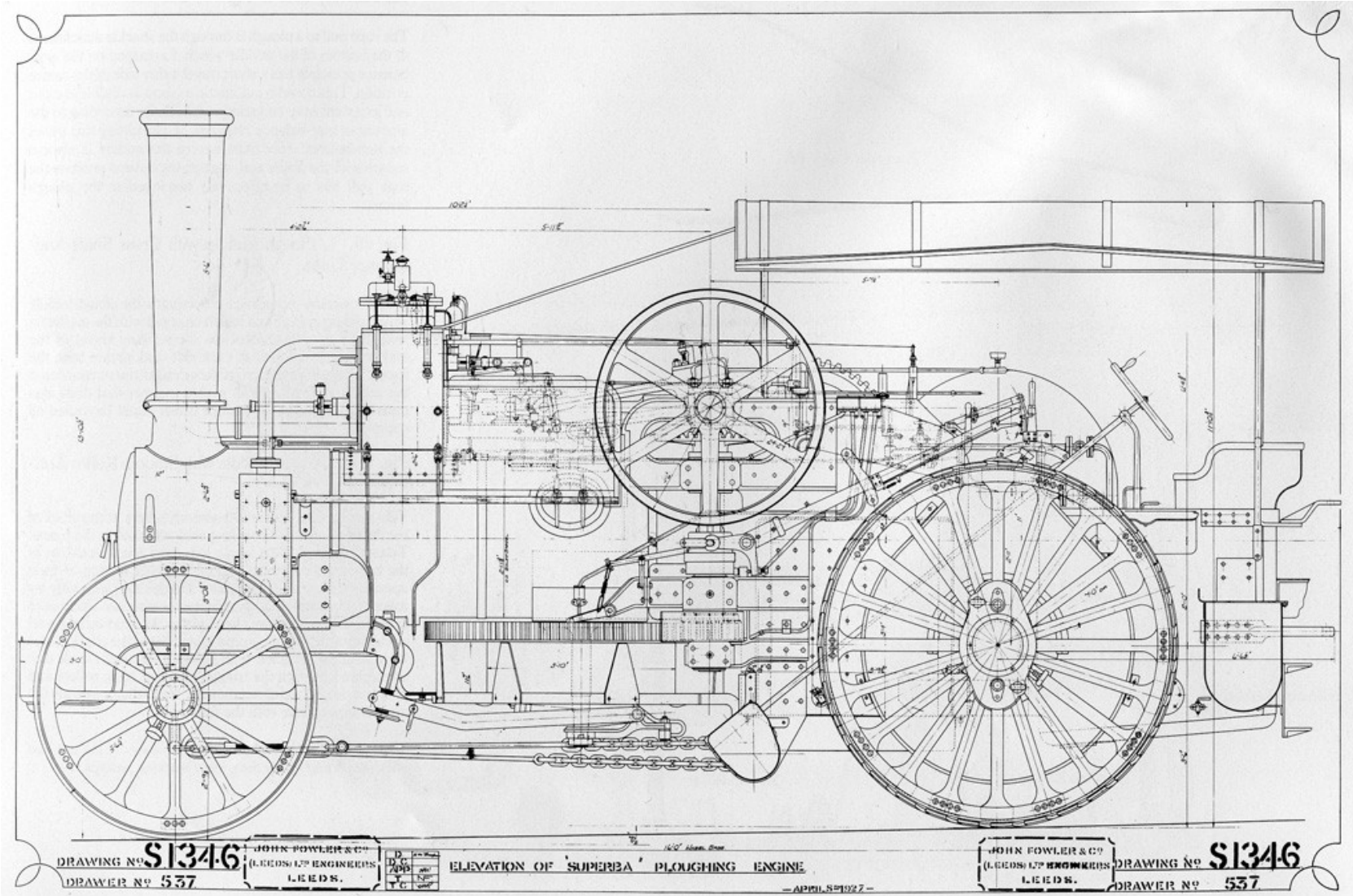Ptolemy's map of the world, as printed at Ulm, Ger., 1482

Cartography

World map by Martin Waldseemüller, 1507.

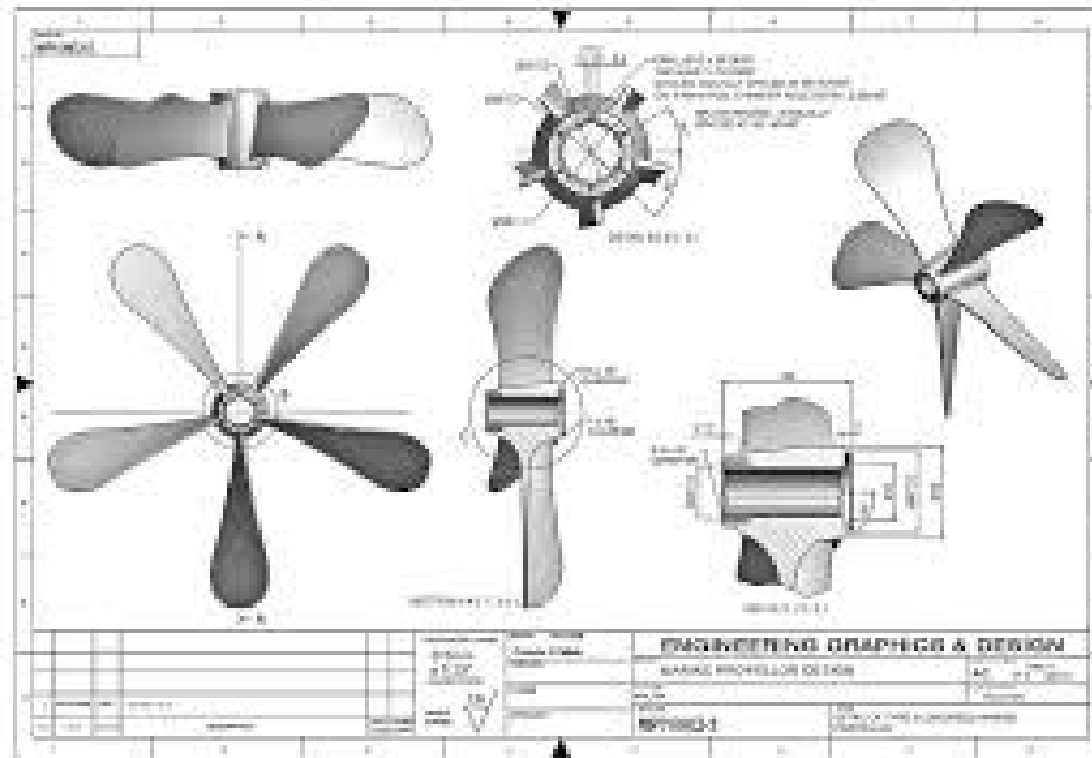# Cartography. Modern world map

Engineering Drawing

Multiple views and projections, the set of the rules are used to depict characteristics of products compile some special and unambiguous code.
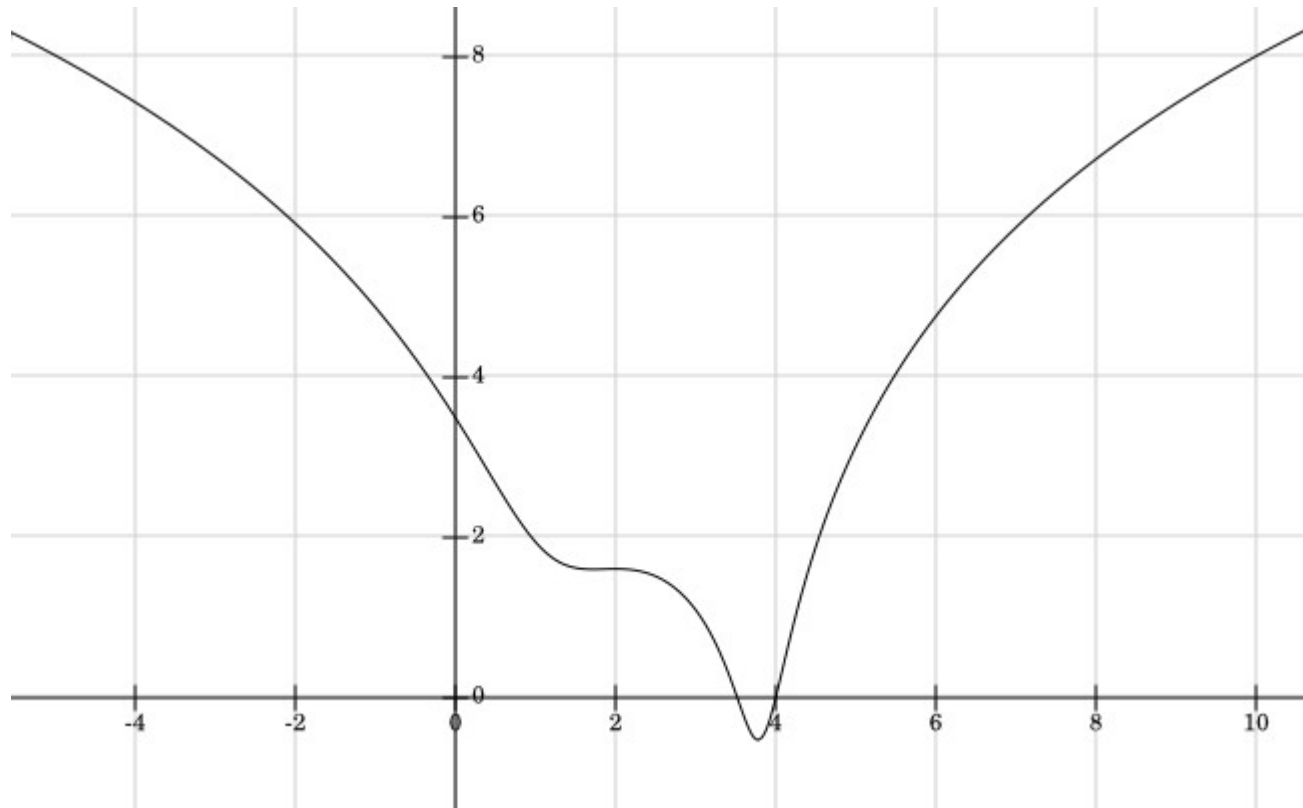
Engineering Drawing
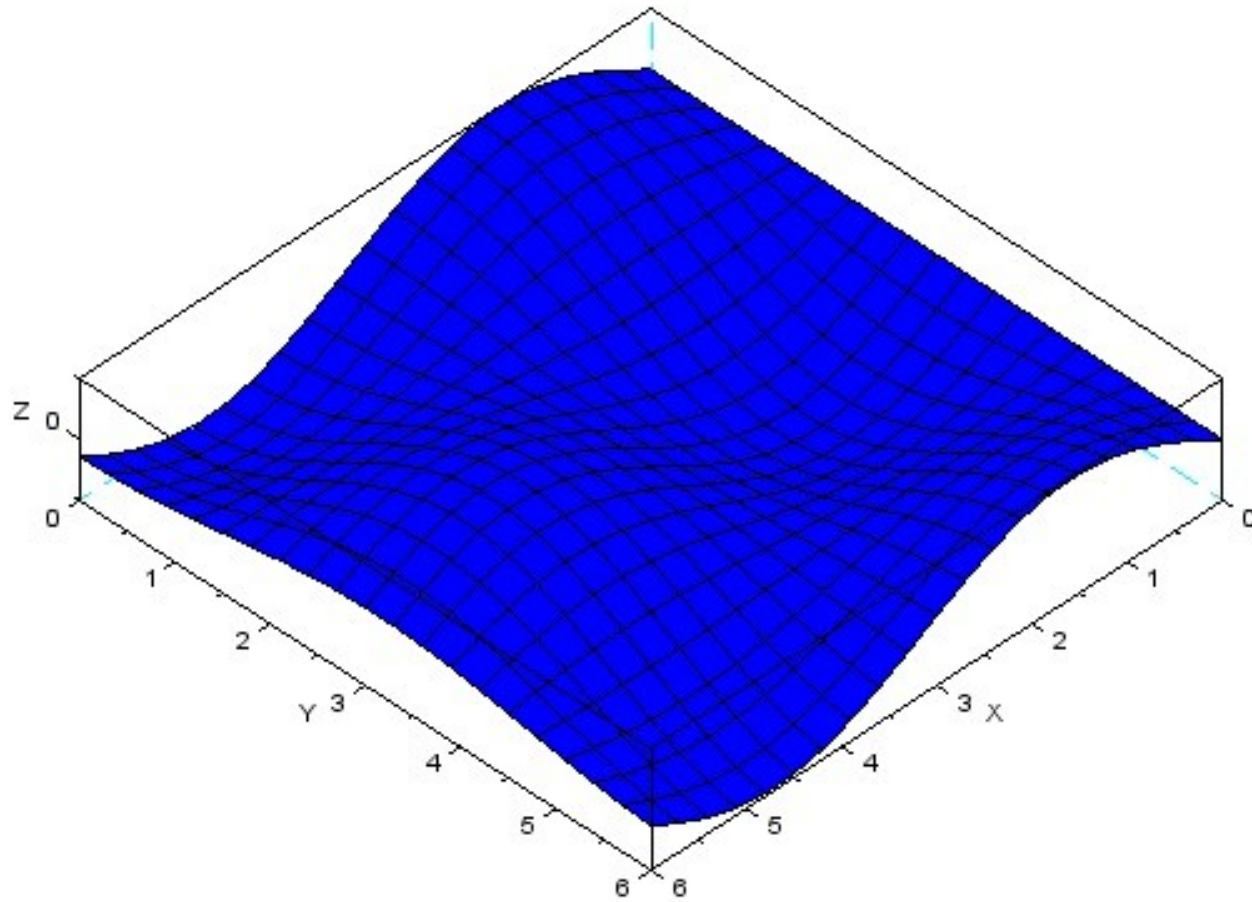
Engineering Drawing

Engineering Drawing

Graphs in cartesian coordinates

► The idea of function reflects rather abstract conceptions but from behind graph drawing even very young students may become familiar with them.

► The 2D and 3D graph drawing is the base of modern Scientific Visualization and the important part of Information and Software Visualization.
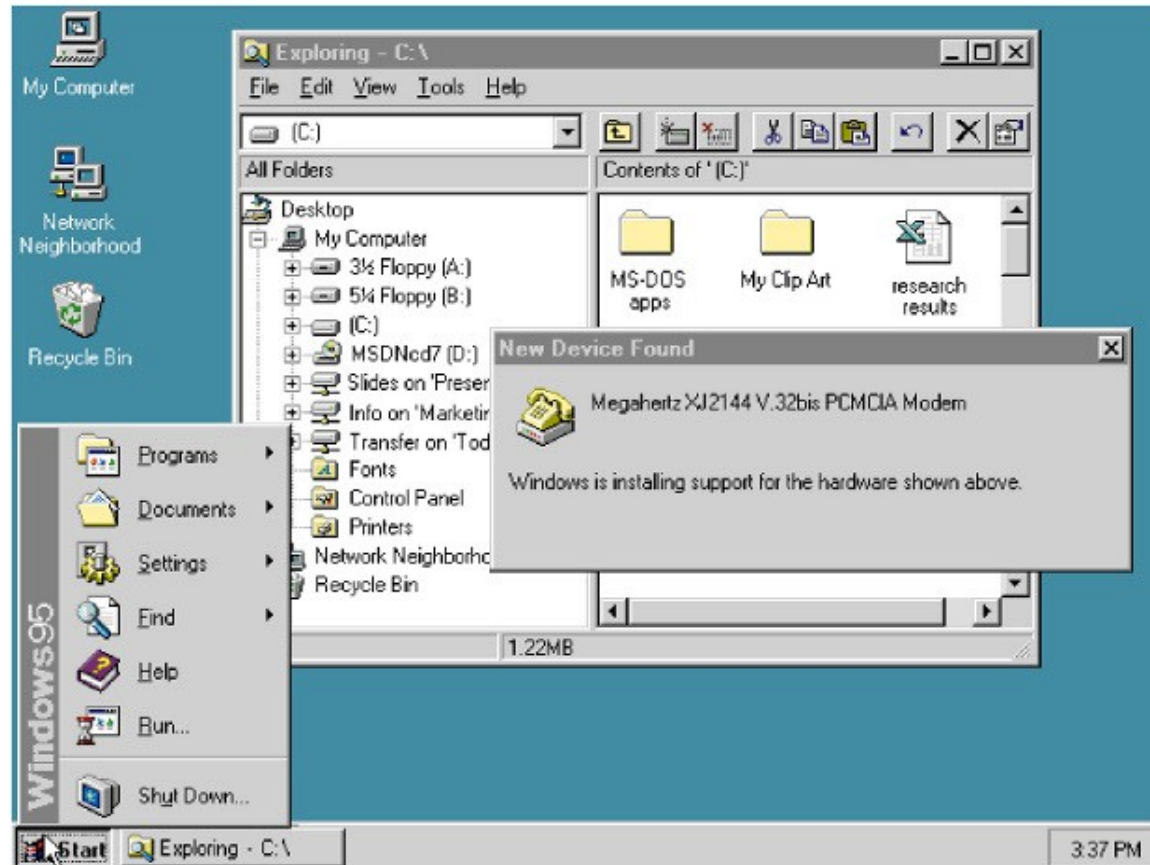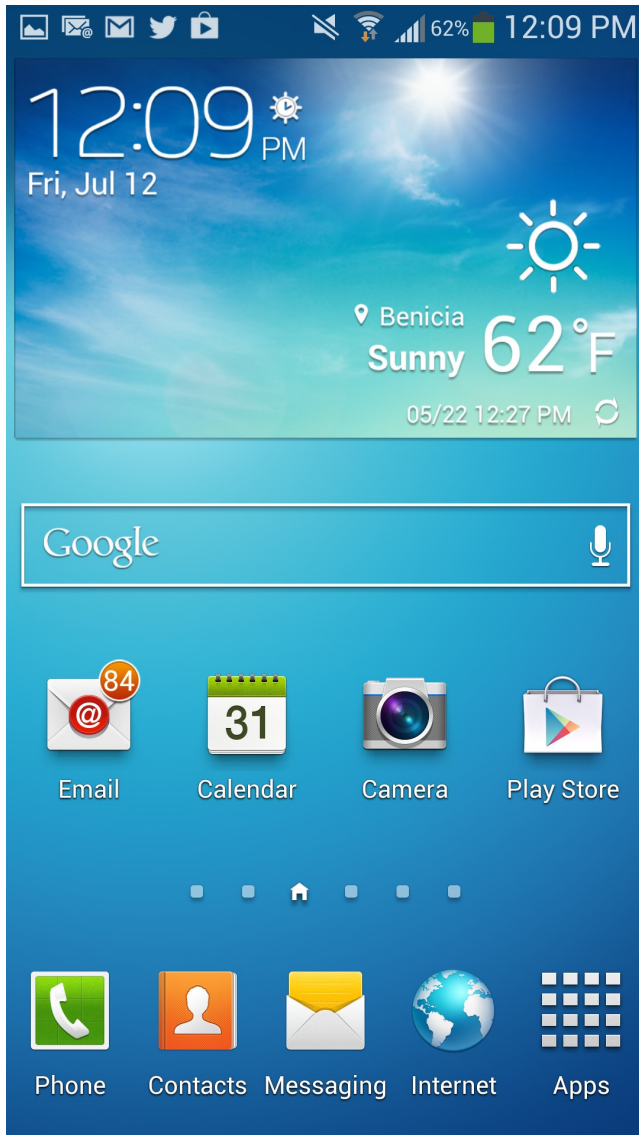
2D graph

3D graph

Desktop Metaphor

► The cornerstone of Desktop Metaphor successes is very links with this change in the awareness of the world.

► Results of modern computerization (and Desktop metaphor) reflect global ideas of modern "post-industrial" world.

► However, "office" interfaces generate office activity techniques in such "nonoffice" domains as medicine or education. This often involves non grata effects.

Desktop Metaphor. Windows 95

Android interface

New approaches

► New approaches are based on the casual use of mobile devices for communication, entertainment and accesses to information resources.

► It is necessary to analyze the implications of the new global metaphors for society.