Computers and the Visual Arts
By Leslie Mezei

A LTHOUGH THERE IS MUCH INTEREST in applying the computer
to various areas of the visual arts, few real accomplishments
have been recorded so far. Two of the causes for this lack of
progress are technical difficulty of processing two-dimensional
images and the complexity and expense of the equipment and the
software. Still, the current explosive growth in computer graphics
and automatic picture processing technology are likely to have dra-
matic effects in this area in the next few years.

In contrast to music, pictures are easier to generate (on in-
expensive plotters, for example) than to analyze. About a dozen
exhibits of "computer art" have been already held, produced mainly
as a hobby. (See Bibliography, CHum, I. [1967], 154-156.) Michael
Noll pioneered with two- and three-dimensional computer-generated
movies. His variations on Piet Mondrian's "Composition with
Lines" created quite a stir. Maugham Mason produced fascinating
Moire-like patterns on an analogue computer. Frieder Nake and
Georg Nees in Germany generated many interesting random ab-
stract designs. Jack Citron's work (see CHum, I [1967], 223) is
representative of the computer art generated by mathematical
formulae. Charles Csuri (ibid., pp. 240-241) introduced representa-
tional art, such as his "Metamorphosis," in which the face of a
young woman dissolves gradually and is transformed into the face
of an old woman. Leslie Mezei (ibid., p. 240) has been using
Canadian national symbols such as the maple leaf and the beaver
for studies in "controlled randomness" in art. H. P. Peterson's
"Digital Mona Lisa" graces many a wall in the computer industry.
The painting was scanned and transformed into digits by a com-
puter and plotted by a mechanical plotter. A major international
exhibit entitled "Cybernetic Serendipity" is being prepared by The
Institute of Contemporary Art in London for 1968.

Interactive design systems with graphic consoles including a
display tube and "light pen" are becoming more common; so far
they are mainly used in engineering design. Some work is being
done in textile design, and pattern grading of clothing is in actual
production. A recent survey by the Association of Collegiate
Schools of Architecture shows that many schools teach program-
ming but the visual design work in architecture is not yet being
assisted by computer graphics anywhere. The Association for
Computing Machinery now has a Special Interest Committee on
Civil Engineering, Architecture and Planning.

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Computer generated educational movies are creating the most excitement today. A sampler produced by the NCEEF Computer Education Group is available from Education Services Inc., 39 Chapel Street, Newton, Mass., 02160. The possibilities of graphically demonstrating invisible processes have great potentialities in many areas of education. Some primitive attempts have also been made in cartoon animation, to automate the laborious fill-in-work.

While the monumental tasks of museum cataloging and art history are being considered (see *CHum*, I [1966-67], 27, 164, 240), a start has yet to be made in the analysis of art. Expensive scanning equipment, large memories and complex software are required. Although scientists are processing moon photographs, bubble-chamber tracks, chromosome pictures, and aerial photographs for "target detection," little parallel effort has been directed to works of art. Part of the problem is to decide just what to do. In the attempt to reconcile the computer and the analysis of art, a new interest has arisen in formal aesthetic and design principles, in the search for a language of visual expression, and in the meaning of familiar though mysterious terms such as "structure," "pattern," "order," and "disorder." There has been an infusion of new ideas from cybernetics, information theory, pattern recognition, and neurophysiology. A growing number of organizations exist for the purpose of active cooperation between the arts and the sciences, such as the International Association for Empirical Aesthetics, Experiments in Art and Technology, Creative Science Society, and Design Research Society. As the computer and its graphic capabilities become easily available to these groups another exciting spurt will develop toward the "Second Renaissance."