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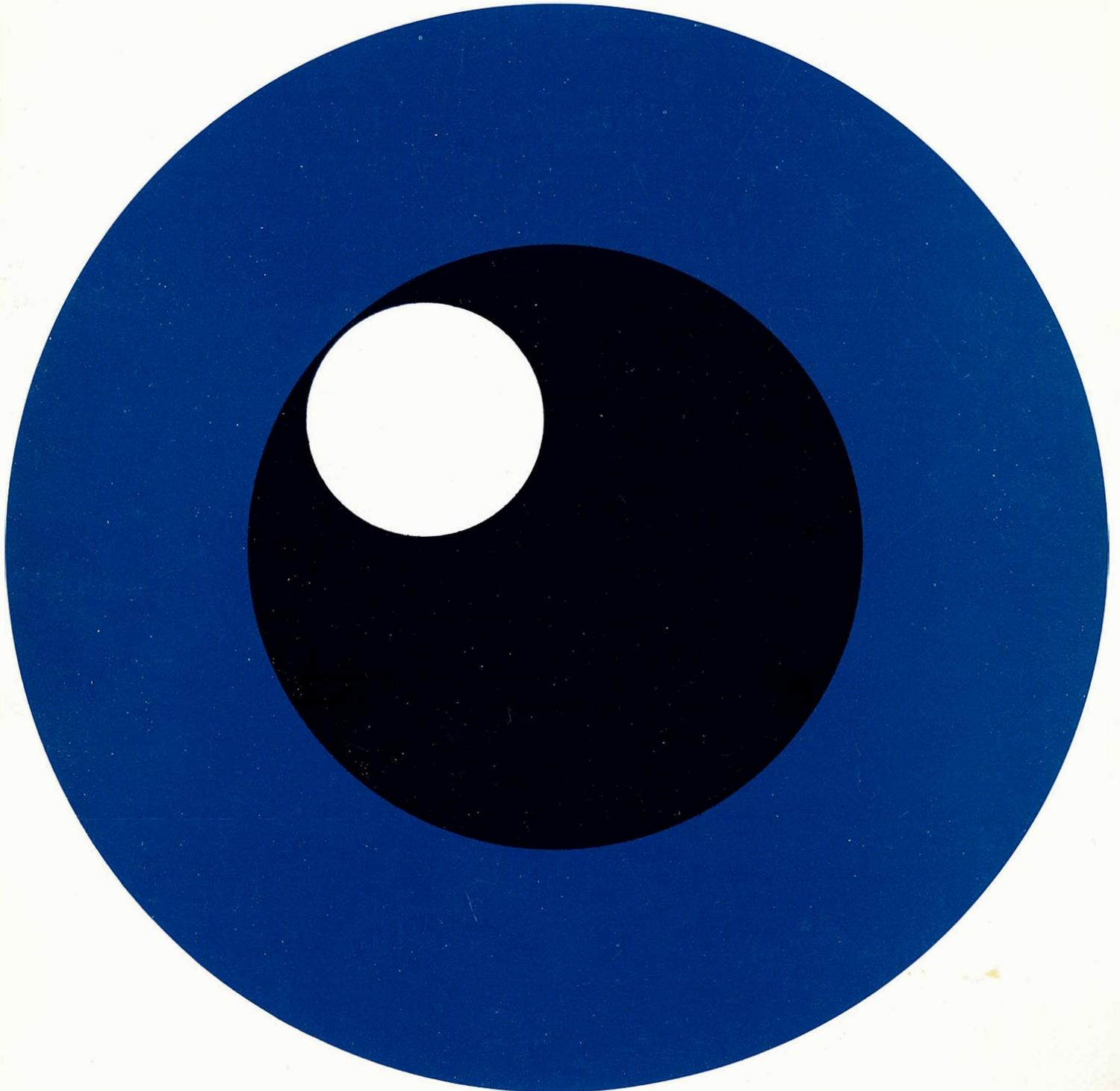
Special issue on VisCom 71  
the Congress and Exhibition on  
the Learning Industry

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**ICOGRADA**

Council of International  
Graphic Design Associations

presents

**Congress and Exhibition on  
the Learning Industry**

Hofburg Congress Centre  
Vienna  
19 - 22 July, 1971  
Apply to BÖG Hollgasse 6  
Vienna 5 Austria

presente

**Congrès et Exposition sur  
l'Industrie de l'Enseignement**

Centre de Congrès Hofburg  
Vienne  
19 - 22 Juillet 1971  
S'adresser à BÖG Hollgasse 6  
Vienne 5 Autriche

präsentiert

**Kongress und Ausstellung über  
die Lernindustrie**

Hofburg Kongresszentrum  
Wien  
19 - 22 Juli 1971  
Anfragen an BÖG Hollgasse 6  
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| Design and layout of issue number 1 | Patrick Burke<br>Geoff White  |
| Contributors to issue number 1      | K C Knowlton<br>Itsuo Sakane<br>Gerard Voigt<br>Paul Kenny<br>Claes Folkesson   |
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For the first time in several hundred years, the communication industry, consisting of newsprint and the publishing world, is being challenged by new rivals in visual media - television, film and various aspects of the computer's capabilities - which forces it to re-evaluate its present position, and adopt new policies.

The effect of the new media is possibly felt most by the newspaper industry since television is able to provide news and information faster and possibly in a more memorable form than newsprint. Advertising is also involved. There is no doubt that the next major industry to be influenced by these developments will be the learning industry which has stood still for a century with its adherence to the old didactic methods.

Yet the benefits of a well co-ordinated and integrated visual programme in education can be the most important single factor of today. Fortunately this concept is not challenged any longer. However both visual research and application is conducted in an unco-ordinated and highly fragmentary manner.

In order to gain benefit in the many factors of visual communication from newsprint, publishing and education, it requires, among many other factors, two major activities. First, the co-operation of the designer; secondly, co-ordination of research and application on a universal level.

The substantially enlarged facilities on which newsprint and publishing industries and the more up to date media of television, cinema and computers, can call, have opened enormous new fields for the designer, and the design world has a new and exciting opportunity here, provided there is an awareness of how to use the new tools and how to apply them.

This new magazine, published by ICOGRADA intends to study this field as well as examine the designer's role in it. It will attempt to serve as an organ expressing the designer's point of view in the new scene. It will attempt to reveal new ideas in the technical aspect of design and to become an essential information source in the area of visual communication to many of our members throughout the world.

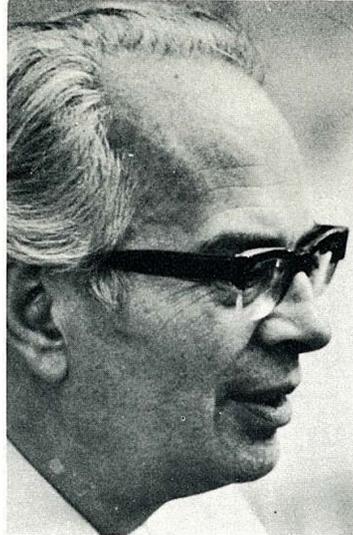
It will be published quarterly with the first three issues devoted to the forthcoming Congress and Exhibition in Vienna to be held from 19 to 22 July, 1971. Subsequent numbers will deal with the broader areas of visual communication such as semiotics, communication theory, psychology of learning and instruction, psychology of perception, ergonomics of visual communication, computer technology and printing technology.

## Speakers at VISCOM '71



Asa Briggs

Asa Briggs is Professor of History at the University of Sussex and since 1968 has been Vice-Chancellor. For nine years earlier he was a member of the University Grants Committee and he was also for nine years President of the Workers' Education Association. He is the author of many books including *The Age of Improvement*, *Victorian People*, *Victorian Studies*, and three volumes of the History of Broadcasting in Britain. He is also a regular contributor to a number of newspapers and periodicals as well as appearing frequently on sound radio and television. He is married, lives in Lewes, Sussex, and has four children. Professor Briggs will be the first speaker in VisCom 71, and will start the proceedings by defining the goals of education with reference to future generations.



Thorold Dickinson

Professor Dickinson was born in Bristol in 1903, was educated at Keble College, Oxford, and worked in the Film Industry from 1926, directing *Gaslight* (1940) and *The Next of Kin* (1941). After producing films for the army, he made *Men of Two Worlds* (1944-5), *The Queen of Spades* (1949), *Secret People* (1953-5). He was chairman of the British Film Academy from 1952-3, has been on the National Film Archive and British Film Institute Experimental Fund Committees, and is Honorary President of the International Federation of Film Societies. He worked as Chief of the Film Services Office for the United Nations in New York from 1956-60, and as Senior Lecturer in Film at the Slade School of Fine Art from 1960-67, where he is now Professor of Film. He will be chairman of Session V part 6 'Teaching the Visual Communicator of the Future'.



Ryszard Otreba

Dr. Otreba was born in Poland in 1932, and received the degree of Master of Fine Art at Cracow Fine Arts Academy in 1959. He has won many awards for print-making and poster design in Poland, and his work has been exhibited in twenty countries around the world. Prints of his are in the permanent collections of the Polish and Swedish National Museums and, among other prominent American Art Galleries, in the Washington DC Smithsonian Institute, the Guggenheim Museum and the Museum of Modern Art, New York. At present Dr. Otreba is Head of Visual Communication at the Cracow Fine Arts Academy Department of Industrial Design. He will be among the speakers in Session V part 6, 'Teaching the Visual Communicator of the Future' and his paper will be concerned with the variability of sign perception in horizontal movement.

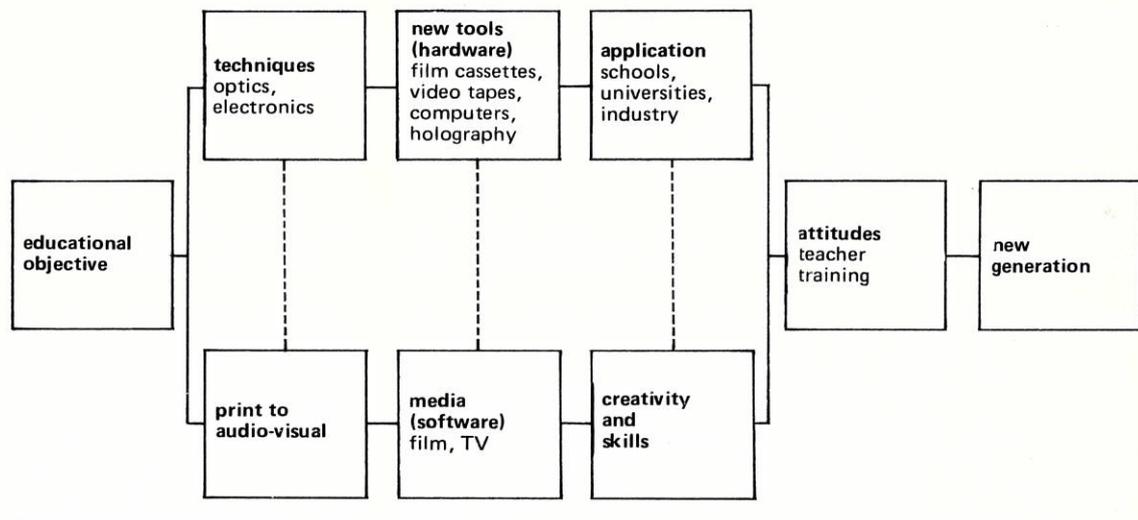


Bogdan Watrasiewicz

Born in Poland, Dr. Watrasiewicz received a BSc in Physics from London University in 1959. After two years at the Electrical Research Association he resumed studies and obtained his PhD in Optics from Imperial College, London, in 1965. He then joined the British Aircraft Corporation to work on optical pattern recognition, optical holography and, later, on acoustical holography. He has published a number of papers in the field of optics, and was up to 1971 Head of the BAC Space Physics Group, also working in the field of satellite attitude sensors and Infra-Red Thin film sensors. He is now a consultant in optics and holography for Cambridge Consultants Ltd., and he will partner Margaret Beynon in Session V part 1 of VisCom 71, 'New Tools in Education'. His paper will be entitled 'Principles and applications of Holography'.

## ICOGRADA Congress and exhibition

The diagram below tries to clarify the content of the VisCom 71 Congress on the Learning Industry. The difference between VisCom 71 and other conferences on visual communication is that it is attempting to combine a number of disciplines which are affecting the industry. In this way it is hoped that the problems will be viewed in their totality and so reveal the relationships between the various activities and their interdependence.



The visual communicator's contribution to teaching and learning becomes of critical and worldwide importance with the educational process depending increasingly on visual presentation. If the information is not intelligently and imaginatively designed, the educational communication will fail.

This congress will deal with visual aids for education at all levels, from industrial information and training, to teaching and learning at universities, and at every kind of secondary and primary school, particularly with the new media of mass-communication (e.g. cassettes for programmed educational television).

ICOGRADA will provide a platform not only for its own members, the visual communication designers, but equally for the educators and for the hardware and software industries - those who supply the programmes to be fed into the machines. The hardware depends on the software and the software depends largely on the designer. The Congress will try to show, for discussion and comparison, the best that they have produced in their various countries. It will be possible to draw conclusions on how the new teaching programmes can be improved and how, in developed and developing countries alike, the different industries and disciplines can work together - especially in the making of these programmes.

It is estimated that up to 1,000 people will be welcomed in the Throne Room of the Imperial Palace in Vienna during the Congress. Half of these will be educators and technicians representing television, universities, schools, design colleges and other interested bodies.

This is the first Congress on programmes for the education industry - an industry on which 1,500,000,000 dollars is spent in the United States alone. It will be an international forum that is long overdue. Publishing companies throughout the world are going into the audio-visual field. Learning institutions throughout the world are equipped with hardware. The need for designed learning programmes of all kinds has vastly increased. Yet there is not enough know-how, not enough understanding of how to co-ordinate and optimise all this work.

At the fourth ICOGRADA Congress, the speakers, the exhibits and the demonstrations will indicate the best that has been achieved so far. They will also provide a positive base for future action and for closer understanding and collaboration between all concerned.

Several exhibitors will reveal new products and services. The exhibitions are designed as an integral part of the Conference and will relate to the discussions at regular sessions. Representatives of the manufacturing companies will be available to provide demonstrations and answer queries.

ICOGRADA is organising two sections of the Exhibition. The first of these will be a *Technical Development Exhibition* which will show examples of future technological developments, including the latest methods of applying holography through the laser beam; the working of colour television, and recent work in three-dimensional television. Also exhibited will be a selection of stereoscopic paintings and drawings arranged by Miss Margaret Benyon of the University of Nottingham.

Whilst the Royal Television Society of Great Britain are kindly lending John Logie Baird's first experimental television equipment made in 1926.

The second part of the ICOGRADA contribution will be a *Design Exhibition for the Learning Industry*. This will include books, book illustrations, film scripts, posters, leaflets and other relevant visual material.

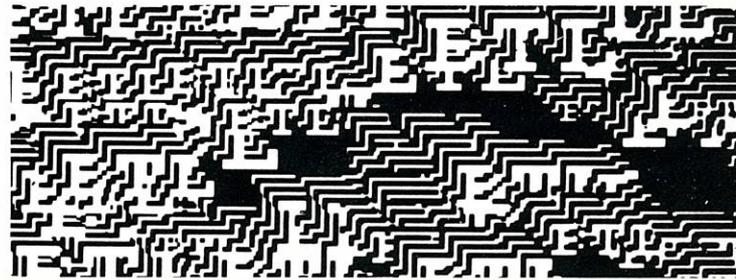
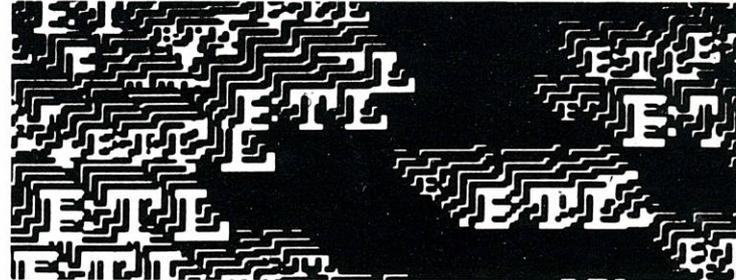
The remainder of the Exhibition will be grouped into various sections under the following headings;

- 1 Publishers with audio-visual departments
- 2 The electronic industry
- 3 The computer industry
- 4 Projection, photographic and optical equipment
- 5 Videotape and cassette loaded tape equipment
- 6 Educational films and television programmes and related audio-visual material
- 7 Educational and graphic services
- 8 Aids to the designer; new systems of colour transfers, instant lettering and printing methods

## Computer animated movies

K C Knowlton

*The illustration shows a sequence of six stills that were produced using the author's new computer language, EXPLØR. EXPLØR is designed for explicit patterns, logical operations, and randomness, and the author will discuss its applications during his speech at VisCom 71.*



Computer-produced movies are playing an increasing role in technical education and research. A number of computer films made at Bell Labs from 1963-71 can be cited as demonstrating the dynamic graphical power of computers and automatic film-recording equipment. Movies made by computer can be seen to be a significant adjunct to education and scientific investigation particularly in areas amenable to mathematical and logical treatment and where results can or should be visualised.

An electronic micro-film recorder can plot points and draw lines a million times faster than a human draughtsman. This machine and the electronic computer which controls it thus make feasible some kinds of movies which heretofore would have been prohibitively intricate, time-consuming and expensive to draw and film.

The microfilm recorder consists essentially of a display tube and a camera, and it understands only such simple instructions such as those for advancing the film, displaying a spot or character at specific co-ordinates, or drawing a straight line from one point to another. Though this

repertoire is simple, the machine can compose complicated pictures or series of pictures from a large number of basic elements; it can draw 10,000 to 100,000 points, lines or characters per second.

This film exposing device is therefore fast enough to turn out in a matter of seconds a television-quality image consisting of a fine mosaic of closely spaced dots, or fast enough to produce simple line drawings at rates of several frames per second. The important questions thus are not whether sufficiently detailed pictures can be produced quickly enough; they are, rather, whether sufficiently powerful and useful programming languages can be devised, and whether the resulting computation times are reasonable.

The answers to these questions are definitely yes: useful techniques can and have been developed, and computation times for most purposes are quite reasonable. In these filming projects, the computer has played two distinct roles: always that of a high-powered drafting machine, and sometimes, particularly important in scientific and mathematical areas, that of a calculating machine which determines the consequences of

mathematical and logical statements. In the latter role, the computer typically accepts a description of a hypothetical system and first determines the successive states of this system by following differential equations or other laws supplied; it then uses its drawing capabilities to render a series of views of the resulting events.

The computer and automatic film recorders, because of their high speeds of calculation and display, make feasible the production of some kinds of films that previously would have been far too expensive or difficult. Costs for the Bell Laboratories series of films have fallen in the range of 200 dollars to 2,000 dollars per minute; the cost of the corresponding hand-animated film would have been at least twice as much in the easier cases; in the other cases it would have been entirely impractical to undertake the job at all without a computer.

The computer offers these further advantages: there are fewer intermediaries and few delays between the producer and the film-making mechanism, thus tremendously speeding up the overall process and minimising communication problems.

This speed, ease and economy of computer animation permits the movie-maker to make several tries at a scene - producing a whole family of film clips - from which he chooses the most appealing result, a luxury never before possible.

The first computer film produced at Bell Laboratories, made in 1963 by E E Zajac, showed the result of the simulation of the motion of a communications satellite. The problem under study was the orientation and stabilisation of the satellite so that one end, and hence the antenna, was pointed constantly towards the earth. The orienting force was the gravity gradient torque - which results from one end of the elongated satellite being slightly closer to the earth - and stability was achieved by viscous-coupled gyros which damped out oscillatory motion. The simulation required numerical integration of complicated differential equations; results were presented as perspective drawings showing the position and orientation of the satellite and its gyros as a function of time.

## Differentiating images

Itsuo Sakane

*Itsuo Sakane's article was originally published in 'Graphic Design', Japan, edited by Masuru Katsumie.*

The Sumitomo pavilion at Expo 70 featured a computer which told fortunes on the basis of the shapes of people's faces. This was just a crowd-pulling attraction, but the way the computer took a televised face and worked out the angles of chin and forehead involved a complex technique. Up until now computers have been considered unsurpassed in digital computation but poor in pattern recognition. Now they are showing their ascendancy in this, too.

The system was developed by Professor Sakai Toshiyuki of Kyoto

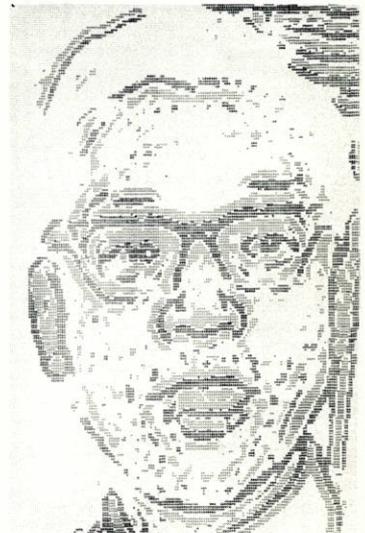
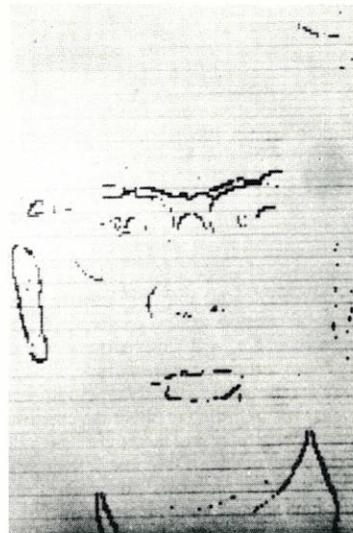
University, and is based on research into line extraction and pattern detection in photographs. The act of extracting lines from images is the first step that living eyes make in building pattern recognition. Differentiating the changes in the grey level. Figure 1 is an original photograph. Figure 2 shows the result of differentiating with a difference of one. Figure 3 shows how too great a difference leaves a meaningless image. The ideal outline would be somewhere between the two.

However, it is not always possible to produce a good outline with this process. So Professor Sakai thought of using a quadratic differential process instead of only a linear differential. This method requires that the average tonal value of a

of fine photo-electric elements, and between each of these there will be circuits to compute and compare the grey level data. Thus an image just like the one obtained by quadratic differential will be gained.

An actual eye probably also employs differential to detect movement. The reason a frog can see a moving insect so quickly is that its eye differentiates the temporal changes in the image. So in order to make the 'eyes' of cars more sensitive there will be a need to include a circuit for differentiating moving patterns.

Tsujiuchi. 'What is important is their purpose and how to use them'. In the same way the capacity of a computer to recognise patterns should not only lead to differentiating the image, but to deciding what patterns ought to be recognised.



University, and is based on research into line extraction and pattern detection in photographs. The act of extracting lines from images is the first step that living eyes make in building pattern recognition.

Extracting lines from a form can be called 'Differentiating Images', and whether it is done by a computer, a living being or a camera, the result is an outline picture of the object. The method Professor Sakai developed is as follows: the image, as shown on a Braun tube, is transferred onto a fine grid. The light and dark areas of the image are simplified into lines whose tonal value is one of eight grey levels. Next, the tone at one intersection on the grid is compared with the tone at each of the eight points which surround it and, according to a stated difference, only the lines between points of greater difference in tone than the stated one are allowed to remain. This is called linear differential, and every point is treated in this manner. The number of lines remaining can be varied by changing the value of the stated difference. For example, it can be set at one, two or three. The lines which make up the outlines are then left in the areas where the grey level differences are greatest. Mathematically speaking, this is

broader area around each point is computed, and compared with the surrounding areas. Figure 4 shows the result, and a comparison with the original shows that a fairly faithful image has been obtained.

The visual perception of living beings also emphasises drastic changes in the grey level, and this is called the mach effect. Insects and lower animals make most use of the effect, and it has been suggested that this is how they distinguish objects. In other words, an example of quadratic differential occurring in the process of visual perception.

The Japanese Mechanical Laboratory plans to improve car safety by installing 'eyes' similar to those of insects. Here again a kind of differential method will be necessary. The simplest method is to pass the signals received by a TV camera through a differential circuit with a condenser and a resistor. By only picking up drastic changes in the grey level, the circuit forms a linear differential image. However, an actual eye not only scans lines, but also grasps spatial relationships, so a compound system similar to insects' eyes is being planned. The image is received simultaneously by a group

The photographic techniques of line tone process and relief produce images similar to the differentiated photographs in the illustrations. A relief photograph is printed by placing the negative and positive film images together but slightly out of line, and it somewhat resembles linear differential. In the line tone process a slight gap is left between the negative and positive films, a light shines obliquely onto the set-up, and it is fully rotated once. This is the quadratic differential type.

The troublesome processes now undertaken by computers and electronic circuits have been used in photography for some time. Ten years ago Professor Tsujiuchi Junpei of the Tokyo Institute of Technology developed a method for producing differentiated photographs by using a phase filter which was darker in the centre. Professor Tsujiuchi's main work was attempting to re-photograph pictures which were originally taken out-of-focus, and bringing them into focus by adjustment of the filter system alone.

Differentiated photographs were only a by-product of his search. 'Anyone can create differentiated photographs', states Professor

## Symbol design in the GDR

Gerard Voigt

*Gerard Voigt is a graphic designer and the present Deputy President of the Verbund Bildende Kuenstler of the German Democratic Republic. He was a winner of the Trade Prize from the District of Halle and a winner of the Art Prize from the city of Halle.*

Everywhere in daily life we encounter marks, signs and symbols of various kinds, which have been produced as quality or representational symbols. Social organizations and institutions, publishing houses and theatres, manufacturers and trading companies, service enterprises and public transport organisations, they all use such marks and symbols for their identification purposes. Many signs have already such a strong hold on our consciousness that we associate a certain scale of values with these signs.

For example, the trade marks of our socialist economy symbolise at home and abroad the high level of our economic capacity, and consequently are witnesses of the achievements of our German Democratic Republic. To this great political and economic significance the artistic quality of the marks has to correspond. Although today many marks fulfil this requirement there are still a number of less successful marks representing our firms, despite the fact that sufficient experts are available who are able to design excellent marks.

The emblem of the Soviet Union, the Hammer and Sickle, unites in its timeless symbolic validity a

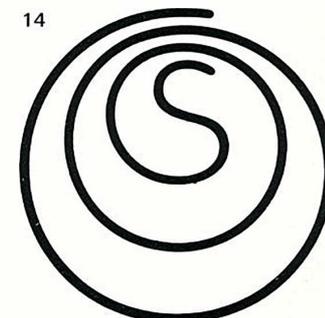
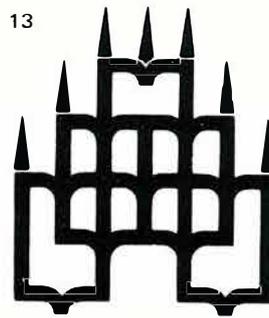
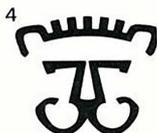
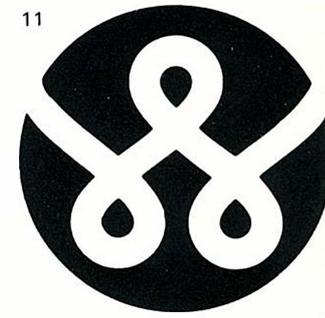
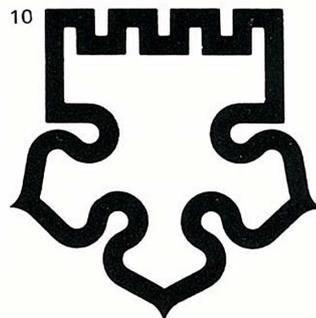
political message and a powerful artistic design. It is hardly necessary to mention another example demonstrating the value and significance of artistic design for political and general social effective and convincing symbols. May this also inspire our clients in State, Industry and Cultural sectors, as well as our artists, to ensure that in their appropriate fields our socialist society is represented by marks really worthy of it.

A close collaboration between clients, the Section Graphic Design and the Office for Inventions and Patents should make it possible to achieve this goal and to guarantee that in future only marks of outstanding quality will assist in representing our Republic both at home and abroad. Registering a mark at the Office for Inventions and Patents is by no means a guarantee of its artistic advertising quality. This must be secured beforehand by a successful draft submitted to the graphic designer. The Sektion Gebrauchsgrafik des Verbandes Bildender Kunstler Deutschlands (Section Graphic Design of the Association of Visual Artists - plastic and graphic arts of Germany) now organises on the occasion of its 6th Congress an

exhibition showing the best marks, signs and symbols which were created since the foundation of our socialist Republic twenty years ago. Through this our best designers of marks wish to come out of their anonymity and present to as many people as possible a comprehensive show of the variety in creative design of marks, and especially to inspire the responsible leaders of institutions and firms to consider this aspect and to examine their relevant marks as to their effectiveness and, if appropriate, to plan a new design, so that where this is not yet the case, entirely effective marks will be obtained.

- 1  
*Christoph Hulsenberg*  
Symbol for a plastic processing works, Berlin
- 2  
*Karl Amann*  
Symbol for the machine factory of W Ratsch, Karl-Marx-Stadt
- 3  
*Wolfgang Hoepfner*  
Symbol for a Saalfeld machine tool factory
- 4  
*Gunter Nitzsche*  
Symbol for the 'Lion' hotel

- 5  
*Harry Priess*  
Symbol for the Potsdam Water Board
- 6  
*Fritz Panndorf*  
Symbol for a Dresden packaging factory
- 7  
*Horst Wendt*  
Symbol for the Leipzig Fair
- 8  
*Heinz Kippnick*  
Symbol for the 'Casino' restaurant Schwerin
- 9  
*Heinz Kippnick*  
Symbol for a Mecklenburg bottling and tinned foods manufacturer
- 10  
*Herbert Pruget*  
Symbol for '900 years of Wartburg'
- 11  
*Fritz Deutschendorf*  
Symbol for a machine manufacturer
- 12  
*Eberhard Richter*  
Symbol for the Weaving Union Hohenstein-Ernstthal
- 13  
*Eberhard Heinicker*  
Symbol for the University of Rostock
- 14  
*Jurgen Forster*  
Symbol for a spring mattress manufacturer



## Two Belgian designers

### Jacques Richez

Born in Dieppe 1918, Jacques Richez has been established as a graphic designer in Brussels since 1944.

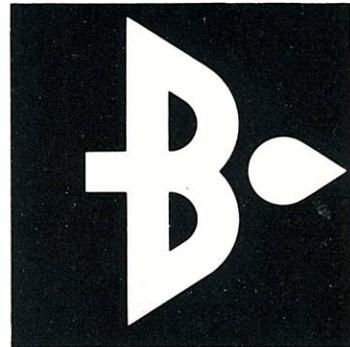
He is a Vice-President of the AGI, and a Member of the jury of the Ecole Nationale Supérieure d'Architecture et des Arts Visuels. He was a member of the jury of the Biennale Internationale de l'Affiche, Warsaw 1970 and the International Sugarmark competition London 1970.

He is the author of *L'Art graphique appliqué à la publicité*, and his work was represented at the exhibition '12 top European graphic designers', held in Japan.

He was responsible for the design of two large murals for the Belgian Pavilion, Osaka 70

He has exhibited at Brussels 1946, Louvre, Paris 1954, Design in Print, Edinburgh 1955, London 1955, Lausanne 1957, Institute of Graphic Arts, New York 1967, Warsaw and Sofia 1968, Brussels 1968, and Helsinki 1969.

He has been a contributor to a large number of magazines including, Graphis Annual, Gebrauchgraphik, Linea Grafica, Penrose Annual, and Graphic Design, Tokyo.



### Michel Olyff

Born in Antwerp 1927.

Studied at the Ecole Nationale Supérieure d'Architecture et des Arts Visuel, Brussels.

He has been in practice as a freelance designer since 1950.

He is a member of the Board of the Chambre Belge des Graphistes (CBG) and Union Professionnelle des Industrial Designers (UID).

He is also a member of AGI.

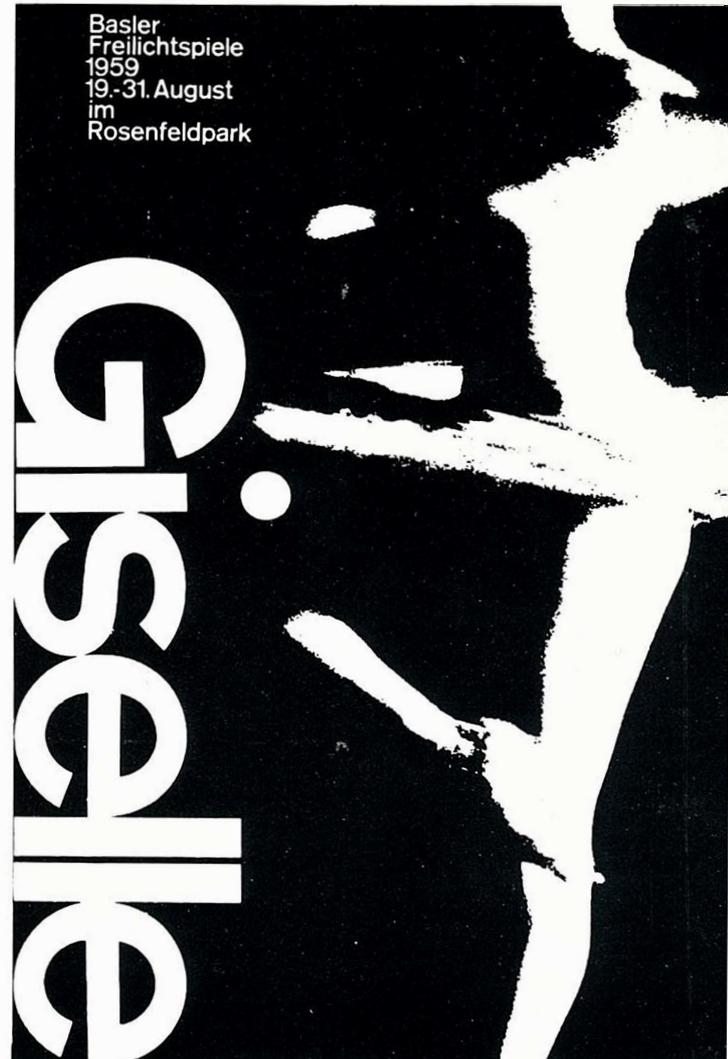
He is a consultant designer to a wide variety of industrial concerns.

At present he is in charge of the graphic programme for the Design Centre in Brussels and recently for the Radiodiffusion-Television Belge.



## Armin Hofmann

*Armin Hofmann is the first Honorary Fellow of the Society of Typographical Designers. An exhibition at the Central School of Art of his work was opened in January by Keith Murgatroyd, President of the Society which sponsored the show.*



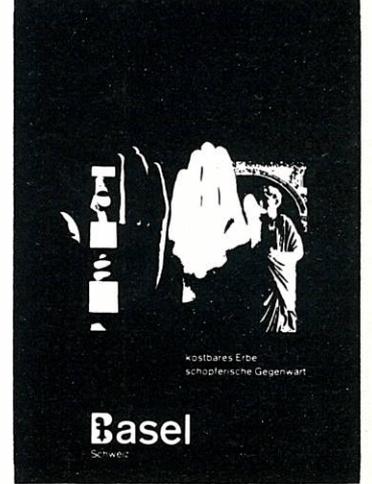
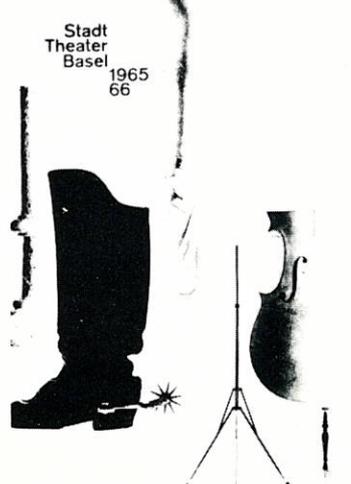
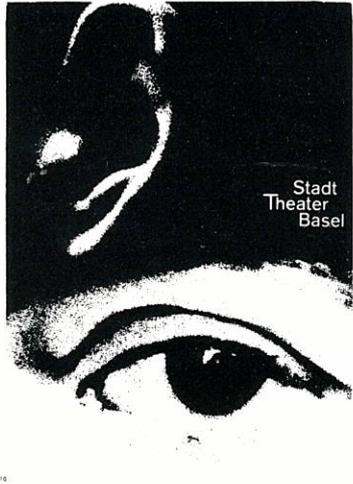
Armin Hofmann's singular quality as a designer stems from that rare combination of deep understanding of the formative aesthetic values of life and work, uncompromising honesty, patience, kindness and, most of all, an unshakeable confidence in human ability to grow larger than the problems that trouble us.

To some of us who have known him and could follow his development over the years, it has become evident without any doubt that Armin is a designer of great integrity. His dedication to beauty, simplicity and human responsibility - when compared with the servile attitudes of many talented designers who change style and philosophical motivations continuously to suit the changing profitable preferences of commercial competition - is a difference between truth and deception, conviction and

compromise. In a basic sense, it is the difference between humane order and social chaos.

Thus, Armin draws his strength as an artist and teacher from an inner balance which gives him confidence in his creative powers and enthusiasm to test them on every new problem large and small. Because of this balance he can detect and develop these qualities in other people as well - which makes him a natural teacher and inspiring leader to design students around the world.

If one tries to be aware of what is characteristic in Armin Hofmann's designs, the first impression that vibrates from them is a sense of concentrated power and a solid certainty of visual structuring. He seems to have an instinctive grasp of what is important, what should be included, and what to leave out. When Picasso said once that 'to know



what to leave out is Art', he identified what gives Armin Hofmann's work its distinction.

The consequences of this quality do and will further influence the art of optical communication wherever they are applicable. This original concept which Armin Hofmann has been continuously refining not only relates the social value of design to a communication environment that must be cleansed from its present pollution aspects, but represents an order of values which we - and especially our young people - must demand as a basic necessity in the reshaping of our environment.

Many of the difficulties and crises which an uncontrolled technological growth, a communication and a population explosion, and a largely antiquated economic order of priorities produce, are challenges that need a deeper understanding,

especially by communication designers. Short cuts to a faster understanding of a communication and a self-disciplinary commitment to its positive environmental values are the parameters within which artists and designers, as the creative avant-garde of society, should recognise their function.

Here Armin Hofmann's work on signs, lettering plaques, letter forms and symbols points towards the essence of the contributions which a socially mature designer can make in reducing the visual confusion and improving the cultural-inspirational values of our environment. By his work as an artist the value of his teaching is increased. As an educator of a new designer generation he employs his creative insight to direct a strategy of education that expands the humane basis on which our progressive development largely depends.

## Design and science

by Paul Kenny

Paul Kenny was, until recently, teaching at the Faculty of Creative Arts at San Francisco State College.

His article is devoted to the search for a possible new visual language utilising the research of human physiology and experiments in visual communication.

Are 'visual' people capable of abstract reasoning? Not, it would seem, by the logical standards of science. Any idea of *thought* which is contrary to our idea of *language* is difficult even to describe. Yet the evidence is available to suggest the feasibility of a *visuals-based conceptual system* as a general development in visual design.

It is almost axiomatic in modern science that thinking is a functional extension of language. The idea is deeply imbedded in scientific literature and methodology and despite considerable evidence to the contrary, it persists. With all due respect to achievement, it may be that language-bound theory is obscuring potential development from other organizational bases, other points of view.

In recent years a dynamic graphic communications industry has brought the western world to a high level of visual sophistication; this and the capacity of graphic computers to make imagery available for complex and rapid operations open new potentials reaching far beyond the present communications function. Visual design is not language, nor is it 'logical' in the language sense. But it has structural capacities now that were never accessible before.

*Language* is tremendously flexible yet capable of seemingly endless varieties of structure. It provides a medium for all shades of logic, opinion, distinction and emotion, casual and specialised. Specialised, it brings the blessings of sweet reason; but it always comes, like most blessings, mixed:

All of us have the experience of thoughts and ideas growing in our minds; for example, relating to our own fields of study. Yet we all know how difficult it can be to state the exact instant when an idea was born in us. Like Topsy, it 'just grow'd'. We are all aware that some idea is beginning to take shape, but for some time it may be vague and misty, seen dimly through the depths of 'feeling', 'intuition'; we are in acute mental discomfort until the idea is expressed in words, formulae or diagrams, that is, until it is *formulated*. The only way to pin down a thought before it can slip away and fly out of the window, is to jump on it with verbal feet, though such language may be inadequate. When the thought has such form and substance, it may be communicated and discussed with others.

We cannot necessarily put all our mental experience into (existing) words. Many thoughts and experiences are extremely difficult to express so. But language gives us undoubted ability to organise thoughts, for collecting, sorting,

relating, and recording ideas. We pay a price with the possession of language, for we become prone to verbal habits. It is only too easy to use clichés, proverbs, and slogans as a substitute for reasoned statements; to accept the smooth persuasion of well-sounding humbug; to misunderstand a difficult passage in a book by misreading into it our own pre-conceived ideas. The broad pastures of our minds are crisscrossed by pathways of verbal habit. (1)

Is language the only basis for organised thought? The art psychologist Rudolph Arnheim makes an authoritative case, in his VISUAL THINKING, that *perceptual* dynamics are reflected in abstract thought, and that the comparison of images related by rules of abstraction is basic to most language reasoning. The fact that these functions are converted into language gives them its characteristics. But any reasoning, he points out, involves a variety of functions in interaction. (2)

What *sort* of functions? On the experimental side, the neurophysiologist W Grey Walter writes that the 10cps *alpha* waves recorded on the electro-encephalograph (EEG) are related to visual activity. The pattern is most regular when eyes are closed and the mind blank, rather like an idling engine. During visual activity the rhythms vanish and vary in complex patterns which sweep 'like a search-light' across the brain, disregarding physical barriers. In some subjects the 'search-light' sweeps over to the non-dominant hemisphere of the cerebrum while a sum is being done, then returns to the language while the answer is given.

In one experiment subjects were asked to close their eyes and think of a painted cube. They were to imagine it cut in half, then cut again at right angles, then across the third plane. They were then asked to tell, without opening their eyes, 'How many unpainted sides have been disclosed by the orthogonal cuts?' EEG recordings were made during calculations. Later the subjects were asked what colour the cube had been. One distinct group said that the colour was not stated in the question and that they saw none, or that it was irrelevant. Others 'saw' red and blue: when asked for more details they reported impressions such as sawdust falling, the sound and image of a saw cutting, and the smell of wood.

The amount of imagery reported by each subject was correlated with his EEG readings. (There was no significant correlation with correct answers). Subjects reporting vivid imagery had high *alpha* activity and those reporting no imagery had none.

Subsequent questioning by Anne

Rowe, grouped the 'visual' subjects in practical and experimental occupations and the 'non-visuals' in theoretical and abstract. The two distinctive groups could not get along with each other. They showed serious misunderstandings 'at the highest and most subtle level' that the author said he would like to see every United Nations delegate compelled to wear a badge showing which 'type' he was so that all could know why they were not communicating.

Tests with identical twins showed identical *alpha* patterns, which means that the disposition toward *visuality* or non-*visuality* is probably genetic (3) Unfortunately, nothing was said about whether or not the subjects could draw.

This would still seem to leave theoretical and abstract thinking to the non-visual group. But in other studies, statements of creative scientists were collected describing their most insightful reasoning. Many reported vivid *imagery* in association with inspiration. Einstein described a sort of 'motor-perceptual' process which then had to be translated 'down' into language and mathematics. The mathematician Poincare said that his greatest ideas came as images (one as a snake with its tail in its mouth, rolling downhill) and that, by remembering the images he could fix the idea in all its complexity and wait to write it out at some more convenient time.

Reasoning on this rare and extraordinary level of abstraction and complexity would seem to defy formal description, at least in terms of current theoretical concepts. Approaching the problem may provoke considerable unease, as when the theoretical physicist David Bohm addressed a conference of biological theorists and urged the importance of finding new language to describe the notion of *order*, which

...is evidently more fundamental than other notions, such as for example, that of relationships and classes, which is now generally regarded as basic in mathematics.

...To carry out this kind of inquiry adequately we need a language that describes order and structure properly. In my view we do not at present have such a language. Evidently the common language is inadequate, because its terms referring to order are extremely vague and confused...

I do not think existing forms of mathematics are really adequate for this purpose either. To be sure something is being done in *topology* and in information theory. But in both subjects, what is absent is an adequate notion of order... (4)

What are visual people to make of it all? If the logical groups are not looking after our interests we had best - at least briefly - examine our own potentials. One basic requirement for an adequate notion of order is the ability to review large categories. It is one thing to be able to list great numbers of items and quite another to hold them in mind and distinguish them as categories. Psychologist Norman Haber, in a *Scientific American* article on experiments with pictorial and linguistic memory (in hopes of improving the limited range of the latter) found that '...the capacity of memory for *pictures* may be unlimited... Recognition is based on some type of representation in memory that is maintained without labels, words, names or the need for rehearsal... Since the pictures are not stored in words they cannot be recalled in words either, at least not in much detail'. (5) The researchers were trying to find a way to attach words or tags onto images so they could be recalled in words.

Now, one may assume that the mind's possibly unlimited capacity for pictorial memory is not infinitely so, but rather in comparison with linguistic memory, and that the translation from pictorial identity to word descriptions will lose not only detail (try describing a picture) but also the equivalent, almost 'unlimited' bases for category comparison.

Further, Michael Gazzaniga, another behavioural psychologist, describes experiments with brain-damaged persons who have lost the physical communications links between the two hemispheres of the cerebrum. He found that while language-based skills (writing, word association, speech) are isolated on the dominant side, the capacity for *motor-visual synthesis* (as in arranging blocks to match a picture design and of drawing a cube in three dimensions) is isolated on the non-dominant side. (6)

Hypothesis:

Theoretical development is self-oriented to its medium-based systematics to a degree which inhibits development from other structural bases, one of which is pictographic and, for the existing language-based conceptual system, it is an inductive probability that there exists a parallel but different structure capable of direct, abstract visual synthesis and extraordinary memory capacity.

The value of such a theoretical development is that it would offer new conceptual latitude in a number of broad and inter-acting fields:

*Science and Mathematics* - which need a conceptual system based upon complex, inter-relateable structures (unavailable in the linguistic capacity for form) for conceiving or holding in mind complex hierarchies of order, with redundancy organised in perceptuo-spatial order rather than on a linear one. (see *Heuristics* article next issue)

*Education* - the same, conceptual devices, but with growth potentials; e.g., teaching machines which 'learn' from students rather than the other way around.

*Information Retrieval* - which needs direct reference to basic, original information, much of which is recorded analogically, rather than through the obsolescence-prone verbal systems for transcription and selection of data, wherein detail is lost for the purposes of later re-synthesis.

*International Communication* through the study of invariants in pattern recognition, such as ICOGRADA's work in semiotics.

*Emerging Nations* - by helping development agencies such as UNESCO provide whole communications and educational concepts which, like technologies, should not be second-hand. (For we are all emerging, into a world-wide culture in which development is unequal but the problems are universal. Obsolescence costs dearly whether we keep it or pass it along.)

*Communications* - design of new media and algorithms in the production sense.

In the human sciences, prediction is a big problem. Statistical method, despite meticulous sampling and projection, fails to disclose the future of human behaviour. The mathematician David Hawkins makes a very simple and enlightening remark on this issue: we cannot predict that which we have not yet decided to do; that which defies prediction is what we have not made up our minds about. (7) What are visual designers going to do? Why, design design!

### References

1 Cherry, Colin, *On Human Communication: a review, a survey, and a criticism.*, Cambridge: The MIT Press, 1966.

(For one of the most lucid brief discussions of language, see chapters 3, 6 and 7)

2 Arnheim, Rudolph, *Visual Thinking*, Berkeley: University of California Press, 1969

3 Walter, W Grey, *The Social Organ, Impact of Science on Society*, July 1968 (UNESCO Publications)

4 Bohm, David, *Some thoughts on the Notation of Order*, in *Towards a Theoretical Biology, vol 2: Sketches*, C H Waddington, ed., Edinburgh: The University Press, 1969.

5 Haber, Ralph Norman, *How we Remember What we See*, in *Scientific American*, May, 1970

6 Gazzaniga, Michael, *The Split Brain in Man*, in *Scientific American*, August, 1967

7 Hawkins, David, *The Language of Nature*, New York: W H Freeman, 1964.

Margaret Benyon, of the Department of Fine Art, Nottingham University, is one of the VisCom 71 speakers. Here she prepares to shine a laser beam on one of her holograms. It reveals a three-dimensional image through the apparently blank plate. To imprint the image, the photosensitive plate is placed behind an object and two laser beams 'photograph' it. The image is imprinted by the interference of wave-fronts from the object. The plate is then developed and fixed, and will reveal the object in apparent 3-D when a beam is thrown onto the plate at exactly the same angle as the original beams.

The hologram itself gives no clue to the image it will display when illuminated by the coherent light of the laser. The dark rings visible to the naked eye are only produced by particles of dust, and there is no obvious relation between the interference patterns on the hologram and the image which can be produced. For instance, a negative reproduction of the hologram will still produce a positive image. In addition, a small fragment of a hologram still produces a complete image, though with some loss of definition, for light-waves from every part of the object are imprinted on each part of the hologram. But even from a complete hologram, the object-image created will be speckled in a way reminiscent of a coarse half-tone photographic reproduction. The laser light forms a sequence of spherical wave-fronts which are not just jumbled as in ordinary light but produce specifically light or dark points.

However, the artistic possibilities of holograms are great: it is possible to construct imaginary 3-D objects as well as to re-construct real ones in their absence, and with three laser beams it is possible to make coloured holograms.



**ICOGRADA exhibition  
in Prague**

*Top photograph shows, from left to right, John Halas, Marijke Singer and Stanislav Kovar at the 'Pro Bono Publico' Exhibition in Prague. Photograph by Martin Pycha.*

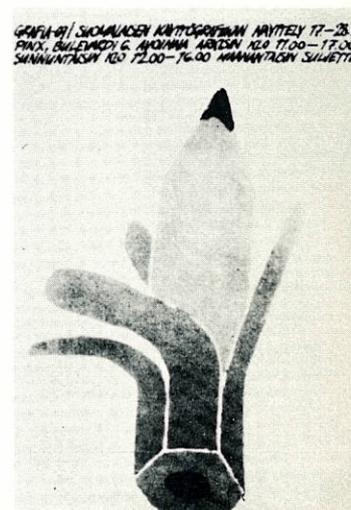
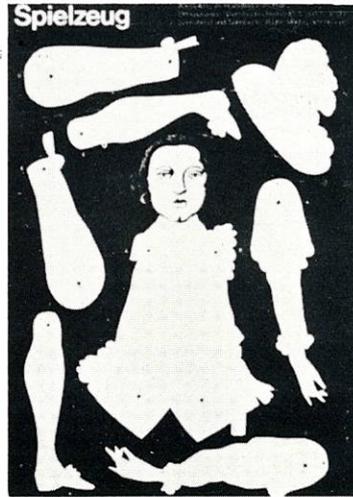
*Photographs below show a selection of some of the posters which were included in the Exhibition.*

An ICOGRADA exhibition entitled *Pro Bono Publico* was held in Prague recently. It was officially opened to the public on the 16th of February 1971 and remained on view for a period of two months.

The exhibition was designed and organised by Stanislav Kovar who is a Vice-President of ICOGRADA. Mr Kovar succeeded in gathering together over three hundred and fifty posters representing the work of fourteen of the Council's member associations.

Throughout the time that it was on display, the exhibition attracted a large and enthusiastic audience, not only from specialists, but also from the general public of Prague.

During a recent Board Meeting held in Prague, John Hallas, the President of ICOGRADA and Marijke Singer, the Secretary General, took time off to visit the exhibition and to congratulate Stanislav Kovar for his efforts on behalf of the Council.



## Audio-visual hardware

*The possibilities in new technical developments of mass-communication can always be of interest to graphic designers. As the introduction of off-set litho printing has extended the powers of designers whose work is in printing, so also the development of new machines and facilities for displaying moving pictures can extend the powers of designers who are moving into the audio-visual field.*

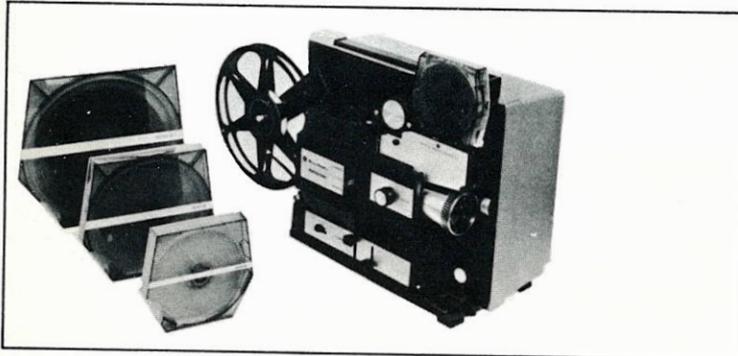
*On this page we show some items of hardware which may help to make audio-visual communication easier in the classroom and in every situation where good audio-visual design is needed.*



### TelDec Video Discs

The TelDec (Decca-AEG Telefunken) Video Disc is a medium for producing good quality television pictures with sound while being easy to store, cheap to buy, and convenient to use. The discs are made of thin, flexible PVC foil which will withstand 1000 plays without loss of quality. The discs are one-sided, and because of the sensitivity of the material and the 'pressure pick-up' they can produce a 6 to 7 minute programme from an 8 inch disc, and a 15 minute programme from a 12 inch disc. An autochange mechanism is being developed which will allow two hours' playing time from a stack of discs 5mm thick. The Video Disc Player is basically similar to a conventional record player. The disc is rotated and a pick-up arm responds to the variations in the

surface and converts them into sound and vision output. In order to accommodate all the information necessary for video reproduction, the disc revolves at 1500rpm and it transmits one television picture every revolution (25 frames per second). By pushing a button it is possible to repeat a frame as often as desired, though true slow motion is not possible. The system is designed to take colour pictures, and colour discs are now being developed, which will still produce good quality monochrome pictures on black and white TV sets. To view the picture, the Video Disc Player is plugged into the aerial socket of any television. When they go into mass-production in about 18 months time, the Players will probably cost from £50 to £100. The discs will be the same price as an LP record;



### Bell and Howell Model 459

This is the first projector to use automatic 8mm cassette loading. Auto 8 frees the user from the need to thread the film (Super 8 or standard 8) or even touch the spool on which it is wound. Threading is fully automatic - in response to pushing a lever - and the film is rapidly wound into the cassette at the end of each showing. Cassettes are made in four sizes: 50ft, 100ft, 200ft, and 400ft. The smallest is for films of up to four minutes in length (the typical 'single concept' film);

the largest provides a running time of up to half an hour. Other features of the 459 include still-picture and reverse projection.



### Philips Video Cassette Recorder Model N 1500

The Philips Video Cassette recording system provides both recording and playback and promises to be the system to be adopted in the European market.

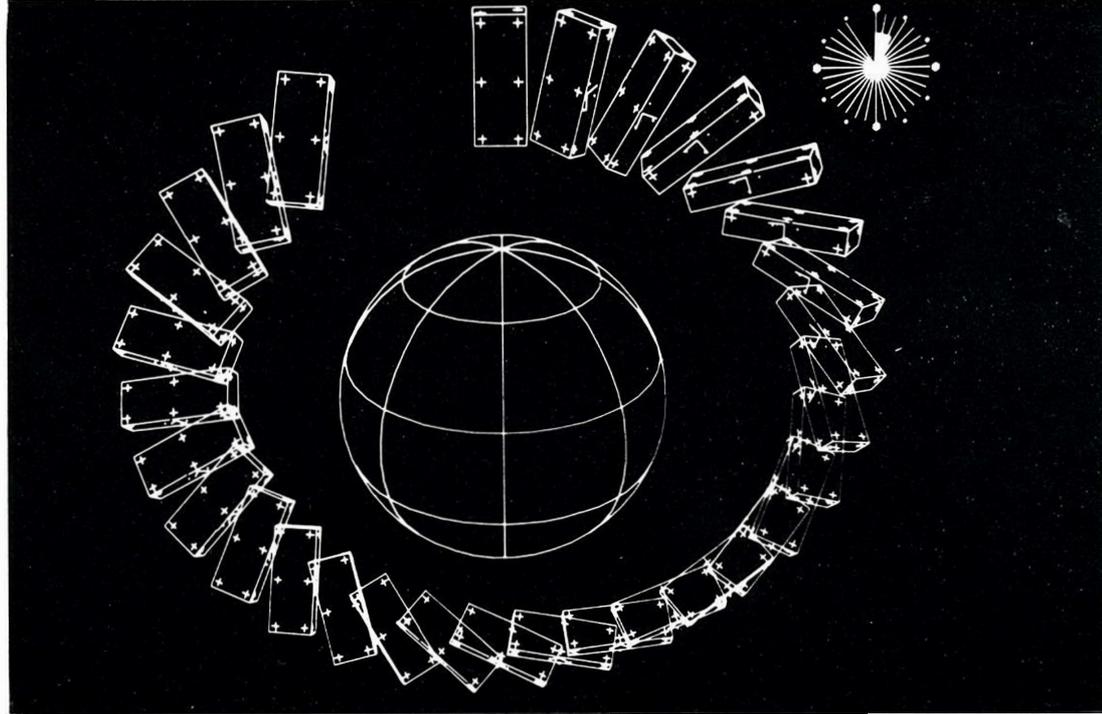
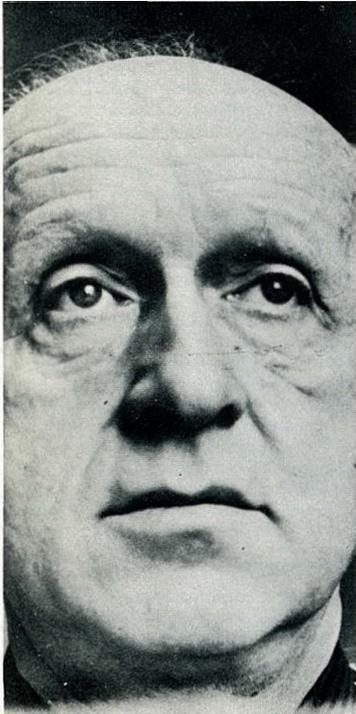


### Technicolor Models 1000A and 1000B

The Technicolor 1000A is a super 8mm optical sound projector with push-button operation and cartridge loading. The 1000B also incorporates a variable intensity lamp by a 'hi-lo' switch, and heavy duty construction. Each projector weighs 21 pounds, and takes Technicolor sound film cartridges in two sizes, 11 minutes and 29 minutes.

# Definition of Cybernetic

Nicolas Schoffer



Nicolas Schoffer defines cybernetics as follows: The cybernetic is the understanding of the life process and of maintaining all phenomena in balance. It is the science of efficiency and government, the organized control of all communication, the understanding of the rule of change to achieve a perfect harmony in all phenomena, organic, physical or aesthetic.

Nicolas Schoffer quotes Paul Valery: 'Two Mortal dangers menace humanity: order and disorder'. Cybernetics are nothing but a series of disruptions and realignments.

Nicolas Schoffer was much influenced by the Paris Fair and, since 1936, by the air displays of Le Bourget. He was fascinated by the new forms produced by technology. For weeks on end he watched the admirably successful forms of aeroplanes spiralling in space. At the Paris Fair he watched the machines, the stands of electronics and the oscillographs, which obsessed him. The speed of our times became visible.

All this has changed his conception of art, for it was absurd that all this evolution could be solely technological and scientific when, on the artistic plane, all was stationary. It was evident that art was falling behind.

To the question posed by the Express: 'What is cybernetic art?' he replied that he never used those words, for there was no such thing

as cybernetic art. He used cybernetic concepts for a system contingent on different combinations and aesthetic variables, which he found the most flexible and best adapted to the social environment.

Then Nicolas Schoffer gave a description and an explanation of his Light Tower which is to be constructed in Paris at La Defense in 1973: 'It will be 322 metres high...It will have an open structure with 260 mirrors fixed to 114 axes, between 200 parallel arms, capable of turning in four directions, at different speeds. It will have 3,000 projectors installed inside the skeleton, in groups of ten; also beams of light, some near the top, projecting rays two or three kilometres into the sky. There will also be smoke from gas batteries.

The tower will have a function in accord with its urban environment, that is to say it will receive all information concerning the activities of the urban ensemble that is Paris. These facts will determine a constantly fluctuating pulse which will signal, perhaps for the first time in the history of a town, the level of energy or relaxation of its population. All this, with the help of generators, will be translated into aesthetic terms: the programming of 5,000 parameters (random characteristics of a system, which define the state of a system) will produce movements to change the colour, the rhythm and the speed of the mirrors and the lights.

The material of which the tower is constructed (steel) will not be of significance; it will be the interior, the air, the space and the light that will matter'.

His ambition is to suppress the object: the Light Tower itself is not important; its significance is as a support for its programmes. The dream of Nicolas Schoffer is to devise a technical means to disseminate such programmes without the need of a tower for support.

He goes as far as to predict that, in the course artistic evolution, the created *object* will be suppressed altogether, and that man will *gain the means to communicate on the level of each individual mind*.

Nicolas Schoffer has always been searching for a means to socialise art (he speaks of this in his book 'The Cybernetic City'); and, for this, two things are needed: one, to find a right scale for a society, and the other, to find industrial methods that will produce low costs.

He has said, of his cybernetic city, that the cybernetic process must be used because, with a constantly increasing population, all today's methods are obsolete.

The cybernetic city envisaged by him will actually be a combination of three towns:

1. The City of Work, which is a vertical town (because this dimension

is stimulating to intellectual and physical activity). It will be two kilometres high.

2. The City of Rest, composed of small bungalows sited twenty or thirty metres above the ground is adaptable to any kind of terrain and the isolation helps relaxation and provides purer air.

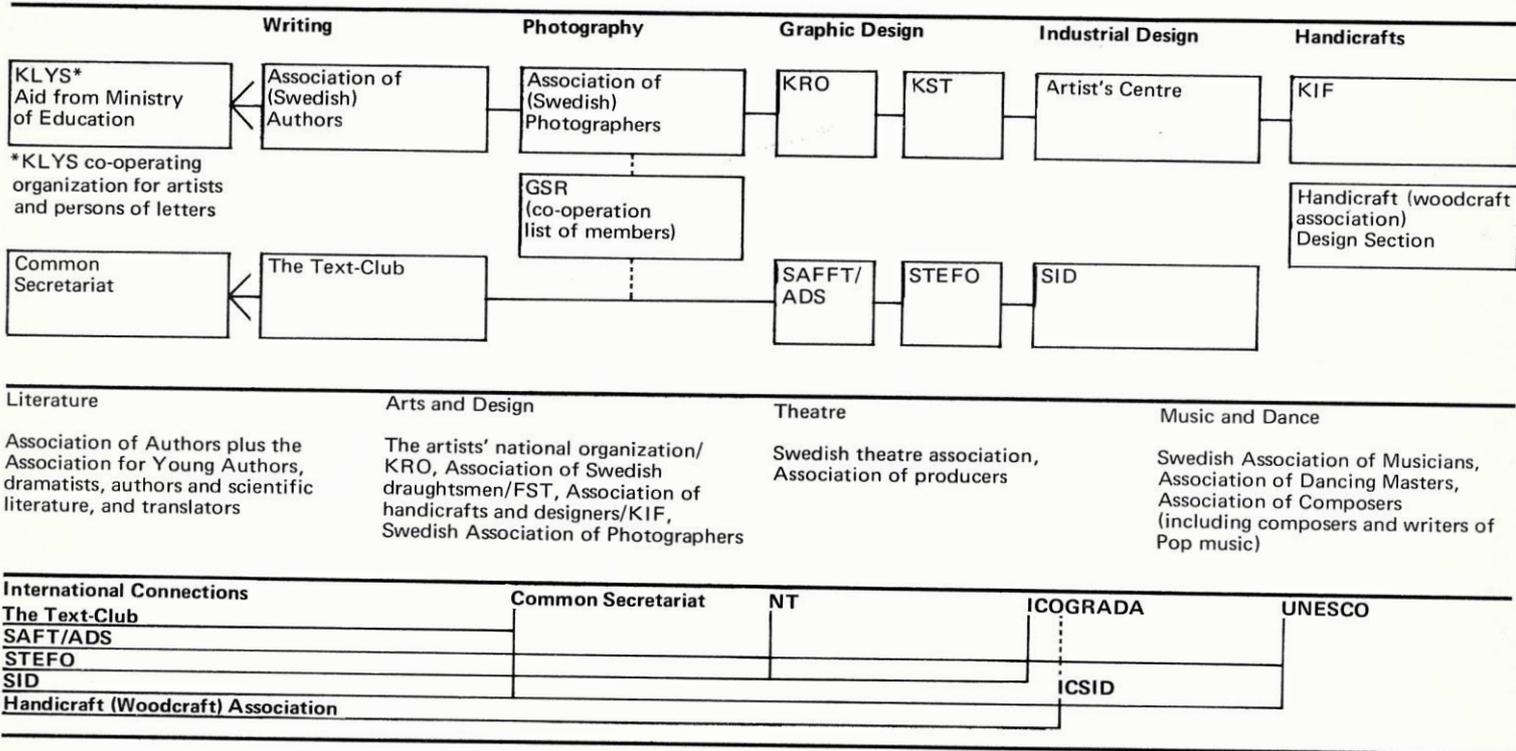
3. The City of Leisure, spiritual, intellectual, aesthetic, and a centre for erotic pleasure. Here is what he says: 'This centre will be an immense area in the form of a woman's breast, to which one will mount by escalators programmed with colours, scents and pleasant sounds. If possible, one will introduce weightlessness, a condition favourable to sexual stimulation. One will also be able to dance there and distract oneself in many ways'.

There is only one condition for the realization of such a project: science and technology must be made to serve the needs of art and aesthetics.

In Nicolas Schoffer's opinion, in the degree to which man improves his technical apparatus, so will he improve his own behaviour, his life and even his own nature.

# Design organisations in Sweden

Claes Folkeson



The largest and fastest growing association within our trade is called KLYS, the co-operating organisation of persons within the arts and persons of letters. Klys is the beginning of an all-embracing trade co-operation within the cultural sector. It is supported by TCO.

Klys consists of a quite varied collection of associations, of which some are affiliated to TCO (ie the Theatre Association), or to LO (=TUC) (ie Association of Musicians), or associations with a professional leaning, like KRO and the Association of Authors.

Klys has a wide channel open to the Department of Education, and affects successfully the cultural politics pursued by the Government.

At present, the secretariat of Klys has its premises in the TCO building, where it also has its legal advisers. Very advanced plans do exist, however, concerning all employed by Klys in a special 'Konstens hus' (House of the Arts) at Mosebacke in Soder, Stockholm. Such an arrangement should give Klys very good resources.

As is apparent from the diagram, the associations affiliated to Klys cover, amongst others, the fields of text and design.

Within the same field, but without any type of co-operation with Klys, are a further 4 to 5 organisations. Why? Many different causes have, of course, played their part in this

development. A little sarcastic, perhaps, but to use a few quotations from the childhood-days of Klys: 'A much too commercial attitude' (about SAFFT), 'FST is already representing the draughtsmen' (about STEFO), or 'SID is too exclusive'. And so Klys grew in its own way, and the others in theirs. Without calling it compensation, SAFFT/ADS, STEFO and SID have developed good international connections. But ought not at least STEFO, which from the very beginning displayed a clear trade-orientated attitude, to belong among the Klys-associations? Does not the lower part of the diagram indicate an unfortunate development for the 'associations on the outside?' Well, say left behind then, if that sounds better.

According to my opinion there are far more interesting aspects than this. Compared with us, Klys has very good resources at its disposal. And political insight.

Within Textklubben, SAFFT/ADS, STEFO and SID - who are now seriously discussing establishing a common secretariat, there is a good common denominator which should be preserved. And which does not exist in Klys.

The members of 'our' associations are virtually solely occupied in producing originals for mass-production. Or mass-communication if this sounds better. Or working as bespoke tailors.

The purchasers of originals for mass-production do, in principle, look the same, whether it concerns objects with two or three dimensions. In all cases the cost of the services are calculated into the product. The subjective setting of prices concerning unique objects, like for example a painting, shows that 'our' members have enormous advantages compared to those of KRO.

In order to manage the economy the society, the technical development, the industry, etc., demand specialists who can quickly grasp and understand the matter. There is, therefore, every reason to develop the business of being an expert on originals for mass-production. And to help members to sell their special services.

Try to accept that our education has derived from the processing of different materials (paper, metal, textiles, etc.) and look instead on the buying side. Large parts of the members of Klys-associations are subjected to subjective evaluations. Our members normally work out their costs.

No, I can't agree that we have been left behind.

On the left of the diagram is Svenska Slöjdföreningen (Swedish Association of Woodworkers), forum of ideas and debates since 1845. With increased aid and support from Government and local authorities it is the idea to establish a centre for, among other things,

discussion and research into mass-produced goods. The exhibition side is also to be developed. This centre is also to serve as a centre of contact between designer, producers and consumers.

The idea of an institution which is directly engaged in the development of designs, and which in a tangible manner looks after contacts between designers and industry, is apparently still some way off.



## Art in Movement

new directions in animation

by John Halas

in collaboration with Roger Manvell

This important book examines in detail the many fields in which animation is today playing an increasingly important part, and suggests ways in which the latest technical facilities of the motion picture can be applied both to the development of graphic art and the art of film itself. Accompanying the text is an immensely varied selection of pictures, illustrating the work of leading artists throughout the world. Over 370 illustrations, £5.25

## Creativity in Communications

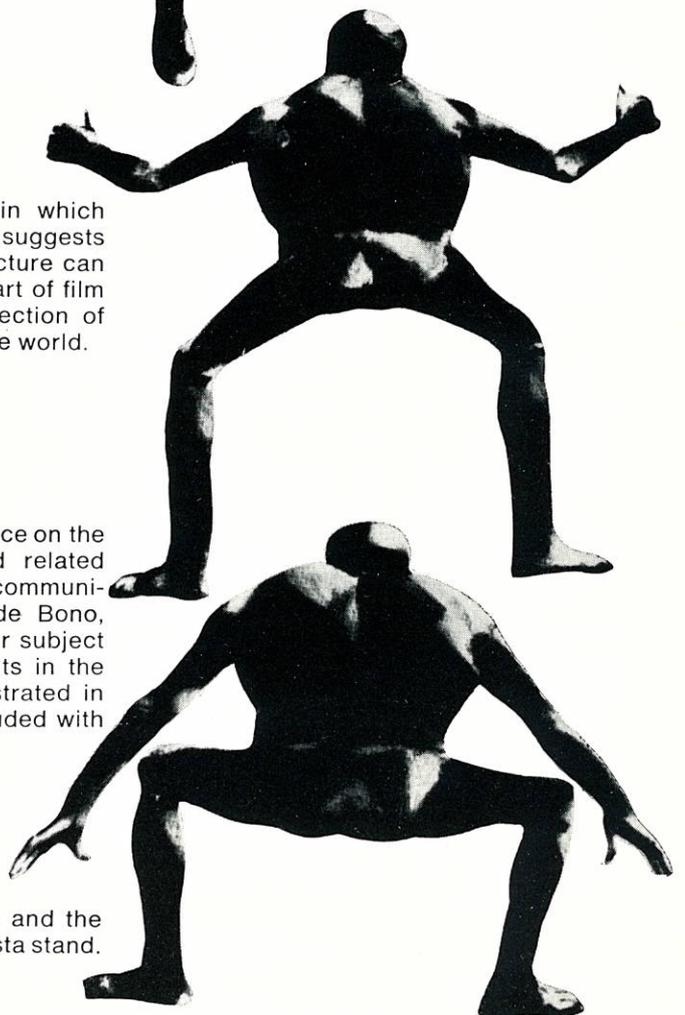
edited by Robert Adams

A distillation of the contributions to an international conference on the subject of creativity in advertising, sales promotion, and related subjects. More than twenty distinguished specialists in the communications business are represented – including Dr Edward de Bono, Colin Forbes, Robert Adams, and David Bernstein – and their subject matter ranges from lateral thinking to the creative elements in the work of both client and agency. The book is lavishly illustrated in vision, and in sound: a record, *Understanding Sound*, is included with the book.

Over 260 illustrations, £6.30

## Studio Vista

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## ICOGRADA

The International Council of Graphic Design Associations was founded in London in April 1963. Its headquarters are in Amsterdam. ICOGRADA is an association of independent Member Associations. Membership is open to societies of professional graphic designers and organisations concerned with the training of designers and/or the raising of graphic design standards. Member associations are elected at the biennial General Assembly, which elects also the Executive Board, determines policy and over-all activities and agrees financial arrangements.

The aims of ICOGRADA are:

- 1  
to raise internationally the standards of graphic design and professional practice by all practicable means.
- 2  
to collect and exchange information on professional, educational and technical matters.
- 3  
to improve graphic design training and to assist the interchange between countries of graphic designers, teachers and students.
- 4  
to organise exhibitions, international assemblies, congresses and symposia and publish documentation on graphic design and visual communications technology, including a News Bulletin.
- 5  
to act as an international forum for co-operation and exchange of views between designers, organisations representing professionals from allied and other fields and those of commerce and industry.
- 6  
to encourage the better use of graphic design and visual communication as a means to improve understanding between people everywhere.