Elektronische Computergrafik.   Beckmann/Riehl 70.

APPARATIVE ART
Herbert W. Franke

The development of computer art has among other things led also to a kind of purism which is, if one thinks about it, rather absurd: one attaches great importance to the fact that each step of the work is made only with the help of computer equipment and avoids the use of other means. Certainly there are cases — for instance when image structures printed by the computer are coloured afterwards — which are only acceptable as makeshifts; such works have become known as computer aided art. There are however many other occasions where the computer could be combined very effectively with other technical equipment in order to achieve specific results.

Skizze des apparativen Aufbaus zur Herstellung der Vorlage
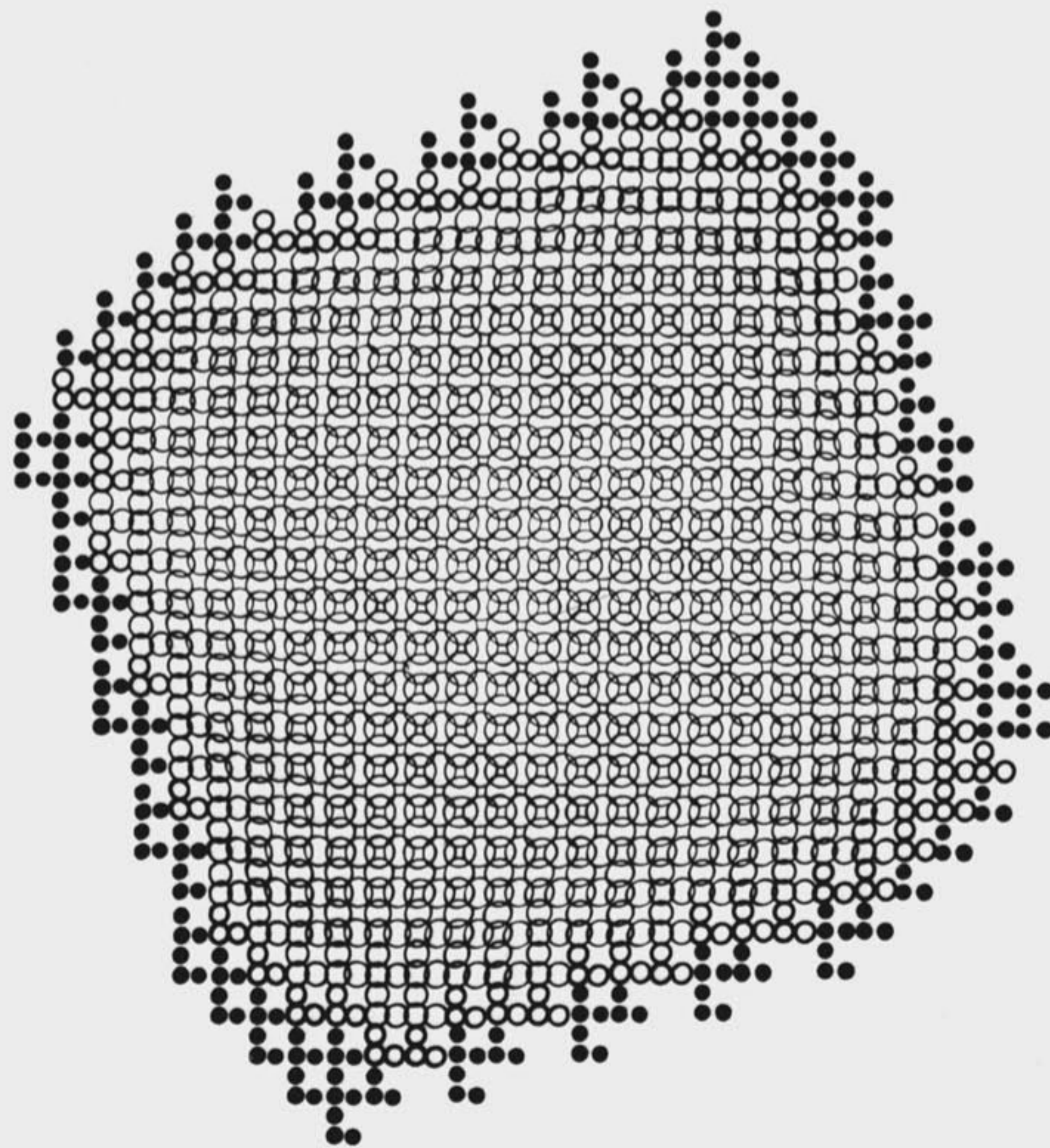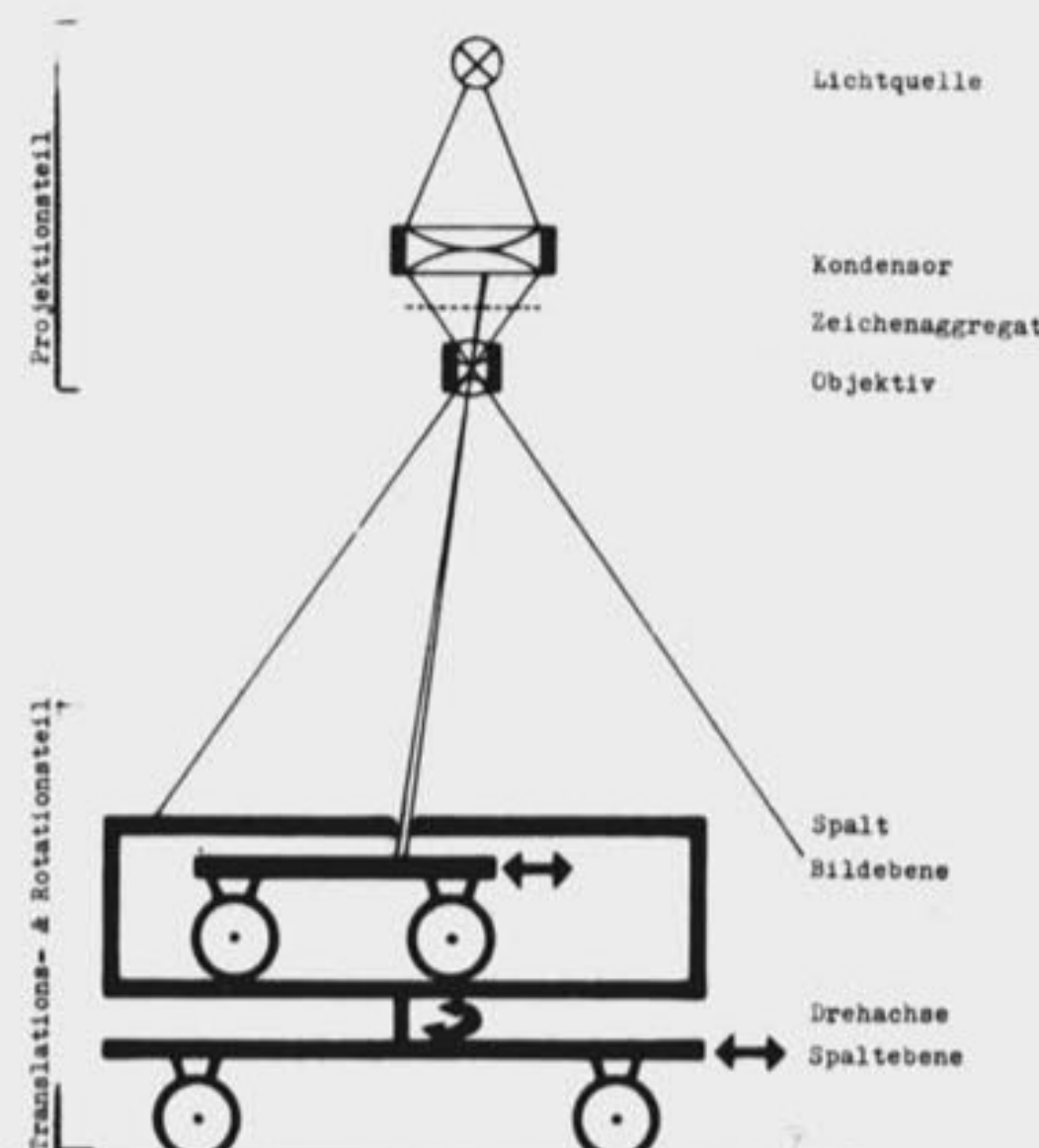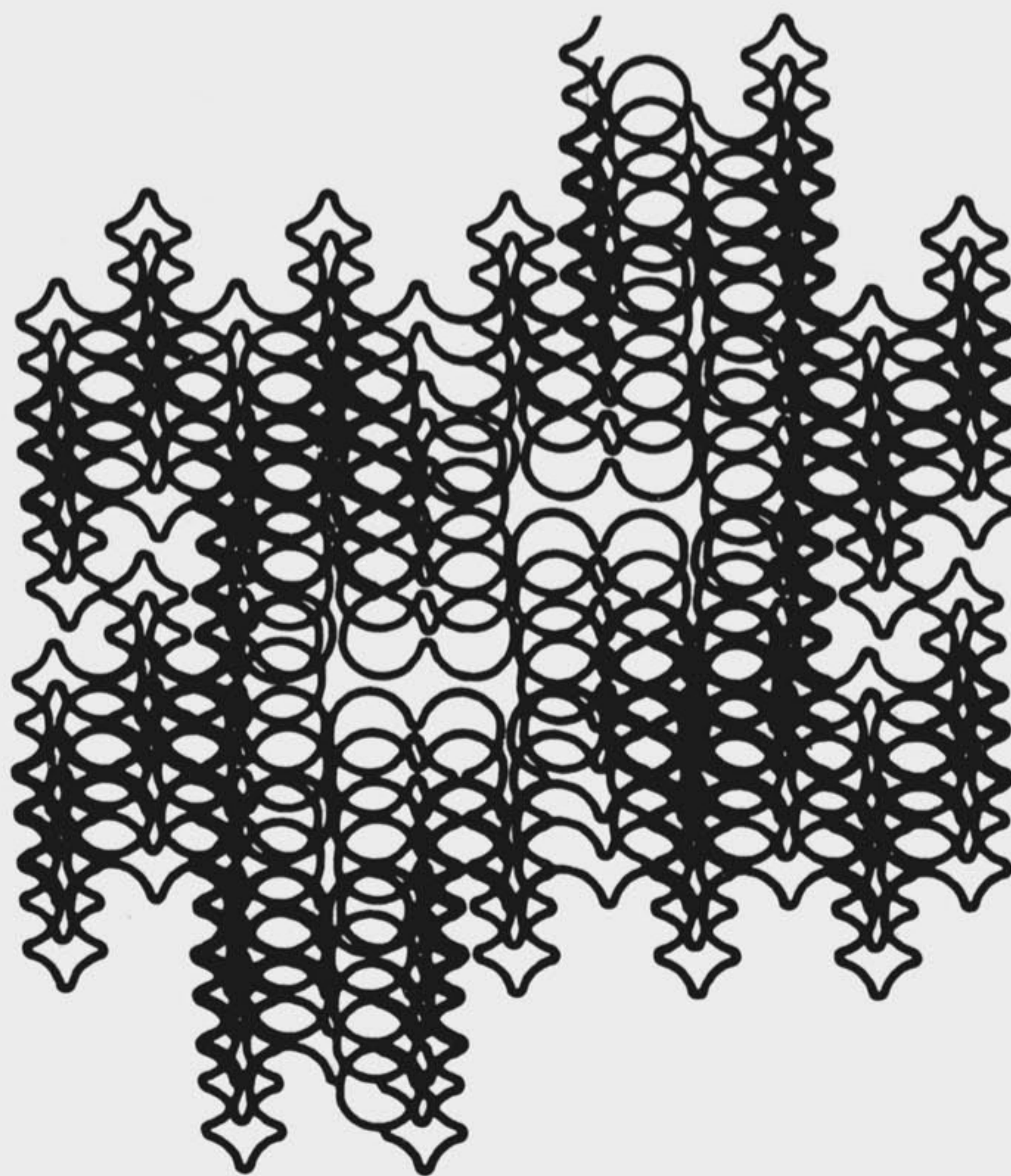
In PAGE 18 the query was raised as to the manner of production of the picture by Gottfried Jager. Since this relates to a very interesting area, I might make some comments on this. In my opinion, computer art is a consistent result of developments which have already started much earlier, and which could be summarized by the slogan 'Apparative Art' ('Apparative Kunst'). It began with mechanical oscillating equipment of several kinds and led to photo-mechanical and photo-optical equipment. Two of the most well known representatives of this direction are Gottfried Jager, Hochschule fur Gestaltung, Bielefeld, and Hein Gravenhorst, Hochschule fur Gestaltung, Kiel.

It is considerations like these that have convinced me of the usefulness of inviting representatives of Apparative Art and photography like G. Jager to participate in a symposium on computer graphics. In a field like design that lies so close to practical matters, it must seem especially paradoxical to produce relatively simple patterns with the aid of computers. And here in the context of practical achievement, the banning of combination by some antiquated aesthetical regulations cannot be upheld.

In order to break down artifically created boundaries — and not merely for the sake of the results — in collaboration with Hein Gravenhorst I have started work on a first experimental series in which patterns of computer graphics are changed using the photo-mechanical transformation table. The results prove that certain kinds of representations can be realized much easier in this way than by an exclusive reliance on computers; this applies especially for sequence images which cannot be illustrated here because of the printing procedures used.

The Computer Arts Society, too, might unintentionally encourage the separation of computer artists and representatives of other areas. In reality however, the tendencies which are expressed in computer art, are adequately supported by other activities in the field of Apparative Graphics, and also by the endeavours of Exact Aesthetics. The term 'computer art' in the title of the Society should not lead us to ignore the issues posed here.

Gottfried Jager is working with two perforated diaphragms which are switched one behind the other in the beam passage (zwei hintereinander in den Strahlen gleichgeschalteten Lochblendenrastern). One of the results absorbed by photographic paper has led to the picture shown in PAGE 18. Hein Gravenhorst is working with a transformation table that permits the shifting of basic graphical elements in the way of transfer and rotation and to expose them on top of each other (graphische Grundelemente translatorisch und rotatorisch zu verlagern und ubereinander zu belichten). What comes about by these methods has been planned in advance, which means that they are programmed in a similar way as computer graphics. In principle it would be possible to produce structures of this kind also with the computer. But in so doing a fundamental question arises. The use of an expensive technical apparatus like the computer is only justified if the graphic results cannot be obtained in any other way. In my opinion there is therefore, no sense in using the computer for the production of trivial patterns which can be drawn much easier with dividers and rulers — except perhaps if one does so as preliminary practice for later works.

THE ILLUSTRATIONS. Reading from top left downwards:

Principle of the 'Lochblenden' set-up by G Jager: a, lens 1 (light-point pattern); b, lens 2 ('Lochblenden' pattern); b, picture plane.

'Lochblenden struktur' (Shutter Structure) by G Jager.

Sketch of the apparatus used in the making of works by Hein Gravenhorst.

Combined apparative and computer graphic by HW Franke, Hein Gravenhorst and Karl Siebig. Basis: a DRAKULA computer graphic (by Franke) which has been submitted to a multiplication process through movement on the transformation table (see next illustration).

Photo-mechanical transformation by H Gravenhorst.

RUNABOUT

Computer programs for use in architectural practice. B Guttridge, 7 Medway Gate, London, NW1 is compiling a list for publication in July 1972. Please send details.

Three Ericsson computers control a Stockholm suburban railway system involving some 50 stations and 800 trains daily. Speeds up to 80 miles per hour (the trains, not the computers, silly!). Electronics,20 December, 1971 p 16E.

The latest 'in' word: *ecopornography.* Refers to obscene cashing in by big corporations and governments on the ecology fad, via adverts and publicity campaigns. See Paul Ehrlich interview, New Scientist, 16 September 1971, p 636. Nudge — done any *ecotage* lately?

Two of the ACM Specialist Groups are Siglash, Language Analysis and Studies in the Humanities, Chairman, Joyce Friedman, University of Michigan, Computer and Communications Science Dept., Ann Arbor, MI 48104. USA: SIGGRAPH, Computer Graphics, Chairman, Jon A Meads, PO Box 1576, Lake Grove, OR 97034 USA. A Computer Graphics newsletter forms part of the work of the group.

The Institut fur Deutsche Sprache, Mannheim, has formulated one of those staggering *gesamt* efforts at which Germans are reputed to excel. The project, to run till 1975, has as object the discovery of the numerous applications of linguistic data processing. The Institute's linguistic data processing department has a staff of 16. The Institute is in touch with universities, and seeks to establish contact with institutions in Germany and elsewhere, active in this field. So, even if you are a mere individual, do get in touch with Mannheim. This seems a project worthy of support. From Angewandte Informatik, 2/1971, p96-97.

The Russians plan to build 15,000 computers in the new planning period 1971-1975. These will be universal computers of third generation, sited at 4,000 computer centres. adl nachrichten No 69, 1971, p 5. Seeing Red?

'It's a funny thing, it really is. In this world you can't just be neutral or you can't just go about your business and live your life in what seems to you to be a normal way. This just doesn't seem possible'. Howard Hughes, in International Herald Tribune, January 11, 1972.

INTERRUPT, newsletter of the Computer People for Peace, CPP. This magazine comes out about every two months. The last issue, no 16, consists of 16 pages. The mag is illustrated — the CND symbol; a representation of the human fist coming down on — THINK. CPP needs you! Annual dues are (only) $ 10: this includes supply of the newsletter. CPP has existed for four years. Why not join, or if in doubt, ask for a sample copy of INTERRUPT. *Anything* to save the Human Race. CPP, The Dolphin Center, 137 a West 14 Street, New York City 10011. USA.

The following booklets are available from CPP. Data Banks, 50c. Health, 50c. Technological Warlords, $1. CPP has local groups in about twelve towns in different parts of the country.

AT LAST-CASUS

A group of interested artists and technical people at Eastern Michigan University have accepted the responsibility of coordinating a US branch of the Computer Arts Society. They will administer the US membership of the Society, and produce one issue of PAGE each year. In addition to these duties, a series of about six workshop centres throughout the US will be formed with the goal of acquainting artists with the computer as an artistic tool. For further information please write to Kurt Lauckner, Mathematics Department, Eastern Michigan University, Ypsilanti, Michigan, 48197, USA.

SOUTH AMERICA

In conjunction with the 1st Congress Informatics of Spanish-American Nations, Buenos Aires 28 May- 3 June 1972, there will be an exhibition at CAYC. Should you wish to submit works, write in the first instance to Jorge Glusberg, CAYC, Elpidio Gonzales 4070, Buenos Aires, Argentina.

SPAIN

Instituto Aleman-Deutsches Kulturinstitut, Madrid, is presenting an exhibition of Computer Art. The tentative opening date is 15 February 1972. The show is due to stay for about three weeks. It will then travel to Barcelona, Bilbao and Valencia. It will also go to Lisbon. The show is arranged by Kathe Schroder. A series of meetings on computers and the arts are due to take place at the Institute between 22 February and 1 March. The opening lecture will be by Professor Max Bense on 'The Idea of Artificial Art'. There is to be a screening of films by Schwartz, Vanderbeek and Whitney. Alan Sutcliffe will speak on 'Procedural Art: Behavioural Art'. For final details contact Helga Drewsen, Instituto Aleman, Zurbaran 21, Apartado de Correos 4064, Madrid, Spain. Telephone 231 03 05. Telegraphic address INSTALEMAN.

GERMANY

The ubiquitous Kathe Schroder is organizing for the Goethe Institut, Munich, an exhibition entitled Computer Graphics, Films, Music and Laser Images 1971, consisting only of works created in the year — yes, you guessed it — 1971. (Careful: carbon dating will be strictly applied.) It is planned to keep the material together for several years; the Germans have a word for this — it is *Wanderlust.*

Intending contributors should apply to Frau Schroder, Plathnerstrasse 27. Hannover, Germany. Frau Schroder is also seeking graphics for re-sale, and is interested in acting as exclusive representative in West Germany for selected artists.

LITERATURE

R A Crowther 'Three-dimensional reconstruction and the architecture of spherical viruses'. Endeavour, September 1971.

IEEE Transactions on Nuclear Science, June 1971. Proceedings of 1971 Particle Accelerator Conference Accelerator Engineering and Technology. Section Computer Control and Instrumentation pp335-437, is of exceptional interest.

Burton Paul 'The Shifting Poles of Computer Experiments and Analysis in Applied Mechanics'. Bibliography. Experimental Mechanics, September 1971. Same issue has article on 'Computer-simulated Stress-optic Patterns'.

Experimental Mechanics, February, 1971. Editorial discusses self-checking and repairing computers related to society.

Report on Conference of Society for Information Display, Datamation, October 15, October, 1972, p33.

A World List of Computer Periodicals. £3. From National Computing Centre, Quay House, Quay Street, Manchester. England.

Think big and act big by writing for your copy of two bibliographies of research publications, one in the field of computer technology, and one in computer simulation. These contain abstracts of work done between 1963 and 1971. They come complete with order forms for copies of the publications. From the unique (Ellsberg) RAND Corporation, Santa Monica, California. USA.

S Kaneff, Ed. Picture Language Machines. Proceedings of Canberra 1969 Conference. Academic Press London and New York 1970.

CALL FOR PAPERS

The USA-JAPAN Computer Conference, Tokyo, 3-5 October, 1972, will include session on humanities applications if sufficient high-quality papers are submitted. Complete drafts, not exceeding 5,000 words to David R Brown, Stanford Research Institute, Menlo Park CA 94025 USA. Include abstract of not more than 150 words. Send draft by 1 March. Oral presentation will be in English or Japanese.

5-6 October 1972. 2-Dimensional Man-SIGPLAN. Machine Communication Conference, Los Alamos. Topics include 'special problems related to computer graphics'. Send papers or abstracts by 1 May 1972. Dr James B Morris, Los Alamos Scientific Laboratory, University of California, PO Box 1663, Los Alamos NM 87544. USA.

CONFERENCES

29 February – 2 March 1972. Electro Optics International 72. Metropole Convention Centre, Brighton England.

5 – 6 April 1972. Information Requirements of the Social Sciences and Humanities, New York. Dr Morris A Gelfand, Queens College, City University of New York. Flushing NY 11367. USA.

12 – 14 April 1972. Joint ACM/AICAS International Computing Symposium, Venice. Conf. Secretariat, C/o FAST Piazzale Rodolfo Morandiz, 20121, Milan, Italy.

22 – 26 May 1972. IFIP Working Conference on Graphic Languages. Participation by invitation only. Frieder Nake, University of British Columbia, Computer Science Department, Vancouver 8. Canada.

19 – 21 June 1972. Ninth Annual Design Automation Workshop, IEEE, Statler Hilton Hotel, Dallas. R.B. Hitchcock, Watson Research Center, Box 218, Yorktown Heights, NY. USA.

The cube: theme and variations

Theme and variations on a cube is a program of modular combinations operated on a square lattice with eight square elements which were deduced from a cube seen in an oblique projection. These basic elements are first assembled into modules, partly through aleatory rules (in the case of the white elements which form the frontal side of the cube), and partly by deterministic rules (as is the case for the remaining seven elements). The completed modules consequently form the final composition.

The scanning of the number and positioning of the white elements in any given set of modules (eight different modules are generated for each composition) allows classification into categories. This classification is to some extent qualitative, and allows the machine an effective selection of one of the compositive modes for each given set of modules i.e.: it mainly determines whether the modules will form compositions with a clear distinction between figure and background, or compositions with a clear distinction between figure and background, or compositions with a higher or lesser degree of ambiguity between figure and background.

The compositional modes are based partly on the above concerns and partly on the observation that there is a proportional relationship between the formal, qualitative character of a set of modules, and the degree of order tolerated in assembly i.e.: the clearer the distinction between figure and background — the greater the degree of order tolerated, and vice versa.

The operative process acts as an automatic coordinator between the various systems in the program, and determines the priorities in the performance of tests and in the execution of operations. What remains to be specified in data is the quantity of prints desired, and the type of output device to be used.

Edward Zajec

LONDON

PLEASE READ THIS CAREFULLY. The monthly lectures arranged by the Society no longer take place at the BCS headquarters, due to a space shortage there. We now meet at the Prudential Assurance Co Ltd. Barnard Inn, London, EC1. Ask your friends to go: there is no charge, even if unaccompanied by a member.

On Wednesday 15 March, a member of CAS will wait by the ticket office at Chancery Lane tube station, to guide you to Barnard Inn, between 7 and 7.45 p.m.

7.30 p.m. Monday 13 March. Lillian Schwartz will present and discuss her films — PIXILLATION, UFOs, OLYMPIAD, MATHOMS, ENIGMA. At US Embassy, Grosvenor Square, London W1. In order to reserve seats, please phone Bob Baker at the Embassy, 01-339 9000. No admission charge. This meeting is open to all.

7.30 p.m. Wednesday 15 March John Lifton. TRANSDUCTION: Its Past Present and Future in my Work. At Prudential Assurance Co. Ltd.

The next CAS week-end programming course will take place 22-23 April 1972, at Cybernet Time Sharing Ltd, London, W1. The concrete and sound poet Bob Cobbing will be attending as guest of the Society. Fee for the course will be around £6, with an additional 20% for non-members. If you wish to take part, please write to Alan Sutcliffe as soon as possible.

A PSSHAK of your own — a workshop for Housing Participation. Several of our own members have participated in the computer angle of this exhibition. It opens at the ICA on 17 February.

29 February 1972, 1.20 p.m. Edward Ihnatowicz 'How to Make a Cybernetic Lobster'. Botany Theatre, University College, Gower Street, WC
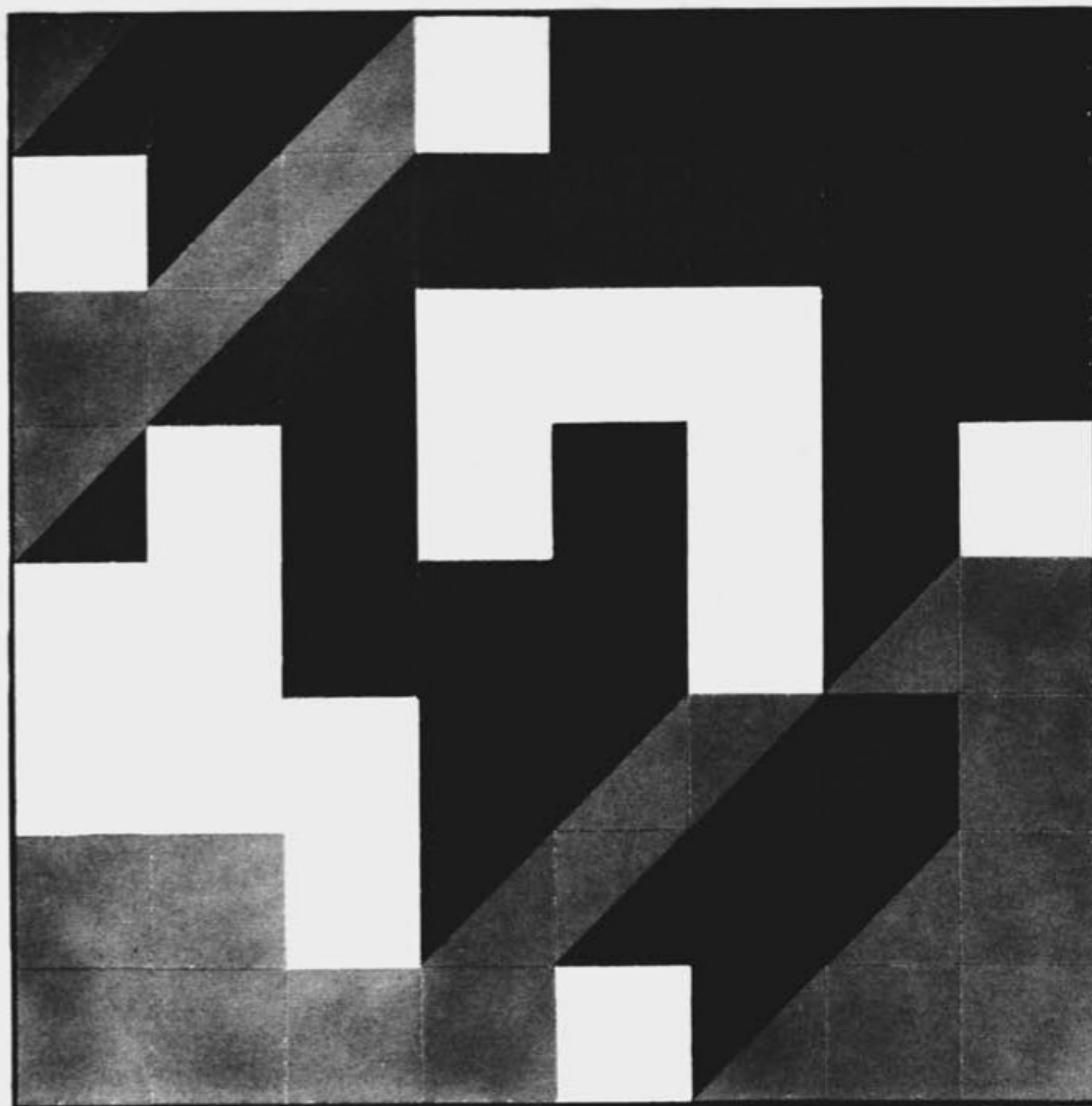
The Limits of Human Nature Series. 23 February. Dr Max Clowes on 'Man the Creative Machine'. 22 March. Dr Robert Young on 'The Human Limits of Nature'. Meetings start at 8 p.m. At ICA.

Note that the lecture by Good on 14 April starts at 7 p.m. Professor Irving John Good on 'The Ultraintelligent Machine'. At ICA.

PROJECT 84 is an Art/Science Centre whose aims include the promotion of 'discussion and co-operation among all fields of cultural activity, and in particular between scientists and those involved in all aspects of the arts'. Membership costs £2 per year (50p for students, and people under 22 years). The Centre has a room in The Dairy, 13 a Prince of Wales Crescent, London, NW1. For further details write to the secretary, David Dickson, 10 Chalcot Square, London NW1. 01-722 0186 (and please mention PAGE).

AIMS AND MEMBERSHIP
The Society aims to encourage the creative use of computers in the arts and allow the exchange of information in this area. Membership is open to all at £1 or $3 per year, students half price. Members receive PAGE eight times a year, and reduced prices for the Society's public meetings and events. The Society has the status of a specialist group of the British Computer Society, but membership of the two societies is independent.

Libraries and institutions can subscribe to PAGE for £1 or $3 per year. No other membership rights are conferred and there is no form of membership for organisations or groups. Membership and subscriptions run from January to December. On these matters and for other information write to Alan Sutcliffe.

COMPUTER ARTS SOCIETY ADDRESSES
Chairman: Alan Sutcliffe, ICL, Lovelace Road, Bracknell, Berkshire. Eng.
Secretary: John Lansdown, 50/61 Russell Square, London WC1.
Editor of PAGE: Gustav Metzger, BM/Box 151, London WC1.
Dutch Branch (CASH): Leo Geurts and Lambert Meertens, Mathematisch Centrum, Tweede Boerhaavestraat 49, Amsterdam, Holland.

ABOUT THIS ISSUE
THE COVER. The illustration are taken from the catalogue 'ars intermedia Werkbeitrage zur Computerkunst'. The exhibition took place in November 1971 in the Datenzentrum der Zentralsparkasse, Vienna. This catalogue documents some of the most adventurous work now being conducted in computer art. We have already given an outline of the group's work in PAGE 16, and the next issue will include some explanation of these illustrations. The catalogue consists of 44 pages and 12 plates. It is in German. You might be able to obtain a copy by writing to Professor Otto Beckmann, A-1040 Wien, Prinz Eugenstrasse 2/6. Austriä.

FRANKE. Dr Herbert W Franke was born in 1927 in Vienna, where he studied physics, mathematics, psychology and philosophy. He has published more than 20 books on scientific subjects. His latest work is 'Computer Graphics Computer Art' which was published in Germany, England and the United States in 1971. His most recent article on computer art appeared in Leonardo, Vol 4, pp331-338, 1971. He has taken part in a number of conferences on computer art, and his graphics have been shown in various exhibitions. His address: D-8191 Puppling 40, Pupplinger Au. Germany. Telephone: 08171/8329.

ZAJEC. Edward Zajec moved to Triests from the United States over a year ago. The two illustrations come from the catalogue of his latest exhibition COMP 3. It was held in November 1971 at the Municipal Gallery, Palazzo Costanzi, Trieste, in collaboration with the Computer Centre of the University of Trieste, and other organizations. The programming of the works in the show was by Dr Matjaz Hmeljak. The exhibition consisted of about 600 graphics, made on plotter and printer, and a film. The greater number of the graphics were not hung, but presented as they came from the printer 'as an attempt to stress the importance of the formative process above the art object, in an effort to demystify the art object, especially in its role of a profitable commodity'. The catalogue (in Italian) is superbly produced. Zajec's address is Via d.Chiesa, Trieste, Italy.