



COMPUTER GRAPHICS
AND ART

NOVEMBER, 1978
VOL. 3, NO. 4

GRACE C. HERTLEIN, Editor
 Calif. State Univ., Chico, Calif.
 JUDITH P. CALLAHAN, Special Assistant
 PAT KOPCZYNSKI, Promotional Assistant
 BERKELEY ENTERPRISES, INC., Publisher

Contributing Editors

ALFRED BORK, Univ. of Calif., Irvine
 CHARLES CSURI, Ohio State Univ., Columbus, Ohio
 HERBERT W. FRANKE, Munich, Germany
 CHARLES GLASSMIRE, Robert Morris College, Coraopolis, Pa.
 ARTHUR W. LUEHRMANN, University of California, Berkeley
 CARL MACHOVER, Machover Associates, Corporation, White Plains, New York
 ABRAHAM MOLES, Univ. of Strasbourg, France
 NICHOLAS NEGROPONTE, Mass. Inst. of Technology Cambridge, Mass.
 JACKIE POTTS, Social Security Adm., Baltimore, Maryland
 ERIC TEICHOLZ, Harvard University, Cambridge, Mass.

Advisory Board Members

EDMUND C. BERKELEY, Editor and Publisher, Newtonville, Mass.
 KENNETH KNOWLTON, Bell Laboratories, Murray Hill, New Jersey
 FRANK MALINA, Editor "Leonardo", Paris, France
 FRIEDER NAKE, Univ. of Bremen, Bremen, Germany
 JOSEPH RABEN, Editor, "Computers and the Humanities", Queens College, Flushing, N.Y.

MATERIALS SUBMITTED FOR PUBLICATION SHOULD BE IN ENGLISH. MANUSCRIPTS SHOULD BE TYPED DOUBLE-SPACED, WITH TWO COPIES OF THE MANUSCRIPT SENT TO:

Editor, COMPUTER GRAPHICS AND ART
 Berkeley Enterprises, Inc., Chico Branch
 555 Vallombrosa - #35
 Chico, California 95926
 PHONE: (916)343-2712

NOTE: Illustrations are REQUIRED with all manuscripts, 100% size preferred. Charts, sample programs are desired with work.

SUBSCRIPTION INFORMATION, ADVERTISING RATES, BILLING INFORMATION -- BUSINESS CORRESPONDENCE SHOULD BE ADDRESSED TO:

Business Office
 COMPUTER GRAPHICS AND ART
 Berkeley Enterprises, Inc.
 815 Washington Street
 Newtonville, Mass. 02160
 PHONE: (617)332-5453

COPYRIGHT, 1978 by Berkeley Enterprises, Inc. Newtonville, Mass. 02160
 COMPUTER GRAPHICS AND ART is published quarterly, 4 issues per year. Printed in the U.S.A.

ANNUAL SUBSCRIPTION RATES

Personal, U.S. & Canada, \$10 per year
 Personal Foreign, \$13 per year
 Library, Departmental, \$15 per year
 Special Rates, \$8 per year, U.S. & Canada
 Special Foreign Rates, \$11 per year
 SPECIAL RATES apply to students and to members of computer graphics societies and art societies. Please attach membership number or evidence of same for these special rates. (See CG&A Ad for details of 2 year rates.)

PHOTOGRAPHY, LAYOUT DESIGN, Grace C. Hertlein

THE MAGAZINE OF INTERDISCIPLINARY COMPUTER GRAPHICS FOR PROFESSIONAL GRAPHICS PEOPLE AND COMPUTER ARTISTS

VOL. 3, NO. 4

- 1 - FRONT COVER - "Le Morte de Beardsley," by William Kolomyjec, 560 Pacific Parking, Lansing, Michigan, 48910. A graphic made up of three components, the work is a computer derivation of Beardsley's designs.
- 3 - EDITORIAL - "In Retrospect," by Grace C. Hertlein. The editor looks back on the last three years of CG&A -- and comments on changes for the fourth year. Artists and writers are invited to study this information and the announcement on page 4.
- 4 - ANNOUNCEMENT, CG&A - CG&A will be pursuing a new form for Volume 4, that of a definitive yearbook, published once a year. Contents of the extended issue are given here, along with subscription blanks.
- 5 - INDEX OF ARTICLES, TEXT - VOLUMES 1, 2, 3 - A useful, 8-page index of all articles and text material is given. Each article contains an abstract of the contents. This abstract is not repeated in the cross-listing. This serves as a valuable reference guide for graphics teachers, artists, and students.
- 13 - INDEX OF ILLUSTRATIONS, VOLUMES 1, 2, 3 - An alphabetical listing of artists and writers and their illustrations from CG&A. Included in the listing are useful graphs, charts, etc. There is no cross-listing in this section. 4 pages, hundreds of illustrations.
- 17 - ANNOUNCEMENT: CYBERNETIC SYMBIOSIS EXHIBITION - An in-depth release on the history of this exhibition, along with varied facets of this six-month showing of varied computer arts, to be held at the Lawrence Hall of Science, University of California, Berkeley, beginning in March, 1979. This will be the largest and most important showing of computer art to be held anywhere. 100,000 people will see this show at UC, Berkeley. The show has been planned and coordinated by CG&A Editor, Grace C. Hertlein, who will also develop the catalog for the extended exhibition. 2-page details.
- 19.- ANNOUNCEMENT - COMPUTERS AND PEOPLE
- 20 - BACK COVER - "Hex Variations" by William Kolomyjec.

NOTE: Details of "Hex Variations" are also on pages 5, 8, 11, 14, and 18.

NOTE TO ARTISTS IN CYBERNETIC SYMBIOSIS: Exhibition contracts will be sent to artists early in 1979, along with updated information on the exhibition. Please wait for this new material. NO NEW ART WORK WILL BE ACCEPTED FOR THIS EXHIBITION, AS OF JANUARY 1, 1979.

EDITORIAL

IN RETROSPECT

EARLY ISSUES

Looking back, CG&A was aimed at an interdisciplinary audience of graphics people. Early in 1976, it appeared obvious that very technical writers were aiming at SIGGRAPH publication. Artists, geographers, engineers, hardware and software writers appeared, first in moderate numbers, then more generously.

SURVEY OF THE INDEX ON ARTICLES, TEXT

Studying the index on articles and text materials offers a pragmatic analysis of what was accomplished. There are respectable quantities of useful materials on teaching computer art, mathematics and art, computer-assisted instruction, hardware and software. Included in this material are articles and papers that will last for some time.

In developing the index on text materials, it appeared obvious that if CG&A was to serve as a valuable reference source, then abstracts of text material would be a viable addition to the index.

CONTRIBUTIONS TO THE FIELD OF COMPUTER ART

Without a deliberate thrust, the direction of CG&A appeared to be a dominant vehicle for computer artists and teachers of computer art. CG&A has published more illustrations of computer art than any other periodical (perhaps with the exception of Computers and People, and its Annual August Art Issues). The focus of computer art has been international, and significant artists and writers have generously contributed to this thrust.

The past three years of CG&A appear to be valuable reference material for artists and teachers of computer art. In this area, CG&A has made a significant contribution to the field of computer art.

PLANS FOR 1979

Detailed plans for a definitive Yearbook are given on page four of this issue. In studying the plans for 1979, it appears that one larger issue would offer more information, of perhaps a more "enduring" nature. Thus, the necessity of one yearly issue, may prove to be a definite advancement for graphics people. The sifting of information and materials "good enough" to last a year forces quality control in a yearbook publication.

ARTISTS

Artists are invited to continue submission of materials, for publication in CG&A and for Computers and People. Materials should be more technically oriented, with flowcharts and sample programs, and not include generalistic comments on art. The "sizzle of the steak" is not as interesting as a complete meal. Emphasis should be on useful information for others.

INTERDISCIPLINARY GRAPHICS

Interdisciplinary graphics, computer graphics in industry, in education, are warmly invited. The comments regarding full development of information apply here also. Illustrations should be 100%, clear, and generous. Flowcharts and programs are desirable.

REVIEWS, ABSTRACTS, BIBLIOGRAPHIES

If we are to make this yearbook issue useful for graphics people, CG&A will need abstract editors and reviewers, from many areas. Persons interested in reviews, abstracts, and bibliographic work, are warmly invited to write the editor of CG&A promptly. Film reviewers are also needed.

NON-RE-INVENTION OF THE WHEEL

In order to publish useful, stimulating material, we would not wish to re-invent and republish materials that are readily available in Computers and the Humanities, Leonardo, and SIGGRAPH. Each periodical has its excellent place. Our new thrust will be excellence, enduring quality, and useful information.

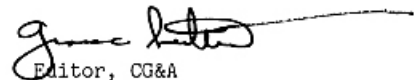
WHAT WAS LEARNED?

Perhaps a magazine on interdisciplinary graphics is a bit early at this point. Perhaps we need a great entrepreneur, to aid in promotion of CG&A (someone not committed to full-time teaching). Perhaps we need more ardent support by all computer artists. I have gently added "perhaps", but these are some of our needs.

Graphics people are still in early phases of competing with one another -- and need to mature to the collaborative, disseminative stage of development. As a writer, I learned more about writing from editing, and the necessity of communicating effectively, to depart from self expression, into the place where the prime concern was to identify useful ideas, and to communicate those ideas to others. A study of conference papers (both national and international) will reveal the same need.

I invite our readers and friends to consider these ideas, and to assist us in our mutual goal, of advancing the state of the art of computer graphics and art -- by our mutual work, our mutual sharing, and our mutual respect. I look forward to our new collaboration in 1979.

Our thanks, to writers, artists, subscribers. Our invitation: to warmly collaborate in 1979.


Editor, CG&A

COMPUTER GRAPHICS & ART

BERKELEY ENTERPRISES, INC., CHICO BRANCH

555 VALLOMBROSA, #35

CHICO, CALIF. 95926

Dear Friends,

Since 1976, "Computer Graphics and Art" has published over 400 pages in 12 quarterly issues. We hope and believe that the information presented in CG&A has been useful, interesting, factual, a valuable reference -- and a contribution to the field of computer graphics.

However, the magazine has not become profitable (nor even sufficiently self-supporting). Consequently, the amount and frequency of publication will change for our fourth year, 1979.

We plan on publishing a yearbook in 1979, instead of four quarterly issues. The planned-for publication date is July.

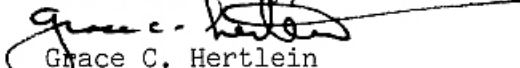
This yearbook will contain among other things:

1. Significant short articles and papers
2. Abstracts of other articles and papers
3. Book reviews
4. Illustrations of new and important works
5. Technical materials including flowcharts and programs
6. A catalog of "Cybernetic Symbiosis", an exhibition of computer art scheduled for six months at the Lawrence Hall of Science, Berkeley, California, and subsequently to be shown in many cities over the next two years
7. Bibliographies
8. And...much more

Our subscription rates for 1979 are unchanged (except for elimination of special rates), and are shown below in the following notice.

We continue to appreciate greatly the support and interest of all our subscribers and contributors.

Yours sincerely,



Grace C. Hertlein

Editor, "Computer Graphics and Art"

TO: COMPUTER GRAPHICS AND ART
Business Office
Berkeley Enterprises, Inc.
815 Washington St.
Newtonville, MA 02160

FULL REFUND IN 30 DAYS IF NOT
SATISFACTORY

---FOR CG&A, 1979---

- () Please enter my PERSONAL (U.S. & Canada) subscription for \$10 per year.
- () Please enter my FOREIGN PERSONAL subscription for \$13 per year.
- () Please enter my LIBRARY/DEPARTMENTAL subscription for \$15 per year.
- () Enclosed is my PERSONAL CHECK and/or PURCHASE ORDER.

NAME _____ TITLE _____
ORGANIZATION _____
ADDRESS _____

INDEX OF ARTICLES, TEXT, VOLUMES 1, 2, 3 COMPUTER GRAPHICS AND ART

NOTE: The following index includes a brief abstract of each article. It is included only with the first listing of the article and is not repeated in the cross-listing.

ANIMATION -- See:

GLASSMIRE, CHARLES, "Re:Viewing - Movements in Animation," August, 1977, p. 19-21

WARNER, JAMES R., "A Pragmatic Approach to the Computer Animation Process," November, 1977, p. 8-18

ART MATERIALS IN COMPUTER ART -- See:

EMMETT, COLIN, "The Rainbow's Egg," May, 1976, p. 25

HERTLEIN, GRACE C., "Part I - Design Techniques and Art Materials in Computer Art," August, 1977, p. 26-33

_____, "Part II - Design Techniques and Art Materials in Computer Art," November, 1977, p. 27-35

BARBADILLO, MANUEL, "Comments on Art," May, 1976, p. 11, Illustrated.

ABSTRACT: 1 page comments by the artist on his "alphabet of forms," computer-designed canvases that are painted by hand.

BENIGER, JAMES R., "From Stylus to Light Pen: Technology and Innovation in the Development of Quantitative Graphics," November, 1976, p. 18-27, Illustrated.

ABSTRACT: Condensed version of an in-depth scholarly study of the history of utilitarian quantitative graphics and important "firsts" in man's attempts to measure, quantify and communicate useful information. Discussion followed by comments with date-ordered important events and innovators. Well illustrated 10-page article.

BERKELEY, EDMUND C., "Computer Art: Possibilities for Future Improvement," August, 1977, p. 22-25, Illustrated.

ABSTRACT: E. C. Berkeley comments on the quality (or lack of quality) of computer art, and its lack of acceptance among non-computer people. He suggests specific ideas for improving the quality of this medium. Controversial, 4-page, illustrated article by a noted writer and editor.

BEVIS, JEAN H., "Mathematics in Art and Computer Graphics," November, 1976, p. 6-9, Illustrated.

ABSTRACT: Mathematician, Jean Bevis, outlines a basic systematic study of techniques for specifying a system of lines, offering a new theory of texture, based on mathematics. Four pages of well illustrated material, with sample textures and portions of programs.

BONACIC, VLADIMIR, "Research and Teaching in Art and Science," August, 1977, p. 4-9, Illustrated.

ABSTRACT: An artist-philosopher describes the development of the Program in Art and Science at the Bezalel Academy of Arts and Design. Discussion of research and teaching topics, with details of these topics and seminars. 6-page article with superior ideas about art and science.

BORK, ALFRED, "Learning through Graphics," February, 1976, p. 5-9 and 30-31. Not illustrated.

ABSTRACT: A significant 10-year forecast for computers, education, and graphics, by a leading authority in CAI and graphics. Contains a definitive review of graphics in education, current systems, hardware and software requirements for the future, courseware, and models for the future. Seven solid pages of text of importance with a generous bibliography.

BORK, ALFRED, "The Physics Computer Development Project," August, 1976, p. 10-17. Illustrated.

ABSTRACT: Alfred Bork reports on the major objectives of the Physics Computer Development Project for the past five years at UC, Irvine. The role of interactive graphics and the development of dialog software utilizes innovative methods for teaching teachers to prepare dialogues without learning programming. New directions are explored. Important considerations for CAI are reviewed in depth, and new directions are explored. Generous references, well illustrated, 8-page article.

BOWLES III, THOMAS A., "Art of the Space Era - Excerpts from the Exhibition Catalog," May, 1978.

ABSTRACT: $\frac{1}{2}$ page discussion of art of the space era, and the stimulation of space exploration for artists, by the Director of the Huntsville Museum of Art.

CAPOWSKI, JOSEPH H., "Some Line Drawings of Neuro-anatomical Structures," August, 1976, p. 8-9, Illustrated.

ABSTRACT: 2-page well illustrated presentation of graphics used in the Physiology Department and Neurobiology Program at the University of North Carolina Center, using an Evans and Sutherland LDS-2 Line Drawing System.

CARTOGRAPHY -- See MAPPING

CHU, KAI, "Computer Graphics and High School Education," August, 1976, p. 18-22, Illustrated.

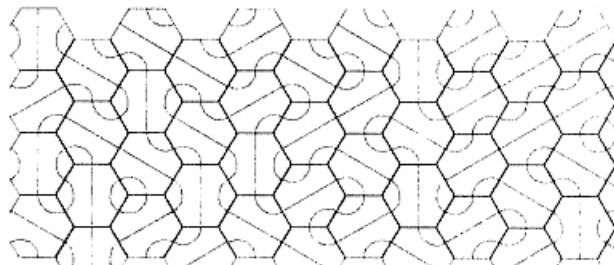
ABSTRACT: A former electrical engineer turned teacher reports on methods for teaching data processing to high school students using computer graphics -- and his unique teaching methods. Philosophical approaches are combined with empathetic insights into high school learning. Well illustrated 5-page article.

COHEN, DAN and LAND, DICK, "Interactive, Dynamic, Computer Art," May, 1978, p. 4-7. Illustrated.

ABSTRACT: 4-page, well illustrated, brief discussion of the interactive "Flower" system developed at Harvard. Virtues of interactive, responsive systems are emphasized.

COHEN, DAN and LAND, DICK, "Excerpts from the Art of the Space Era Exhibition," May, 1978, p. 7.

ABSTRACT: $\frac{1}{2}$ page philosophical comments -- superb ideas regarding computer art.



COMPUTER ART - CRITICISM, ANALYSIS -- See:

- BERKELEY, EDMUND C., "Computer Art: Possibilities for Future Improvement," August, 1977, p. 22-25
- GLASSMIRE, CHARLES, "Re:Viewing," February, 1977, p. 32-33
- HERTLEIN, GRACE C., Editorial, "The State of the Art of Computer Art: Phase Two," May, 1976, p. 4
- _____, Editorial, "In Defense, in Praise of Computer Art and Graphics," November, 1977, p. 3
- LINEHAN, THOMAS E., "An Investigation of Criteria for Evaluating Computer Art," May, 1976, p. 6-9

COMPUTER ART - PERSONAL PHILOSOPHIES -- See:
PERSONAL PHILOSOPHIES OF COMPUTER ART

COMPUTER-ASSISTED ART, TEACHING -- See:
TEACHING COMPUTER-ASSISTED ART

COMPUTER-ASSISTED INSTRUCTION -- See:

- BORK, ALFRED, "Learning through Graphics," February, 1976, p. 5-9 and 30-31
- BORK, ALFRED, "The Physics Computer Development Project," August, 1976, p. 10-17
- CAPOWSKI, JOSEPH J., "Some Line Drawings of Neuro-anatomical Structures," August, 1976, p. 8-9
- CHU, KAI, "Computer Graphics and High School Education," August, 1976, p. 18-22
- FRITCHIE, CHARLES J. and MORRIS, ROBERT H., "Inexpensive Graphics from a Storage Cathode Ray Tube," May, 1976, p. 5 and 32
- JOHNSTON, ROBERT A.; SINGER, MICHAEL J. and THORPE, LINDA J., "Computer Map Overlays for Land Management," August, 1978, p. 14-27
- MC NICHOLS, ELAINE, "Computer-Assisted Graph-Making," November, 1976, p. 32-33
- MORRIS, ROBERT H., and FRITCHIE, CHARLES J., (See FRITCHIE listing and abstract.)
- ONYETT, LLOYD, "PLOTMAP: Computer Representation of Geographic Data," February, 1976, p. 18-21
- SCHNEEBERGER, REINER, "Computer Graphics at the University of Munich, West Germany, November, 1976, p. 28-31
- SINGER, MICHAEL J., JOHNSTON, ROBERT A. and THORPE, LINDA J., (See JOHNSTON, ROBERT A. listing and abstract.)
- THORPE, LINDA J.; SINGER, MICHAEL J., and JOHNSTON, ROBERT A., (See JOHNSTON, ROBERT A. listing and abstract.)
- WILLIS, VICTORIA and WU, KINGSLEY, "Computer Graphics for Interior Design Students," August, 1977, p. 16-18
- WU, KINGSLEY and WILLIS, VICTORIA, (See WILLIS, VICTORIA listing and abstract.)
- COQART, ROGER, "Graphics Applications: Paintings," August, 1976, p. 24-25, Illustrated.
ABSTRACT: Philosophical approaches to computer art applications in paintings, from a Belgian artist. 2 pages, abstract Bauhaus derivations.
- COQART, ROGER, "Outer Space and Technological Progress," May, 1978, p. 30, Illustrated.
ABSTRACT: 1/2 page of comments on computer art, from Art of the Space Era Exhibition.
- CORDEIRO, ANALIVIA, "The Programming Choreographer," February, 1977, p. 27-31, Illustrated.
ABSTRACT: The author describes experiments in choreography and television at the University of Campinas, Brazil. 5-page article, with tables, flowcharts, and illustrations of dancers. Slight bibliography.

- COVINGTON III, JOSEPH P., "Unimaginable Images: An Art of the Space Era," August, 1978, p. 28-33, Illustrated.
ABSTRACT: 6-page, well illustrated excerpts from the catalog, Art of the Space Era, Huntsville Museum of Art, by the Curator of Education. Excellent history of computer art, early computer graphics, techniques, motivation for artists, and discussion of new directions.

- CULLINANE, STEVEN H., "Diamond Theory," February, 1977, p. 5-7, Illustrated.
ABSTRACT: Methods of achieving innumerable patterns from mathematics are discussed and illustrated generously in a 4-page condensation from a definitive paper. Designs may be used in painting or sculpture. (Ten illustrations)

DANCE -- See:

- CORDEIRO, ANALIVIA, "The Programming Choreographer," February, 1977, p. 27-31

- DUNKER, KEN and SHAO, PAUL, "Varied Attitudes Held Toward Computer Art," May, 1978, p. 32, Illustrated.
ABSTRACT: 1 page of attitudes about art gathered by the two artist-teachers; ideas about creating art - from the ASE (Art of the Space Era Exhibition).

- EMMETT, COLIN, "The Rainbow's Egg," May, 1976, p. 25, Illustrated.
ABSTRACT: 1 page comments by the artist on his silkscreened graphics.

ENGINEERING AND GRAPHICS -- See:

- JONES, KERRY, "Engineering Applications in the Design of Buildings," August, 1976, p. 5-7

- FRANKE, HERBERT W., "Art of the Technical World," February, 1976, p. 10-11, Not Illustrated.
ABSTRACT: Profound 2-page text by a prominent artist-philosopher, considering computer art as the bridge between the two realms: artistic-literary and scientific-technical. Bibliography.

- FRITCHIE, CHARLES J., and MORRIS, ROBERT H., "Inexpensive Graphics from a Storage Cathode Ray Tube," May, 1976, p. 5 and 32, Illustrated.
ABSTRACT: Brief, well illustrated discussion of photographic techniques used to achieve graphics from a storage tube CRT, with sample output, five illustrations.

- GLASSMIRE, CHARLES, "Re:Viewing," February, 1977, p. 32-33, Illustrated.
ABSTRACT: History of combinations of media, TV, film, etc. are reviewed by the author. Concerns regarding new hardware, and the future of the "wired-in nation." 2 pages, philosophical.

- GLASSMIRE, CHARLES, "Re:Viewing," (Movements in Animation), August, 1977, p. 19-21, Illustrated.
ABSTRACT: Generously illustrated 3-page review of a new text, with emphasis on philosophical aspects of art, photography, animation.

GRAPHICS STANDARDS -- See:

- HERTLEIN, GRACE C., Editorial, "Graphics Standards and Practices," August, 1978, p. 3

GRAPHING AND CHARTING -- See:

- BENIGER, JAMES R., "From Stylus to Light Pen: Technology and Innovation in the Development of Quantitative Graphics," November, 1976, p. 18-27

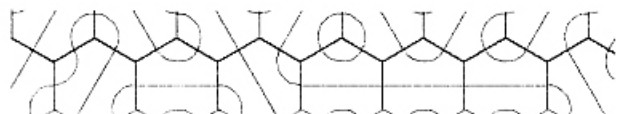
MC NICHOLS, ELAINE, "Computer-Assisted Graph-Making," November, 1976, p. 32-33

HARDWARE -- See:

- BONACTIC, VLADIMIR, "Research and Teaching in Art and Science," August, 1977, p. 4-9
- BORK, ALFRED, "Learning through Graphics," February, 1976, p. 5-9 and 30-31
- HERTLEIN, GRACE C., "The Potential of Computer Art in the Textile Industry," February, 1977, p. 21-26 and 34
- KNOWLTON, KENNETH, "Computer Displays Optically Superimposed on Input Devices," May, 1977, p. 4-12
- MACHOVER, CARL, "CRT Graphic Terminals," May, 1977, p. 16-29
- MANNING, E. T., "Spatially Quantized Images," February, 1978, p. 5
- MICRO CONSULTANTS, INC., "New Systems from Industry," August, 1978, p. 12
- PALYKA, DUANE, "A Personal Philosophy of Ideas, New Hardware, and the Results," February, 1976, p. 15-17
- RAMTEK CORPORATION, "New Systems from Industry," August, 1978, p. 13
- TEICHOLZ, ERIC, "Graphic Technology and the Display of Spatial Data," February, 1977, p. 8-17
- _____, "Digital Plotters -- A Look at the Future," February, 1977, p. 18-20
- WARNER, JAMES R., "A Pragmatic Approach to the Computer Animation Process," November, 1977, p. 8-18
- HERTLEIN, GRACE C., Editorial, "Objectives and Goals for Computer Graphics and Art," February, 1976, p. 4, Not Illustrated.
ABSTRACT: The editor explores briefly the goals of the new magazine, aiming at a "participant" readership. 1 page.
- HERTLEIN, GRACE C., Editorial, "The State of the Art of Computer Art, Phase Two," May, 1976, p. 4, Not Illustrated.
ABSTRACT: The editor contrasts Phase I (Cybernetic Serendipity) of computer art with the new trends. The question is posed, "Can we define art?" 1 page.
- HERTLEIN, GRACE C., Editorial, "The Potential of Computer Graphics Applications," August, 1976, p. 4, Not Illustrated.
ABSTRACT: The potential of computer graphics applications is reviewed, along with trade-offs in hardware and software. Questions of transportability, NIH, sharing of ideas is advocated. "What if" questions are posed regarding the ultimate potential of computer graphics. 1 page.
- HERTLEIN, GRACE C., Editorial, "To Measure, to Quantify, to Know," November, 1976, p. 4. Not Illustrated.
ABSTRACT: Simulation and the "Limits to Growth," and the importance of interdisciplinary graphics are reviewed. The understanding gained by visualization is emphasized -- yet, do we "know and understand?"
- HERTLEIN, GRACE C., Editorial, "A Call for Graphics Curricula," February, 1977, p. 3, Not Illustrated.
ABSTRACT: The need for a Graphics Curricula Center is presented, along with recommendations for such a Center.

- HERTLEIN, GRACE C., Editorial, "Computer Graphics, A Varied Tool: Analysis of Levels of Graphics Use," May, 1977, p. 3, Not Illustrated.
ABSTRACT: Levels of graphics use are analyzed, ranging from user-oriented systems to interdisciplinary specialist systems.
- HERTLEIN, GRACE C., Editorial, "SIGGRAPH - Its Power and Potential for Graphics People," August, 1977, p. 3. Not Illustrated.
ABSTRACT: The need for graphics curricula, bibliography/teaching centers for graphics is reviewed, along with a need for collaboration with SIGGRAPH.
- HERTLEIN, GRACE C., Editorial, "In Defense, in Praise of Computer Art and Graphics," November, 1977, p. 3. Not Illustrated.
ABSTRACT: Reply to the controversial comments by E. C. Berkeley regarding the failures of computer art. Positive, brief comments in defense of computer art and its potential.
- HERTLEIN, GRACE C., Editorial, "Art of the Space Era -- To Leave the Cradle of Earth," February, 1978, p. 3. Not Illustrated.
ABSTRACT: Technological art is analyzed, exploring the new "mind set" of art and science, leaving behind outmoded ideas, exploring beyond the cradle of the known.
- HERTLEIN, GRACE C., Editorial, "Make Do with What You Have," May, 1978, p. 3. Not Illustrated.
ABSTRACT: 1 page discussion of achieving graphics by fully utilizing hardware and software within one's establishment -- not re-inventing the wheel -- and planning for new hardware and software.
- HERTLEIN, GRACE C., Editorial, "Graphics Standards and Practices," August, 1978, p. 3. Not Illustrated.
ABSTRACT: The need for graphics standards is reviewed, along with four themes for standards, including recommendations for device-independent and machine-independent graphics systems.
- HERTLEIN, GRACE C., Editorial, "In Retrospect," November, 1978, p. 4. Not Illustrated.
ABSTRACT: A look back at CG&A for the past three years, things learned, work to be done, and plans for the future, as CG&A begins its fourth year -- going into a new Yearbook form.
-
- HERTLEIN, GRACE C., "Coordination of Bibliography Making for Interdisciplinary Graphics," February, 1976, p. 24-25. Not Illustrated.
ABSTRACT: Discussion of the need to coordinate and merge bibliographies for use by graphics people is presented, along with suggestions.
- HERTLEIN, GRACE C., "Book Review - Altair Design," February, 1976, p. 32, Illustrated.
ABSTRACT: Review of a clever computerized coloring book, suitable for any age - the recurrence of design patterns from different cultures is mathematically based.
- HERTLEIN, GRACE C., "NCC '76," May, 1976, p. 10-17, 26-27, and 29. Illustrated.
ABSTRACT: A preview of NCC '76 is given, with in-depth comments by artists. Heavily illustrated, 6½ pages.

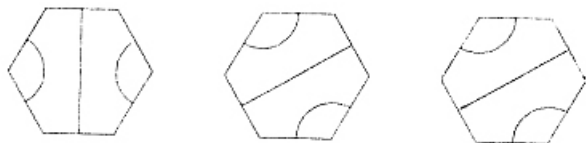
- HERTLEIN, GRACE C., "Art Reproductions -- The First Set," May, 1976, p. 30-31. Illustrated.
ABSTRACT: Comments on special graphics offered to subscribers, with techniques to achieve collages and photographic manipulations.
- HERTLEIN, GRACE C., "The Potential of Computer Art in the Textile Industry," February, 1977, p. 21-26 and 34. Illustrated.
ABSTRACT: In-depth review of hardware, software, designing systems in the textile industry. Comparisons of automated woven and knitted systems, with analysis of input, output, storage methods. Well illustrated with diagrams and designs. 7 pages, well illustrated. References.
- HERTLEIN, GRACE C., "Part I - Design Techniques and Art Materials in Computer Art," August, 1977, p. 26-33. Illustrated.
ABSTRACT: 8-page, generously illustrated material on class-tested design techniques to achieve computer art, along with lecture and laboratory topics. Useful for curriculum planning.
- HERTLEIN, GRACE C., "Part II - Design Techniques and Art Materials in Computer Art," November, 1977, p. 27-35. Illustrated.
ABSTRACT: 9-page conclusion - discussions of design derivation exercises, art materials and photographic techniques in computer art. References, glossary of terms, along with charts and tables of forms of computer art. Valuable for teachers of computer art and students.
- HERTLEIN, GRACE C., "Review: IFIP Congress Series, Volume 7," February, 1978, p. 34-35. Not illustrated.
ABSTRACT: 2-page overview of the 1000 page proceedings from the IFIP Congress 77 - brief listings of interesting graphic papers and 6 abstracts. Not illustrated.
- HMELJAK, MATJAZ and ZAJEC, EDVARD, "Scherzo for Matrix and Figures," November, 1977, p. 20-25. Illustrated.
ABSTRACT: Flow-charts, sample subroutines, printouts, in a well illustrated 6-page article on a system that produces variant series of images, no two alike. It combines curved and angular forms. Slight references.
- HMELJAK, MATJAZ and ZAJEC, EDVARD, "Computer Art - The Embryonic Stages of a New Art," May, 1978, p. 34. Illustrated.
ABSTRACT: 1 page comments on the artists' approach to computer art, from the Art of the Space Era Exhibition.
- INTERACTIVE GRAPHICS -- See:
 BONACIC, VLADIMIR, "Research and Teaching in Art and Science, August, 1977, p. 4-9
 BORK, ALFRED, "Learning through Graphics," February, 1976, p. 5-9 and 30-31
 _____, "The Physics Computer Development Project," August, 1976, p. 10-17
 CAPOWSKI, JOSEPH J., "Some Line Drawings of Neuroanatomical Structures," August, 1976, p. 8-9
 COHEN, DAN and LAND, DICK, "Interactive, Dynamic, Computer Art," May, 1978, p. 4-7
 KNOWLTON, KENNETH, "Computer Displays Optically Superimposed on Input Devices, May, 1977, p. 4-12
 LAND, DICK and COHEN, DAN, "Interactive, Dynamic, Computer Art," May, 1978, p. 4-7
- MACHOVER, CARL, "CRT Graphic Terminals," May, 1977, p. 16-29
 PALYKA, DUANE, "A Personal Philosophy of Ideas, New Hardware, and the Results," February, 1976, p. 15-17
 WARNER, JAMES, "A Pragmatic Approach to the Computer Animation, Process," November, 1977, p. 8-18
- JONES, KERRY, "Engineering Applications in the Design of Buildings," August, 1976, p. 5-7. Illustrated.
ABSTRACT: An engineer discusses a series of programs used by his company to produce time-saving drawings and plans for buildings, allowing the company to produce fabrication/erection drawings in 1-2 days, rather than weeks, by manual methods.
- JOHNSTON, ROBERT A.; SINGER, MICHAEL J.; THORPE, LINDA J., "Computer Map Overlays for Land Management," August, 1978, p. 14-27. Illustrated.
ABSTRACT: 14-page, illustrated article on the LUMP System of the University of California, Davis, with maps and flowcharts. A definitive, technical report by members of the Division of Environmental Studies. This system is used in teaching at UC, Davis. Moderate References.
- KAMMERER-LUKA, G. G., "Graphics Applications in the Environment: Groupe Couleur de Belfort," August, 1976, p. 28-33. Illustrated.
ABSTRACT: The coordinator of the group reviews their involvement with computers and relates the work of this group in the Belfort community. Art in the environment for people is the unique goal of this group.
- KAWANO, HIROSHI, "Comments on Art," May, 1976, p. 12. Illustrated.
ABSTRACT: 1 page, illustrated comments by the Japanese artist, who uses the computer to help design paintings, executed manually.
- KNOWLTON, KENNETH, "Comments on Art," May, 1976, p. 13. Illustrated.
ABSTRACT: 1 page, significant comments by the noted artist, regarding his philosophy of computer art.
- KNOWLTON, KENNETH, "Computer Displays Optically Superimposed on Input Devices," May, 1977, p. 4-12. Illustrated.
ABSTRACT: A definitive discussion of a new console that can serve alternately as a typewriter, computer terminal, text editor, telephone operator's console, or CAI terminal -- by a noted graphics authority. 9-page, generously illustrated article, with references.
- KOLOMYJEC, WILLIAM, "Some Brief Notes on Computer Art and Teaching," August, 1977, p. 10-15. Illustrated.
ABSTRACT: A brief philosophy of computer art with notes on teaching computer art. Well illustrated, with two sample programs for computer art. 6-pages.



- KORNEDER, HANS, "SNE COMP ART: A Software Package for Creative Problems by Graphic Data Processing," May, 1978, p. 12-15. Illustrated.
ABSTRACT: 4-page detailed discussion of the subroutines used at the University of Munich, with fine illustrations of the basic element, structure, and arrangement of each routine. Useful for teachers of computer art.
- LAND, DICK and COHEN, DAN, "Interactive, Dynamic, Computer Art," May, 1978, p. 4-7. (See COHEN, dan, for listing and abstract.)
- LAND, DICK and COHEN, DAN, "Excerpts from Art of the Space Era Exhibition," May, 1978, p. 7. (See COHEN, DAN, for listing and abstract.)
- LAPOSKY, BEN F., "Oscillons: Electronic Abstractions," May, 1978, p. 19. Illustrated.
ABSTRACT: 1 page of comments on the origins of the artist's experiments with analog art, from Art of the Space Era.
- LINEHAN, THOMAS E., "An Investigation of Criteria for Evaluating Computer Art," May, 1976, p. 6-9. Illustrated.
ABSTRACT: The author presents a philosophy that the new aesthetic of computer art requires a departure from previous traditionalist doctrines for evaluating art. Criteria for evaluating this art are reviewed. 4 pages.
- MACHOVER, CARL, "CRT Graphic Terminals," May, 1977, p. 16-29. Illustrated.
ABSTRACT: A graphics display specialist writes in depth about CRT displays. Superb tutorial: How CRTs produce graphic images; block diagrams; performance characteristics of systems; tradeoffs. Generously illustrated 14-page article with moderate references.
- MAKAROVITSCH, ALEX G., "How to Build Fuzzy Visual Symbols," February, 1976, p. 22-23. Illustrated.
ABSTRACT: A new approach is described, with algorithms and flowcharts in a brief, technically oriented article. 2 pages.
- MAKAROVITSCH, ALEX G., "Visual Fuzziness," November, 1977, p. 4-7. Illustrated.
ABSTRACT: Technically oriented 4-page, well illustrated introduction to several aspects of visual fuzziness and its relationship to computer graphics. Useful tables and diagrams.
- MANNING, E. T., "Spatially Quantized Images," February, 1978, p. 5. Illustrated.
ABSTRACT: 1 page discussion of spatially quantized images, from Art of the Space Exhibition. Philosophical comments, as well as hardware insights.
- MAPPING -- See:
- BENIGER, JAMES R., "From Stylus to Light Pen: Technology and Innovation in the Development of Quantitative Graphics," November, 1976, p. 18-27
- JOHNSTON, ROBERT A.; SINGER, MICHAEL J.; THORPE, LINDA J., "Computer Map Overlays for Land Management," August, 1978, p. 14-27
- ONYETT, LLOYD, "PLOTMAP: Computer Representation of Geographic Data," February, 1976, p. 18-21
- SINGER, MICHAEL J.; JOHNSTON, ROBERT A.; THORPE, LINDA J., (See JOHNSON, ROBERT A. for listing and abstract.)
- TEICHOLZ, ERIC, "Graphic Technology and the Display of Spatial Data," February, 1977, p. 8-17
- THORPE, LINDA J.; SINGER, MICHAEL J.; JOHNSTON, ROBERT A. (See JOHNSTON, ROBERT A. for listing and abstract.)
- MARCUS, AARON, "Hieroglyphs," May, 1978, p. 16-17. Illustrated.
ABSTRACT: 1 page philosophical ideas regarding the genesis of the artist's works -- from Art of the Space Era. Well illustrated, 4 graphics.
- MASTERS, RAMON, "Computer Synthesis of Anamorphic Projection Systems," February, 1978, p. 10-19. Illustrated.
ABSTRACT: 10-page, well illustrated, in-depth article on the history of anamorphic images, and detailed ideas for constructing computer-aided anamorphic images. Superior tutorial on the subject. Diagrams, formulas, references.
- MATHEMATICS AND ART -- See:
- BEVIS, JEAN H., "Mathematics in Art and Computer Graphics," November, 1976, p. 6-9
- CULLINANE, STEVEN H., "Diamond Theory," February, 1977, p. 5-7
- HMELJAK, MATJAZ and ZAJEC, EDVARD, "Scherzo for Matrix and Figures," November, 1977, p. 20-25
- MAKAROVITSCH, ALEX G., "How to Build Fuzzy Visual Symbols," February, 1976, p. 22-23
- MAKAROVITSCH, ALEX G., "Visual Fuzziness," November, 1977, p. 4-7
- MASTERS, RAMON, "Computer Synthesis of Anamorphic Projection Systems," February, 1978, p. 10-19
- MAZLACK, LAWRENCE J., "Digital Computer Based Sculpture Composed of Coloured Elements," May, 1976, p. 18-24
- MOHR, MANFRED, "The Sign of Tomorrow," February, 1978, p. 6-9
- ZAJEC, EDVARD and HMELJAK, MATJAZ. (See HMELJAK, MATJAZ for listing and abstract.)
- MAZLACK, LAWRENCE J., "Digital Computer Based Sculpture Composed of Coloured Elements," May, 1976, p. 18-24. Illustrated.
ABSTRACT: 8 pages of technically oriented review of computer art, music, sculpture; in-depth paper on 3-D color pattern development, using a cellular growth concept for sculpture. 65 superior references.
- MC NICHOLS, ELAINE, "Program and Comments on the Cover," February, 1976, p. 27. Illustrated.
ABSTRACT: 1 page background on the artist's interests in natural science, with the program and subroutine used to execute the cover work.
- MC NICHOLS, ELAINE, "Computer-Assisted Graph-Making," November, 1976, p. 32-33. Illustrated.
ABSTRACT: A brief, 2-page discussion of a user-oriented CHART system for interdisciplinary students, with refinement of course content and results of teaching such a course.
- MICRO CONSULTANTS, INC., "New Systems from Industry," August, 1978, p. 12. Illustrated.
ABSTRACT: 1 page discussion of the "Intellect" System, from Micro Consultants.

- MILOJEVIC, PETAR, "Algorithmic Art of the Space Era," May, 1978, p. 11. Illustrated.
ABSTRACT: $\frac{1}{2}$ page comments on computer art, from Art of the Space Era Exhibition.
- MOHR, MANFRED, "Comments on Art," May, 1976, p. 14. Illustrated.
ABSTRACT: 1 page of notes by the artist on his philosophy of computer art.
- MOHR, MANFRED, "The Sign of Tomorrow," February, 1978, p. 6-9. Illustrated.
ABSTRACT: Excellent philosophical/mathematical comments by a noted computer artist. Excerpts from Art of the Space Era, and other writings. Emphasis on mathematical dominance in art.
- MOLNAR, VERA, "Unimaginable Images," May, 1978, p. 31. Illustrated.
ABSTRACT: 1 page, comments of the artist's views of computer art, from Art of the Space Era Exhibition, well illustrated.
- MORRIS, ROBERT H. and FRITCHIE, CHARLES J. (See FRITCHIE, CHARLES J. for listing and abstract.)
- NEES, GEORG, "Comments on Art," May, 1976, p. 15. Illustrated.
ABSTRACT: 1 page of significant views on computer art, with illustrations of computer-aided design, 2 and 3-D. Fine graphics.
- NEGROPONTE, NICHOLAS, "On Being Creative with Computer Aided Design," February, 1978, p. 22-33. Illustrated.
ABSTRACT: 13-page reprint from IFIP Congress '77, Toronto Canada -- advocating creative CAD systems. Four settings for the computer are detailed: as a slave, a virtuoso, a creativity-tolerant, and a place -- all are presented in a significant paper. 74 references. A classic, philosophic paper.
- ONYETT, LLOYD, "PLOTMAP: Computer Representation of Geographic Data," February, 1976, p. 18-21. Illustrated.
ABSTRACT: Review of a user-oriented mapping system the author devised for medium and small computers. Designed for non-programmers, it is used at California State University, Chico, in the Geography Department. Maps, bibliography.
- PAINTINGS -- APPLICATIONS OF COMPUTER ART -- See:
 BARBADILLO, MANUEL, "Comments on Art," May, 1976, p. 11
 COQART, ROGER, "Graphics Applications: Paintings," August, 1976, p. 24-25
 KAMMERER-LUKA, G. F., "Graphics Applications in the Environment: Groupe Couleur de Belfort," August, 1976, p. 28-33
 KAWANO, HIROSHI, "Comments on Art," May, 1976, p. 12
 PALYKA, DUANE, "A Personal Philosophy of Ideas, New Hardware and the Results," February, 1976, p. 15-17. Illustrated.
ABSTRACT: The author reviews his experiences using the Evans and Sutherland Frame Buffer System, which allows the artist to treat the computer as a paint and brush medium. The artist can think in terms of 1-D, 2-D, 3-D, or 4-D. Comments on the paintings complete the 3-page, illustrated article.
- PALYKA, DUANE, "Outer Space -- Inner Space," May, 1978, p. 33. Illustrated.
ABSTRACT: 1 page comments on the artist's views of computer art - from ASE Exhibition.
- PERSONAL PHILOSOPHIES OF COMPUTER ART -- See:
 BARBADILLO, MANUEL, May, 1976
 BEVIS, JEAN H., November, 1976
 BONACIC, VLADIMIR, August, 1977
 COHEN, DAN and LAND, DICK, May, 1978
 COQART, ROGER, August, 1976 and May, 1978
 CORDEIRO, ANALIVIA, February, 1977
 CULLINANE, STEVEN H., February, 1977
 DUNKER, KEN and SHAO, PAUL, May, 1978
 EMMETT, COLIN, May, 1976
 HERTLEIN, GRACE C., May, 1976, February, 1977, August, 1977, November, 1977
 HMEJAK, MATJAZ and ZAJEC, EDVARD, November, 1977, May, 1978
 KAMMERER-LUKA, G. F., August, 1976
 KAWANO, HIROSHI, May, 1976
 KNOWLTON, KENNETH, May, 1976
 KOLOMYJEC, WILLIAM, August, 1977
 LAND, DICK and COHEN, DAN, May, 1978
 LAPOSKY, BEN, May, 1978
 MAKAROVITSCH, ALEX G., February, 1976 and November, 1977
 MANNING, E. T., February, 1978
 MARCUS, AARON, May, 1978
 MASTERS, RAMON, February, 1978
 MAZLACK, LAWRENCE, May, 1976
 MC NICHOLS, ELAINE, February, 1976
 MILOJEVIC, PETAR, May, 1978
 MOHR, MANFRED, May, 1976 and February, 1978
 MOLNAR, VERA, May, 1978
 NEES, GEORG, May, 1976
 PALYKA, DUANE, February, 1976 and May, 1978
 ROY, JOHN, May, 1976
 SASAKI, MUTSUO K., May, 1978 and August, 1978
 SCHNEEBERGER, REINER, November, 1976
 SCHWARTZ, LILLIAN, May, 1978
 SHAO, PAUL and DUNKER, KEN, May, 1978
 SYKORA, ZDENEK, May, 1976
 VER HAGUE, JAMES C., February, 1978
 VILDER, ROGER, May, 1976
 ZAJEC, EDVARD, May, 1976
 ZAJEC, EDVARD and HMEJAK, MATJAZ, November, 1977 and May, 1978
- PHILOSOPHY OF COMPUTER ART, ART AND SCIENCE -- See:
 BONACIC, VLADIMIR, "Research and Teaching in Art and Science," August, 1977, p. 4-9
 BOWLES, THOMAS A., "Art of the Space Era -- Excerpts from the Exhibition Catalog," May, 1978, p. 8
 CORDEIRO, ANALIVIA, "The Programming Choreographer," February, 1977, p. 27-31
 COVINGTON III, JOSEPH P., "Unimaginable Images: An Art of the Space Era," August, 1978, p. 28-33
 FRANKE, HERBERT W., "Art of the Technical World," February, 1976, p. 10-11
 HERTLEIN, GRACE C., Editorial, "The State of the Art of Computer Art: Phase Two," May, 1976, p. 4
 _____, Editorial, "In Defense, in Praise of Computer Art and Graphics," November, 1977, p. 3
 _____, Editorial, "Art of the Space Era -- To Leave the Cradle of Earth," February, 1978, p. 3
 LINEHAN, THOMAS E., "An Investigation of Criteria for Evaluating Computer Art," May, 1976, p. 6-9
 MARCUS, AARON, "Hieroglyphs," May, 1978, p. 16-17
 MAZLACK, LAWRENCE J., "Digital Computer Based Sculpture Composed of Coloured Elements," May, 1976, p. 18-24
 MOHR, MANFRED, "The Sign of Tomorrow," February, 1978, p. 6-9
 SCHNEEBERGER, REINER, "Experimental Esthetics with Computer Graphics -- Analyses of Viewers' Impressions of Computer Graphics," May, 1978, p. 20-28

- SVITAK, IVAN, "Monolog of a Computer," (Poem), February, 1976, p. 29
- WOOD, CAROLYN H., "Art of the Space Era," May, 1978, p. 8
- POTTS, JACKIE, "Computer Graphics and You," February, 1976, p. 26. Illustrated.
ABSTRACT: A noted graphics specialist briefly comments on the future of this broad field.
- POTTS, JACKIE, "An Art Chairman's Flashbacks," August, 1976, p. 26-27. Illustrated.
ABSTRACT: The NCC '76 Art Chairman recalls personal anecdotes of the exhibition, with planning, behind the scene events.
- PUK, RICHARD F., "Expanding the Graphics Compatibility System to Three-Dimensions," February, 1976, p. 12-14. Illustrated.
ABSTRACT: Design considerations for a user-oriented 3-D graphics system are presented. Considerations were: user ease for the non-programmer or novice; interaction with the user on his own terms; utilization of the system by sophisticated users. References.
- RAMTEK CORPORATION, "New Systems from Industry," August, 1978, p. 13. Illustrated.
ABSTRACT: Comments on the new Ramtek Color-graphics Terminal and visual mathematics at the University of California, Santa Cruz.
- ROY, JOHN, "SDL PORTFOLIO - COMMENTS ON ART," May, 1976, p. 16. Illustrated.
ABSTRACT: Brief, 1/4 page comments by the artist on his work, from the SDL Portfolio.
- SASAKI, MUTSUOKO K., "Beauty and Impression," May, 1978, p. 10. Illustrated.
ABSTRACT: Personal 1/2 page comments on the artist's goals in computer art, from the ASE Exhibition. Emphasis on natural derivations.
- SASAKI, MUTSUOKO and SASAKI, TAKEAKI, "Computer Art System: ART-3," August, 1978, p. 4-11. Illustrated.
ABSTRACT: Well illustrated 8-page article on a system that takes hand-drawn figures and uses them in computer art. Results are patterned, brush-like works, unique in the field of computer art. Includes flowcharts, sample data, with generous illustrations.
- SCHNEEBERGER, REINER, "Computer Graphics at the University of Munich, West Germany," November, 1976, p. 28-31. Illustrated.
ABSTRACT: 4-page article reviews the system design and details of course objectives for teaching computer art to artists at the University of Munich. Students generated art of esthetic quality after the first class.
- SCHNEEBERGER, REINER, "Experimental Esthetics with Computer Graphics -- Analyses of Viewers' Impressions of Computer Graphics," May, 1978, p. 20-28. Illustrated.
ABSTRACT: 9 page article about experiments in evaluating computer art, along with analyses of statistical manipulations. Useful for analysis of art. Well illustrated. Tables and charts.
- SCULPTURE -- See:
- ALEXANCO, JOSE, "Untitled Sculpture," August, 1977, p. 32 (Illustration)
- _____, "Sketches for Sculpture," August, 1977, p. 32 (Illustration)
- CULLINANE, STEVEN H., "Diamond Theory," February, 1977, p. 5-7
- HERTLEIN, GRACE C., "City Series," August, 1977, p. 26 (Illustration)
- MAZLACK, LAWRENCE J., "Digital Computer Based Sculpture Composed of Coloured Elements," May, 1976, p. 18-24
- VER HAGUE, JAMES, "Helikos," May, 1977, p. 1 and 36, (Illustrations)
- _____, "The Artist as Translator and Interpreter," February, 1978, p. 21
- SCHWARTZ, LILLIAN, "The Technology of Each Era," May, 1978, p. 18. Illustrated.
ABSTRACT: 1 page of philosophical comments regarding computer art, from ASE Exhibition.
- SHAO, PAUL and DUNKER, KEN, "Varied Attitudes Held Toward Computer Art," May, 1978, p. 32. Illustrated.
ABSTRACT: 1 page of attitudes about art, gathered by the two artist-teachers, along with their approach to computer art. ASE Exhibition.
- SINGER, MICHAEL J.; JOHNSTON, ROBERT A.; THORPE, LINDA. (See JOHNSTON, ROBERT A. for listing and abstract.)
- SOFTWARE -- See:
- BEVIS, JEAN H., Mathematics in Art and Computer Graphics," November, 1976, p. 6-9
- BORK, ALFRED, "Learning through Graphics," February, 1976, p. 5-9 and 30-31
- _____, "The Physics Computer Development Project," August, 1976, p. 10-17
- HMELJAK, MATJAZ and ZAJEC, EDVARD, "Scherzo for Matrix and Figures," November, 1977, p. 20-25
- JONES, KERRY, "Engineering Applications in the Design of Buildings," August, 1976, p. 5-7
- JOHNSTON, ROBERT A.; SINGER, MICHAEL J.; THORPE, LINDA J., "Computer Map Overlays for Land Management," August, 1978, p. 14-27
- KORNEDER, HANS, "SNE COMP ART: A Software Package for Creative Problems by Graphic Data Processing," May, 1978, p. 12-15
- MAKAROVITSCH, ALEX G., "How to Build Fuzzy Visual Symbols," February, 1976, p. 22-23
- _____, "Visual Fuzziness," November, 1977, p. 4-7
- MASTERS, RAMON, "Computer Synthesis of Anamorphic Projection Systems," February, 1978, p. 10-19
- MAZLACK, LAWRENCE J., "Digital Computer Based Sculpture Composed of Coloured Elements," May, 1976, p. 18-24
- MC NICHOLS, ELAINE, "Program and Comments on the Cover," February, 1976, p. 27
- _____, "Computer-Assisted Graph-Making," November, 1976, p. 32-33
- ONYETT, LLOYD, "PLOTMAP: Computer Representation of Geographic Data," February, 1976, p. 18-21
- PUK, RICHARD F., "Expanding the Graphics Compatibility System to Three-Dimensions," February, 1976, p. 12-14
- SASAKI, MUTSUOKI and SASAKI, TAKEAKI, "Computer Art System: ART-3," August, 1978, p. 4-11
- SCHNEEBERGER, REINER, "Computer Graphics at the University of Munich, West Germany," November, 1976, p. 28-31
- SINGER, MICHAEL J.; JOHNSTON, ROBERT A.; THORPE, LINDA J., (See JOHNSTON, ROBERT A. for listing and abstract.)



TEICHOLZ, ERIC, "Graphic Technology and the Display of Spatial Data," February, 1977, p. 8-17

THORPE, LINDA J.; SINGER, MICHAEL J.; JOHNSTON, ROBERT A. (See JOHNSTON, ROBERT A. for listing and abstract.)

WARNER, JAMES R., "A Pragmatic Approach to the Computer Animation Process," November, 1977, p. 8-18

WILLIS, VICTORIA and WU, KINGSLEY, "Computer Graphics for Interior Design Students at Purdue University," August, 1977, p. 16-18

WOLFGANG, W. G., "A Computer Program to Generate Weave Structures," November, 1976, p. 10-17

WU, KINGSLEY and WILLIS, VICTORIA, " (See WILLIS, VICTORIA for listing and abstract.)

ZAJEC, EDVARD and HMELJAK, MATJAZ, (See HMELJAK, MATJAZ for listing and abstract.)

STANDARDS -- See GRAPHICS STANDARDS

SVITAK, IVAN, "Monolog of a Computer," February, 1976, p. 29. Not Illustrated.

ABSTRACT: A noted Czech philosopher writes a poem about a computer that falls in love with a student who exceeded the maximum score possible on a machine-graded test.

SYKORA, ZDENEK, "SDL Portfolio - Comments on Art," May, 1976. Illustrated.

ABSTRACT: Very brief notes by the artist on his work, 1/2 page with two illustrations.

TEACHING COMPUTER-ASSISTED ART -- See:

BEVIS, JEAN H., "Mathematics in Art and Computer Graphics," November, 1976, p. 6-9

BONACIC, VLADIMIR, "Research and Teaching in Art and Science," August, 1977, p. 4-9

CHU, KAI, "Computer Graphics and High School Education," August, 1976, p. 18-22

HERTLEIN, GRACE C., "Part I - Design Techniques and Art Materials in Computer Art," August, 1977, p. 26-33

_____, "Part II - Design Techniques and Art Materials in Computer Art," November, 1977, p. 27-35

KOLOMYJEC, WILLIAM, "Some Brief Notes on Computer Art and Teaching," August, 1977, p. 10-15

KORNEDER, HANS, "SNE COMP ART: A Software Package for Creative Problems by Graphic Data Processing," May, 1978, p. 12-15

SCHNEBERGER, REINER, "Computer Graphics at the University of Munich, West Germany," November, 1976, p. 28-31

WILLIS, VICTORIA and WU, KINGSLEY, "Computer Graphics for Interior Design Students at Purdue University," May, 1978, p. 20-28

WOLFGANG, W. G., "A Computer Program to Generate Weave Structures," November, 1976, p. 10-17

WU, KINGSLEY and WILLIS, VICTORIA, (See WILLIS, VICTORIA for listing and abstract.)

TEICHOLZ, ERIC, "Graphic Technology and the Display of Spatial Data," February, 1977, p. 8-17. Illustrated.

ABSTRACT: A noted graphics authority explores varied aspects of graphic technology. Spatial data, definitions, storage, hardware and software problems, as well as trends are discussed in depth. 10-page, well illustrated article, with references. Interdisciplinary implications beyond Geography.

TEICHOLZ, ERIC, "Digital Plotters -- A Look at the Future," February, 1977, p. 18-20. Illustrated.

ABSTRACT: The history of digital plotters is reviewed, along with types of plotters, components, trends, including microfilm systems. Listing of plotter manufacturers, addresses.

TEXTILES AND COMPUTER ART -- See:

HERTLEIN, GRACE C., "The Potential of Computer Art in the Textile Industry," February, 1977, p. 21-26 and 34

WOLFGANG, W. G., "A Computer Program to Generate Weave Structures," November, 1976, p. 10-17

THORPE, LINDA J.; SINGER, MICHAEL J.; JOHNSTON, ROBERT A., (See JOHNSTON, ROBERT A. for listing and abstract.)

VER HAGUE, JAMES C., "The Artist as Translator and Interpreter," February, 1978, p. 21. Illustrated.

ABSTRACT: 1 page comments about the artist's approach to computer art, with a mathematical emphasis. From Art of the Space Era Show.

VILDER, ROGER, "SDL Portfolio Comments on Art," May, 1976, p. 17. Illustrated.

ABSTRACT: Experiences of the artist in computer are reviewed in 1/2 page - from SDL Portfolio.

WARNER, JAMES R., "A Pragmatic Approach to the Computer Animation Process," November, 1977, p. 8-18. Illustrated.

ABSTRACT: Superior 11-page tutorial on animation, invaluable to the practitioner, along with vital considerations of the decision-making process and valuable suggestions for the new (and practiced) animator. Well illustrated with references.

WILLIS, VICTORIA and WU, KINGSLEY, "Computer Graphics for Interior Design Students at Purdue University," August, 1977, p. 16-18. Illustrated.

ABSTRACT: 3-page review of the graphics syllabus and planning for teaching computer graphics to interior design students. Generous illustrations of architectural drawings.

WOLFGANG, W. G., "A Computer Program to Generate Weave Structures," November, 1976, p. 10-17. Illustrated.

ABSTRACT: A technically oriented article, with valuable in-depth descriptions of weave structures, which can be reduced to a set of algorithms. These algorithms reduce all weave structures to five basic weaves and a set of operators. The basic weaves and the system is fully described and well illustrated by printouts, flowcharts. Technical emphasis.

WOOD, CAROLYN H., "Art of the Space Era," May, 1978, p. 8. Illustrated.

ABSTRACT: 3/4 page of comments on art and technology, space exploration and artists, by the curator of the Huntsville Museum of Art. From Art of the Space Era Exhibition Catalog.

ZAJEC, EDVARD, "SDL Portfolio - Comments on Art," May, 1976, p. 16. Illustrated.

ABSTRACT: The impact of the computer on art is presented briefly, in a well-illustrated 1-page commentary - with six illustrations.

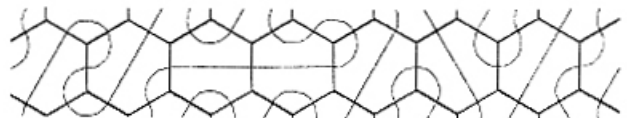
ZAJEC, EDVARD and HMELJAK, MATJAZ, "Scherzo for Matrix and Figures," November, 1977, p. 20-25. (See HMELJAK, MATJAZ for listing and abstract.)

ZAJEC, EDVARD and HMELJAK, MATJAZ, "Computer Art - The Embryonic Stages of a New Art," May, 1978, p. 34. (See HMELJAK, MATJAZ for listing and abstract.)

INDEX OF ILLUSTRATIONS, VOLUMES 1, 2, 3 COMPUTER GRAPHICS AND ART

- ALEXANCO, JOSE, "Untitled Sculpture," August, 1977, p. 32
 _____, "Plotter Sketches for Sculpture," August, 1977, p. 32
- ANONYMOUS SOURCE, "A Patient Lady Sits Rigidly for Her Likeness," August, 1977, p. 20
- BARBADILLO, MANUEL, "Aeleana," May, 1976, p. 11
- BASSET, KLAUS, "Kubus-Serie," May, 1976, p. 27
 _____, "Line Printer Output," (Six Illustrations), August, 1978, p. 30
 _____, "Diagonale, Raumbeschreibende Matrixform," August, 1978, p. 30
- BECKMANN, OTTO, "Theatre Graphics," February, 1977, p. 31
 _____, "Scenery Design," February, 1977, p. 33
 _____, "Scene Design," August, 1978, p. 32
- BENIGER, JAMES, R., "Illustrations of Historical Documents - Charts, Maps," (Eleven Illustrations), November, 1976, p. 18-27
- BEVIS, JEAN, H., "Seated Nude," November, 1976, p. 9
 _____, "Elements of the ARPE System," (Six Illustrations), November, 1976, p. 8
- BONACIC, VLADIMIR, "Patterns Representing Characteristic Orbits of Galois Fields," August, 1977, p. 4
 _____, "Dynamic Object," (Four Examples), August, 1977, p. 5
 _____, "Design for an Exterior Mural," August, 1977, p. 5
 _____, "Digitized Arabic Characters," August, 1977, p. 9
 _____, "Diagrams," (Two Illustrations), August, 1977, p. 6 and 7
- BORK, ALFRED, "Varied Illustrations from the Physics Computer Development Project," (Seven Illustrations), August, 1976, p. 10-15
- BUSINESS WEEK, "Cartoon," (from January, 1968), February, 1978, p. 33
- CAPOWSKI, JOSEPH, "Figures 1 - 5," (Medical-Neuro-anatomical Drawings), August, 1976, p. 8-9
- CHU, KAI, "Designs for Textile by High School Students," (Seven Illustrations), August, 1976, p. 18-22
- COHEN, DAN and LAND, DICK, "Flowers," (Seven Illustrations), May, 1978, p. 4-7
 _____, Diagram, "Circle Generators," May, 1978, p. 5
 _____, Enlargements, "Flowers," (Front and Back Covers), May, 1978, p. 1 and 36
 _____, "The Flower Series," August, 1978, p. 31
- COMPUTAKNIT SYSTEM, "Illustrations and Flowcharts," (Six Illustrations), February, 1977, p. 20-23 and p. 34
- COGART, ROGER, "Permutable Series," August, 1976, p. 24
 _____, Detail, "Traveling through the Square Series," August, 1976, p. 25
 _____, "Structured Square Series-Inwards," August, 1976, p. 25
 _____, "From the Square Series," (Photographic Reversals), Front and Back Covers, p. 1 and 36
 _____, Detail, "From the Square Series," May, 1978, p. 30
 _____, "Positive-Negative Grid with Perpendicular Elements," May, 1978, p. 30
 _____, Detail, "Structured Square Series," May, 1978, p. 30
- CORDEIRO, ANALIVIA, "Computer-Aided Choreography," (Seven Illustrations and Six Flowcharts), February, 1977, p. 27-31
- CORDEIRO, WALDEMAR, "Gente - Grau 3," August, 1976, (Front Cover), p. 1
 _____, "People," August, 1976, (Back Cover), p. 36
 _____, "People," May, 1977, p. 30
- CSURI, CHARLES, "Vitruvius Man," May, 1976, p. 6
 _____, "Cathode Ray Tube with Light Pen," May, 1976, p. 7
 _____, "Module and Form Interactively Manipulated," May, 1976, p. 7
 _____, "3-D Flower and Its Path," November, 1977, p. 16
 _____, "Flower," November, 1977, p. 10
- CULLINANE, STEVEN H., "Diamond Theory," (Ten Illustrations for Mathematically-Derived Graphics), February, 1977, p. 5-7
- DA VINCI, LEONARDO, "Lettering," (Name of Leonardo in Anamorphic Form), February, 1978, p. 10
 _____, Detail, "Beauty Adorns Virtue," February, 1978, p. 19
- DU BREUIL, "Reflecting Cone Anamorphosis," February, 1978, p. 16
- DUPRE, JACQUES, Detail, "Metamorphosis," August, 1978, p. 29
- DURER, ALBRECHT, "The Northern Hemisphere of the Celestial Globe," November, 1976, p. 20
 _____, "The Southern Hemisphere of the Celestial Globe," November, 1976, p. 21
 _____, "Self Portrait," August, 1977, p. 20
 _____, "Wall Lettering," (Anamorphic Form), February, 1978, p. 11
- DWYER, BARBARA, Detail, "Double Checkerboard," August, 1976, p. 3
- EMMETT, COLIN, "The Rainbow's Egg," May, 1976, p. 25
- ESCHER, MAURICE, "Castrovalva," August, 1977, p. 24
 _____, "Prickly Flower, 1936," August, 1977, p. 24
 _____, Detail, "Metamorphosis II," August, 1977, p. 24
- EVANS AND SUTHERLAND, Illustrations from the "PICTURE System," (Two Graphics), November, 1977, p. 8 and 14

- FEGARSKY, HOWARD, "From the Cube Series," May, 1976, p. 3
- FRANKE, HERBERT, "Untitled Graphics," May, 1976, p. 29
 _____, "Analog Graphics," May, 1976, p. 27
 _____, "Random Squares," May, 1976, p. 6
 _____, "Untitled Silkscreened Analog Graphic," November, 1976, p. 30
 _____, "Raumband Mit Drei Knoten," August, 1977, p. 29
- FRITCHIE, CHARLES J. and MORRIS, ROBERT H., "Illustrations from Chemistry and Physics," (Four Illustrations), May, 1976, p. 5 and 32
 _____, Detail, "CRT Outout," August, 1978, p. 31
- GIORGINI, ALDO, "Untitled Graphic," May, 1977, p. 12
- GROUPE COULEUR DE BELFORT, "Monumental Tapestries," August, 1976 (Eight Illustrations), p. 28-33
- HAMM, JACK, "Sketches," (Five Illustrations), August, 1977, p. 23
- HERTLEIN, GRACE C., "Computer Collage #1," May, 1976, p. 30
 _____, "Computer Collage #2," May, 1976, p. 30
 _____, "Sea Fans," May, 1976, p. 31
 _____, "Organic Form, Design for Textile," February, 1977, p. 34
 _____, "Seashells - Design for Textile," February, 1977, p. 34
 _____, "Comparisons with Photography," (Three Photographs from Nature), August, 1977, p. 23
 _____, "Sculpture - City Series," August, 1977, p. 26
 _____, "Textile - City Series," August, 1977, p. 27
 _____, "Beginning Sketching Assignments," (Twelve Illustrations), August, 1977, p. 30-31
 _____, Detail, "Computer-Designed Textile," August, 1978, p. 33
- HMELJAK, MATJAZ and ZAJEC, EDVARD, "Technical Illustrations," (Flowcharts, Tables), November, 1977, p. 20-23
 _____, "Illustrations of Compositions," (Eighteen Graphics), November, 1977, p. 21-25
 _____, "Scherzo for Matrix and Figures," (Seven Illustrations), May, 1978, p. 34
- HOLIDAY, ENSOR, "Illustrations from Altair Design," February, 1976, p. 32
- JAPAN SOCIETY FOR PROMOTION OF THE MACHINE INDUSTRY, "Wire Cage Bottle Design," November, 1977, p. 8
- JOHANNESON, STURE and KALLIN, STEN, "Topographic Form," May, 1976, p. 26
- JOHNSON, ROBERT A.; SINGER, MICHAEL J.; and THORPE, LINDA J., "Tables, Soil Survey Report Data," August, 1978, p. 14
- _____, "Flowcharts, LUMP System," August, 1978, p. 16, 17, 20
 _____, "Tables, LUMP System Research," August, 1978, p. 18, 21, 24
 _____, "Maps," August, 1978, p. 18, 19, 21, 24, 25, 27
- JONES KERRY, "Engineering Drawings and Tables," (Four Illustrations), August, 1976, p. 5-7
 _____, "Gaussian Distribution," May, 1977, p. 33
- KAMMERER-LUKA, G. F and GROUPE COULEUR DE BELFORT, "Monumental Tapestries," August, 1976, (Eight Illustrations), p. 28-33
 _____, "Untitled Serigraphs," (Three Illustrations), May, 1977, p. 35
- KAWANO, HIROSHI, "Simulated Color Mosaic," May, 1976, p. 12
 _____, "Black and White Illustrations of Computer Printouts," (Two Graphics), May, 1976, p. 12
- KALLIN, STEN and JOHANNESON, STURE, "Topographic Form," May, 1976, p. 26
- KNOWLTON, KENNETH, "Universal Declaration of Human Rights," May, 1976, p. 13
 _____, "Hardware Diagrams, CRT Displays," (Twenty-eight Illustrations), May, 1977, p. 1-11
 _____, "Universal Declaration of Human Rights," May, 1977, p. 30
 _____, "Universal Declaration of Human Rights," August, 1978, p. 28
- KNOWLTON, KENNETH and SCHWARTZ, LILLIAN, Detail, "Tapestry I," May, 1976, p. 13
 _____, Detail of "Tapestry," August, 1978, p. 29
- KOLOMYJEC, WILLIAM, "Random Forms," February, 1976, p. 14
 _____, Detail, "Birds," February, 1976, p. 24
 _____, "Boxes I," August, 1977, p. 10
 _____, "Water into Wine," August, 1977, p. 11
 _____, "Creature Tunnel," August, 1977, p. 11
 _____, "Frog Pond," (With Computer Program), August, 1977, p. 12
 _____, Detail, "Organic Illusion," August, 1977, p. 13
 _____, "Random Squares," (Two Variations), August, 1977 (With Computer Program), p. 14
 _____, "Le Morte de Beardsley," November, 1978, p. 1 (Front Cover)
 _____, Detail, "Hex," November, 1978, p. 36 (Back Cover)
 _____, "Variations - Hex," November, 1978, p. 5, 8, 11, 14, 18
- KORNEDER, HANS, "SNE COMP ART System" (Twenty-Four Illustrations), May, 1978
- KUPPER, HUBERT, "Musical Score," May, 1976, p. 19



- LAND, DICK and COHEN, DAN, "Flowers," (Seven Illustrations), p. 4-7
- _____, Diagram, "Circle Generators," May, 1978, p. 5
- _____, "Flowers," (Front and Back Covers), p. 1 and 36
- _____, "The Flower Series," August, 1978, p. 31
- LAPOSKY, BEN F., "Oscillon 1049," May, 1978, p. 19
- LUXENBERG, H. and KUEHN, R., "Diagrams of CRT Display Systems," (Six Illustrations), May, 1977, p. 17-20
- MACHOVER, CARL, "Diagrams and Tables of Display Hardware," (Six Illustrations), May, 1977, p. 16-29
- MAKAROVITSCH, ALEX, "Detail of Fuzzy Graphic," February, 1976, p. 29
- _____, "Flowcharts of Fuzzy Visual Symbols," February, 1976, p. 22-23
- _____, "Untitled Graphic," November, 1977, p. 4
- _____, "Black and White Photographs from Coloured Panels," (Six Illustrations), November, 1977, p. 5-6
- _____, "Tables and Diagrams," November, 1977, p. 4-6
- MANNING, E. T., "George Washington," August, 1976, p. 26
- _____, Wernher von Braun," February, 1978, p. 5
- _____, "George Washington," August, 1978, p. 32
- MARCUS, AARON, "Untitled Photoprint," May, 1978, p. 16
- _____, "Noise Barrier," May, 1978, p. 16
- _____, Detail, "Hieroglyphs Series," May, 1978, p. 17
- _____, "Hieroglyphs," May, 1978, p. 17
- MARQUETTE, JEAN-CLAUDE, "Harmonic Story," May, 1976, p. 26
- _____, Detail, "Tapestry," May, 1976, p. 26
- MARTIN, TONY, "Ellipsoid," May, 1977, p. 34
- MASTERS, RAMON, "Undistorted Portrait of a Man on a Grid," February, 1978, p. 10
- _____, "Diagrams of Varied Projections," February, 1978, p. 12, 13, 15, 16, 17
- _____, "Computer Planar Projection: One Surface," February, 1978, p. 13
- _____, "Computer Planar Projection: Two Surfaces," February, 1978, p. 13
- _____, "Computer Curvilinear Projection: Concave," February, 1978, p. 14
- _____, "Computer Curvilinear Projection: Convex," February, 1978, p. 14
- _____, "Computer Reflecting Cylinder Anamorphosis," February, 1978, p. 17
- _____, "Computer Reflecting Cone Anamorphosis," February, 1978, p. 18
- _____, "Computer Cone Construction Anamorphosis," February, 1978, p. 19
- MAZLACK, LAWRENCE J., "Matrix Illustrations and Tables for the Design of Sculpture," (Nineteen Illustrations), May, 1976, p. 20-24
- MC NICHOLS, ELAINE, "Daymoths," (Front and Back Covers), February, 1976, p. 1 and 36
- _____, Detail, "Daymoths," February, 1976, p. 3
- _____, "Graphs from the CHART System," (Three Illustrations), November, 1976, p. 32-33
- MICRO CONSULTANTS, INC., "The Intellect System," August, 1978, p. 12
- MILOJEVIC, PETAR, "Equidistant Space," May, 1978, p. 11
- MIROW, GREGORY, "Medium Sized Persian Medallions," August, 1977, p. 25
- _____, "Bouquet," August, 1977, p. 25
- MOHR, MANFRED, "Combinatorial Framework of the Ordinal 15," (Front Cover), May, 1976, p. 1
- _____, "Theoretical Space Projection," (Back Cover), May, 1976, p. 36
- _____, "The Cubic Limit Series," May, 1976, p. 14
- _____, Drawings, "Cubic Limit Series," November, 1976, p. 6
- _____, "Phase Pattern," November, 1976, p. 8
- _____, "P-197A," February, 1978, p. 6
- _____, Detail, "P-211A," February, 1978, p. 7
- _____, "Examples of Signs and Co-Signs," (Four Works), February, 1978, p. 7
- _____, "P-210A - Part I," February, 1978, p. 8
- _____, "P-210A - Part II," February, 1978, p. 8
- _____, "P-196A," February, 1978, p. 9
- _____, Detail, "Meta Language II," August, 1978, p. 30
- MOLNAR, VERA, "Superpositions 3," February, 1977, (Front Cover), p. 1
- _____, "Superpositions 1," February, 1977, (Back Cover), p. 36
- _____, "196 Trapeziums Series," May, 1978, p. 31
- _____, "Hypertransformations," May, 1978, p. 31
- _____, Second Variation, "196 Trapeziums Series," May, 1978, p. 31
- MONET, CLAUDE, "The Artist's Garden," August, 1977, p. 22
- MORRISS, ROBERT H. and FRITCHIE, CHARLES J., "Illustrations from Chemistry and Physics," (Four Illustrations), May, 1976, p. 5 and 32
- _____, Detail, "CRT Output," August, 1978, p. 31
- MUYBRIDGE, EADWEARD, "Man Running," August, 1977, p. 20
- NAKE, FRIEDER, "Emergence and Disintegration of a Form," February, 1976, p. 2-3
- _____, "City Forms," February, 1976, p. 26
- _____, "Random Walk through Raster," November, 1976, p. 6-7
- _____, Details, "Emergence and Disintegration of a Form," February, 1978, p. 20
- NEES, GEORG, "Max Bense Museum," May, 1976, p. 15
- _____, "Designs for the Hanover Fair," (Three Illustrations), May, 1976, p. 15
- _____, "Designs for Textiles," May, 1976, p. 19

- NEGROPONTE, NICHOLAS, "Mutual Feedback Graphic Systems," February, 1978, p. 25
- _____, "Enchantment," (Chart of Levels of Graphics Systems), February, 1978, p. 26
- _____, "Sketches for Architecture," (Three Works), February, 1978, p. 27-28
- _____, "Illustration of the User, Media, Enhancement," February, 1978, p. 28
- _____, "Media - Complexity Levels," February, 1978, p. 29
- _____, "Senses Match - Graph of Levels," February, 1978, p. 30
- NICERON, "Reflecting Cylinder Anamorphosis," February, 1978, p. 15
- NOLL, MICHAEL, "Four-Dimensional Hypercube," November, 1977, (Three Illustrations), p. 11, 13, and 15
- _____, "Untitled Illustrations," November, 1977, p. 15
- ONYETT, LLOYD, "Maps, Diagrams," (Six Illustrations), February, 1976, p. 18-21
- PALYKA, DUANE, "Self Portraits," February, 1976, p. 15
- _____, "Strange Bird," February, 1976, p. 17
- _____, "Untitled Cartoon," February, 1976, p. 17
- _____, Detail, "Strange Bird," August, 1977, p. 21
- _____, "Strange Bird," May, 1978, p. 33
- _____, Detail, "Self Portrait," May, 1978, p. 33
- _____, "Bubble Series," May, 1978, p. 33
- PETERSON, H. PHILIP, Detail, "Cybernumerics," August, 1977, p. 21
- POZZO, ANDREA, "Quadrature," February, 1978, p. 11
- PUK, RICHARD F., "Architectural Details," (Five Illustrations), February, 1976, p. 12-13
- RAMTEK CORPORATION, "Colorgraphics Terminal," August, 1978, p. 13
- ROY, JOHN, "Segrid," May, 1976, p. 16
- _____, Detail, "Segrid," August, 1977, p. 28
- RUBENSTEIN, C. B. and SCHWARTZ, LILLIAN, "Lillian II," May, 1978, p. 18
- SASAKI, MUTSUKO K., "Maples in Storm," (Front and Back Covers), August, 1977 (Reversals), p. 1 and 36
- _____, Detail, "Maples in Storm," May, 1978, p. 10
- SASAKI, MUTSUKO and SASAKI, TAKEAKI, "Fire Maple I," August, 1978, p. 4
- _____, Details, "Fire Maple," August, 1978, p. 5
- _____, "Examples of Functional Patterns Generated by ART-3," August, 1978, p. 6-9
- _____, "Flowchart, ART-3," August, 1978, p. 6
- _____, Details, "ART-3 Patterns," August, 1978, p. 8-9
- _____, "Mandarin Ducks I," August, 1978, p. 10
- _____, "Mandarin Ducks II," August, 1978, p. 11
- SCHNEEBERGER, REINER, "Four Examples of Student Art," November, 1976, p. 28-31
- _____, "Computer Art Used in Tests for Analyses of Viewers' Impressions of Computer Art," (Thirteen Illustrations), May, 1978, p. 20-28
- _____, "Tables, Comparisons, Correlations," (Twelve Tables and Listings), May, 1978, p. 20-28
- SCHWARTZ, LILLIAN and KNOWLTON, KENNETH, "Detail of Tapestry I," May, 1976, p. 13
- SCHWARTZ, LILLIAN, "Night Scene," February, 1977, p. 32
- SCHWARTZ, LILLIAN and RUBENSTEIN, C. B., "Lillian II," May, 1978, p. 18
- SEURAT, GEORGES, "Un Dimanche a La Grande Jatte," August, 1977, p. 21
- ST. FRANCIS OF PAOLA (MAIGNAN), "Anamorphic Painting," February, 1978, p. 12
- STEPHENS, MICHAEL, Detail, "3-D Form," May, 1976, p. 19
- SUNDQVIST, GORAN, "Lost on the Milky Way," August, 1978 (Front Cover), p. 1
- _____, "UFO," August, 1978, (Back Cover), p. 36
- SYKORA, ZDENEK, "Structure," May, 1976, p. 17
- _____, "Black and White Structure," May, 1976, p. 17
- SYNTHA VISION, "Illustrations from Animation," November, 1977, p. 9 and 17
- TEICHOLZ, ERIC, "Maps, Cartographic Illustrations," February, 1977 (Eleven Graphics), p. 8-18
- TENGSTRAND, TORD, "Merry Christmas," November, 1977, p. 2
- VER HAGUE, JAMES, "Helikos," (Sculpture), May, 1977, (Front and Back Covers), p. 1 and 36
- _____, "Voluta," (Sculpture), February, 1978, (Front and Back Covers), p. 1 and 36
- _____, "Voluta," February, 1978, p. 21
- VILDER, ROGER, "Variation on 9 Squares," May, 1976, p. 17
- _____, "Two Untitled Variations," May, 1976, p. 17
- WARNER, JAMES R., "Emerging Man," May, 1977, p. 33
- _____, "Gyrating Form," May, 1977, p. 34
- _____, "Storyboard Illustrations," (Nine Sketches), November, 1977, p. 15, 17, 18
- WILLIS, VICTORIA and WU, KINGSLEY, "Interior Designs," (Eight Illustrations), August, 1977, p. 17-18
- WOLFGANG, W. G., "Illustrations of Computer-Generated Weave Structures," November, 1976, (Front and Back Covers), p. 1 and 36
- _____, "Woven Designs," (Two Works), November, 1976, p. 11
- _____, "Printouts, Flowcharts," November, 1976, p. 12, 13, 17
- _____, Details, "Knitted and Woven Fabrics," (Four Examples), November, 1976, p. 14, 15

ANNOUNCEMENT: CYBERNETIC SYMBIOSIS EXHIBITION

BACKGROUND

As part of its 10th Anniversary celebration, the Lawrence Hall of Science will feature a definitive display of varied international invitational computer art. This large exhibition of computer art will be open to the general public for a six-month showing, beginning in March, 1979, continuing through August, 1979.

As a public science center, teacher training facility, and research unit of the University of California at Berkeley, the Lawrence Hall of Science (LHS) promotes public understanding and improvement of science at all levels. According to Arthur Luehmann, Associate Director of LHS, the science center offers an ongoing program that emphasizes the union of art and science. The new exhibition will offer the general public a unique opportunity to see and appreciate a range of contemporary art forms created by this union of art and science (man and the computer).

The artists represented in this exhibition represent the most important computer artists in the world today. The exhibition features a wide variety of artistic and programmatic approaches to contemporary art that includes a range of final media presentations.

This exhibition has been organized by Grace C. Hertlein, Associate Professor of Computer Science, California State University, Chico, California.

According to Diane Carlson, coordinator of exhibits at LHS, an anticipated 100,000 persons will view this exhibition during its six month showing. Upon completion of its stay at LHS, the show will be routed to other science and technology museums in the U.S.

CYBERNETIC SERENDIPITY - 1968

1978 also marks the 10th Anniversary of "Cybernetic Serendipity," the first important international computer art exhibition. This landmark showing of new art was organized by Jasia Reichardt and displayed in London's Institute of Contemporary Arts. The exhibition then toured important technology museums here and abroad.

A dozen or so of the initial artists featured in "Cybernetic Serendipity" are still working in this medium. However, their newest works reveal strong departures from their early expressions -- the latter dependent upon specific, limited computing systems and programming techniques. Thus, there has been a marked advancement in the machines available for creating computer art and in programming systems used to create these new art forms.

The word "serendipity" means the aptitude for making fortunate discoveries accidentally. One might say then, that computer art arose as a "happy accident" from the field of cybernetics. "Cybernetic Serendipity" emphasized the potential union of art and science in this important, first exhibition.

The new exhibition is deliberately titled "Cybernetic Symbiosis," to show its relativity to the first exhibition -- and to emphasize the maturation of this new medium. In the present show, computer art is symbiotically unified within other

art forms. In this show, approximately 60 artists will be represented.

Computer art of 1978 and 1979 is markedly different from that of 1968. Today the computer is often a designing "colleague," and artists use the computer to create designs from which they choose -- and then implant these designs in other art forms: sculpture, paintings, textiles, wallpaper, serigraphs, photographic manipulations, films, etc. The role of the artist and the role of the computer have now melded, forming an interdependent symbiosis of art and science.

AN EXTENDED EXHIBITION

Computer art exhibitions are generally gathered for computer audiences and displayed for very brief periods of time (often 3-4 days), coinciding with the duration of specific computer conferences. Art museums have been reluctant to show computer art, not because of its quality, but because of traditional prejudice regarding the computer. Thus exposure to this new art form has been largely limited to computer-oriented individuals. Very few exhibitions have been mounted for longer periods of time, intended for the public. Europe is more open to new art forms than the United States. One exception has been "Art of the Space Era," shown for six months at the Wernher von Braun Space Museum of the Huntsville Museum of Art, Huntsville, Alabama. This exhibition was developed to commemorate the 20th Anniversary of America's first satellite, Explorer I. Selected works from the "Invitational Computer Graphics Show" of this exhibition will be featured as part of "Cybernetic Symbiosis."

One of the main purposes of this exhibition is to acquaint the general public with this new medium. The term "public" implies that people of all ages and occupations enjoy art, and that art is not the prerogative of aesthetes. The works presented in this exhibition possess a wider public appeal than earlier works -- and they look like art. This is due primarily to the marked trend of taking computer-aided designs back into varied art forms.

INTERACTIVE COLOR GRAPHICS

"Cybernetic Symbiosis" will feature varied aspects of computer art in this extended exhibition. One of the important features of this show will be a special interactive color graphic system, designed and donated by Tektronix, where the viewers may interact directly with computer art and see immediate results on a huge screen. Designs will be drawn on a digitized tablet, working spontaneously in varied colors. No programming experience will be necessary to use this advanced color system. This new computer system is typical of the trend in computers -- that of designing computers for people, and is called "user-oriented systems".

PERMANENT COLLECTION OF COMPUTER ART

As part of this new exhibition, a beginning permanent collection of computer art will be dedicated, featuring paintings, serigraphs, lithographs, and photographs of computer art. These works will be donated by important artists, to form a growing collection of computer art, to be housed at the Lawrence

Hall of Science. Artists and their permanent works will be reviewed in later releases.

FILM FESTIVAL

Along with the display of static (non-moving) computer art, an international computer art festival will be held at the Lawrence Hall of Science. A changing schedule of animated and video computer films will be presented in this festival, along with special speakers on computer film-making.

SPEAKERS

As part of "Cybernetic Symbiosis," important lectures will be featured. Varied philosophies and approaches to this new art form will be discussed. A schedule of featured speakers will be announced at a later date.

PUBLICATIONS

A number of computer art reprints will be available for sale during the exhibition. Books on computer art, note cards, reprints of articles, and general material on this new art form will allow viewers to explore the medium on other levels, and to study materials at their leisure.

CATALOG - CYBERNETIC SYMBIOSIS

A special definitive catalog of the works from "Cybernetic Symbiosis" will be developed by Grace Hertlein, organizer of the exhibition. This companion piece for the show will be available at moderate cost for visitors of LHS. It will feature illustrations and ideas by participating artists, along with brief essays by prominent computer art authorities, focusing upon specific changes that have occurred in this new art medium during the past ten years. The future of this new art form will also be reviewed in the exhibition catalog.

COORDINATION

The exhibition was gathered and coordinated by Professor Grace Hertlein, Department of Computer Science, California State University, Chico. She also organized the "Art of the Space Era Computer Graphics Invitational" and has coordinated many other important computer art exhibitions during the past six years. She is also the editor of the international quarterly, "Computer Graphics and Art," published by Berkeley Enterprises, Newtonville, Mass.

Final selections for "Cybernetic Symbiosis" will be from previous international exhibitions and new materials gathered by Grace Hertlein, who will jury the show with a prominent specialist in art and technology from the San Francisco Area.

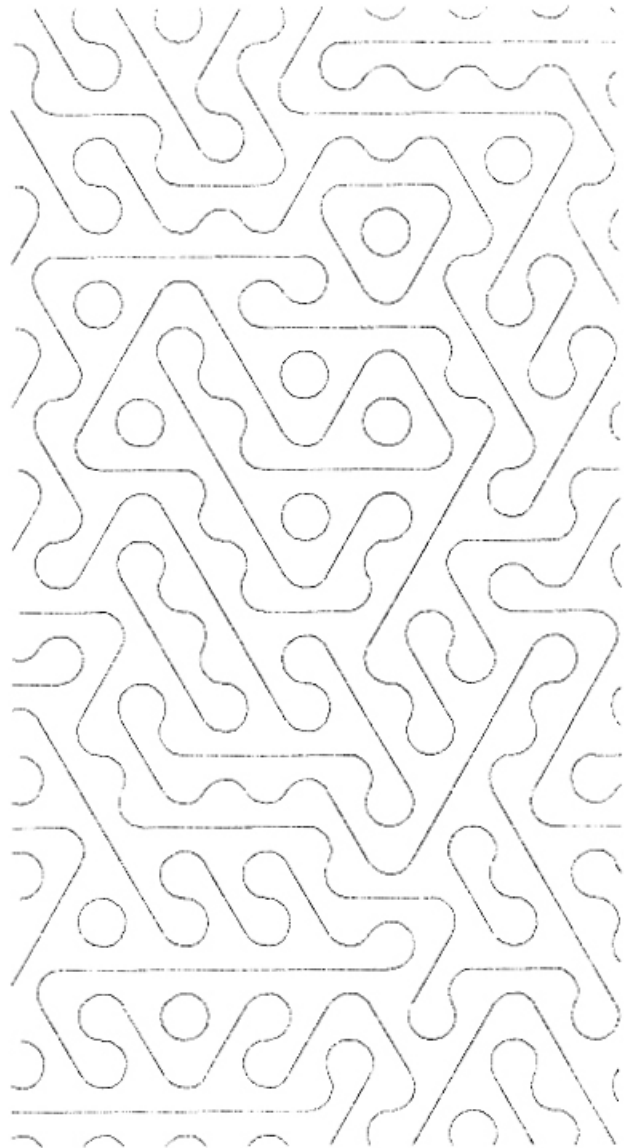
The show is being coordinated jointly with Lawrence Hall of Science personnel, including Arthur Luehrmann, Associate Director of LHS and Diane Carlson, Public Exhibit Coordinator.

Contact persons for this exhibition are:

Diane Carlson, Exhibit Coordinator
Lawrence Hall of Science
University of California, Berkeley
Berkeley, CA 94720 (415)642-2858

(Addresses concluded above.)

Grace C. Hertlein, Associate Professor
Department of Computer Science
California State University, Chico
Chico, CA 95929 (916)895-6443 or
(916)343-2712



ABOVE: Detail of "Hex Variation," by W. Kolomyjec.

WU, KINGSLEY and WILLIS, VICTORIA, "Interior Designs," (Eight Illustrations), August, 1977, p. 17-18

ZAJEC, EDWARD, "Cube: Theme and Variation Series," (Five Illustrations), May, 1976, p. 16
_____, "The Cube," August, 1977, p. 28
_____, "Illustrations from the ICCH/2 Exhibition," (Two Works), August, 1977, p. 32

ZAJEC, EDWARD and HMELJAK, MATJAZ, "Scherzo for Matrix and Figures," (Seven Illustrations), May, 1978, p. 34

computers and people

formerly *Computers and Automation*

The magazine of the design, applications, and implications of information processing systems.

BERKELEY ENTERPRISES, INC.
815 WASHINGTON ST.
NEWTONVILLE, MASS. 02160
617-332-5453

Dear Friend,

You may be interested in our monthly magazine "Computers and People" (formerly "Computers and Automation") -- the oldest magazine in the field of computers and data processing, published since 1951.

Our policy is to publish factual, useful, and understandable information related to computers, their applications, their implications, and society, and controversies connected with the computer.

Our authors have included:

Dr. Jerome B. Wiesner, President, Mass. Inst. of Technology
C. P. Snow, English statesman, author of "The Two Cultures"
Prof. John Kenneth Galbraith, Harvard University
Ralph Nader, consumer advocate
Dr. Simon Ramo, Chairman Executive Committee, TRW Inc.
Dr. Carl Sagan, Cornell University

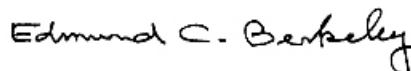
and many more distinguished persons with important views

We would like to offer you a subscription, whereby if you subscribe now and send payment, we will send you TWO FREE issues -- and we refund your money within 10 days if the magazine is not satisfactory to you.

HOW CAN YOU LOSE?

May we hear from you?

Yours sincerely,



Edmund C. Berkeley
Editor, Computers and People

ECB;bc

TO: Berkeley Enterprises Inc., 815 Washington St., Newtonville, MA 02160

() YES, please send me () 2 FREE sample issues. I enclose:
() payment of \$11.50 annual subscription price (U.S.A.), or
() my organization's purchase order, signed

() My name and address are attached

