PL/I FOR GRAPHIC ART
KARL SOOP

For many years the graphics programmer has had to spend much frustrating energy on making the purely graphic-technical parts of his program work. Anybody who used a subroutine package knows what it means to code endless parameter lists, trying to remember all the seemingly irrelevant and impossibly-named invocations. The languages have often been fairly low-level, such as FORTRAN, and lent themselves badly to graphics in a number of ways. In industrial applications the programming and testing effort has meant a high cost threshold; in university environments where programming is considered cheap it has meant less; but for the computer artist, the labour with graphics has meant an unavoidable and frustrating corvée.

These problems are intended to disappear with GRAPL/I, the new graphic superset of PL/I which is available (as a so-called PRPQ from IBM) since early 1972. This language has user-friendliness as its prime objective, although as reported at the ONLINE-72 conference in September, most of the improved programming ease comes through PL/I itself, which is shown to be vastly superior to other host languages. These facts should be especially relevant to computer art engineers.

When the great flurry over the Conway Life Game occurred last year in Scientific American, the Mathematical Games column was bombarded with letters from readers who had solved some of the games with various computer programs, some of which used interactive graphics. It is easy to find an algorithm for the game moves, but the graphic part of the program may be more or less tedious. I contend that my solution, using GRAPL/I, although completely non-original in other respects, was the only one that was programmed in less than 15 minutes, again largely thanks to pure PL/I elements in the language (the source code is only 70 statements, of which 20 graphic; this includes a menu for various selections).

Another common occupation of the gamesman is to construct various objects in four or higher dimensions, and then look at them in two-dimensional projection as they rotate in their hyperspace. There are two snags here: First one must know the coordinates of all vertices in one position of the object; then one must decide the order in which to display the edges without having to go back on an edge (where possible). The answer to the first one is found in the book "Regular Polytopes" by Coxeter.

The initial coordinates are stored as constants in an array, and in another array one stores the required order of display after giving each vertex a number. For the particularly simple case of a four-dimensional unit cube (tessaract), the coordinates equal the four bits of the vertex number itself (0—15) and the program may look like this:

```
DECLARE (UA, UB) (4) FLOAT, IX(4) INIT (1,2,4,8)
        STATIC FIXED BIN, IOR(33) STATIC FIXED
        BIN INIT (0,1,5,13,9,1,3,7,15,11,3,2,6,14,10,2,
        0,4,5,7,6,4,12,13,15,14,12,8,9,11,10,8,0);
DO L = 1 TO 50;              /* number of rotation steps */
REBUILD (TESSARACT);
UA(1) = COS (ALFA); UA(2), UB(1) = SIN (ALFA);
                             /* form unity vectors */
UA(3) = COS (BETA); UB(2)=-UA(1);
UA(4), UB(3) = SIN (BETA); UB(4)=-UA(3);
DO K = 1 TO 33;              /* go thru vertices */
  CA = SUM(UA * (IX&IOR (K))); CB = SUM (UB *
  (IX&IOR (K)));
  BUILD (TESSARACT) POINT(COMPLEX  (CA,CB)* 100 +
  375+475 I);
END;
DISPLAY GRAPH (TESSARACT):
AL = AL + .10; BE = BE + .14;
DELAY (100); END;
```

Note that it is easier to rotate the space itself than the object. The "space" is simply the two orthonormal vectors on which the object is projected by the dot product (SUM function). The vectors are arbitrarily chosen as

$$(\cos\alpha, \sin\alpha, \cos\beta, \sin\beta)/\sqrt{2}$$
$$(\sin\alpha, -\cos\alpha, \sin\beta, -\cos\beta)/\sqrt{2}$$

where the root is swallowed by the scale factor 100 raster units on the screen. The starting values of α,β may be given e.g. by the lightpen. Note also that the projection itself is carried out by only two statements (CA, CB), but that one might even further contract the code by eliminating the vertex loop and specify a complex array expression in the BUILD statement. Even if code is repeated within implied loops this way, there is no efficiency degradation as the compiler recognises this fact and places the code outside. Anyway the art programmer should not be concerned with such trivia.

Four-dimensional perspective requires only three more statements. One can also easily project two stereoscopic views of the object, beside each other on the screen, and enjoy a three-dimensional panorama through a simple optical arrangement. This I have not done yet, but it promises to be an odd sight, not easily created by non-computer means.

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AESTHETIC PARAGRAPHS
GARY WILLIAM SMITH

In PAGE 22 I put forth a statement (Computer Art and Real Art) concerning Frieder Nake's note in PAGE 18. At the time of that writing I had not reviewed John Lansdown's article in PAGE 19 (a reaction to Nake's note, PAGE 18). Neither had I seen the comment by John H. Whitney (PAGE 21) nor the further discussion by Nake (PAGE 21).

As Frieder Nake suggests, further discussion of the computer assisted art medium does seem to be in order and PAGE does seem to be the logical vehicle for such a discussion.

I have no basic disagreement with John Lansdown (Computer Graphics-Computer Art, PAGE 19). However, I would like to caution him against making the same mistake for which he takes Dr. Nake to task, namely that of conceiving the role of the computer in the arts too narrowly. Concern with process and procedure in computer assisted art is in itself an excellent approach, but let us keep an open mind to other approaches as well. At this point, considering the vast unexplored potential of the computer in the arts, I feel it is unwise to begin confining ourselves within artificial classifications. Let us beware of boxing ourselves in with ists and isms.

John H. Whitney (Reflections on Art, PAGE 21) does a good job of expressing the promise of the computer's vast potential. His music/visual arts metaphor is quite appropriate and relevant. His optimism, though, does tend to run to excess. I feel a brief comment is necessary in order to maintain our perspective. Whitney states, "Only the computer, — not any other means known to mankind, can *make art move*." This has, "revolutionised our power to create form in action". Making art move is really nothing new and certainly not the discovery of the computer. Space does not allow a listing of the many contemporary artists working with some aspect of movement in art (kinetic art). Calder, Rickey, Tsai, etc. Furthermore, kinetic art in the United States is at least 2 or 3 centuries old. It was created by the unheralded backwoodsmen and mountainfolk of early America. The technology was the pocketknife. The power source was the wind. Examples of these kinetic works were recently displayed in the exhibition American Folk Sculpture at Cranbrook Academy of Art Galleries. Or we could look back a few thousand years to the Chinese fireworks displays. If the Chinese had bothered to support art critics, perhaps we would remember these displays as "happenings" or "environmental experiences". They are certainly among the most public, social, and (at the time) revolutionary kinetic art forms which have been produced.

What I am trying to establish is that the computer's ability to "make art move" is not in itself significant. Art has been moving for some time now. What is significant is the marked sophistication with which the movement can be controlled and directed, even projecting it into previously unexplored dimensions.

From an art/aesthetic viewpoint, computer sophistication notwith-standing, the most successful creations of kinetic art to date have been accomplished by artists using relatively primitive technical means.

Calder, Rickey, Tsai, etc. This seems to indicate to me that Whitney's kinetic art revolution, though a future possibility, is now lying dormant within the machine. Somewhat similar to Excalibur, the sword imbedded in stone, the revolution is waiting to be liberated by individuals of sufficient artistic strength.

ART'S PARTS

Frieder Nake (Technocratic Dadaists, PAGE 21) states that his article is an attempt to clarify his position. He has been largely successful in this respect. However, our points of difference seem to increase in direct proportion to the clarity of his statements. In fact, considering Nake's relative influence and respect in this field, I find the gross lack of perception which he displays to be nothing less than shocking.

I believe the key to Frieder Nake's difficulties can be found in his statement, "If I want to change something, I have to focus on that area which I know most about. Therefore my attack is on computer art as that part of art that I am familiar with." One cannot acquire a working knowledge of certain segments of art without a broad grasp of art as a totality. Art is not something which can be comprehended by bits and pieces. To consider oneself competently familiar with a "part of art" is to confess ignorance of "art" itself.

This seems to be the heart of the difficulty (and, I might add, a reflection of the technical background vs. artistic background problem which I raised in PAGE 22). Although the above should be a sufficient criticism of Nake's article, a point-by-point review would probably help to substantiate my statements. Please bear with me as I shall try to keep keep my comments brief.

Nake defines graphics as "visual information". While visual information is certainly one aspect of graphics, a broader view would include communication, expression, etc., etc. In other words, his definition is but a reflection of his own specialised interests.

Continuing on the subject of graphics, he maintains "that with the exception of music, no other field [in computer assisted art] has shown so much progress". If true, this is a sad comment on the other fields of computer assisted art. I maintain that there are few areas of art in which the progress has been so dismal, especially in relation to potential. A disappointingly high percentage of computer assisted graphics has been concerned with matters no more profound than flower shapes and star shapes. Wallpaper.

MEANING FOR THE MASSES

Nake places admirable emphasis on the belief that art should be *meaningful*, especially in a sociological way (meaningful for the masses). I am increasingly learning to share that belief. Unfortunately, his ideas as to just what specific things may be meaningful are somewhat limited by lack of a broad insight into the many subtle ways in which a work of art may eventually assert its meaningful qualities. Art which seems of little consequence at the moment, given 5, 50, or 500 years, may establish itself as quite profoundly meaningful. I doubt that Leonardo Da Vinci's drawing of the first helicopter (or aerial screw as he called it) sometime around 1500 was widely accepted by the masses as "meaningful" at that time. I doubt that Rembrandt's many paintings of unknown figures (beggars, old men, mistresses, etc.) were instantly recognised as "meaningful" by the masses of his day. And yet it is precisely these works by Rembrandt which seem to have the most " meaning" for the masses today. Witness the attendance records of any recent exhibitions of Rembrandt's work.

Frieder Nake goes so far as to claim that the use of computers in solving problems of a social nature "is even more meaningful for an artist than such problem-solving alone". First of all, where has it been established that such activity is indeed meaningful for an artist? But much more importantly, just how does the use of a computer add "meaning" to the solution of a particular problem? This betrays Nake as being guilty of the very thing he criticises in PAGE 18; namely the use of "the big machinery, still surrounded by mystic clouds, used to frighten artists and to convince the public that its products are good and beautiful".

JUST ANOTHER TOOL

He also seems convinced that most "computer artists" are bent upon the revolutionary use of the computer to "deny and replace the traditional ways of artistic production" and to "drastically change the places at which aesthetic objects are found and aesthetic events happen (museums, theaters, etc.)". They are interested in bringing "the means of artistic production up to date". He asserts that their efforts are in vain. I must partially agree that if any "computer artists" really are attempting to accomplish the goals listed above, so far they are failing. Personally, though, I am not aware that these goals are actually being pursued. While I cannot speak for the intentions of others, I can state that the goals listed above hold very little interest for me. I approach the computer as simply another artistic tool (as explained in PAGE 22). The computer, like any other art medium, has its own intrinsic advantages and disadvantages, and I have an additional advantage in that I am not a "computer artist". I am an artist who happens to be working with computers at the moment. Should my present work with computers lead eventually to revolutionary changes, it would not be the result of any grand scheme. Rather, it would be the result of the natural development of aesthetic decisions and progressions. More important to me than the "revolution" is the quality of the art produced while getting there.

Speaking of possible progress to be made in computer assisted art, Nake asks, "But — what for?" I suspect that non-artists have asked this question of artists since the first caveman began marking his cave walls so many years ago. Nake asserts that, "such aesthetic progress does not introduce any new quality, only quantity". As I suggested in PAGE 22,

this depends upon the abilities and sensibilities of the individual artists who are active in the field. Second-rate artists will give us quantity. First-rate artists will give us quality.

This reaction to Frieder Nake's article is at best a partial review of many disparate statements. There are quite a few points which I have not reacted to because I felt they were of lesser significance. Others were skipped simply because I could not determine exactly what point was being made. In addition, I found it difficult to determine whether he was in agreement or disagreement with certain statements he listed. For example: "We often hear and use the argument that the computer will, at last, set free all that hidden creative power in the artists." I disagree. But I find no indication of Dr. Nake's agreement or disagreement. Further clarification would seem to be in order.

In the midst of all this diatribe, I offer the words of the painter, Lester Johnson, "We can procrastinate, speak aesthetic paragraphs, nuances of the current political art scene, but in the final analysis the art must speak for itself."

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COMPUTER OLYMPIX

Within the culture program of the Olympic Games in Munich there were two events which included computer art. Messerschmitt-Bölkow-Blohm, an industrial firm, showed an exhibition in their casino, open to the public, consisting of works of computer art which had been developed by a team with the purpose of creating aesthetic computer graphics. Together with the exhibition they edited a picture book entitled "Computer Graphics".

In a combined music-film-slide-light-festival organised by Josef A. Riedl, there were a number of presentations, including contributions from Franke, Mohr, Schwartz and Whitneys.

NOTES BY AN ARTIST
VICKY MEYER

The split of our culture is represented by two sets: technicians and artists. The technicians-engineers exercise the logical part of their brains, and invent wonder machine-tools for extending the capabilities of men. They do not always consider to what end their inventions go. Artists, meanwhile, exercise the intuitive-emotive part of their brains, rejecting the messy machine age as too complicated, badly directed, and poorly motiviated. They recognise that a logical mode of thought produced this age and so they reject the logical approach too.

The world of technicians is one of some harmony. Men work together in pleasant daily routine, without violent ups and downs. They are directed toward solving problems by pooling their thoughts. Organising these thoughts logically is necessary in order to have a regular communication pattern that each can apply. Artists have more ups and downs. Perhpas they have more happinnesses and more unhappinesses than the technicians. Artists often work by inspirations, intuitions. A wonderful feeling comes in a flash and they furiously work it out. And if the flash can't be worked out immediately, it is gone and over. It is hit and miss. The hits are glorious. The misses are frequent. Few have the kind of mind that allows the idea to be worked out by steady time and labor in the mode the technicians work in. The technicians may not have answers, but will apply their logical mind powers until some answer, maybe not complete, but better than none, is formed. They work together.

Evidence of these differences: If technicians ever fight it is due to some misunderstanding, but seldom direct intent to fight because their nature is disciplined cooperation. There is a steady mood of working together necessitated by complications of their technical problems. Artists on the other hand, are prone to moodiness and egotism, and may fight with intention. They think independently and reach conclusions they feel are **true**. Another artists' truth makes him mad.

Why exercise only one part of the brain and exclude the other? Both logic and intuition could be exercised and compliment the other for double strength of mind. I lived by my intuition and my work was produced in this mode. So I declared a period of discipline. I immersed myself in the world of computers, which is the most rigorous of all algorithmic thinking. It nearly killed me, disciplining myself this way.

I AS THE PIECE OF ART

I now regard myself as an experimental art piece: I was so worked up that my state was evident and on display to everyone who came in contact with my frustration-energy field. The art-concept was me; the work of art: based on splits of me — splits of misery in the alien technical world, vs. happiness of learning; splits of my brain between old habits of intuition vs. logic. Simultaneous thought processes whirled in my head and seldom could any connections be made because information modes were incompatible. The effect was upsetting frustration. There was an energy field surrounding the piece powered

by this obvious frustration. Algorithmic thinking was antithetical to everything I knew. Enhancing my frustration field: my nerves suffering the social adjustment of daily work with a team of people, instead of absolutely alone in the haven of my studio where I had sole control over the object I created. In addition, the artists rejected me for talking logically. Indeed my perceptions atrophied, while my mind was busy inside my head on internal organisation and logic problems. The engineers rejected my strange notion that there might be some feelings in connection with computer programs. My self then suffered fear of invisibility. The energy field changed to include this fear with the frustration.

I needed a gimmick to keep me from removing myself from this painful state. To get me into the algorithmic discipline with most efficiency I chose computer animated graphics as closest to my habits of art. This way I could make myself learn about The Machine and pretend to myself it was just another art technique (which I feared was untrue but was unsure).

I did make computer graphics. I did take engineer's programming courses. I did suffer in these foreign environments. Then I hit the problem that even stymies engineers at first and I almost removed myself: The frustration of when the computer goes down. What do you do? Its memory is non operational with all of your notes and sketches and materials and files. The machine will be down for days perhaps. Do you want frequent long coffee breaks, or is there some way to use that time to work. This is a psychological problem encountered frequently by people when they first get to working with computers. I utilised this problem in the only way I knew, I made it part of the piece of art that was me by adding the power of this frustration to those already emitting from my energy field. I had no will except to suffer. I was a piece of art representing frustration with the electronic age. This I offered my public. Again I reminded myself that the final synthesis of logic with my old ways would be twice as good as either.

VISUAL PERCEPTION VS. INTELLECTUAL PERCEPTION
Meanwhile I continued to observe myself and the dwindling of my visual perceptions. I now perceived less and and less of what was before my eyes. Instead I perceived patterns which I knew through organising in my head. I sat on top of the hill one sunset and saw that the pattern of lights on the distant hill was flickerings from house windows determined by the swaying tree branches. In the past, using my eyes, I saw everything, not just that single pattern, and I saw through an impression mode strong enough to go home and paint what I had seen from memory. Now, if I had painted the sight it would have been an intellectual pattern.

I noticed my thoughts, like the light pattern, were different kinds of information than before, the structure was different. In the computer, if you take it as a model of the brain, information is retrieved from storage memory by a system of indexing. You call up information from storage at box labelled 1 or at box labelled 3, or box 3 added to box 4. This is straightforward indexing by number. What is beautiful about the brain and about art is the multilevels of indexing happening simultaneously. Human brains are like computers except that the one has superior indexing to the other. Art evokes this superior indexing, intuitively. Now what were the characteristics of this indexing? To know this, one could catch those elusive flashes of intuition and work on them logically. Is intuition, then, a form of relationship indexing to store data differently than by the logic mode? Is it possible to work and labor by logic after an intuitive idea? Is it possible to synthesise or is there forever to be a split of mind?

METHOD AND MODE OF INDEXING: RELATIONSHIPS
The computer is a dumb machine, knows nothing. It is up to the programmer to set up the system of indexing and storage. Who can explain algorithmically the way a brain calls up thoughts and the way art evokes them. You see a robin but see it not. I imagine it sings (but don't hear it). Instead I experience a concert of warbling tones but from an amplified guitar; and the touch of a man's knee sitting next to mine and see the wool of his trousers. The perception of the robin has not registered visually. What occurred was identification of the vibration as a background enveloping the sight of the trousered leg. My stronger experience was not a sensory perception. This non-sensory experience-retrieval occurs through indexing on the strongest relational link. Of course I am not sure what the linking is. It is only clear that indexing happens in files so large that we must rely on our method of indexing or lose the memory information forever.

Formal objects or abstract thoughts can be associated if carried on the same vehicular form, e.g., equation, recursion, proposition, or just a simple stringlike list. But more likely only a single proposition is succinct enough to associate information of disparate modes.

Formal elements in successful art are only stimuli, catalysts used by the referencing mechanism to go through brain indexfiles, which in turn contain further-indexed stored material. The common example of data structure is the tree with its branches, but this is much too simple. Connectorenergy flows along the index path and brings to conscious mind rich-variety multi-levelled subconscious objectmaterial. In other words, formal art is a vehicle for relating psychoexperiential memories stored in the brain under a variety of emotional modes and thought processes. Thought process and modes are, for example, intuitive or intellectual, happy or fearful. The propositional form determines what propositions can be related and remembered. Relationships then (or connections), are the crux of art content.

If we perceive logically we will also store by logical indexing and then the information can be retrieved only in a logical mode. If on the other hand we perceive intuitively we store intuitively and must retrieve intuitively. To reinterpret information into another mode, it must first

be retrieved from memory storage by its original mode of indexing; then reprocessed; then stored again in the final reprocessing mode form of indexing. How many modes are there? (More than just logical vs. intuitive?) Perhaps the model is spinning drums of information, each drum a different mode. Some connector touches the drum as it has spinned to the right point and the information stored on that point comes up to the front of the brain. Or perhaps instead of revolving computer drums, the information for each mode flies around continuously in our brains until chance or will power provides the necessary connection of one information in one mode to connect with or be added to information from another mode in order for new discoveries to be made in still another mode made of their synthesis.

GRAPHIC IMAGES OF RELATIONAL INDEXING
Meanwhile, my computer images were flying around my head as around the computer screen and they reminded me of associative indexing. The graphics program I had devised was for modular sculpture moving in harmonic time.

Each subimage, like an object of information, flying an independent trajectory but definitely in relationship to the other flying objects by the common image viewing space. It was a missing connection I needed to relate these, just as the connective association of indexing of our brains was eluding me. Multilevels of associations, so many, so rich. The more connections, the richer the image. More information.

The index-relationship is more important than the visually perceived object which is merely a catalyst. In the example of seeing a robin, associative indexing is purely psycho-experiential re-editing based on emotional content. This is a division often referred to as conscious and subconscious levels of understanding. The richness of art is due to human ability to respond unconsciously on such a rich multitude of levels to what is consciously perceived at a simpler level. The parameters are of many different sets of information, and yet we relate them. Relationship is the key to our perception, storage, and retrieval of information; and relationship is the key to our understanding of our universe and our lives. Re-editing is the way we expand this related information. It is relationship-indexing that permits re-editing, and it is the indexing I wish to represent visually.

To express the associative indexing is a graphic computer program an appropriate medium? A logical program, graphic animation: harmonic movements are related by quantitative proportions. Imagination could allow us to associate different qualities with each subimage based on differences of form (of each subimage). We could sense qualitative relationships as well as quantitative ones. Mine is a program dealing primarily with form. I need to expand the program (beyond and still including form) to display connections which are not visual. The computer is a machine for connecting stored information. Its connections are in the form of associated lists, arithmetic calculations and logical calculations. Its capabilities are up to the cleverness of the programmer. So far no computer is capable of multilevel, multimode, multiparameter connections such as we energise subconsciously in our brains.

CONCLUSION
The artists warned me that logic would ruin my intuition. I asked how they could prefer ignorance for bliss. It is true that for a while my intuitive and artistic instincts dried up. It was the rigour of the discipline, the hardship I imposed on myself. Only now my two minds are coming together to work. I can see again. Hopefully I will now see more.

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GESTALT SYNTHESISER c 2002
MARGARET CHISMAN

Professor Abraham Moles and others have expressed interest in the formulation of scientific theories of aesthetics. The following is an idea for a "Gestalt synthesiser" from an sf novel of mine which has not yet found a publisher. Remember, this idea is by a novelist and "computer poet", and not by a scientist.

Imagine, at about the turn of the century, a much shorter working week, and great attention being paid everywhere to new forms of leisure activity. In all large centres of population there is a new kind of pleasure garden, entry to which is free, on condition that a) each person has his personality profile charted, and b) has a minute capsule embedded in his skin with his own unique (but henceforth anonymous) code number. The purpose of this is to record on the numerous pickup mechanisms throughout the pleasure gardens the amount and sort of activity entered into by the various personality types, and by means of a number cruncher to analyse and process the information for the benefit of sociological research.

Let me describe the gestalt synthesiser. It looks superficially like an electronic organ with several keyboards. Art technicians have analysed visual representations into a number of broad categories, viz those concerned with people; with natural scenes; with the manmade environment, and abstract designs.

Starting with the last: any abstract is a combination of background and foreground texture, shapes, colours, and superimposed effects. Each keyboard deals with one of these categories and each note on the keyboard gives a variation within the category on a translucent lighted screen above the instrument.

The man made environment synthesiser keyboards provide views of buildings, factories, houses, motorways, reactors, airports, etc., with the ability, as with the previous instrument to vary colour, background, foreground, etc.

The natural environment instrument provides scenes of mountains, forests, rivers, rocks, waterfalls, trees, vegetation and flowers with the colour and other variations available as above.

The instrument for reproducing pictures of people (which is colloquially known as "Find your ideal partner") is a sort of sophisticated identikit of the total person, with an extremely large choice of variables, shape of face, body, hair, skin colourings etc., in fact the choice of variables occurring in the genetic-lottery and more. The composite figure so produced can be clothed in any period costume or style, or left unclothed.

Each instrument can be played like an organ, and new art forms thus produced by "cross pollination" between aural and visual keyboard practice. Underneath each note is a button to fix that particular effect on the screen. The lowest keyboard, the gestalt, operates on the picture as a whole, print or slide can be taken to provide a permanent record of what would otherwise be entirely evanescent.

A scientific theory of aesthetics could gradually be built up by the electronic recording and analysis of the relationships between personality types and the kind of pictures each produced, particularly those designs of which the "artist" liked enough to make a permanent record.

In addition a theory of physical attraction between the sexes (and this surely is part of aesthetics) would emerge as a result of activity on the Ideal Partner Synthesiser.

Discussing this idea with various scientists and engineers, I think it is technologically possible, but the prototype would be very costly. However, sociologically, we are not ready (will we ever be?) to have personality inventories taken of large numbers of the population, and to make use of this information on a mass scale by means of an identification capsule ineradically embedded in our bodies. So it all must, regrettably, remain in the realms of science fiction.

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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

MEETINGS: FUTURE DIRECTIONS

7.30pm Wednesday 17 January 1973
2nd floor 50/51 Russell Square London WC1

FUTURE DIRECTIONS OF THE COMPUTER ARTS SOCIETY

The committee of the society meets on the first Friday of each month. Four people are ex officio members: John Lansdown - secretary, George Mallen - treasurer, Gustav Metzger - editor of PAGE, and myself - chairman. Any member of the society may attend the meetings and so join the committe. Three or four people do so frequently, several others attend sometimes, and we often have a guest from abroad. This open committee approach has the disadvantages that the four officials are over worked, and others who attend may be uncertain of their roles.

It is important to broaden the scope of the committee, because these four people are in danger of becoming or appearing to become a clique, while their concern with mechanical and recurring tasks means that the society is not making much progress with new activities like our own computer and workshop.

Some of the tasks available are:

Meetings organiser, for our monthly meetings and other events

Exhibition orgaiser, for our travelling exhibition

Records secretary, for bibliographies, discographies, spoolographies, members who lecture, and so on

Membership and mailing secretary

Editors for individual issues of PAGE

In addition, all the present arrangements, policies and habits should be questioned:

Should we have elections to the offices and committee?

Should PAGE be more or less frequent, bigger and more cheaply produced?

Why have we concentrated our activities on London?

It is the purpose of this meeting to give air to these questions and to any others that members may care to raise. If you would like to be more actively engaged in the society's activities, or if you have any comments or criticims at all about its current direction, please come to this meeting, or write to me if you are unable to be there.

1973 looks like being an exciting year, with CIRCUIT in the US, issues of PAGE from there and France, CAS at Edinburgh Festival, and all our usual attractions (Members outside Holland and USA, send me your 1973 subscription now.)

I edited this issue of PAGE

Alan Sutcliffe

Wait a minute, shouldn't it be a double-t in BULLETING?