

THE BEGINNER'S GUIDE TO OIL PAINTING

by

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“To put the final touch to your painting a frame is necessary”

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CHAPTER 1: INTRODUCTION

1. PURPOSE OF STUDY

This thesis represents the findings of a study intended to relate recent art (manifested in scatter pieces, buried sculpture, earth art, ecological art, systems art, process art, body sculpture, mail art, auto-destructive art, art of nominating part of the world as art, conceptual art, language art) to a context beyond the art historical context.

With the gravity of environmental and social problems affecting the quality of man's life in an affluent industrial society, it seemed logical that artists and their work should be affected by these concerns as well. "Perceptiveness" is after all a quality often attributed to artists.

The apparent 'dematerialization' of this recent art and the consequences of this on the artwork as a commodity seemed to present a valuable point of departure. It seemed to show a desire for artists to make their art socially relevant to these recent issues of "quality of life" rather than continue its designated relevance to the socio-economic-political order. To verify this intuition is a further aim of this study. More specifically, the approach was to:

- 1) Examine the common features of this art and find a meaningful yet generalised framework which would specify the common intentions of the artists, beyond their specific individual concerns.
- 2) To identify the constraints on the artists' capacity to pursue a new social relevance and to examine ways in which the type of art under consideration reacts to these constraints.

2. LIMITATIONS OF UNDERTAKING.

While most of the art referred to has been done outside the local art context (except for Christo and Eventstructures Research Group projects) this is not to be considered as a major disadvantage.

Information is available through magazine appraisals and interviews as well as in some books, and the nature of the new work because of its typical presentation in the form of documents or photographs is readily accessible.

Part of the trend of this type of art is the breakdown of localised development in specific cultural centres, primarily because its media lends itself to distribution to any part of the globe (as books, photographs, films, tape recordings, television), as Seth Siegelaub (the curator who has organized several 'conceptual art' shows) has said, "I am interested in conveying the idea that the artist can live where he wants to—not necessarily in New York or London or Paris as he has had to in the past—but anywhere and can still make important art".

Nevertheless it is recognised that without direct contact with the artists and works described,¹ it is obvious that distortion of original intention has occurred through the bias of critics and misconceptions due to partial information will arise—however the critics themselves are considered as part of the art information generating system and thus it seems quite valid to accept their information-biases. As a consequence of this fact and the wide context considered, this study should be considered as a suggestion of a general trend rather than as an 'in-depth' study. It suggests a framework or an approach perhaps for a more intensive study in the future, applied perhaps specifically to the local context.

3. SUMMARY OF CONTENTS

What to Paint On

Chapter 2 tries to establish that there are in fact serious problems in our environment which affect the quality of life at the present time (Corporate State) and problems of a global scale which, though they seem distant are of an impending significance. The artist is part of this global-societal context and thus also subject to its problems.

Getting Ready

Chapter 3 examines specific views about society and the approaches which could be taken to solve what were identified in Chapter 2 as problems of the socio-economic-political matrix.

These approaches ascribe an important role to a "new aesthetic" or a "new sensibility" although none of them actually identify its characteristics. The implication on recent art is that the artist potentially could have social relevance in terms of changing this matrix by perhaps defining this 'aesthetic' in the nature of his works.

Setting the Palette

Chapter 4 examines ecological approaches to solving environmental problems which are threatening the survival of the human species. Underlying the solution is the need for a changed relationship between man and nature: from an anthropocentric view to a view which recognises that man is a part of the natural cycles and natural systems and dependent on them for his survival. Heizer's and Long's works are examined in relation to previous anthropocentric landscape traditions, to suggest a changing sensitivity to nature in recent art. The nature of the ecological sensibility is equated to an "aesthetic sensibility".

Useful Colour Charts

Chapter 5 places the ecological view into its wider context (i.e. as an open system). Since the open system view suggests a radical (possibly) reorientation of science from a mechanistic, reductionist viewpoint to a systems oriented, perspectivist viewpoint—it indicates a change from present major paradigm in science.

The ecological viewpoint can be seen as a subset of an open-systems viewpoint. Thus a solution to environmental problems involves an open-systems approach or a perspectivist method of analysis.

While the systems approach has not as yet been applied in the social sciences there are already signs that the 'Image of Man' in psychology, perception etc. is changing from a mechanistic robot-model to a more holistic systems model.

Painting a Picture

Chapter 6 demonstrates that there is a trend in some recent art towards an open-systems orientation.

The Chapter defines art in terms of criteria relating to an existing art context. It then examines the art world as a system which typically produces an output of art information. The input in this system is typically the raw data which the artist produces. This is then processed and transformed into information.

An examination of some recent art in relation to the systems model reveals a transition from object-orientation to a systems-orientation in both the works themselves and also in the development of a perspective outlook in the artists' attitudes.

The perspectivist viewpoint results in a recognition of the art world as a system and in a re-assessment of the artist's role from a

producer of data to a processor of data, manifested in the increasing dematerialisation of the art-object and the interpretation of data not specifically created for interpretation but already present in the world.

This Chapter suggests the 'systems-oriented aesthetic' as the general framework in which to place some of the recent art and implies a shift from an object-oriented aesthetic to a systems-oriented aesthetic parallel to the shift in science.

CLEANING UP

Chapter 7 indicates the difficulty of ascribing a direct political role to a systems-oriented art because it is part of an art-system which is intrinsically tied to the existing socio-economic-political structure. The dilemma is that the art-system defines what art is and thus for the artist to move outside its boundaries totally, is to exclude himself from being an artist although in this new context his continued activity may be worthwhile.

While the systems aesthetic seems to be a valuable one in relation to the problem of improving the 'quality of life', only broader changes in the nature of the entire art-system will allow the artist to be an effective agent for social change.

CHAPTER 2: WHAT TO PAINT ON

1. INTRODUCTION

The aim of this chapter is to briefly demonstrate that there are problems in the world and that they relate to affluent industrial man at a number of different levels. While it is easier to grasp those problems which are on a localized scale and thus are of direct relevance (issues such as local pollution, destruction of environment by highways and automobiles, decrease in quality of life) the macro-scale problems (such as over-population, diminishing resources and the threat of lethal warfare) are certainly more important concerns, however at this level solutions are usually more difficult.

One of the outcomes of a McLuhanesque age is that we are supposedly more aware of those global problems. According to McLuhan² the nature of our media has made large quantities of information available to a mass audience at a high speed from all parts of the globe. "In an electric information environment, minority groups can no longer be contained or ignored. Too many people know too much about each other. Our new environment compels commitment and participation."³ Television for instance forces participation in the war in Vietnam, famines in Biafra and India, black riots in America, on the other hand it may be argued also that because of the overwhelming scale of problems to the average person, it instead breeds acceptance of these phenomena and in fact indifference and even callousness. Other factors associated with the goals of the particular society may also obscure the importance of these as relevant issues.

The aim then, is to present a context of some specific issues which the author considers of relevance to contemporary man and thus relevant to contemporary artists. Whether the artists respond to these or consider them relevant, whether they in fact react to them and thus modify their attitudes, sensibilities, content and methods of their activity is the question which this thesis is examining.

There is no intention to show the connectivity of causes and effects but rather to sketch in some aspects of the global and more local environments which seem relevant.

2. A GLOBAL PERSPECTIVE

Population Growth

Paul Ehrlich⁴ attributes many of the world's problems (including environmental deterioration) to population growth. He argues that considering the present technology and patterns of behaviour, our planet is grossly overpopulated now and that a large absolute number of people and a high rate of population growth are major hindrances to solving human problems.

In this context then, the limits of human capability to produce food by conventional means have very nearly been reached. Problems of supply and distribution already have resulted in roughly half of humanity being undernourished. Some 10-20 million people are starving to death annually now.

But despite this inadequacy of supply other non-renewable resources—minerals and natural water—are being consumed quicker than natural processes can replenish them.

Much of the diminishing resources are due, moreover to the exploitative economic systems of the overdeveloped nations which persist in pursuing an affluence based on wastage.

Environmental Deterioration

Further, Ehrlich sees that the attempts to increase food production will tend to accelerate the deterioration of our environment which will in turn eventually reduce the capacity of the Earth to produce food.

Such technological "successes" as automobiles, pesticides and inorganic nitrogen fertilizers are major causes of environmental deterioration.

Most laymen tend to see the environmental deterioration as a problem which merely combines aesthetic decay with direct health hazards. These however are only minor consequences when we consider the effects of upsetting the ecosystem of the earth on which we are so dependent.

Ecological systems depend on complexity, so that everytime a forest is cleared or animal species exterminated, the complexity of the ecosystem is reduced.

Already other types of environmental deterioration are present—air pollution for example is changing the climate of the Earth—dust blankets over Southern Asia and murkiness of the atmosphere over the Pacific are manifestations of this. Already the atmosphere is cooling as less sunlight can penetrate the solid particles in the atmosphere and such weather changes could produce serious damage to world agriculture.

PLAGUE AND WARFARE

Another effect of population growth is that it increases the probability of a lethal world-wide plague and a thermonuclear war. A large weak population is ideal for disease-causing organisms, especially lethal viruses. In addition in a large population there is more chance of a lethal mutation of a common virus such as flu occurring. Also organisms could conceivably escape from biological warfare laboratories.

Thermonuclear war also becomes more likely as countries struggle for their share of diminishing resources. A struggle for the rich oil resources of the Middle-East is one of the factors behind political conflict in the area at present.

More frightening perhaps is the attitude of many corporations in the United States which are planning for the advantages they can reap through nuclear war. "... that our way of life including free enterprise, the oil industry and Socony Mobil Oil Company, can survive, recover and will win with it."⁵

* * *

The reality of considering these problems is however less than those closer to hand. After all, the affluent people in the affluent society can hardly see the immediacy or relevance of plague, famine or overpopulation in a society where steady consumption of commodities is the rule—the affluent consciousness does not feel dependent on natural processes—food is something that comes from the supermarket.

3. THE CORPORATE STATE

While the industrial societies are among the main offenders of global problems there are also important problems posed to the welfare of the individual by the structure of these societies. Both Charles Reich⁶ and Kenneth Galbraith⁷ have characterised the industrial state by the emergence of the structure known as the corporation. Galbraith notes that corporations are by no means the only structures which exist in the industrial state, however the influence of corporations

is increasing and constituting a dominant element not only in the American economy but at social and political levels as well. There are moreover certain characteristics of corporations particularly in the pervasiveness of their power and the need to satisfy organisational rather than human needs that seem undesirable.

Charles Reich⁸ has furthermore analysed the corporations and noted their close enmeshing with non-profit institutions, the education system and the government. Moreover the inter-relationship of these elements forms a greater whole than the parts.

Characteristics of the Corporate State

(i) Amalgamation and Integration.

Amalgamation and integration of many companies into one can occur in two ways. Firstly separate companies can follow parallel policies, making identical pricing decisions, identical products with identical methods of distribution and secondly by takeover of many diverse companies by a single management.

Amalgamation of the government and private sector occurs when the government provides services (such as educating people for industry) for the private sector and the private sector performs public function (such as Boeing building bombers for the government). Thus in the corporate state, diverse and pluralistic systems (i.e. the limitation of one kind of power by another) are dwindling at an increasing rate.

(ii) Hierarchical Administration.

Another feature of the Corporate State is that it is basically an administrative state and since the theory of administration emphasises rational control of activity by lines of authority, responsibility and supervision, this results in everyone being arranged hierarchically. There are no rules for every contingency and individual choice is minimised. The structure of bureaucracy then produces a small ruling elite who make all the decisions about what is produced, consumed, how resources are allocated, the conditions of work, etc. Further while the administration is valueless it functions most effectively when the status quo is maintained.

(iii) Autonomy.

The Corporate State is autonomous in that it is not subject to control by the people through the democratic process⁹; by the market in the private sector¹⁰; or by pluralism in the case of the government¹¹.

Further, those people in positions to exercise power are not in control either since the existence of bondholders, stockholders, banks and bankers, potential raiders seeking control, financial control by conglomerate ownership all result in impersonal demands of profits, growth and stability of income. The executive holding power is also dependent on the information he gets and thus he doesn't challenge the autonomy of the corporate state either.

(iv) Status—the New Property

According to Reich "the concept of status in the corporate state has replaced the role of private property in the market economy. Status, which defines an individual's relationship to organisations has become the chief goal in life—happiness is defined in terms of position in a complex hierarchy of status.

Galbraith's principle of consistency¹² is relevant here too. The principle states that there must be a symmetry in the motivation and goals of organisations and the individuals comprising them. Thus the corporation must somehow attribute social purpose to the goals of those who comprise it.

The technocracy is principally concerned with the manufacture of goods and with accompanying management and development of demand for these goods and thus it attributes social purpose to these in "a high standard of living" which is defined in terms of more goods (usually of those type that conserve muscular energy or raise calorie intake).

Thus the individual identifies his goals with those of the organisation and he does not want to exercise his freedom against authorities (i.e. he wants his homelife investigated, his psychological make-up, his friends and associations, political and cultural activities and past investigated, he wants his privacy invaded, to fulfil special conditions), since the organisations and society's well-being is identical to his own.

Since everyone is arranged in a hierarchy, inequality is clearly defined—everyone can feel the differences between himself and other statuses. As one man's special status benefits and privileges depend on the proper functioning of the rest of the organisation and the need for everyone else to be kept in their proper place, the individual becomes more and more the ROLE as less and less of his private life remains.

(v) Role of Law.

Reich's most startling analysis is in the role of law¹³ in the corporate state. Law perpetuates and legalises the controls already executed by the corporate state to keep it running effectively. Reich notes that law in America changed from a medium which carried traditional values of its own to a value-free medium adapted to serve public policy—the public interest of the corporate state. We have already seen that the public interest is really an expression of the needs of the corporations (i.e. the principle of consistency).

Corporations are not subject to the Bill of Rights while they do exercise government powers (due to the emergence of the public-private state). They can decide on what is to be produced and what is not, how resources are allocated; also they can fire employees for using free speech or discriminate against those who do—newspapers, T.V. and magazines can refuse to carry public opinion.

Federal regulation of economic activity by law rationalizes and stabilizes industry—it does not protect the consumer, the individual, rather it polices outlaws, prevents unruly competition and limits entry into a field, creates monopolies and excludes particular groups in the allocation of valuable resources (e.g. T.V.)

In addition technology is not subject to law, this is best exemplified by the development of Mace as a police weapon. It was developed for profit by a private company; no tests or studies were made by scientific or government agencies; no approval made by any legislative body; no vote made by the public; no disclosure of information on its long-term effects made; no standards set as to when it would be appropriate to use it and in fact the law bars any redress to the victims.

The Law in fact functions in advancing private interests. The courts become the field for private manoeuvre for power, status and financial goals using the legal powers of the government to provide benefits, subsidies, allocate resources, franchise and to grant special favours and exceptions. For each status, class and position in society there are different sets of laws. Finally there are a great number of laws in the corporate state and consequently

there is a large amount of discretionary power generated so that the law can be enforced selectively or arbitrarily.

* * *

In the context of this integrated and formidable structure it seems possible also to attribute many of the manifestations of environmental deterioration, deterioration of the quality of life to the corporations. When we examine their objectives the link becomes more obvious.

Goals of Corporations

The main objectives of corporations are "a secure level of earnings and a maximum rate of growth consistent with the provision of revenues for the requisite investment. Technological virtuosity and a rising dividend rate are secondary in the sense that they must not interfere with the first objectives".¹⁴

The corporation can only maintain its decision making autonomy if it has a steady level of earnings so that it is not vulnerable to outside influence. It maintains profit maximisation and expansion of output to expand the corporation itself and thus maintain its stability. (This behaviour is similar in organisms).¹⁵

Growth, moreover, while it is the goal of the organisation is also a social goal by the principle of consistency and thus we find that the almost universal acceptance of the annual increase in Gross National Product as a measure of a country's social success. Similarly technological advance as a goal of the corporation is consistent with technological advance as a social goal.

James Weaver goes on to make the link of environmental deterioration with the imperatives of economic growth¹⁶—nature is treated as a commodity (things like air, water, quiet and natural beauty are treated as 'free goods' and their use not as social costs). He demonstrates that economic growth results in overdeveloped countries which destroy natural resources for more commodities (increasingly supplying an artificially created demand for useless goods) and produce dangerous pollutants and waste. The link then between corporations and environmental deterioration is fairly obvious.

4. FURTHER CONSEQUENCES FOR THE INDIVIDUAL

So far we have shown some of global problems as they potentially affect the individual, some of the problems of the corporate state and how they directly affect the individual, we also have shown that there is a relationship between the global problems and the structure and goals of the corporate state. The next section then examines some further consequences on the individual of economic growth and of industrialisation even prior to the emergence of the corporate state.

The Consequences on Man of Economic Growth.

Under the directives of economic growth "labour becomes a commodity to be bought and sold on the market like sacks of flour or bales of hay"¹⁷ and the point about labour markets is that they require differentiated incomes to operate, thus they generate income inequality. In addition as labour becomes more specialized—tasks are divided into minute tasks. Alienated labour is then required to do alienated tasks—and education is enlisted as was shown before to provide this labour—as much as anything else schools teach compliance and obedience to the system.

Other consequences discussed are the geographic mobility which results in despoliation of otherwise inaccessible areas; the destruction of cities and the loss of community.

Biological and Psychological Needs

Ian McHarg¹⁸ provides in a case study a striking correspondence between the destruction of quality in the city environment (i.e. noise, pollution, sensory deprivation) and pathology. While it is difficult to predict correlations it seems that not only poverty but population density correspond to patterns of pathology (Psychological as well as physiological).

However this correlation could be due to the nature of employment of the people living there. Stephen Boyden¹⁹ points out that the industrial system has replaced man's biological needs by false externally imposed needs (i.e. that one's status, one's self respect, self worth depends on the quantity and quality of goods consumed—the problem is that one's expectations always rise so one is never satisfied) which now have become part of the biology of man²⁰.

The falseness of these needs is emphasised if we compare the conditions of life of urban man today and the non-psychological needs of palaeolithic man.

“The industrial man is no longer subject to natural regulatory mechanisms that ensured his calorie consumption was not in excess or less than that required for growth, physical activity; the social environment now imposes a monophasic sleeping pattern whereas palaeolithic man slept when he became tired during the day; the emotional involvement of the average individual in the main activities of the day is now minimal; the average individual is not engaged daily in personal creative activities; the average individual is prevented from responding to personal tensions in a spontaneous way; the average individual is not surrounded by a visual environment full of interest; the average individual is separated from close relatives so that there is no opportunity for spontaneous conversation to share problems and anxieties; the average individual is seldom involved in meaningful co-operative group activities; most of his daily activities are not directly goal-directed.”²¹

While this is a great generalisation it is not to deny its significance, for certainly the symptoms of biological maladjustment are growing, in the form of increased mental illness, growing suicide rates, and in anti-social behaviour such as crime and delinquency.

The interrelationship of these maladjustments as consequences of the corporate state and its objectives is also stressed, although these deprivations would have been relevant prior to the corporate state, however as the corporate state extends its influence as it has been described to do, we all will come to share the same deprivation of biological needs.

* * *

We have examined then problems of a global scale, those implicit in the structure of the corporate state, to those that affect the individual at a person level and shown the interrelationships which occur between the different levels. The aim was not to be comprehensive but rather to indicate areas of concern that seemed relevant.

The next chapter emphasises the need for changed attitudes and sensibilities to deal with these problems on a societal level and in chapter 4 on an environmental level.

CHAPTER 3: GETTING READY

1. INTRODUCTION

It is far beyond the scope of this thesis to examine theories as to how some of the man-man, man-society, man-technology problems outlined briefly in Chapter 1 are to be solved or what approach should be used in analysing them. There are many social and political and economic theories (which are often contradictory as to the extent to which social change must take place, in what form and with what basis liberation from the repression of the present corporate state must proceed—it is even more difficult to propose how these theories could be applied and whether the processes of social change actually taking place seem to correspond to their theoretical models.²²

However, what is relevant to this is the proposal of several of these writers, who are influential in forming the views of certain artists referred to in Chapter 6, that “there is a need for the formation of a ‘new aesthetic sensibility’ as a prerequisite or necessary accompaniment to social change”.

2. THE FURTHER DIMENSIONS OF THE CORPORATE STATE

Irrelevance of Ideology

The economist Galbraith²³ has insisted that the aims of the industrial state have been power and expansion. The needs of this state moreover have not been served by the complete expression of the aesthetic impulse at all, however he sees the future as a technocracy “guided by aesthetic decision-making”.

He questions both Communism and American laissez-faire capitalism stressing that both societies have developed the same corporate structures despite their different ideologies. This is because the corporation itself has its own goals and develops its own autonomy (as has been already shown in Chapter 2) irrespective of its subjects' beliefs who tend to identify their own goals with those of the corporation. This fact also demonstrates that Marxism is a production orientated system and that its fundamental economic premises (i.e. of growth) are the same as those of capitalism.

“Marxism is the mirror image of bourgeois industrialism: an image reversed and yet unmistakably identical. For both traditions, the technocratic imperative with its attendant conception of life stands unchallenged. Ironically, it is the greatest single victory bourgeois society has won over even its most irreconcilable opponents: that it has inculcated upon them: its own shallow, reductionist image of man. Like classical economics, scientific socialism approached society as Newton approached the behaviour of heavenly bodies, seeking their immutable “laws of motion”. Marx's view still aspired to the “myth of a social-scientific objectivity” in which society would be understood as “a process of natural history”.²⁴

The Technocratic Deception

Even so Galbraith does not think that the industrial system is a terminal phenomena as does Roszak—it is the product of a vast and autonomous transformation and still in the process of evolving. However as Galbraith points out “it has succeeded tacitly in excluding the notion that it is transitory and thus somehow an imperfect phenomena. Among the least enchanting words in business lexicon are planning, governmental control, state support and socialism. To consider the likelihood of these in the future would be to bring home the appalling extent to which they are already a fact.”

In the economy the flow of instruction from the consumer to the market (i.e. the consumer buys goods and services in the market and opportunities that result for making more or less money, are the message of the market to the producing firms) what he calls the "Accepted Sequence"²⁵ has been reversed so that the mature corporation has readily at hand the means for controlling the prices at which it sells as well as those at which it buys and what the consumer buys at the prices which it controls. The problem is that the reversal of the sequence (The Revised Sequence) is not recognised and it is still believed that the individual is the ultimate source of power in the economy and this belief raises barriers against a wide range of social action, including government interference on questions of industrial squalor, air and stream pollution, sacrifice of aesthetic values—rhymed commercials and billboards. Also the individual subordinates his personality to the organisation, being a good member of the team in the belief that he helps to enlarge the range of choice of individual consumers. This then affords great protection to the autonomy of the technostructure and great immunity to its techniques of managing demand.

The recognition of this deception is the first step in controlling the technocracy and redirecting it to more humane goals.

Aesthetic Goals in a Technocracy

The technocracy itself according to Galbraith is inescapable: in an emergent superscientific culture long-range decision making and implementation become more difficult and necessary. Judgment demands precise socio-technical models and thus a structure incorporating central storage of information, decision-making autonomy and adequate techniques for implementing social change is required to make these decisions.

Galbraith however emphasises the role of aesthetic criteria in the decision-making process of the future technocracy. At present, aesthetic goals are beyond the reach of the technostructure, i.e. it cannot identify itself with them and thus if they are strongly asserted, they are viewed as constraints.

Aesthetic goals contest the claims of power lines over landscape, of power development over natural streams or national parks, of highways over natural streams, strip mining over virgin mountains and shopping centres over antique squares. To assert these goals is to interfere seriously with the management of the consumer and thus economic advantage in its effect on output, income and cost.

Because of this, the state (i.e. the government sector) is the only means possible for asserting aesthetic priorities and providing the essential framework for artistic effort. The nature of this aesthetic sensibility which is to be used in the technocracy, however is not characterised by Galbraith.

3. LIBERATION FROM THE CORPORATE STATE

Political and social theorists Herbert Marcuse and Norman Brown while differing in their emphasis on the nature of man's alienation and how it can be alleviated are both united against Marx on the primacy of consciousness in social change. For Marx "it was not consciousness of men that determines their social being, but on the contrary, their social being that determines their consciousness".²⁶ For Marcuse, liberation is also related to social domination but for Brown there is the further condition that liberation from the scientific world view must also take place (i.e. a reductionist view to which Marx, Freud and even Marcuse subscribes, to an extent).

Quantitative Changes

Marcuse unlike Galbraith (who sees the present consequences as a result of a misinterpretation of the system) sees the consequences inseparable from the system.

In his *Essay on Liberation*, Marcuse devotes an entire chapter to the role of the new sensibility in the impending revolution. Thus while quantitative changes can mean and can lead to revolution only in conjunction with qualitative changes can the system as a whole change.

Marcuse sees this qualitative change as being based on "a sensitivity receptive to the forms and modes of reality which thus far have been projected only by the aesthetic imagination",²⁷ only in this way, can we be freed from the repressive satisfactions²⁸ of the unfree society.

The Role of Art

Since aesthetic form is to emerge in the social process of production, art has to change its traditional locus and function. It would become an integral factor in shaping reality and the way of life, this however, he says would involve a transcendence of Art, the end of the segregation of the aesthetic from the real—the end of the commercial unification of business and beauty, exploitation and pleasure. Art would have to recapture its more primitive 'technical' connotations as the art of preparing (cooking!) cultivating, growing things and giving them a form which neither violates their matter nor the sensitivity of the individual.²⁹

Marcuse sees art in its present form as the example of liberation but not as a tool for liberation. He notes that much art of this century has continually declared itself as anti-art, as a necessary mechanism for preserving itself from sublimation (repressive tolerance) by the forces of exploitation and consumerism. Only by this desublimation can art keep itself pure and alive and maintain its capacity for a deep response to the "in-itself" qualities of people and things. It is this knowledge and this aesthetic sensibility which will be needed after the revolution, as for art's actual liberation potential it is minor because it is art (i.e. a representation or metaphor of reality) and not reality itself.

Marcuse doesn't characterise the nature of this aesthetic sensibility—however he senses that the basic qualities of art are essential to the kind of man that the revolution wants to produce.

4. THE COUNTER CULTURE

Galbraith and Marcuse while differing in the radicality of their propositions for change both underline the role of an aesthetic sensibility in their theories. However they both see the inevitability of a technological state; Marcuse still speaks of the "social process of production" and Galbraith of the "super-scientific culture", the counter culture for better or worse denies the necessity of technological directives. Thus both Reich³⁰ and Roszak³¹ see the evolution of the new consciousness in the youth movements in America as not merely "the age-old process of generational disaffection" but genuinely radical discontent significantly different to other sources of radical discontent.

Radical Discontent

Rozak³² demonstrates that the discontent coming from questions of social justice in the black power movement and the working class is quite different to that of the student movements.

“What after all, does social justice mean to the outcast and dispossessed. Most obviously it means gaining admission to everything from which middle-class selfishness excludes them”.³³ Thus black power, black culture and black consciousness could conceivably be steps merely to black consumption, black conformity, black affluence. Similarly for example in the May 1968 General Strike in France if the workers had taken control of French industry it is doubtful whether they would set technocratic priorities aside in favour of a new life style.

Thus New Left activists such as the Students for a Democratic Society have little in common with “older” generation Marxist guardians of social justice, who see these activists as decadent, spoiled, middle class young, who cannot settle down gracefully to the responsibilities of life in an advanced industrial order.³⁴

The new discontent is not merely against social injustice, domination of one culture over another, not merely against capitalism and imperialism, not merely against what Marcuse calls surplus repression but challenges also “the nature of education, the validity of institutionalism and the legal system, the nature and purposes of work, the course of man’s dealings with the environment, the relationship of self to technology and society”.³⁵ This discontent seems to be challenging not just any one aspect of the corporate state or technocracy but rather the entire system and its premises.

This is particularly evident in the *S.D.S.* questioning of the fashionable thesis that we have reached the “end of ideology” in the Great Society. This is in part Galbraith’s thesis that ideology is absent in the technocracy (as outlined before), however, it has simply blended itself into the indisputable truth of the scientific world view.

Bertalanffy³⁶ suggests that scientific world views are by no means objective and in his formulation of the General Systems Theory shows that the categories of thinking in science are determined by biological, cultural and linguistic factors. While science can come to a closer correspondence to ‘reality’ by a process of de-anthropomorphisation³⁷ it can only mirror reality and each aspect has thus only relative truth. This view is quite different to the reductionist thesis on which the current scientific world view is based—in that physical theory is the only one to which all possible science and all aspects of reality can be reduced.

Thus the technocrats deal in ‘rationality’, ‘efficiency’ and ‘progress’ and in the ‘value-free’ language of statistics and convince themselves that they have no ideological orientation. “The most effective ideologies are always those that are congruent with the limits of consciousness, for then they work subliminally.”³⁸

A New Life Style

The youth movement emphasises the importance of choosing a new life style (this is where the difference in generations lies), one based on satisfying the self rather than assuming one of the roles which the technocracy or corporate state offers. This preservation of the self against the state is not anti-social but rather of vital importance to the human community.

“Protection of nature and man from the machine is logical because of the power of the machine to dominate nature. A personal moral code that transcends law is necessary where law has ceased to express a balance set of values. In addition the new consciousness seeks the restoration of the non-material elements of

man’s existence, the elements like the natural environment and the spiritual that were passed by in the rush of material development.”³⁹

It also seeks the emergence of the non-intellective capacities in response to the dehumanised rationality of the technocracy—“those capacities that take fire from the visionary splendour and experience of human communion—become the arbiters of the good, the true and the beautiful”.⁴⁰ The new consciousness also seeks to transcend science and technology, to restore them to their proper place as tools of man rather than as determinants of man’s existence.

Both Roszak and Reich are very poetic and convey the impression of subjectivity in their writings on the counter-culture but appropriately so, if we consider “objectivity” within the current scientific world view as a manifestation of the technocratic ideology. The point of this digression on the counter-culture is that a spontaneous movement based on a new set of goals and values accompanied by a new sensibility that isn’t based on economic or technological premises is in the process of developing.

The People’s Park

That this new sensibility has an aesthetic basis is evident if we consider for example the People’s Park—the muddy vacant lot near Berkeley campus owned by the University of California which was turned into a park by a group of ‘street’ people and students. They saw the plot of land in terms of the human and ecological situation of the city rather than in legal terms as private property. And in placing human needs and ecology (their understanding of what it is) ahead of law they proposed something of a new social order. They proposed a society in which aesthetics, ecology and human requirements would be paramount and in which decisions concerning these matters would be made not by persons designated by law in our society but by self-constituted local groups whose legitimacy came only from their proximity and concern. Jack Burnham goes as far as to characterise the People’s Park as a “real-time work of art”.⁴¹

By “real-time” Burnham means that the activity happened within the day-to-day flow of normal experience. As a contrast, appreciation of art objects usually happens in ideal, non-existential time in the sense that the art object is not necessarily dependant on the persons real experience of time.⁴²

Ideal time and “experimental idealism” are furthermore both outgrowths of the classical frame of reference. That is to say that they stem from the intuition that location and proportion transcend the illusion of time—in science then, the emphasis is on strict control over isolated formal relationships—it is the reductionist hypothesis of the world.

5. THE AESTHETIC SENSIBILITY

The aim then in presenting the viewpoints of Marcuse, Galbraith and the attitudes of the counter-culture is that they all enlist that amorphous quality “the aesthetic sensibility” in active roles to rectify the problems of man and man, man and society, man and technology. The validity and relevance of their approaches is not of particular interest, rather it is the nature, function and definition of this ‘aesthetic sensibility.’

Marcuse and Galbraith attribute it as something similar to the sensibility of artists and poets but this view is by no means adequate since the range of artistic response and sensibility is large and it

would seem that some types of sensibility would be more adequate for their purposes than others.

In Chapter 6 a fundamental change in aesthetic sensibility from an object-orientated aesthetic to a systems-orientated aesthetic in an 'art' context will be discussed but whether this aesthetic is the same as the one envisaged by Marcuse or Galbraith or whether it forms the basis of the counter-culture's sensibilities or whether it is in fact a step beyond all these and whether it is a practical aesthetic in the light of society's problems cannot be proved within the limits of this thesis, however these are questions posed for future investigations.

The next chapter considers an ecological approach to problems of the environment and man's relationship to it and what can be described as the systems approach implicit in it. From this approach emerges an attitude which could also be described as a new (in the context of recent Western man) "aesthetic sensibility" which is very much a systems-orientated aesthetic. The nature moreover of this sensibility can be more readily identified and some of its components will be analysed in Chapter 5.

CHAPTER 4: SETTING THE PALETTE

1. ANTHROPOCENTRIC VIEW OF THE WORLD.

"Western society at large, believes that the world, if not the universe, consists of a dialogue between men, or between men and anthropocentric God: the result of this view is that man, exclusively is thought divine—given dominion over all life, enjoined among all creatures to subdue the earth. Nature is then an irrelevant backdrop to the human play called progress, or profit. If nature is to be brought to the foreground, it is only to be conquered—man versus nature."⁴³

As a society our model of reality is one based on economics—the world is seen as a commodity, not as a series of interrelationships which incorporate physical and biological processes. We knew how to exploit the seashore for profit, sterilise the landscape for profit, fell the great forests for profit, fill protective marshes for profit. But we do not know or value the chemical elements and compounds that constitute life and their cycles, the importance of the photosynthetic plant, the essential decomposers, the ecosystems, their constituent organisms, their roles and co-operative mechanisms, the prodigality of life forms, or the genetic rod with which we confront the future."⁴⁴

2. HISTORICAL ORIGINS OF THE ANTHROPOCENTRIC WORLD VIEW

Genesis

Whatever were the earliest roots of the western attitude to nature it seems that they were confirmed in Judaism. The story of Genesis which is the source of most generally accepted description of man's roles and powers insists upon dominion and subjugation in nature, encouraging the most exploitative and destructive instincts in man rather than those that are deferential and creative.

"Then God said 'Let us make man in our image, after our likeness: and let them have dominion over the fish of the sea, and over the birds of the air, and over the cattle, and over all the earth, and over every creeping thing that creeps upon the earth'.⁴⁵

While the literalness of Genesis has been rejected⁴⁶ it is evident that it is the literal belief and not the allegory which permeates the Western view of man and nature. Implicit in the story of Genesis is also the concept of time as non-repetitive and linear. The Greco-Roman conception of time was a cyclical notion and thus the idea of a beginning was impossible in this framework. The expression of this idea today (despite the fact that we consider ourselves in a "post-Christian age" we still live under its values) is in our implicit faith in perpetual progress which was unknown either to Greco-Roman antiquity or in the Orient.

Guardian Spirits

Christianity in contrast to ancient paganism and Asia's religions not only established a dualism of man and nature but also insisted that it is God's will that man exploit nature for his proper ends. In antiquity every tree, every spring, every stream had its own genius loci: its guardian spirit. These spirits were accessible to men and before one cut a tree, mined a mountain or dammed a brook it was important to placate the spirit in charge of that particular situation.

By destroying pagan animism, Christianity made it possible to exploit nature in a mood of indifference to the feelings of natural objects.⁴⁷

What has been said must be qualified, in that Christianity is a complex faith and its consequences differ in different contexts. Only in a situation where technological advances made such spectacular advances could these values be so destructive. It seems that the change in Medieval times from the scratch plough (which required cross-plowing) to the 8 oxen plough which was more efficient but also required the pooling of resources (for no family had 8 oxen) vastly changed man's relation to the soil. Distribution of land was no longer based on needs of the family but rather on the capacity of a power machine to till the earth, and man now had the capacity to exploit nature in the context of the appropriate values.

Beliefs of Science

The origins of science in Western civilisation are tied to Christian theology. Since God had made nature, nature must also reveal the divine mentality—thus Friar Roger Bacon produced startlingly sophisticated work on the optics of the rainbow but as a venture in religious understanding

There seems then to be a relationship of modern science, in its origins, to the attitudes of Christian theology. Science and technology gave mankind the power to implement the values of dominion and subjugation of nature, since the values behind science were not incongruent to those of Christianity.

3. LANDSCAPE ARCHITECTURE

The Renaissance Tradition

McHarg points out that the Western tradition of landscape architecture (except for the eighteenth century English tradition) has been identified with garden making.

In the Renaissance, the visual and symbolic expression of humanism upon the land typically expressed the authority of man by the imposition of a simple Euclidean geometry upon the landscape. "Man imposes his simple entertaining illusion of order, accomplished with great art, upon an unknowing and uncaring nature. The garden is offered as proof of man's superiority".

In France, Louis XIV lay transected by twin axes at Versailles, king by divine right, the ordered gardens below, testimony to the divinity of man and his supremacy over a base and subject nature. Typically this is a selected nature, decorative and tame whose order of array, unlike the complexity typical of nature, is reduced to a simple and comprehensible geometry.

The Japanese Tradition

In contrast is the traditional Japanese garden here there is also a very strict ordering of elements, however it is not the imposition of an overall scheme and fitting of parts into it without regard to their intimate interrelationship but rather a general principle which governs the relationships of the basic components at the most fundamental level—the order is created at the level of the moss and rocks not at the level of an overall scheme. Thus there is a perceptiveness to nature reflected in Japanese language, rich in descriptive power, in which subtle changes in natural processes (e.g. the tilth of soil and dryness of the wind) are precisely describable.

The Eighteenth Century English Landscape

This was a parallel development in Western culture. Its proponents, while lacking a science of ecology used native plant materials in interdependent communities with no imposed aesthetic—nature itself produced the aesthetic. (The exposure to Oriental principles

of asymmetry had helped sustain this view). Form and process were indivisible aspects of a single phenomenon. It is obvious that the political socio-economic climate the time had much to do with this development (i.e. the absence of cities and the industrial revolution) while their views were adequate for the Eighteenth Century a more comprehensive theory is necessary now.

* * *

In this context it is interesting to examine superficially aspects of Richard Long's work and that of Michael Heizer—both are artists working in the natural environment in the late 60's and early 70's.

While it is not perhaps correct to examine their work outside an art context it is interesting nevertheless to compare the attitudes which their work expresses in relation to the environment, to what degree anthropocentric values are present. This is the type of re-orientation in values in art which will be discussed in Chapter 6.

Michael Heizer

Heizer works mainly on flat, arid desert areas⁴⁸ where there is little plant and animal life to respond to. His works up to 1970 ranged from huge rocks placed in depressions, dug into the desert (e.g. the 52 ton mass in a 51 x 10 x 9' cement depression at Silver Springs, Nevada), ditches dug in the desert (the Five Conic Displacements—150 tons of earth was removed and the depression filled up with water after floods) to drawings made by trucks on the desert (Ground-incision/Loop Drawing), powder dispersals and metal installations in the environment which directly respond to the action of the environment (e.g. Dissipate).

The salient feature of his work seems to be an incorporation of natural processes in the work itself: the rain filling his depressions with colloidal matter "at a rate of 3-4 inches annually" and the use of the wind to create visual patterns "the wind carries away compositional difficulties and obliterates touch"⁴⁹ are examples.

In works such as Dissipate, the form of the work is dependent on the continuous processes of the environment—the 9 metal troughs (12' x 1' x 1') are fixed into the desert floor in a random pattern but due to expansion and contraction of the metal as a result of heat changes from day to night or due to the action of the wind (in filling the troughs with earth) or the action of floods, they change their fixed configurations and form patterns according to the effects of the environment.

However while Heizer's work embodies the recognition of interrelationships—it is more an interrelationship of the physical elements rather than those of more complex plant ecologies. Further, his expressed desire is in a sense still related to the anthropocentric man—he has chosen an area where he cannot upset the plant-animal relationships and this clouds our vision. One clue is in the scale of Heizer's work—it is huge and while his forms are minimal, pieces like Ground/Incision Loop Drawing begin to look like a typically abstract drawing except taken off the canvas and enlarged (perhaps this is why he uses the desert—because it is a flat, neutral surface).

He says "Man will never create anything really large in relation to the world—only in relation to himself and his size. The greatest scale he understands is the distance between the earth and the moon."⁵⁰ In conjunction with the scale of gesture in Hezier's work this statement suggests Hezier is operating within the same tradition as the Renaissance humanist gardener although perhaps with greater sensitivity to certain processes of the natural environment.

Richard Long

Long's pieces are both lyrical and pictorial—he conveys a strong feeling for the landscape. Long's geography is felt rather than treated as an abstraction—instead of subjecting nature to his will, he personifies it through a series of photographs and statements—emphasising existing relationships rather than imposing new man-centred ones.

His 2 mile walk sculpture, where lines are formed in the grass as he walks along four different imaginary lines 64, 32, 16 and 8 times, his presence in the environment is asserted perhaps not constructively but not destructively either—the trampled grass will grow back again.

His compositional devices are as simple as possible: lines, the intersection of lines and squares where he encloses some area by walking. Particular locations in England, Scotland and Ireland are important to Long whereas Hezier's work is not particular in the sense that the desert is generally invariant (or at least he views it as such) and the works could be placed anywhere within this general context. While Long's work doesn't show a particularly acute awareness of the interrelationships of nature it is close to an animistic relationship to nature; Long may in fact be placating the genius loci of specific places in his travels—he certainly isn't exploiting nature in a "mood of indifference to the feelings of natural objects".

While the full implications of these artists work will be developed later it is of interest that the traditional man-nature view has been somewhat modified. We are not however prepared to argue at this present point that the work embodies an ecological view of the man-nature relationship.

4. THE ECOLOGICAL VIEW OF THE WORLD

Mans' Dependence

We have implied what the ecological view is by stating what its antithesis appears to be, however, this will not suffice. An ecological view considers the world in terms of interrelationships, cycles and processes, all interdependent and man in this context (i.e. of the world) is not divine, perhaps he is the current, latest dominant species but in no sense is he outside these natural system.

McHarg gives the example of a simple capsule experiment⁵¹ which demonstrates some of the cycles which man depends on. The capsule contains an energy source (the sun), some air, some water, some algae, growing in the water, some bacteria and man.

"The system depends first upon the sun, the net production of photosynthesis after respiration, upon the water and upon the cycling and recycling of the materials in the system by decomposers. The process requires that the substances or wastes, the output of one creature are the inputs to the others. The oxygen wastes of the plant were input to the man, the carbon dioxide of the man input to the plant; the substance of the plant input to the man, the wastes of the man input to the plant, the wastes of the man and plant input to

the decomposers, the wastes of these the input to the decomposers, the wastes of these the input to the plant: and the water cycles continuously."⁵²

In a sense the most important organism to man is the plant, algae—its chloroplasts are the dominant mechanism by which the light of the sun is transformed into the substances supporting all life, the sugar and carbohydrates. Plants may have in fact produced all the free oxygen, indeed all food, fossil fuels, the stabilization of the earth's surface and the terrestrial water systems, temperatures of climate and microclimate have been accomplished by plants. Man is the parasite of plants since plants are hardly dependent on man at all. In the light of man's dependence it logically is difficult to hold an anthropocentric view of the world.

Vital Cycles

The cycle discussed so far is only one of several cycles on which life and thus man depend. While energy from the sun is constantly entering and passing through the Earth's ecosystems, the ecosystems themselves have no similar extraterrestrial source of carbon, nitrogen, potassium, sulphur, oxygen and hydrogen. These substances must be continually recycled through the ecosystem if the ecosystem is to persist. The 3 cycles shown below are the carbon cycle, nitrogen cycle and phosphorous cycles.

Concept Of Fitness

While Darwin advanced the conception of biological evolution with natural selection as its primary mechanism Henderson observed that the earth was peculiarly suited to the evolution of matter, of life, of creatures and of man. Biological evolution still continues but does not respond easily to voluntary manipulation while the environment, because it is in a constant flux can be changed by the presence of organisms. The point is that the environment can be changed to produce a better fit but this is dependent on a knowledge of the environment and its interactions.

Creativity

Another aspect of the ecological view is the perception of the world and its evolution as a creative process.⁵³ While entropy or degraded energy in any system must increase according to the second law of thermodynamics, in life systems and the orderings that they accomplish there is evidence, not of degradation but of upgrading.

"Energy impinging on living communities and stored in carbon compounds sustains a variety of forms of life promoting their individual and group organisation, enhancing the capacity of the habitat to sustain life; regulating the economy of water movement and chemical transformation—in short doing work."⁵⁴

This tendency of living organisms to raise matter to a higher order by entrapping energy from outside the organism and forcing it to do work is called negentropy or creation. Absolute entropy is destructive in that it is the condition when all energy would be degraded, random, simple, uniform, disordered, unable to perform any further work. In contrast idealized negentropy would exhibit high order, complexity, diversity, uniqueness and ability to perform work.

5. THE ECOLOGICAL SENSIBILITY

Thus the antithesis of the exploitative view of nature is the ecological view of man's dependence on nature not as a separate entity but as part of many interdependent systems. The complexity and holistic

organisation of a system is in direct contrast to the simple relational man-nature dualism of the anthropocentric world view.

Insensitive exploitation of nature corresponds often to the degradation of energy and as such is a violation of the general principles of living systems. Also, the similarity of some systems (oceans and organisms)⁵⁵ points to the functional similarities of many organic (including man) and inorganic systems; thus from an ecological point of view, a man-nature dualism is untenable.

The point then is that the present crisis is largely due to values held towards nature, values whose origins are in Judeo-Christian theology and which are in many respects contradictory to the facts of the world.

The values expounded by McHarg,⁵⁶ then amount to a changed sensibility, one which emphasises interdependences, processes, isomorphisms, environments, concepts of fitness, continuous exchanges of energy, development of higher levels of order and energy states—in other words he is advocating a view where what can be termed as systems are of primary importance.

The ecological view however is part of a wider conceptual framework developed by Bertalanffy in his General Systems Theory. This is the subject of the next chapter.

CHAPTER 5 USEFUL COLOUR CHARTS

1. SYSTEMS

Approach to Analysis

There are two arguments for a systems approach to analysis of living phenomena.

- 1) that such an approach will reveal the 'Gestalten' properties that characterise the higher levels of organisation which we call 'living systems'.
- 2) that many of these Gestalten properties are common to the different levels of organisation of living matter (from bacteria to human societies) and thus provide a valid and powerful form of generalisation.
- 3) that while the properties can be generalised to the 'species', it need not necessarily claim generality to all living systems because systems analysis presupposes a knowledge of what functions the part system can undertake.

The approach however in this thesis is the second one, that a systems approach is a valid form of generalisation for many types of phenomena.

Defining a System

Angyal writing in the context of gestalt psychology⁵⁷ on the structure of wholes, states that those holistic connexions which cannot be resolved into relationships are systems. Bertalanffy⁵⁸ notes that three different kinds of distinctions can be made between any 3 elements: (a) according to their number, (b) according to their species, (c) according to the relations of the elements. Angyal⁵⁹ draws 4 distinctions between relations and systems.

- 1) Relationships involve two and only two members. Complex relationships can always be analysed into pairs of relata. Systems may involve an unspecified number of components not analysable in certain respects into pairs of relata.
- 2) Relata enter into a relationship by virtue of their immanent attributes while constituents enter a system through their positional values in the system.
- 3) The concept of a dimensional domain is necessary for systems. An example of such a domain is time or space—it is not necessarily important to have such a domain to make relationships. For example two colours which exist at separate points in space need not be compared with reference to that space, however in a system there is a specific form of distribution of members in that space.
- 4) Systems cannot be deduced from relations while deduction of relations from a system still remains a possibility.

Another way of looking at it, is that relationships are always summative i.e. the elements are the same within and outside the complex summation of characteristics and the behaviour of elements is as known in isolation. The elements in a system are always constitutive i.e. they are dependent on specific relations within the complex—you have to know not only the parts but also how they are put together.

Further, a sum can be considered as being gradually and thus linearly in time whereas a system has to be conceived of as being composed instantly in time.

Angyal concludes that causal thinking which has been the basis of thinking in science for a long time is an example of relational thinking and he conjectures that the change to systems thinking "may be as difficult as the transition from a 3-dimensional to a 4-dimensional geometry".⁶⁰

2. OPEN SYSTEMS

Open and Closed Systems

Bertalanffy derives the general properties of all systems mathematically—finding that systems manifest behaviour such as growth, competition between parts, wholeness, progressive segregation, progressive mechanisation, centralisation, hierarchical order and finality.⁶¹ These properties of systems while relevant have not been discussed. Our more immediate aim is to differentiate between the behaviour of closed and open systems.

"A closed system must according to the second law of thermodynamics eventually attain a time-equilibrium state with maximum entropy and minimum free energy, where the ratio between its phases remains constant. An open system may attain a time-independent state where the system remains constant as a whole and in its phases, though there is a continuous flow of component material. This is called the steady state."⁶²

By definition then closed systems are systems which are considered to be isolated from their environments.⁶³ A further implication is that entropy can be expressed as a measure of probability and so a closed system tends to a state of most probable distribution. For example in a box of green and yellow marbles, it is highly improbable that all green marbles and all yellow ones align themselves on the left and right sides respectively. In open systems, since there is a steady import of energy from the environment the operation of entropy is counteracted and the open system is characterised by negative entropy (negentropy) rather than positive entropy. Thus open systems tend to states of most improbable distribution i.e. states of increased order and organisation.

On a large scale this is the observation that the ecologist makes (McHarg) through Darwin's theory of evolution. Before we list the common characteristics of Open Systems it is useful to note the similarity between information and entropy.

Information and Entropy

The theory of communication states that information in general cannot be interpreted as energy. The flow of information can sometimes correspond to the flow of energy (e.g. when light waves emitted by some objects reach the eye and elicit some reaction from the organism): sometimes it flows opposite to the flow of energy (e.g. in a telegraph cable the current flows in one direction and information is sent in either direction by interrupting the current at a point); sometimes information can be transmitted without a flow of energy or matter (e.g. in photoelectric doors, the interruption of light informs the photocell that someone is entering).

Information however can be measured in terms of decisions. For example in a game of 20 questions where we are supposed to find out an object by receiving yes/no answers to a question:

The information in one question is the decision between two alternatives, e.g. animal (non-animal). With two questions we can decide between four alternatives. Thus a measure of information can be expressed in terms of logarithm to base 2.

Entropy can also be expressed in these terms⁶⁴ (i.e. as a logarithm

of probability). Thus negative entropy or information is a measure of order or of organisation since information is also an improbable state. This correspondence relates to the Naturalists view⁶⁵ that apperception of the system was potentially an ordering process and thus negentropic. Thus a man living in the forest would learn of its operation and while his presence would constitute a reduction of creation, the potential for its increase would be latent in the apperception of the forest by the observing man. Thus the man would, by intervention, be able to increase the forest's thermodynamic creativity. Thus the role of man in apperception and communication is thought to be dominant as the basis for creative expression.⁶⁶

There is another strong similarity between the theory of communication and open systems in the concept of self-regulation. Ashby⁶⁷ shows logically that the use of a regulator to achieve homeostasis (i.e. the maintenance of a steady state) and the use of a correction channel to suppress noise in an information transference are homologous. For the full argument refer to Ashby's study.

Common Characteristics of Open Systems

Katz and Kahn⁶⁸ have listed these properties in general terms and we will refer to their classifications in analysing the work of artists considered in Chapter 6.

1. Importation of energy from the environment.. No open system (including a social structure) is self-sufficient or self-contained.
2. There is a through-put. Open systems transform the energy available to them, in other words the system does work.
3. Open systems export some product into the environment.
4. The pattern of activities of energy exchange has a cyclic character and the product exported into the environment provides sources of energy for repetition of the cycle of activities.
For example, an industrial concern utilises raw materials and human labour to turn out a product which is marketed and monetary return is used to obtain more raw materials and labour to perpetuate the cycle of activities. In a social system, the structure is an interrelated set of events that return upon themselves to complete and renew the cycle of activities.
5. Negative entropy—open systems survive and maintain their characteristic internal order only so long as they import from the environment more energy than they expend in the process of transformation and exportation.
6. Open systems receive inputs that are informative and furnish signals to the structure, about the environment and about its own functioning in relation to the environment. This information, received as negative feedback, corrects the system's deviation from its course.
A coding process for the given system simplifies the world into a few meaningful, and simplified categories.
7. The system corrects malfunctioning so that it maintains a steady state or homeostasis. The basic principle is the preservation of the character of the system and when there are unrestricted amounts of energy for input the system preserves its character through growth and expansion.
8. There is a tendency in open systems in the direction of differentiation and elaboration.
9. The principle of equifinality states that systems can reach the same final state from different initial conditions and by different paths of development.

3. ENVIRONMENTS OF OPEN SYSTEMS.

Part of the problem in treating living systems as open systems is the difficulty of characterising their environments. Bertalanffy's formulations do not include the processes of the environment itself which are among the determining conditions of the exchanges. In this section we will consider two approaches where the specific nature of the environment of the system is a prime consideration.

Causal Texture of the Environment

Emery and Trist⁶⁹ have analysed the concept of causal texture of the environment in relation to organisations. They list four ideal types.

1. **Placid, randomized environment.** This is the simplest type where goals and noxiants are relatively unchanging in themselves and randomly distributed. This means that there is no difference between tactics and strategy and the organization can exist adaptively as small units.
2. **Placid, clustered environment.** This is a static type where the goals and noxiants are not randomly distributed but rather, hang together in certain ways. Under these conditions organisations develop strategies as distinct from tactics and also grow in size, tending to centralised control and co-ordination.
3. **Disturbed-reactive environment.** This is a dynamic rather than a static environment. It is a clustered environment where there is more than one system of the same kind, i.e. the objects of one organisation are the same as others like it. These competitors seek to improve each others chances by hindering each other, each knowing that the others are playing the same game. Between strategy and tactics there is an intermediate response—i.e. operations.
4. **Turbulent fields.** Here the dynamic properties arise not simply from the interaction of identifiable component systems but from the field itself. Turbulence results from the complexity and multiple character of the interconnections. Individual organisations cannot adapt successfully simply through their direct interactions since they cannot predict the size or consequences of the actions they set into train. We could describe the field in western society as a turbulent one. The reasons for this are implied in Chapter 2 where the interconnections of the corporate state were described and the pervasiveness of its control noted. The turbulent field is caused by four basic factors:
 - (i) Growth to meet old style competition, however the organisations are so large that their actions are persistent and strong enough to induce autotoxinous processes in the environment.
 - (ii) The deepening interdependence between economic and other facets of society make it more difficult to predict the effects of corporations' actions.
 - (iii) The increasing reliance on scientific research and development to meet the challenge of competition emphasises the need to manipulate needs because otherwise it is difficult to know whether the scientific research done years beforehand will be useful or useless when it is applied in the market situation.
 - (iv) The radical increase in speed, scope and capacity for communication results in a quantity of information received at such a rate that it can scarcely be processed, not to speak of making decisions on its basis.

The contribution of these factors results in a field which is so complex and unpredictable that the corporations have no way of judging

whether an action will be amplified beyond all expectations or will be completely ineffective. Emery suggests that it is only through social values that have overriding significance for all members of the field is it possible to reduce the turbulent environment to a simpler type. With such values the relevance of large classes of events no longer has to be sought in an intricate mesh of causal strands but is given directly by the ethical code.

Thus the type of system responses made must be linked to the nature of the causal texture of the environment. For a turbulent field organisations must make different responses and have different structures to those required in placid environments. In other words it is necessary to specify the properties of environments that are relevant to adaptive behaviour.

Perceptual Systems and their Environments

J.J. Gibson⁷⁰ has stressed that living systems learn and adapt because of their ability to react to general and less variable properties of the environment (invariants) rather than because of their sensitivity to the concrete events and objects which do after all yield a constant flux of stimulation.

1. Sources of Stimulation.

Gibson's hypothesis is that the environment consists of opportunities for perception, of available information, of potential stimuli. Further, the environment in relation to the organism exhibits certain invariant properties; for example for terrestrial man the earth is below, the air above, the waters are under the earth, the ground is level and a rigid surface of support. Thus it is the organism's ability to perceive these invariants of the environment which have resulted according to Gibson through natural selection in a perceptual system which is an active information-seeking perceptual system. The opposing view of perception is that the organism is passive in the perceptual process—stimuli from the environment excites his receptors and his brain organises these stimuli into patterns—this is a sensation based theory of perception. Gibson's view is that perceptual experience can take place without underlying sensory qualities specific to receptors—an information based theory of perception.⁷¹ Thus Gibson's view is that the neural inputs of a perceptual system are already organized and therefore do not have organisation imposed on them. "The evidence of these chapters shows that the available stimulation surrounding an organism has structure, both simultaneous and successive and that this structure depends on sources in the outer environment. If the invariants can be registered by a perceptual system, the constants of neural input will correspond to the constants of stimulus energy, although the one will not copy the other. Then meaningful information can be said to exist inside the nervous system as well as outside".⁷² He goes on to postulate that rather than the brain constructing information from the input of a sensory nerve, that the centres of the nervous system, including the brain, resonate to information.

2. Perceptual Systems.

Thus instead of studying specific sensory organs he examines perceptual systems. There are several ways higher animals have of orienting the perceptual apparatus of the body: listening, touching, smelling, tasting and looking. These kinds of attention involve adjustments and exploratory movements of the eye-head systems, ear-hand systems, hand-body systems, nose-head system and the mouth-hand system.

The implications of this theory on the interpretation of some recent art will be discussed in Chapter 6.

* * *

At the present stage it is sufficient to stress the importance of understanding the structure of the environment (as a source of stimulation in a perception theory or as a causal texture in social theory) for understanding the adaptive behaviour of an open system.

The approach of characterising the environment for the art system is the logic behind chapters 2, 3 and 4. To a degree Emery's and Gibson's analyses also characterise aspects of the environment of ideas about society and perception to which many of the recent contemporary artists are reacting.

4. A NEW CONCEPTUAL FRAMEWORK

Guiding Metaphors

There has been criticism that the systems theory cannot predict and hence cannot be experimentally confirmed or disconfirmed and thus that it is not a scientific theory. However it is the author's view that if systems theorising improves the comprehensiveness of the maps we make of human organisation then it must be considered as an advance.

Also Kuhn⁷³ stresses the all important role in scientific development of our guiding metaphors and principles for mapping the real world. He sees science at any given period dominated by a single "major paradigm", that is a scientific conception of the natural order so pervasive and intellectually powerful that it dominates all ensuing scientific discovery.

Rapoport elaborates: "the change in intellectual climate which allows one to see how problems which were overlooked previously is in a way more important than any single and special application. The 'Copernican Revolution' was more than the possibility somewhat better to calculate the movement of the planets, general relativity more than an explanation of a very small number of recalcitrant phenomena in physics; Darwinism more than a hypothetical answer to zoological problems; it was the changes in general frame of reference that mattered."⁷⁴

Bertalanffy then sees the significance of the systems view as a reorientation of our conceptual framework at least in science from a mechanistic to an open system view.

The Open Systems World View

The mechanistic view resolved happenings into linear causal chains; conceived the world as a result of chance events and a Darwinistic 'play of dice' and reduced all biological processes to laws known from inanimate nature.

The open systems view is that the world is based on principles of multivariable interaction (e.g. reaction kinetics, fluxes and forces in irreversible thermodynamics) and a dynamic expansion of physical laws in light of biological laws. An open systems view is not chaotic but states that teleological aspects exist in open systems in adaptiveness, purposiveness and goal-seeking behaviour. The unifying principle of the world is that there is organisation at all levels.

Furthermore the model of the world as a great organisation helps to reinforce the reverence for living which seems lost and this seems to be analogous to the reverence for living which both McHarg and Marcuse advocate.

In fact the mechanistic world view (in which the only organisation of reality is that which is imposed on the chaos by human minds) is a view related to the anthropocentric view of the world. This correlation is even more striking if we consider Newton's religious motivations in his scientific work.

Marcuse while he appears to reject the current sensibility (i.e. the mechanistic world view) cannot conceive of the alternative, however in the social sciences, the science of man we can nevertheless see a trend to the open-systems world view.

The Image of Man

The mechanistic and open systems world views in science are also influential in determining what can be described as the 'image of man' in the sciences of man.

Many psychological theories are mechanistic in the sense that they support 'robot' models of human behaviour. An example is the behaviouristic theory which finds no differences between human behaviour and laboratory rats, with engineers subsequently patterning human behaviour after the model of rat behaviour.

There are four major principles in psychology which seem to derive from the mechanistic view.⁷⁵

1. Stimulus Responses.

The stimulus-response theory proposes that the behaviour of an animal and a human is a response to stimuli coming from outside, (for example conditioning by way of repetition of a sequence of conditional and unconditional stimuli according to Pavlov; conditioning by reinforcement of successful responses by Skinner and childhood experience according to Freud whereby socially acceptable behaviour is reinforced and psycho-pathological complexes are formed).

Thus we have psychological engineering, advertising, motivation research, radio and T.V. as ways of conditioning or programming the human machine so that it buys what it should: washing powder wrapped in brilliant color, the biggest car as the symbol of the phallus and the refrigerator as symbol of the maternal womb.

2. Environmentalism.

The environmentalism theory proposes that behaviour and personality are shaped by outside influences. This is the "give me a bunch of kids taken as they come and I will make them doctors, lawyers, beggars and thieves by the power of conditioning" theory. It is also linked to the belief that money buys everything—the Russians build better space vehicles, so more billions spent on education will produce the Einsteins to bridge the gap.

3. Equilibrium.

The equilibrium theory proposes that behaviour is the reduction of tensions—the sexual ones in particular (Freud). Allied to this is the 'principle of stability' which states that the basic function of the mental apparatus consists in maintaining homeostatic equilibrium.

4. Economy.

The principle of economy, or the utilitarian principle, proposes that the expenditure of mental or vital energy is reduced to a minimum by the organism. This theory however overlooks the importance of stress in producing higher life forms, if indeed this principle were true, life forms would not have developed past the amoeba.

Man as Robot underlines all these approaches, and furthermore man as robot is the motor force of a mechanised and commercialised society. The goal of manipulating psychology is to make humans

ever more into robots engineered by mechanised learning, advertising techniques, mass media, motivation research and brainwashing.

Recently however there has been a tendency for a holistic reorientation in psychology—the model of man is now seen as an active personality system. Manifestations of this reorientation can be seen in the theories of Piaget, Werner, Maslow, Allport; the neo-Freudian schools; egopsychology; the new look in perception (Gibson); and in theory of cognition, etc.

The psychological organism is no longer thought of as passive but rather as a primarily active system. The new image of man as a systems concept emphasises “immanent activity instead of outer directed reactivity and recognises the specificity of human culture compared to animal behaviour”.⁷⁶ Man is not only surrounded by a physical environment but also by a symbolic universe and thus must be treated accordingly.

Perspectivism

Thus the open systems world view presents not only a different conceptual framework to the mechanistic view but also different values, since values are in fact different models of the way people act in and resolve the real world. It has been continually implied that our world would be a better one if and when these values are expressed by our culture as ideologies. It will, if the correspondence of the open systems model of the real world is correct, for then our values will correspond closer to the biological world of which we are a part.

However, one of the main difficulties in grasping this new conceptual framework is in the fact that Western thinking has been essentially in terms of opposites (e.g. thinking in terms of hot and cold, black and white, day and night, life and death), and thus is not suitable for dealing with holistic problems.

Bertalanffy suggests that the term ‘perspectivist’ view to describe the philosophical attitude underlying the open systems approach to science and contrasts it to the reductionist view, that physical theory is the only one to which all possible science and all aspects of reality eventually should be reduced—a perspectivist view stresses the relativity of the categories of experience and thus the relative nature of any ‘truth’.

1. INTRODUCTION

Ideas in science have often manifested themselves in art. Naum Gabo speaks of the relationship of ideas in science to his own art.

“I would say that the philosophic events and the events in science at the beginning of this century have definitely made a crucial impact on the mentality of my generation. Whether many of us knew exactly what was going on in science or not, does not really matter. The fact was that it was in the air and an artist, with his sensitiveness acts like a sponge. He may not know about it but he sucks in ideas and they work on him.”⁷⁷

Thus it is not surprising to see the beginnings of a radical change in art, parallel to the re-orientation in science to a perspectivist or open-system orientated world view. Further, this change from a reductionist-mechanistic world view to a perspectivist open-systems view can be seen as a shift in “major paradigms”⁷⁸ in art as well as in science.

In the world, the transition to open-systems thinking is seen in the growing importance of ecology (note that systems concepts are integral to ecology) and the questioning of the mechanistic world-view by social, political theorists, the counter culture and the growth of perspectivist viewpoints in many disciplines, including biology and social sciences. In art the transition can be seen in ecological art works, in the equation of art with information (this conforms to the equation of creativity with higher levels of order due to negentropy and the equation of negentropy with information),⁷⁹ the general emphasis on processes rather than end-products and concern with characterising the nature of environments of the art-system and consequently extending the boundaries which concern the artist.

Harold Szeeman⁸⁰ comments on some of the characteristics of this new work: “the obvious opposition to form, the high degree of personal and emotional engagement; the pronouncement that certain objects are art although they have not previously been identified as such; the shift away from the result towards the artistic process; the use of mundane materials; the interaction of work and material; Mother Earth as medium, work-place, the desert as concept.”

He goes on to say that “the artists represented in this exhibition are in no way object-makers. On the contrary they aspire to freedom from the object, and in this way deepen the levels of meaning of the object, reveal the meaning of those levels beyond the object. They want the artistic process itself to remain visible in the end product and in the “exhibition”. It is significant that the mass of their body, the power of human movement plays an important role for these artists and creates the new alphabet of form and material”.

Some of the artists (such as the earth artists) are not represented by works at all but with information—the conceptual artists are represented by working plans, which no longer require further realisation. This type of art is a far cry from formalist color painting (such as Noland, Olitski and Ellsworth Kelly) where discoveries of new visual formats and visual manipulations have a close relationship to the annual changes in automobile styling and are obviously consumer-product orientated, however these are consumer goods available only to the richest people. These are high status consumer products.

In part the reaction against an object-oriented aesthetic is an outcome of the artist's recognition of art having a different role in society to the economic one which is often assigned to it and thus it is also an outcome of the artist's recognition to avoid sublimation⁸¹ of his art. Thus it becomes difficult to assign economic value to a pile of dirt, some photographs, holes in the desert, a work consisting of a 2 mile walk or a person cutting himself. It also becomes difficult to consider the presentation of these items as objects or things in themselves, it becomes necessary to consider them within some system—the meaning of these items is not in their intrinsic worth (which is how those unacquainted with this art tend to judge it) but in their positional value in some system.

In the context of a system, the concept of boundary becomes important—the artist considers the social environment outside art and art's position in this; considers art in relation to the corporate state; in relation to politics and the natural environment. The material limits are defined after considering these factors—to assume material limits is to work within a conventional mode and thus to accept a restricted context and the going concept of art and its role.

The consideration of art as a system necessarily questions the function of art in relation to a wide context—a wide environment. We have noted previously the necessity for a system to characterise its environment⁸² and many of these artists have accepted Marcuse's and Reich's critiques of society as the environments for the art-system.

The implication of all these factors is that this art necessarily has a conceptual focus—art is not merely making objects and making judgments about them but it is about making judgments on the complex interrelationships and systems which affect the artist.⁸³

The aim then of the following sections is to show more clearly the nature and development of a system-aesthetic in recent art and to show that it is a major re-orientation in art comparable to that in science. It must be emphasised that the present period is a transitional state between "major paradigms" in art and so inconsistencies do occur⁸⁴—these will be outlined in the last chapter when we consider some consequences of the changed sensibility in art to the possible roles given to art in the future by Galbraith⁸⁵ and Marcuse.⁸⁶

2. DEFINITION OF ART

Kustom City

Before we go on to show some of the historical development of the systems aesthetic in art, it is useful to state what we in fact mean when we say art and then to show the implications of this on the transition to a systems aesthetic. What is it that distinguishes the Kandy Kolored Hot Rods from Kustom City⁸⁷ from a Lichtenstein comic-strip and the Duchamp ready-made spade?

Tom Wolfe in his visit to Kustom City says "pretty soon you realise you're in a gallery .. half of them will never touch the road .. they're carted all over the country to be exhibited at hot-rod and custom-car shows .. they're full of big powerful, hopped-up chrome plated motors, because all that speed and all that lovely apparatus .. its like one of those Picasso or Miro rugs .. you hang them on the wall .. in effect they're sculpture."⁸⁸

The Hot-Rod looks like art, it is used like art, the person who made it claims he is an artist and it produces an effect far surpassing a painting or a sculpture yet there is still doubt at the present time whether it is art or not.

The Lichtenstein painting uses "enlarged Ben-Day dots, raw primary colors and printers ink colors inspired by the crassest techniques of commercial illustration exploring the pictorial vocabulary of comic books"⁸⁹—not even changing the composition but taking it as found. It may not look like art, it may not produce any aesthetic emotion but we know it is art.

The Duchamp Spade is an ordinary spade in its original state yet we are now sure that it is a work of art yet there are a million other spades identical to it and we don't consider these to be works of art. The Spade does not produce an aesthetic emotion in us any different to any other spade, it does not look like art, apart from the particular gallery it is exhibited, in its function is as a utensil for digging. If we didn't know that an artist had done it we would not know it was art yet there is no doubt in the minds of anyone associated with the art world that it is art.

Criteria

Donald Brook⁹⁰ has drawn 4 possible categories by which we judge something to be a work of art:

- 1) Genetic Criteria (this involves only the nature of the originating agent—the test may be not only that the man is known to be an artist but may also lie in the mode, style, purpose or intention of the generating process).
- 2) Objective Criteria (this involves what we perceive in looking, touching, smelling and whether this information corresponds to what we know a work of art to be).
- 3) Affective Criteria (this involves the effect it has on us—i.e. that it affects us with an 'aesthetic' emotion).
- 4.) Functional Criteria (this involves how it is used—i.e. it is put in a gallery or in the foyer of an insurance block to be admired as a work of art).

All of these categories moreover should be used in conjunction with one another to determine an object's status as art. However, it is even more illuminating if we consider the problem from a systems viewpoint.

It is obvious that the effectiveness with which we can apply these categories depends on our understanding of the art context—i.e. our knowledge of artists, exhibitions, galleries, art-dealers, art museums, art-collectors, art-critics, our acquaintance with magazines on art, books on art, history of art, films on art, essays on art, etc. The Genetic criteria is proved if we have evidence of this man's activities as an artist (exhibitions in galleries), critic's confirmation that he is an artist (essays on his work)⁹¹ the Objective criteria is then that the object resembles so many other things seen in the art context, in books, magazines, galleries, etc., the Affective criteria is that it produces a response in us which we know is an 'aesthetic' one from our experience of such responses in an art context, or from our knowledge about such responses in books on art, magazine articles or discussions in an art context and the Functional criteria is whether the object is displayed in a gallery, bought by an art collector, etc.

The point then is that the art context provides us with information about the object's or situation's status as art. In other words the object obtains its meaning from its positional value in the art-system.⁹²

"The recognition of art relies upon the recognition of cues (i.e. genetic, objective, affective or functional) which signal that the type of behaviour termed aesthetic appreciation is to be adopted. These cues form a context which reveals the art object"⁹³ Burgin goes on

to say that an object becomes or fails to become a work of art in direct response to the inclination of the perceiver to assume an appreciative role.

Thus the hot-rod is potentially a work of art, it is as soon as it is placed in the art-system i.e. that art critics write about it as art and its maker as an artist, or it is exhibited in an art gallery (or the concept of an art gallery is extended to include the hot-rod factory). Wolfe, in writing his essay is in fact helping to make the hot-rod a work of art.

The status of Duchamp's Spade as art is totally dependent on its context—there are almost no intrinsic qualities in the spade to make it art—the spade depends totally on its value in the art system.

As a social system the art system has the same type of behaviour as any other open system,⁹⁴ furthermore it is useful to analyse closely what the artist's position is in this system if we are to understand how the artist can possibly change the system.

3. THE ART SYSTEM

The Changing Metaprogram

"Programming the art system involves some of the same features found in human brains and large computer systems."⁹⁵ Burnham notes that artists are the equivalent in their position in the system to that of programs and subroutines in a computer, i.e. they prepare new codes and analyse data in making works of art.

Their activities are supervised by metaprograms which consist of instructions, descriptions and the organisational structures of programs. Metaprograms include art movements, significant stylistic trends and the business, promotional and archival structures of the art world.

At a higher level art contains a self-metaprogram which reorganises the art impulse on a long term basis—it operates in establishing strategies on lower levels in terms of societal needs. However, there are many pictures of human life due to the relativity of the categories of human experience⁹⁶ and thus the nature of the self-metaprogram is rather vague and obscure. Nevertheless, it is an aim of this thesis to show that what Burnham calls the 'self-metaprogram' of art is in fact changing now.

Society's needs are such at the moment that consideration of the environment and man's actions in relation to it are of prime importance⁹⁷ and that an understanding of the inter-actions of economics, politics and social factors is integral to this consideration.⁹⁸ According to Bertalanffy the need is for a greater awareness of the interrelationship of all phenomena in the form of systems.⁹⁹

That the "self-metaprogram of art is in fact changing, can be seen, in the loss of interest in the gallery scene by the informal public, the support for street art by several important critics, the newsreels of underground cinema, the fact that museums of modern art are closing the circuit on modernising and responses to politically inept groups such as the Art Worker's Coalition".¹⁰⁰ The reaction against object-based art because it lends itself to exploitation is a realisation by the artist (holding certain values of the nature of the specific art system (with contradictory values) of which he is a part). This argument will be discussed later.

Values

Values in the art system are merely information, preferences controlled by museums and art historians. The importance of values in art is similar to their importance in society in general in that they reduce the complexity of the environment of both the art and social systems.

In a society the only way a turbulent field¹⁰¹ can be simplified is by common values—so that "large classes of events no longer have to be sought in an intricate mess of causal strands but are given directly by the ethical code".¹⁰²

In art there is also a complex field—a vast assortment of possible art media, styles, ideas. Art like society is fragmented—a list of styles from any book on modern art would show the diversity of available art (most of the abstract styles from the beginning of the twentieth century are still painted and repainted not to speak of realism and traditional painting). The historian however imposes preferences (thus Greenberg develops a mainstream theory of avant-garde art—which holds that only the art in his definition of the mainstream is considered to be of any quality) to reduce the complexity of this field.

The Artist's Role

In a sense the artist produces the raw data and critics, magazines, galleries, museums, collectors and historians all exist to create information out of the unprocessed art data. Thus all the artists and art works in the world are potential art information. Some people, like the hot-rod designer are potential artists in the sense that when his data is recognised as potential art information he is an artist.

Thus the institutions which process art data are as important components of the system as the producer of data. Without the support system the object ceases to have definition, but without the object the support system can still sustain the notion of an object."¹⁰³

The realisation of this relationship is in a sense a major cause of the radical changes in art at the moment, particularly in relation to much conceptual art.

The encoding process for information in cybernetics¹⁰⁴ always involves some definite process—typically this process can be broken down into hardware and software components. The hardware is the actual physical means used to code the information and the software is the program or procedure used to encode it. Different programs then can change the information resulting from the same data i.e. different art information results when the art data is encoded by books, catalogs, interview, reviews, advertisements, sales or contracts. Thus all these forms legitimately embody the work of art. The art-object then is merely an information 'trigger' for mobilising the information cycle. Les Levine¹⁰⁵ stresses the importance of the mass media as an encoding process and the consequences for artists in not recognising its effect.

Inconsistencies¹⁰⁶ in some art which shows a systems-aesthetic is often a result of the failure of the artist to see or acknowledge his place in the art system. Thus the artist who is against consumer goods because of his political beliefs 'dematerialises' his objects so they cannot contribute to the economic system—he does not however recognise all the software extensions (i.e. magazines, books etc.) and the actual functioning of the art world as a system which continues to turn his dematerialised works into a commodity and the humble

artist into a sought after star. This artist does not realise that he is simply producing raw data—to change the art information which is subsequently produced he has to alter the entire system. The simultaneous realisation of the art system and the need to change it are the reason many artists are shifting their emphasis from the production of data (which is not art information) to actual encoding of data (merely chosen from the real world) thus fulfilling the role previously executed by critics, curators, essayists and feeling that this way they can exert greater influence in changing the art system.¹⁰⁷ The actual consequences of this approach will be mentioned in the last chapter.

This section then has shown the usefulness of a systems approach as a tool to define what art is. The subsequent recognition of the possible irrelevance of the artist's work in a sense can be seen in an article on American grid-iron uniforms—in both *Studio International* and *Art International* by Peter Plagens where non-artist produced data is processed to produce art information. Thus when we consider the development of a Systems-oriented aesthetic it is quite reasonable to use critics interpretations of the new work because they are the ones who are actually producing the art information. The next sections will discuss the development of the systems oriented aesthetic from 2 aspects:

- 1) An examination of the actual objects or situations produced as art data, whether the actual morphology of the object or situation is a closed or open system (if it is a system at all) ignoring all the wider implications of the work.
- 2) An examination of the values and world views implied in the works or stated by the artists—to see whether their responses to the art- system, the social, political economic and environmental systems embodies what could be described as a perspectivist approach.¹⁰⁸

It is expected that a systems-oriented aesthetic will also embody a perspectivist approach if a lack of correlation between the two is noticed it could be taken to indicate that art at the moment is in a state of transition between the object-oriented and systems-oriented aesthetic.

4. OBJECT-ORIENTED AESTHETICS

Op Art Objects

Op Art incorporates aspects of light sculpture, construction and painting with the common concern with illusion, perception and the physical and psychological impact of colour. Vasarely, the dominant figure in optical art, utilises various devices to create the illusion of movement and metamorphosis within the abstract organisation. Moreover, all his works are aimed at producing an end-product whose only function is to stimulate the eye—not to provide information through perception but rather to produce sensations on the optical nerve. The basis of his work is a sensation theory of perception and the mechanistic implications of this theory have already been noted by Bertalanffy.¹⁰⁹

While his format varies from murals, books, tapestries, glass mosaic, slides, film or television his actual content is static in its actual form and when considered as objects out of their context they do not fulfil any of the criteria for an open system. Like any static object they make no response to the environment—no input passes through the object and no output results. Furthermore

the object exists in an ideal time, i.e. it is conceived outside the influences of real-time ageing processes, deterioration effects and actual environmental effects on the object. The object of course does exist in real-time and when the object becomes covered in dust or begins to decay it is cleaned and restored to its ideal state.¹¹⁰

The processes of conception, production are separated from the object itself—there is no attempt to incorporate these as part of the object—nor is the object considered as a residue or evidence of some process (which it is of course). This is the same separation of end-product from the production process which occurs in consumer goods.

Also if we consider the connection between the object and the spectator, when the spectator is viewing the work because of the intrinsic qualities of the Op art object in relation to his perceptual apparatus, his eyes respond with a particular predictable sensation.

If we consider our definitions of systems and relationships¹¹¹ we see that this particular situation is a relationship and not a system. Here the relata (the object and the viewer's eye) enter a relationship due to their immanent qualities and not because of "positional values in a system". (i.e. what occurs in this perceptual situation is due to the intrinsic qualities of both the eye and the object.)

Typically even the formal elements of the design are built up part by part and exist only in relationships to each other—there is no holistic organisation of form as there is in minimal art.

Much kinetic art springs from Op and while the fact that most open systems move (i.e. change their nature, readjust themselves, grow etc) kinetic art should have been one of the more radical alternatives to a static formalist aesthetic, in most cases.¹¹² these have been merely modifications of static formalist sculpture—movement merely changes the internal compositional relationships—it does not change the object itself. The motion is also presented for a purely visual (rather than kinaesthetic etc.) perception of it, much the same as Op.

The open systems concepts then do not seem to be at all embodied in Op art objects themselves although the methods of production and research could embody a systems approach. We might be even tempted to consider Op art as a paradigm of an object-oriented art especially after we consider its close relationships to concepts of consumerism, mass-production and the suitability of its images in the corporate state from consumer packaging to monumental statements in equally monumental office blocks which are themselves monuments to the corporate state.

Pop Art Objects

The Pop Art object is similar to an Op object in that it has the qualities of a static object in an idealised time, it is an object detached from its production process although it does indicate the source of its content. It has the same logic as a consumer good i.e. when its images have been worn out symbolically they can be replaced with others, of identical function but a more topical form. This is an example of the obsolescence principle which is the natural consequence of not treating the object as part of a process.

While the images of Pop art set up connections with the environment—these do not form systems but rather are relationships since the connections are due to the immanent attributes of the paintings and the image in the environment.

In a sense there is some conceptual focus in Pop in the fact that

the selection of images is a large (if not most important) part of the artistic process and we recognise this aspect of the process in the end-product. For example Warhol's soup-cans, Brillo boxes and Coca-Cola bottles, Lichtenstein's comic book images and Rosenquist's composite images all moreover executed in industrial techniques of commercial illustration.

The intention to make art a real-time activity and thus take art out of an idealised frame of reference¹¹³ is evident firstly in the choice of images but later in Pop in the use of actual objects in conjunction with a painted image. Tom Wesselman's still-life's and works by Jim Dine are examples. In some of Dine's works, paint-brushes, pots of paint, shoes and socks (which could be mistaken as accidentally left near the painting) are actually part of the work. While the works remain objects however it is obvious that they do not embody open systems concepts.

Happenings however, which sprang from Pop Art's concern with the real environment seem to embody a system concept and these will be considered later.

Relation of Op Art to Society

Vasarely in the 50s suggested mass art as a legitimate function of industrial society and in one respect his contribution is valuable in that he helped to break down the naive yet long held idea that a tiny output of art objects could somehow beautify or even significantly alter the environment. Another illusion it tried to breakdown was that 'artistic influence prevails by a physic osmosis given off by such objects' manifested in the fact that public beauty is the exclusive province of well-guarded museums.

However Vasarely's attempts to utilise technology is in some ways a failure—for while he produced vast quantities of works, available to the public as cheap multiples and thus had enlarged the art market his activity was still at the periphery of the industrial system. Also the substitution of a large quantity of useless art objects rather than making quality available to a large number of people is absurd. Vasarely has expanded the art market from an elitist consumer group to a mass market, however in the process—(because of the trivial nature of objects whose only function is to produce sensations on the retina) his objects start to resemble the other useless commodities already present in the American consumer market such as retractable headlights and such items as the Nothing Box (a little black box with a light that flickers on and off retailing for about the same price as a Vasarely multiple—designed to be used as a gift for those who already have everything).

In contrast to Vasarely while his production methods could use some systems concepts—a systems aesthetic is literal in that all phases of the life cycle are relevant. There is furthermore no primarily visual end product—the systems aesthetic resists functioning as an applied aesthetic but rather functions in revealing the progressive reorganisation of the natural environment. Thus it holds the means for improving the quality of life not merely enlarging its quantity.

Relation of Pop Art to Society

Pop Art made a similar contribution as Op Art destroying the concept of a precious, exalted and exclusive art object. Pop's significance to a great extent was its recognition of the actual popular culture as a source for the images of art. It was a reaction to the new continuum of consumer society at a time when the undesirable consequences of the misuse of technology and the consumer mentality were not

evident as they are now. Furthermore, the recognition that the entire environment could become the work of art is important as a step in the development of a systems-oriented aesthetic. Art increasingly began to take a life-like format overlapping with the environment and blurring the distinctions between art and daily life. Thus it was taking on certain process-oriented characteristics: "the new problems for art concern constant redefinition of its boundaries and more process oriented distribution of energy".¹¹⁴

Commonplace images in Pop Art are in part a reaction to the usage of 'fine-art avant garde paintings' in a mass context. The advertising-packaging industry would endow its goods with some of the aesthetic excellence attributed to fine art. Thus 'A New Trend in Furnishing' provides sample interiors complete with an abstract expressionist painting on the wall—i.e. the latest avant garde artwork is lending character to a mass product. However while Pop Art reacted against this type of exploitation by producing the banal aspects of commercial advertising as art, because it remained in the same relationship to the economic context it too is exploited so that nowadays the same furniture interior features a painting of Campbell's Soup Tins.

Pop allies itself closely to the economics of plenty, it bears a generally sympathetic relationship to consumer society and thus appears to have a mechanistic world view underlying it. Andy Warhol when interviewed made the following comments:¹¹⁵

"...I think everybody should be a machine

I think everybody should like everybody."

Q. Is that what Pop Art is all about?

A. "Yes its liking things."

Q. And liking things is like being a machine?

A. "Yes because you do the same thing every time. You do it over and over again."

Furthermore, Warhol claims he likes monotony and demonstrates it by painting 200 cans of Campbell's soup. In addition Warhol's public personality has been projected through the media as a commodity in the same way movie idols are consumer commodities.

This same robot-model¹¹⁶ of human behaviour is the basis on which advertising of consumer goods operates. As we have shown, a continuous demand for a corporation's product is necessary for it to maintain its autonomy.¹¹⁷ Consequently it creates and maintains the demand for its goods typically by manipulation of people's symbolic needs through advertising.

The emphasis is on manipulation—the more predictable or more machine-like the individual¹¹⁸ the easier it is for the corporation to maintain the continuous demand for its products. The techniques used typically exploit man's symbolic and psychological needs:

"People feel that if you jump from a Ford to a Cadillac, you must have stolen some money."

"You have to have a carton that attracts and hypnotizes this woman, like waving a flashlight in front of her eyes."

"The home freezer becomes a frozen island of security."

"One of the main jobs of the advertiser in this conflict between pleasure and guilt is not so much to sell the product as to give moral permission to have fun without guilt."¹¹⁹

Vance Packard states the obvious: "Much of this advertising seems to represent regress rather than progress for man in his long struggle to become a rational and self-guiding being". While Pop Art does sometimes express explicitly a judgment on the consumer society,

more often it celebrates it. A local exception to this rule is Richard Larter, whose juxtaposed images of political figures and erotic images gives visual expression to Marcuse's theory on the connection between political and sexual repression in society.¹²⁰

Nevertheless, Pop Art of this nature is criticism which still remains within the framework of a mechanistic world view. Even the use of collage, as a pictorial device—i.e. disparate, random images, presents a concept of the world incorporating chance causal chains—an unstructured, unorganised world unlike the perspectivist's model of the world.

The Consumer Object

To state that the consumer product is considered normally as a closed system seems obvious but it is necessary to point this out because of the close relationship of both Op Art and Pop Art to the consumer product. To illustrate this we need only consider that when the advertiser promotes it he is selling the end-product not the resource depletion, or the production process and not its consequences (polluting by-products or alienation of the factory's employees), nor is he selling it as potential waste (when its uses have been exhausted).

The failure to see objects as merely particular configurations of matter at a particular point in time (i.e. with a past history as well as a future history), as part of continuous transformation of energy, results in blindness to the relationship between phenomena. Thus many people are concerned about pollution but see it merely as a need for backyard cleanliness on a larger scale, not as being related to the entire network of political, economic and social systems.

We habitually attribute values to entities—thus pollution is bad and maintaining our growth of Gross National Product is good. From a systems viewpoint, however, entities do not have any intrinsic 'goodness' or 'badness' merely a position in a system. Pollution thus belongs to the system which includes: the consumer good, the corporation, the increasing scarcity of time, decreased public services, debasement of culture, advertising, etc.

The problem of pollution, then cannot be solved outside the context of the entire system, its symptoms can be merely hidden.

5. THE TRANSITION

Minimal Art

The beginnings of a systems-oriented aesthetic seems to appear in much of Minimal Art. Minimal artists tried to produce objects which were 'wholes'¹²¹ in other words that they constituted perceptually a single 'gestalt'. Consequently their forms were not constructed visually as a summation of parts but rather consisted of a single indivisible form.

This aim of Minimal art comes from its phenomenological basis: it is based on the philosophical idea that experience through our senses is the only reality—in other words that experience has to be dealt with directly. Thus the object and perceiver are both conceived as necessary constituents of a specific situation—the perceiver is supposed to experience the phenomena before him operationally—not by a mere casual observance "to clear one's presuppositions about it".¹²² Furthermore the perceptual experience in this case was contrived as a real-time activity not an ideal-time activity in the case of Op Art object situation,¹²³ because in this case the experience of 'gestalt' depends primarily on movement in space and time around the object.

Burgin notes that the experience of time and space in perception are linked: "time in the perception of exterior events involves the observation of a succession linked with muscular-navigational memories—a visceral identification with change. Similarly kinaesthetic modes of appreciation are applied to the subjective transformation of these events in interior time and in recollection."¹²⁴ He concludes that to distinguish between the 'arts of space' and the 'arts of time' is a misconception based on materialism from a focus on the object rather than upon the behaviour of the perceiver.

The distinction between real-time and ideal-time perception can be seen in the modes of attention employed by the perceiver in relation to the Op Art object and the Minimal object.

In relation to the Op Art object the sensation on the retina can be considered to occur at a single point in time—there is little additional information (or rather sensation) to be obtained by moving in space relative to it whereas in relation to the minimal object to obtain the available information employment of many perceptual systems¹²⁵ is required—the Minimalist work can be best interpreted from the viewpoint of an information seeking theory of perception. In addition the Minimal object and viewer connection seems more dependent on a common dimensional domain¹²⁶ than the Op Art object and viewer relationship. Also the aspect of space-time seems more crucial to the dimensional domain of the Minimal object than it does to the Op object. Thus in a sense the current occupation with time and consequently ecology and consciousness of process has its origins in Minimal art.¹²⁷

Donald Judd

The method of Minimalist art was often highly conceptualised. Donald Judd in his writings would compile in relation to his 'specific objects' what he would call an entity's 'list structure' i.e. all the enumerated properties needed to physically build the object. The art object's list structures also included its phenomenal qualities which did not show up in the fabricator's plans but proved necessary for 'seeing' the object. This rationalisation of the aesthetic process of art objects and their conceptual origins is thus a pre-requisite to the emergence of a systems aesthetic. The object both in its parts and its perceptual qualities becomes a holistic object.

Most importantly the object itself is no longer as important as the information about it. Thus an artist such as Robert Morris can order a copy of a piece by telephone and have it privately fabricated. His later works are focused on material forming techniques and arranging these results so that they no longer form specific objects but remain uncomposed. The precedence of process becomes increasingly obvious in works of this nature.

Morris leads into a vast range of materials, earth sculptures, air and steam works where the specific material determines the sculptural responses made to it.

Carl Andre

Carl Andre's works are typically within a strict self-imposed modular system. He uses convenient commercially available objects, like bricks, styrofoam planks, ceramic magnets, cement blocks and wooden beams.

Individual pieces are specifically conceived in the conditions of the place in which they are to occur. The component units are arranged (this implied the fixed nature of the parts and a preconceived notion of the whole). Furthermore, the parts are held together by gravity

and when the component parts are removed from the particular site the artwork ceases to exist.

Andre's pieces are typically flat on the ground and impinge only slightly into the spectator's common space, Bochner¹²⁸ says of them "their persistent slowness is unavoidable and gives them their presence". Not only then is Andre systematic in his methodology but the connection of his work (consisting of a specific arrangement) to a specific location and to a specific perceiver can be described as a system—though not an open system under our terminology.¹²⁹

Moreover while the beginnings of a systems-aesthetic appear in Minimal art the system is still closely related to the nature of the material or object used to display it—whereas the art discussed under systems-oriented art in its dematerialisation tends to be independent of particular material qualities.

Little Bay Wrap-Up

Many environmental works and events which are process works and thus often real-time activities also exhibit a transition towards a systems-oriented aesthetic.

Christo's Little Bay Wrap-Up in Sydney 1969 is such an example. One million square feet of coastline was wrapped up with a cream colored saron plastic and fixed with orange polypropylene rope. In a sense this was still a concern with formal sculpture in that the volumes of the wrapped coastline were highlighted by a single uniform surface. There was a modification of one's information about the site, and the visual element after the initial impression (because of the uniformity of texture and colour) was somewhat replaced by other sorts of perceptual information obtained through listening (as people moved over the site, the ocean, seagulls) touching (the altered surface of rocks, plastic stretched over solid and void) smelling (the ocean, etc.) and the wealth of information from one's bodily movements over the irregular surface.

The coastline remained packaged for a few weeks and once the plastic coating was removed there was no evidence at all on the actual site of the event having taken place. In addition, Christo's process orientation can be seen in the fact of planning, negotiating, obtaining information about weather, materials, etc. as well as the process of actually creating the work, adjusting his strategy as problems arose due to the nature of the environment on the site and the changing experiences in the changing environment,¹³⁰ were all part of the work. The residue of all this activity is a book which records its various aspects of planning and making. Initially it was intended that the coast remain covered in plastic until ultraviolet light finally caused the deterioration of the plastic.

Thus the work itself is only obtainable through a photographic record—it avoids the gallery situation in that it is beyond the scope of most collectors to buy the coastline or for that matter pay the huge cost of materials¹³¹ and maintenance. The scale of the gesture is important for enormous resources have been mobilised in the production of a work which is physically ephemeral—leaving practically no residue (merely proof of its existence).

Furthermore, this work satisfies many of the criteria for an open system¹³²—it takes energy from the environment (materials, manpower, physical rock structure): there is a transformation of the energy (i.e. the making, planning process) and it exports some product into the environment (information about the modified environment). The system grows (i.e. the quantity of wrapped coastline increases)

as more inputs are absorbed however the source of these inputs is not really dependent on the output (unless the output is the artist's fame which results in his ability to procure more resources). In the process of making—there is a feedback relationship between the problems in the transformation of the energy in the situation and the progressive solutions. The system is temporary and cannot maintain itself indefinitely, also it merely expands in size—it does not increase in the complexity of its organisation in the way an open system behaves. Also it is bounded within the limits of its initial conception and materials.

Eventstructure Research Group

As the name implies this group organises events using different types of inflatables as their media. Their work is similar in its process aspects to Christo's work. There is no real product—the plastic tube is merely a method for structuring an activity—i.e. it inflates and deflates and is modified by its specific relation to the external environment—people, landscape, projected film, sound, etc. All aspects of the process are relevant.

Again while the events embody some open system concepts—input, output and transformation, the growth limits are always determined by the initial boundary conditions (i.e. the form of the plastic tube). Thus their conception of open systems seems intrinsically bounded by their material limits (plastic inflatables)—similarly Christo's system concepts are bounded by the physical limitations of his media. As a contrast much of recent systems-oriented art seems media-independent¹³³ and thus is a more radical stance. Because the systems orientation is intrinsic in the qualities of the media used the system is not the main concern of this art but rather a by-product of other concerns.

ERG adopt the relationship suggested by Galbraith¹³⁴ in relation to industrial society—i.e. that sensitive individuals should be able to determine the uses of technology for non-consumer reasons. In this way they seem to be undermining the values of the technocracy. The possible continued use of each work contradicts in a sense the continuous stream of outputs necessary to maintain the growth economy. "What is needed now are more and more demonstrations of technological application outside the dictates of the institutionalised program. Such an open-ended exploitation of technology's resources becomes the evidence for all people that there is an extension of their individual wills and freedom."¹³⁵

Christo's employment of technology implies a similar attitude—also both Christo and ERG emphasise the importance of contact between the artist and ordinary people as a means for changing their individual possibilities (i.e. changing their consciousness). In this contact the environment or event is not imposed in a mechanistic way for the production of specific predictable sensations but rather the participants can relate spontaneously to various kinds of information available to them.

6. SYSTEMS ORIENTED AESTHETICS

Ecological Art

In a sense the open systems concepts in the works of Hans Haacke and Alan Sonfist are also dependent on their materials. However while the boundary conditions for a Christo or ERG event is synonymous with the natural process in relationship of a specific material to a process, the choice of natural organic and inorganic

processes in ecological art as the boundary conditions of the system enlarges it enormously. Also the fact that the medium used is nature which is the paradigm example of an open system¹³⁶ it is then to be expected that their works embody the characteristics of open systems.

Sonfist uses natural mineral crystals within a hollow glass sphere sealed at its cylindrical base. The configurations formed within it are never twice the same, following a self-generating cycle.

- 1) The crystals fall to the base through gravity.
- 2) With an application of heat or light the crystals are vaporised into a purplish gas which migrates upwards through the spherical space.
- 3) The vapour crystallises and the crystals adhere to the inside surface of the glass.

The analysis of Sonfist's work in terms of open systems characteristics reveals that it satisfies many of the criteria but not all: the system imports energy from the environment (heat and light) which transforms crystals into gas. The pattern of activities is furthermore cyclical. The system cannot however grow into more complex states (i.e. the principle of negentropy) and its final states are determined by the initial conditions—i.e. properties of the crystals, volume enclosed and enclosing surfaces of the sphere. This system while acting as a metaphor of larger ecological systems is potentially creative¹³⁷ in the sense that it is information about the physical environment which if used could result in a higher ordering of natural processes by man.

Hans Haacke

Hans Haacke's work has developed from works using water, emulsions, steam and air, initially within a strong geometric framework. However his later works reveal his decision to allow natural entities to organise themselves which is in direct contrast to Sonfist who has organised his process with an artificial boundary—artificial despite the fact that the process is dependent on this boundary—in condensing the vapour and supporting the crystals.

'A 150 foot plastic hose, tightly inflated with helium will fly high above the beach or sea ... And also I would like to lure 1000 sea gulls to a certain spot (in the air) by some delicious food so as to construct an air sculpture from their combined mass.'¹³⁸

Similarly Haacke's 'Spray of Ithaca Falls'—the freezing and melting of a rope depended on environmental conditions. A nylon rope was wrapped in screening and suspended across the falls. Flowing water and freezing cycles quickly built a snow and ice configuration over a four day period.

The similarities to Sonfist's work in its operation is obvious, however by the physical boundaries of Sonfist's work it could be considered as an object in an ideal-time framework¹³⁹ (except that its internal composition changes) however because Haacke's works are in the environment and are unable to be stored and can only be experienced by being present where the passing of time is simultaneous with the experience of viewing it.

Some of his works cause disturbances of an ecological or social system.¹⁴⁰ For example when he imported artificial rain and moss into an area of dry forest, he changed its vegetation for a short period.

Further extensions of the systems concept in Haacke's work lie in

his willingness to use all forms of organic life and in some works is content not to structure them at all (i.e. total non-interaction) but merely witnesses such things as the hatching of chickens or exhibits a meteorological chart. The importance of the systems concept and not of the materials used is also evident where 'invisible' components such as air, water and steam are used in a system.

It must be emphasized that because no artificial boundary is imposed by man the system can obviously continue to function as an open system in nature indefinitely—it has been noted that the containment of phenomena actually restricted its creative functioning because it was always dependent on its enclosure.

Real-time Art

The similarity of Richard Long's¹⁴¹ work to Haacke's seems obvious; where Haacke responds to the information potential in animal ecologies¹⁴², Long responds to the information potential in the landscape, Long is putting the landscape and his aesthetic response to it on display in a real-time situation—his response to the English countryside is typically sympathetic, without imposition and attentive to its subtleties. Paintings of landscapes act in a completely different way—the image becomes the important aspect and typically is contained in a finite pictorial frame by an anthropocentric man who admires the landscape but continues to exploit and destroy it. The extensions of the landscape painting, its anthropocentric character and ecological naivety can be seen in the example of the company director whose company destroys nature (either directly or by being part of a growth economy), increases entropy and generally acts in contradiction to biological and ecological principles. Like the painting "Nature" is considered as an ideal time state and has nothing to do with the entity he is despoiling. Thus with his profits he buys a house in picturesque natural surroundings just like his landscape painting.

When we speak of the distinction between Art and Life this is what we mean—that our responses to art conventionally have been idealised and symbolic (in this context they still may be also) and thus many of our attitudes to the real world are idealised too.¹⁴³

Bertalanffy writes of a growing schism between biological drives and symbolic values. Thus while one of the reasons for rapid technological change is increased proficiency in symbol manipulation in philosophy, art, religion, literature, mathematics and various forms of scientific logic. But belief in symbols and ideologies often compels man to commit acts ordinarily against his biological well-being,¹⁴⁴ "the symbolic world of culture is basically unnature, far transcending and often negating biological nature, drives, usefulness and adaption".¹⁴⁵

It seems from this that Marcuse's criticism of art as being an ineffective agent of social or environmental change stems from it being a condition of idealised time and not a real-time activity.¹⁴⁶ Thus when the artist consciously makes art a Life or real-time activity¹⁴⁷ it can start to have actual social and political consequences. Whether art should have this role is of course a different question—we may be in fact satisfied with its metaphorical roles.

Dennis Oppenheim

Oppenheim is an interesting figure because he is an Earth artist whose activities have become more and more focused on his own body. In a sense he is useful as a link between 2 different categories of recent art—Earth Art and Body Art and Performance Art.

Before we go on to discuss his work it is important to note that a distinctive feature of much recent art is the movement away from the gallery—Earth Art.¹⁴⁸ in fact makes this unavoidable whereas Body art and Performances can conceivably still occur in a gallery. The important point is that this enlargement of boundaries is important in that the artist becomes exposed to a new potential source for art information. Just as acceptance of the picture frame imposed certain finite possible modes of expression so too the gallery imposes certain limits to expression. Similarly the artist's reliance on consumer society (although this is perhaps unavoidable) similarly limits the range of expression—the art system offers the artist money and fame to conform.

As an Earth artist Oppenheim mowed fields of crops in geometrical configurations which usually contradicted the normal contours of the land. His works had similar qualities to Heizer's—i.e. an imposed gesture on the landscape and where Heizer's holes interact with environmental forces by filling up with water, Oppenheim's fields grow back to their former length. (An interesting aspect is that both the cut and uncut grass grows at a similar rate so that the difference in length between them remains constant—the work maintains its form despite the interaction with natural processes).

Oppenheim moved on from 'ground systems' to use of interacting ecologies. In July 1968 he directed the harvest of a 300 x 900 foot oat field. Cutting, gathering, baling and trucking of bales were stages of the art process documented. At that time the artist planned a work for the summer of 1969 in which "isolated episodes will be directed towards a core network involving every permutation (from planting to distributing the product)".¹⁴⁹ A portion of the crop is to be selected by the artist and sold in 25 lb. sacks. Also four carloads of wheat will be purchased from the Dutch commodity exchange in Amsterdam and sold short in the U.S.

The significance of this project is that Oppenheim is using the untapped energy and information network of the day-to-day environment with a minimum of reorganisation. It is also interesting to note that the art commodity system is undermined in a sense by the unsaleability of the process (it is a 'ready made' process taken from the real environment) or by the fact that what is sold is some sort of residue which the art-consumer society snaps up, its art value being far in excess of its normally attributed economic value.

Isomorphisms

Oppenheim's work recently has shifted focus to his own body. This is an attempt to come in closer contact with systems as they affect the artist (i.e. the connection of his body to his mind). Here the material used to display the systems relationship impinges only on the artist himself—and the principle of withdrawing from imposition on the external environment and still yielding art information applies in an even more extreme way.

Oppenheim's body art also tries to set up morphological connections between his body processes and the land's processes. A film made in conjunction with Bob Fiore correlates an incision on Oppenheim's wrist and the subsequently slow healing process with a cut or a large ditch in natural terrain.

In a work called Backtrack he compares the evidence of past wounds or scars on his body to the characteristics of land in also manifesting its past in tangible forms. Oppenheim comments: "For me activity on land is charged, not passive like processed steel, the

land holds traces of a dynamic past which the artist may allow to enter his work if he so wishes...I am creating a system that allows the artist to become the material, to consider himself as the sole vehicle of art—the distributor, initiator and receiver simultaneously".¹⁵⁰

Another piece, "Material Interchange for Joe Stranard" consists of a jar containing a mosquito placed over a friend's arm, which eventually bites him. Out of this present context a mosquito biting someone yields very little information—in the context of Oppenheim's art concerns, the information is of a different nature to that expected.

"Think what's happening here. The mosquito is filling its body with a material lying below the surface on which it is standing and then becoming airborne. This involves an incredible material displacement. This foreign body is now carrying your blood around. Your blood now conforms to the interior configuration of an insect, it places a part of you in a state of material suspension."¹⁵¹

The point is that Oppenheim is presenting data which is accessible to everyone but by placing it in the context of his art works it becomes information about structural similarities between organic (including man) and inorganic systems. A viewpoint such as this cannot imply either an anthropocentric universe nor a chaotic one—there is structure at every level of the universe. This point of view moreover has been already presented to us by ecologists.¹⁵² Oppenheim's work thus embraces a perspectivist philosophy—it also illustrates that underlying concerns of artists working within a real-time context are similar despite differences in media—thus Body artists are really dealing with processes, change and systems as too are Earth artists.

Another artist who has dealt vividly with isomorphisms between different phenomena is the musician John Cage.

"I have spent many pleasant hours in the woods conducting performances of my silent pieces, transcriptions, that is for an audience of myself, since they were much longer than the popular length which I have had published. At one performance I passed the first movement by attempting the identification of a mushroom which remained unsuccessfully unidentified. The second movement was extremely dramatic beginning with the sounds of a buck and doe leaping up to within ten feet of my rocky podium. The expressivity of this movement was not only dramatic but unusually sad from my point of view, for the animals were frightened simply because I was a human being. However, they left hesitatingly and fittingly within the structure of the work. The third movement was a return to the first, but with all those profound, so-well known alterations of world feeling associated by German tradition with the A-B-A".¹⁵³

Real-Time Artists

When an artist acts in a real-time situation all the time and specifically is concerned with the causal links in a social system, it often becomes difficult to know when the artist is doing a piece (i.e. specifically processing art data into information).

For example Vito Acconci had an exhibition in a gallery over a period of some weeks. During this time he progressively moved all the furniture, clothing and utensils on which he was dependent from his flat 2 blocks down to the gallery where it was stored. As more of his belongings were removed from his flat, Acconci began to realise the extent to which he was dependent on certain items.

In this situation it is not only Acconci's belongings which are on exhibition at the gallery but Acconci's day-to-day real-time existence. One cannot contemplate this artwork in an idealised time situation.

Similarly with Gilbert and George, the sculptors, "You know as soon as they walk in, you don't have to ask whether they are doing a piece."¹⁵⁴

Their performance of the Nerve Sculpture at an open-air concert by Blind Faith in Hyde Park involved walking completely unrelaxed, zombie-like twice around the audience. At one stage a group of skinheads started to jeer and throw things and police had to form a cordon to protect them.

"It was really a very impressive sculpture" says George "with cameras clicking and teenagers asking us questions about sex, drugs, religion and politics. We had prepared answers, mostly 'Yes' or 'No'. We wore dark suits, 'collar and tie' and when they asked 'Why are you dressed like that we said 'Only to be normal!'"¹⁵⁵

7. ART AS INFORMATION—PROCESSING

*Conceptual Art*¹⁵⁶

The recognition that art is really concerned with information processing and not necessarily working from data in the form of objects was confirmed by the emergence of conceptual art. Sol Le Witt has stated "since no form is intrinsically superior to another, the artist may use any form, from an expression of words (written or spoken) to physical reality, equally."¹⁵⁷

Douglas Huebler's work can be broken up to fit into one of three categories: Duration, Location, or Variable Pieces. The artist specifies that all geographical, temporal and process lines of demarcation limit the conceptual boundaries of the piece but since most of Huebler's art is embedded in a real-time situation he places no physical boundaries around a work's beginning and end on its actual location.

Duration Piece 9 consists of a 1" x 1" x 3/4" plastic box which was enclosed within a larger cardboard container and sent by registered mail to an address in California, on being returned as undeliverable it was left altogether intact, enclosed in a slightly larger container and sent to Utah. When it was returned again he continued the same process, selecting addresses which marked off a line joining the two coasts of the United States.

Huebler's awareness of systems is quite substantial—he is drawing attention to the existence of various energy systems in the world which can be 'plugged into', thus he utilises the U.S. postal service to describe over 10,000 miles of space in six weeks. It is significant that Huebler does not produce any art data, he selects a system already in the world (the U.S. postal service) and turns this data into art information (by simply posting a package in the mail).

Robert Barry is concerned about what we know about an environment without seeing or experiencing it. An exhibition in his bare studio consisted of 1) 1400 KH2 Carrier Wave (AM) 1968, 2) 1100 KH2 Carrier Wave (AM) 1968, 3) 98 MH2 Carrier Wave (FM) 1968, 4) KH2, 8.25 MM Ultrasonic installation, 5) Phosphorous-32 Radiation Piece, 1969, 6) Cesium-137 Radiation Piece 1969, 7) Electro-Magnetic Energy Field $E = 110V$, 6.2 metres 2, 1969.

Some of his recent proposals are statements such as "something which is very near in place and time but not yet known to me" or "something which affects me and my world but is unknown to me".

As far as the receiver is concerned the newer works involve a conceptual process which triggers off a dilemma known in philosophy as logical regression or a series of propositions that have no beginning and thus provoke circularity.

Again there is no data presented as such by Barry—the things used as his data exist in the real world—he merely selects them for art processing.

As Burnham states: "One of the transcending realisations of conceptualism is that any form of energy can or may be used to convey information, that the sender or carrier is in fact a secondary problem to that of formulating a significant reason for its use."¹⁵⁸ What the conceptual artist does is formulate reasons for using certain aspects of the real world.

Information and Creativity

It is interesting to reiterate at this point the relationship between information and entropy.

Bertalanffy¹⁵⁹ has shown the actual mathematical correlation between these two quantities and McHarg¹⁶⁰ has pointed out that man's creative role in nature should be considered thermodynamically as increasing the complexity, diversity, stability, quantity of species, number of symbioses¹⁶¹ and lowering entropy in the biosphere.

We can consider information about the environment as being equivalent to entropy. The application of this equation is evident if we consider the information about the environment which is present in the genes of an organism. This information is the result of natural selection and is the means by which the organism has adapted to the environment. Those species whose genes contained inadequate information about the environment were unable to adapt and thus became extinct. Thus the maintenance of a high energy level of an organism is dependent on the adaptive usefulness of its information.

Man can be creative if through his apperception of the biosphere he can obtain information about the biosphere and can then intervene to produce changes which raise the energy levels of the biosphere. At the moment man is steadily lowering the energy levels of the biosphere.¹⁶²

A first step to a creative role is a recognition of the systems underlying nature, thus the information which artists such as Haacke, Long, Oppenheim, Huebler are producing (i.e. the pervasiveness of organisation at all levels of nature, the perspectivist approach to the world, a systems-oriented aesthetic) is potentially creative in the natural world in that the information could lead to people changing their attitudes and actually intervening with nature to raise her complexity rather than reduce it.

However, until this information is used in this way, their work outside an art context remains only potentially creative.

The obvious point to make is that the ecologist presents the same information more precisely and clearly than any of these artists. The specific attribute of the artist could be that he expresses this same aesthetic¹⁶³ in a more striking fashion, or that he applies it practically to his own lifestyle (particularly those artists whose art activities are synonymous with their day-to-day activities in real-time) or he makes contradictory cultural values available (to the prevailing ones) for possible use by society when socio-political circumstances have changed.¹⁶⁴

However the unimpaired survival of these values may be difficult: Seth Siegelau who exhibits works by conceptualists Barry, Weiner, Kosuth and Huebler admits "my interest as a businessman isn't in circumventing the commercial system. I've just made pages of a book comparable to space (art situational space). Artists having

their work go out as printed matter can be just as viable as selling Nolands.¹⁶⁵

The difference is of course the nature of information in the two works (object-aesthetic vs systems-aesthetic) while their sale conveys the same art information.

Nevertheless the sale of a systems-oriented art (of which conceptual art is a subject), does pose certain questions in relation to the art-system, consumer society and the corporate state.

Consequences of Dematerialisation

Through the history of art there has been a certain tacit relationship between dealer, audience, collector and artist establishing control over the production and dissemination of a work of art. With the art discussed all previous notions of an object's intrinsic qualities have been challenged to the point where it would be a simple matter to reproduce some recent works with or without the artist's consent.

The dilemma in the present situation occurs when the collector obtains ownership of information which is available in the public domain in any case. It is the same kind of irony of the consumer society when a collector (disconcertingly?) buys a pile of earth, vegetables or any of the other 'poverty' materials which are the residue of some artist's process at 'art' prices which are considerably higher than the generally accepted economic value of these materials. A more subtle irony is that the artist is unwittingly predicting the future when we may in fact pay a high price for a clean pile of earth or for green plants outside an art context—already peace and quiet, time and natural beauty are becoming scarce commodities and consequently expensive.

While the 'dematerialised' art still assumes the form of a commodity particularly as printed material it is quite likely that the traditional art market will change for a new audience. The collector of carefully crafted, high quality decorative paintings will obviously become disenchanted in an art lacking visual sensual appeal and questioning his materialistic values so that the promoter of this art (dealers such as Siegelau) will look for new markets and possibly find them in a more radical and politically motivated audience. Systems-oriented art could then articulate the necessary; 'aesthetic sensibility' which is a necessary basis for political and social changes which could be effected by this audience.

Art as information processing also leaves little in the way of protection for the artist. Style used to be the equivalent to patent rights. In the current situation where the artist's output is based on non-sequential ideas, it becomes difficult to support the notion of ownership. Ownership amounts to who amplifies the original data (which is available to all) so that it becomes information.

Bertalanffy¹⁶⁶ has noted that one characteristic of a system is competition between parts: every whole is based upon the competition of its elements as one part becomes dominant or is better organised to gain more information and energy from less organised systems (this principle accounts for the widening gap between the overdeveloped economics and the underdeveloped economics).

In an art system it means that as the fame of a living artist grows he simply ceases to make data. His subsequent output is information since it is already art history. Also the famous artist as a better organised system has greater access to museums and media and while he can plagiarise ideas from lesser known artists the reverse cannot occur.

Burnham however notes that the implications of this total art processing system are quite radical—"As information processing becomes better understood, institutions and persons other than artists will insist on creating their own art information, specifically in projects which demand money, planning and technical support beyond the artist's means."¹⁶⁷

There are two possible consequences here that 1) the systems-aesthetic implicit in this art-information will be used by non-artists in which case this could be the foundations for liberation according to Marcuse¹⁶⁸ or that 2) the systems-aesthetic will provide aesthetic guidance to the technocracy when the technocracy participates in projects concerned with this type of art information.¹⁶⁹

This is however only conjecture—there is no evidence that this will occur—the point is though to outline the radical potential of this dematerialised art.

8. POLITICAL IMPLICATIONS

Because systems-oriented art is typically a real-time activity it is not surprising to find it impinging on other systems beyond an art context. A perspectivist approach typically tries to extend the boundaries of the environment of the art system. Where Op and Pop Art condone the industrial process and thus the corporate state, systems oriented art questions it and comes into actual conflict with the corporate state's values.

Haacke's Cancelled Show

Hans Haacke's cancelled show at the Guggenheim is an obvious example of a conflict of values.

Haacke's interest in systems has been discussed already.¹⁷⁰ It is in this context of systems that we must see the offending work. The work, dealing with interactions between human organisms or more specifically with social systems consisted of photographs of real estate in New York and the captions to these had business information collected from the public records of the County Clerk's office which gave details of the owners, previous owners, landlords, mortgages and other business transactions.

"The works contain no evaluative comment. One set of holdings are mainly slum located properties owned by a group of people related by family and business ties. The other system is extensive real estate interests owned largely in commercial interests, held by 2 partners".¹⁷¹

The show was cancelled by the Director of the Museum because Haacke's work in correlating physical decay with specific financial transactions seemed to be too politically loaded.

The Director wrote: "We are pursuing aesthetic and educational objectives that are self-sufficient and without ulterior motives. On these grounds the trustees have established policies that exclude active engagement towards social and political ends."¹⁷²

The point of course is that the Guggenheim Foundation itself represents and propagates certain attitudes contradictory to Haacke's. This can be seen in the functions of the Foundation—it dispenses thousands of dollars in grants every year; induces wealthy patrons to contribute to it; it holds spectacular social events and as a public or semi-public institution it is a priori a political symbol. Thus Haacke's exhibit is seen to be attacking 'the holy institution of private property in a capitalist society'. In relation

to the art gallery (whose function is the selection of the superior objects of our culture) Haacke is implying that there is no difference between the power of money to control the direction of art and the power of money to keep rotten slums in existence.

Systems-Aesthetics as Values

The relevant point which arises from this cancellation for the systems-oriented aesthetic is that mere analysis of any environment using this approach 'objectively' (i.e. considering phenomena as inputs, transformation of energy, outputs, etc.) implies automatically a set of values.

We have seen that in nature a systems approach contradicts an anthropocentric man, in society it contradicts the corporate values. This is further evidence of Bertalanffy's implications of a systems approach in relation to the 'image of man'.¹⁷³

Thus values on specific issues are closely tied to world views—an anthropocentric man is also subject to the corporate state's values—Haacke quite possibly in the context of his other systems (inorganic, organic and human) presented these without judgment, however to merely take a systems approach is, a priori a judgment.

Thus it is not surprising that other artists with developing sensitivity to systems (and thus perspectivist world views) are also in conflict with the aspects of the art-system, such as institutionalised galleries which represent contradictory values. Daniel Buren's refusal to exhibit at the Guggenheim and Robert Morris' cancelled show at the Tate are further examples.

Joseph Beuys

The political activities of Joseph Beuys stem directly from his art. While his systems-aesthetic is not as clearly defined as Haacke's a perspectivist viewpoint is nevertheless present.

Beuys' universe is typically structured, not chaotic, he has furthermore rejected the objectiveness associated with reductionist scientific theories which underlie our society's uncritical acceptance of all that technology has to offer.

He sees art as being a real-time activity and thus a political action. "Freedom is the creative capacity to introduce new causes into the course of history".¹⁷⁴ Thus it is not surprising that Beuys sees his most creative role as an educator. His political actions have been quite direct— from the founding of an Organisation of Non-Voters to interviews with Chancellor Willy Brandt on 'freedom of information'.

* * *

To reiterate the point of this section then, a systems oriented aesthetic a priori incorporates values which conflict with those of the corporate state and the scientific premises underlying the technocracy because both were formed on object-oriented, mechanistic and reductionist attitudes. While this was implied in the development of a General Systems Theory by Bertalanffy—the social and political conflicts with the Establishment, of art based on a systems aesthetic illustrates his point.

CHAPTER 7: CLEANING UP

A General Perspective

We have established then, a shift or tendencies towards a shift in the major paradigm in art from an object-oriented aesthetic to a systems-oriented aesthetic. Furthermore the metaprogram of art seems to be changing in response to the changing needs of society in relation to man, the environment and technology. This change moreover, is by no means without inconsistencies within its internal logic.

A systems approach reveals the interrelationship of dealers, galleries, collectors, artists and both their works and the software extensions of their works. (i.e. in magazines, books, etc.). Such an approach shows that each component has an effect on the total art information produced and that more frequently writers, critics and historians rather than artists generate actual art information. Typically, the artist merely produced the raw data and thus to a great extent factors outside the control of the artist determined the nature of the information produced. This realisation resulted in a shift in the role of the artist from the producer of data to the amplifier of existing data or as an art information processor.

This art information is increasingly about various types of systems rather than objects (which are merely components of systems) and this accounts for the general observation that art has become 'dematerialised'. It seems, also that the systems-oriented aesthetic exhibits in the responses it makes to data in the real world the same type of sensibility as the one expounded by McHarg in an environmental context and implied by Galbraith and Marcuse in a socio-economic context, and thus could conceivably play some role in social change.

The problem in its effectiveness, however, lies with the limitations the artist is subject to within the art-system, before we even consider its limitations in relation to the rest of society.

Where the artist has a commodity—a thing of limited supply to offer, his problems are merely those of demand (which it is the dealer's duty to stimulate). Where, however the art by its very nature offers no transferable rare physical product, the artist attempting to work and earn as an artist within a system which is geared to sale (in so far as it is in any way adjusted to art in the context of economics) must either starve or fabricate criteria of rarity for what is intrinsically not rare—for what may indeed "depend for its very identity as an endeavour within the domain of art upon the irrelevance of such criteria. In these circumstances distinctions between those artists who will permit their work to be 'dealt' with and those who will not, become distinctions with potentially critical overtones."¹⁷⁵

If an artist is to allow his art (even if it is dematerialised) to become a commodity when his beliefs are apparently radically contradictory to the assumptions or beliefs formative in the socio-political structure of the Corporate State (whose smooth functioning depends on a continuous and predictable production-consumption cycle) is to defeat his intentions. For the information then contained in his art may be information about social change but it is also information about condoning the economic system he is trying to subvert. Furthermore, it must be stressed that this is only a problem if the artist is concerned with social change.

Art-Language

This is the criticism which the Art-Language Group offer in reference

to many of the recent projects and performances. "Radical works are absorbed by the consumer capitalist system, the same as objects; instead of objects, it is now processes, photos of processes (signed), interviews, personalities and statements that are sold".¹⁷⁶ Lucy Lippard has recently expressed a similar disillusionment with an art mode whose great promise as an agent of social change seems to have been sublimated by consumerism.

Art-Language see this as an outcome of the fact that the 'new art' is still working within "imposed paradigms and a formalist superstructure." Art-Language aims to examine these premises and assumptions on which art has been based, to create new promises, new theories of art, new methodologies and alternatives to art making. This is done with the aim to ultimately propose ways that art can be effective in contributing to social change.

Kosuth sees the function of art as that of a question, to extend the concept of what art is. "The value of a particular artist after Duchamp can be weighed according to how much they questioned the nature of art",¹⁷⁷ i.e. what they added to the conception of art.

Thus the art process is seen as framing propositions as to what art is. Furthermore, Kosuth insists that art is relevant only to itself as a tautology—"art shares similarities with logic, mathematics as well as science."¹⁷⁸

The Art-Language Group thus uses analytical theory in an attempt to formulate a system¹⁷⁹ similar to a transformational grammar to make propositions about art. There has been however some criticism of their method from philosophical viewpoints as well as for its communicative value.

It has been implied that the radicality of the new art is not necessarily its dematerialisation but rather the change to a systems type of thinking and within this framework many kinds of work can be placed including some of that criticised by Art-Language.

The works, of course, vary in the definition of the boundaries of the environments with which the particular art-system is placed. While Kosuth and Art-Language in a sense seem to have the narrowest boundary conditions (i.e. of art's relevance only to itself) they nevertheless exhibit a well-developed systems aesthetic. Kosuth's definition of art's function as being to increase the complexity of the concept of art is describing art's function in open systems terms. As in the thermodynamic sense creativity is negentropy or ordering of an organism to a higher energy or information level, which is what Kosuth is saying art should do, i.e. the function of art is to increase the creativity of art.

Modes of Behaviour

Furthermore, it is apparent that Kosuth and Art-Language can be seen to be fulfilling one of the possible modes of behaviour listed by Charles Harrison¹⁸⁰, to avoid sublimation, by the functioning of the art-system within the corporate state.

Harrison has characterised this mode as "the pursuit and analysis of the implications of the art work as such (the 'theory of art') in consciousness of the fact that those implications may/will have relevance in the long term in the cultural/political context."¹⁸¹

Another way to avoid sublimation and thus maintain the autonomy of expression is by "detachment, natural or self-imposed, from all broad considerations of context so far as possible, to protect the work from contamination".¹⁸² This is the mode adopted by Richard Long¹⁸³ in his walks through the countryside.

A third mode of behaviour is "the self-conscious exposure of the discomfort inherent in the context—this might take the form of either ironic self-assertion with reference to the art context (Les Levine) or of anarchic self-assertion with reference to the social/political context. This last approach is usually limited in its effectiveness and usually is a means to much bad art."¹⁸⁴

Les Levine

Les Levine's is perhaps the most advanced systems-aesthetic in art at present. He avoids the problem of working in the art-context and thus making money, by working with the art-context and using money as his medium. Where the industrialists think of art as a good tax dodge or as a kind of pastoral retreat, Levine considers business and industry as art in its most essential form.

Levine has set out to vindicate the art-system, his logic being that anything can be sold with public relations energy behind it. His "Plastic Disposables" challenge the market mechanisms which restrict the supply of certain art works making it clear that this restriction is not rarity or scarcity but economic strategy. He sees that Noland's stripe paintings could easily be mass-produced. It is in relation to this mass-production economic that Levine signed contracts with department stores for the sale of millions of Disposables at \$1.25—through these he may make more money than Noland.

Levine admits that he's a corporate type with interests in all types of management and even intends moving into legitimate art "a business based on all the tried and true items of American consumerism: pop, colorfield and all the rest..."¹⁸⁵ One of the major functions of his gallery would be to create artists and art groups, re-image them where necessary.

Levine typically uses press releases, publicity getting strategies and shrewd advertising. "Basically it is business that supports art. Who else buys full page color advertisements? All good art, like any other product is packaged for a specific market. This is one of the reasons art usually approximates the size of furniture; art works increase in size directly in proportion to the prospective owner's status and apartment size."¹⁸⁶

Levine has used other aspects of the art-system to create other works. Opening a restaurant as a work of art was done in relation to the sociology of New York's more frequented artists' bars. Burnham comments: "On the art level it has to be accepted for what it is: a self-organising, data generating system. This is a real-time art work—its gallery is open 14 hours a day, 7 days a week, always changing, charging no admission and allowing him to eat free."¹⁸⁷

In other works, Levine again utilises aspects of the art-system: a work in relation to the Cornell Earth Art Show, a paint work in relation to the "So and So paints a Picture" series of Art News, a work making money on the Stock Exchange and a "Your Worst Work" Show in relation to the "New York Painting and Sculpture: 1940-70".

Levine's works not only operate as systems outside an art-context (i.e. processing of data from real world into art information) but also within the art context—each work is intrinsically tied to the phenomena of the art-system, amplifying what he sees as the essence of the art world in its actually functioning—i.e. money.

In all his work Levine employs the media to sell his work. He understands that in a technological society there are no real choices

for people, only selections out of a number of pre-coded choices already made by society.¹⁸⁸ This is due in part to the monopoly certain power groups have to the media—for the information environment he sees as being as potent as the technological environment.

Furthermore, if the functioning of this environment is to become an open system, everyone needs to be able to plug into it, i.e. everyone should be capable of influencing everyone through it. At present the situation is a 1-way process—for technology to be 'supportive' in a biological sense this process should be a 2-way process. In the light of this aim, Levine sees the recent systems-oriented art (especially in its emphasis on art information) as being an attempt to influence the media environment and thus its role in fact is merely making us aware of the fact that to effect any sort of social change we have to deal directly with the information environment.

Conclusion

What this thesis proposes then, is that the systems-oriented aesthetic is evolving as the new major paradigm¹⁸⁹ in art as a response to the real needs of our society,¹⁹⁰ in a development parallel to the systems re-orientation in the sciences as outlined by Bertalanffy.¹⁹¹

It has been suggested that this systems-oriented art presents itself potentially as the most potent aesthetic consciousness in terms of effecting social change, especially since a systems aesthetic necessitates real-time activity.¹⁹² An ideal-time art because of its unreal framework (i.e. separateness from reality) lends itself to being easily defined by the corporate state as an "inoffensive, marginal, decorative activity, a game, a pastime or a confessional, the past tense of creativity: something which is to be entered almost at birth in the immemorial narrative of art history."¹⁹³

Systems-oriented art then has the aesthetics of social and environmental change¹⁹⁴ in it—however whether any art at the present time can actually directly effect radical social, political and environmental change is probably doubtful and whether it is in fact a function of art rather than other areas of human learning¹⁹⁵ to try, seems also doubtful.

The role of the artist according to Jack Burnham is a little more modest: artists are "deviation-amplifying systems or individuals who, because of psychological make-up are compelled to reveal psychic truths at the expense of the existing societal homeostasis".

If art however does have a specific revolutionary role it is according to Marcuse¹⁹⁶ that it 'waits in the wings' until after the revolution has occurred and there provides the necessary sensibility to creatively (explicitly in thermodynamic terms—i.e. raising the complexity of the environment) reconstruct not only the physical environment but the social one as well.

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NOTES

- 1 There has been direct contact with some artists—Christo, Jeffrey Shaw and Theo Botschuyver (ERG) and Ian Burn (Art Language)
- 2 "The Medium is the Message" Marshall McLuhan.
- 3 Ibid. p. 24
- 4 "Population, Resources, Environment", Paul R. Ehrlich.
- 5 Maxwell S. McKnight, security adviser of Socony Mobil Oil Company.
- 6 "The Greening of America", Charles Reich.
- 7 "The New Industrial State", Kenneth Galbraith.
- 8 Charles Reich, op. cit. p. 64-95
- 9 How do voters enforce their will on pollution, the supersonic plane, mass transportation, the arms race or the Vietnam war?
- 10 As Galbraith notes op. cit. p. 170 "high technology and heavy capital use cannot be subordinate to the ebb and flow of market demand. They require planning; it is the essence of planning that public behaviour be made predictable—that is, subject to control". Thus corporations create their own demand for products via advertising—snowmobiles being more popular than hospitals.
- 11 Since the government does not represent all interests including minority ones such as agnostics, the poor, youth, radicals but rather organised interests only.
- 12 Charles Reich op. cit. p. 79
- 13 Charles Reich op. cit. p. 86
- 14 Kenneth Galbraith op. cit. p. 176.
- 15 Ludwig von Bertalanffy "General Systems Theory", p. 60.
- 16 James Weaver "The results of the Pursuit of Economic Growth", Architecture in Australia, August 1971 p. 669.
- 17 Ibid. p. 672
- 18 Ian McHarg "Design with Nature" p. 189-195.
- 19 Stephen Boyden "Man in a Changing Environment", Architecture in Australia, August 1971, p. 655.
- 20 Herbert Marcuse "An Essay on Liberation", p. 17, chapter on the Biological Foundation for Socialism.
- 21 Stephen Boyden op. cit. p. 657
- 22 The presentation of only some views is obviously a bias but the aim is not to be didactic but rather to show the sources of ideas that influence these artists.
- 23 Kenneth Galbraith "The New Industrial State".
- 24 Theodore Roszak "The Making of a Counter Culture", p. 100
- 25 Kenneth Galbraith op. cit. p. 211
- 26 Theodore Roszak op. cit. p. 27.
- 27 Herbert Marcuse "An Essay on Liberation", p. 35.
- 28 An example cited by Roszak is the repression of sexuality (op. cit. p. 15). He states that to liberate sexuality would be to create a society in which technocratic discipline would be impossible—the strategy therefore chosen is not harsh repression but rather the Playboy version of total permissiveness. However while we are led to believe there is sex and sex galore, it has been assimilated to an income level and social status available only to "well-heeled junior executives and the jet set". Real sex we are led to believe is something that goes with the best Scotch, twenty seven dollar sunglasses and platinum-tipped shoelaces. It is sex which creates no binding loyalties, no personal attachments, no distractions from one's career, social position and to the system generally."
- 29 Marcuse suggests that there may be some primary distinction between beautiful and ugly; good and bad (in addition to the space and time suggested by Kant as pure forms of sensibility common to all human beings), prior to all rationalisation and ideology, a distinction made by the senses in distinguishing that which violates sensibility from that which gratifies it.
- 30 Charles Reich "The Greening of America"
- 31 Theodore Roszak "The Making of a Counter Culture"
- 32 Ibid. p. 67
- 33 Ibid. p. 68
- 34 Daniel and Gabriel Cohn-Bendit speaking after the French General Strike:

"The differences between the revolutionary students and workers spring directly from their distinct social position. Thus far students have had no real experience of grinding poverty—their struggle is about the hierarchical structure of society, about oppression in comfort. The workers on the other hand suffer from direct economic oppression and misery."

35 Charles Reich op. cit. p. 255.

36 Ludwig von Bertalanffy "General Systems Theory" p. 223

37 A progressive elimination of traits specific to human experience by a convergence of research, so that many methods are used to show the same aspect of reality and progressive elimination of human experience in a system of mathematical relations.

38 Theodore Roszak op. cit. p. 56

39 Charles Reich op. cit. p. 257

40 Theodore Reszak op. cit. p. 50.

41 Jack Burnham "Real-Time Systems" *Artforum* Sept. 1969 p. 55.

42 The real-time, ideal time dichotomy is a parallel one to the life-art dilemma which is a problem for many artists today.

43 Ian McHarg "Design with Nature" p. 44.

44 Ibid.

45 The Bible, Genesis, verse 24.

46 By Theologians, Abraham Heschel, Gustave Weigel, Teilhard de Chardin and Paul Tillich.

47 While the cult of saints is purported to have replaced animism—the saint is functionally different from natural objects and remains a man approachable only in human terms.

48 Typically in Nevada, Silver Springs, Black Rock Desert, Coyote Dry Lake, Massacre Dry Lake, Mojave Desert.

49 Michael Heizer, *Artforum*, December 1969. p. 32.

50 Ibid., p. 36.

51 Ian McHarg op. cit. p. 44.

52 Ibid., p. 45.

53 Bertalanffy's argument encompasses all aspects of the ecological view including this one—see Chapter 5.

54 Ian McHarg op. cit. p. 53.

55 Ian McHarg *ibid.*, p. 51.

56 Ian McHarg *ibid.*, p. 32-33.

The crucial role of values is vividly demonstrated in McHarg's example of highway planning. Instead of reducing the problem to the simplest and most commonplace terms (with a profit and progress emphasis) i.e. the traffic volume, design speed, capacity, pavements, structures, horizontal and vertical alignments in the context of economic cost-benefit formula, he proposes that any cost-benefit analysis includes resource values, social values, and aesthetic values as well.

The maximum economic benefit should be replaced by the maximum social benefit at the least social cost. Also, in light of the ecological view, social benefit is measured in terms of the interdependence of many factors such as fitness of environment for the highway and for its potential creative effects (i.e. in contributing to public and private objectives of urban renewal).

57 A. Angyal "Foundations for a Science of Personality" Chapter 8.

58 Ludwig von Bertalanffy, op. cit., p. 54.

59 A. Angyal op. cit.

60 Ibid.

61 For a full mathematical derivation see L. von Bertalanffy op. cit. p. 60-77

62 Ludwig von Bertalanffy "The Theory of Open Systems in Physics and Biology", *Science* Vol. 111 (1950) pp 23-9.

63 Conventionally, chemical reactions are considered as closed systems but Kohler, ("The Place of Values in the World of Fact" pp. 314-28) analyses the flame of a candle as (a chemical reaction) an open system—the burning process is typically dependent on a continuous supply of inputs from the environment (oxygen) and continuous export of outputs to the environment (carbon dioxide).

64 Ludwig von Bertalanffy "General Systems Theory" p. 42.

65 Ian McHarg, op. cit. pp. 117-127.

66 The implication of thermodynamic creativity on "Art" will be considered in Chapter 6.

67 W.R. Ashby "Introduction to Cybernetics", pp. 202-18.

68 D. Katz and R.L. Kahn "The Social Psychology of Organisations", pp. 14-29.

69 F.E. Emery and E.L. Trist "The Causal Texture of Organizational Environments" *Human Relations* vol. 18 (1965) pp. 21-32.

70 J.J. Gibson "The Senses Considered as Perceptual Systems".

71 An information based theory of perception, because it sees stimulation as being obtained by the organism, not imposed on it, emphasises the goal-directedness of the organism's behaviour which we have already noted as a general property of open systems.

72 J.J. Gibson op. cit. p. 267.

73 Thomas Kuhn "The Structure of Scientific Revolutions".

74 A. Rapoport "Critiques of Game Theory" *Behavioural Science* 4 (1959) p. 49.

75 Ludwig von Bertalanffy op. cit. pp 188-191.

76 Ibid.

77 Gabo interviewed by Abram Lasaw and Ilya Bolotowsky p. 159.

78 See Chapter 5 section 4—Guiding Metaphors.

79 See Chapter 5, Section 2—Information and Entropy.

80 Exhibition Catalogue for "When Attitudes become Form (Works-Concepts-Process-Situations-Information)", I.C.A., 1969.

81 i.e. repressive tolerance by society. See Chapter 3, Section 3—Role of Art.

82 See Chapter 5, Section 3—Causal Texture of Environment.

83 The artist is then a "perspectivist considering goals, boundaries, structure, input, output and related activity inside and outside the system". Jack Burnham, *Artforum*, September 1968, p. 32.

84 The Art-Language group are trying to accelerate this change by examining the premises on which art is based (often linguistic ones) rather than its forms—they in fact see their role as showing the fallacy or irrelevance of the paradigm underlying object-oriented art—whether their position is justifiable or their methods adequate is the subject of some debate at present.

85 See Chapter 3, Section 2—Aesthetic Goals in a Technocracy.

86 See Chapter 3, Section 3—Role of Art.

87 Tom Wolfe "The Kandy-Kolored Tangerine-Flake Streamline Baby" p. 63-87.

88 Ibid.

89 Robert Rosenblum "Pop Art and Non-Pop Art" an essay in "Pop Art Redefined" by John Russell.

90 Unpublished manuscript on Definition of Art.

91 This is what makes the Duchamp Spade such a convincing work of art—the quantity of information it has generated in an art context in books, magazines, galleries, etc.

92 If we considered the object or situation outside the context of art ideas, responses, processes (i.e. artist's, dealers, critics, curators) then by definition we could not conceive of it as art. The object's value as art exists only by virtue of its position in an art context. This was the definition (in Chapter 5 Section 1 Defining a System) of a system.

The Balinese say: "We have no art. We do everything as well as we can." However Balinese objects find their way into our museums and are exhibited as art or as "religious magical and household utensils exquisitely and lovingly made". Thus these objects become art once they are placed in our art system and thus our value system—our conception of high art is imposed on their objects. This again demonstrates that an object is art by virtue of its position in an art system.

93 Victor Burgin, *Studio International*, October 1969, p. 119.

94 See Chapter 5, Section 2, Common Characteristics of Open Systems.

95 Jack Burnham—*Artforum* September, 1969 p. 49

96 See Chapter 5 Section 4.

97 See Chapter 2 Section 1, 2

- 98 See Chapter 2 Section 3, 4.
 99 See Chapter 5.
 100 Jack Burnham op. cit.
 101 See Chapter 5 Section 3—Causal Texture of the Environment.
 102 Ibid.
 103 Jack Burnham op. cit.
 104 John Cunningham Lilly (1967)—Programming and Metaprogramming in the Human Biocomputer; Theory and Experiment.
 105 Les Levine, "The information fall-out", *Studio International*, June 1971.
 106 i.e. between the artist's stated aims and the actual results.
 107 This seems to be the impulse behind Joseph Kosuth and the Art-Language Press.
 108 See Chapter 5 Section 4.
 109 See Chapter 5 Section 3 Perceptual Systems and Environments. Section 4 Image of Man.
 110 Jack Burnham—Artforum September, 1969 p. 50.
 "Ideal time and 'experimental idealism' are both out-growths of the classical frame of reference. They stem from the intuition that location and proportion transcend the illusion of time. In both classical artistic and scientific experimentation the strictest control is exacted over formal relationships. Reduction, isolation and manipulation are the foundations of the classic inventive structure in art or technology. The problem of form and anti-form represent polarities of this structure not an alternative. Paralleling experiments in classic science, works of art are simplified models of complex unmanageable situations.
 Experimental idealism rests on the intellectual and physical isolation of the aesthetic experience. Its tools are picture frames, bases, spotlights, guards, galleries, hypostatic objects, and the concept of high art itself. It suggests that sensually the world is impossible as experience and must be broken down into palatable sanctuaries."
 111 See Chapter 5 Section 1—Defining a System.
 112 An exception which comes to mind is Tinguely's self-destructing machine "The Homage to New York".
 113 The references to the Art-Life dichotomy which are so frequent these days are really the distinctions between ideal time and real time.
 114 John Russell "Pop Art Redefined".
 115 "What is Pop Art?" Art News, November 1963.
 116 See Chapter 5, Section 4, Image of Man.
 117 See Chapter 2, Section 3, Goals of Corporations.
 118 The human being is reduced to making similar responses to those of Pavlov's conditioned dog.
 119. Vance Packard, *The Hidden Persuaders*, 1958.
 120 Marcuse's argument is that the repression of guilt caused by obscene behaviour in the political sphere is accomplished by 'liberation' from guilt in the sexual sphere, i.e. by the encouragement of permissiveness in society, however as we have already pointed out this liberation is the Playboy version of sex and thus it is still within the framework of the corporate state's goals and thus not really liberating.
 121 See Chapter 5, Section 1, Defining a System.
 122 Allen Leepa "Minimal Art and Primary Meanings" from G. Battcock's "Minimal Art".
 123 See Chapter 6, Section 4, Op Art Objects.
 124 Victor Burgin *Studio International*, October 1969.
 125 See Chapter 5, Section 3, Perceptual Systems and the Environment.
 126 See Chapter 5, Section 1, Defining a System.
 127 There is a historical link also in that many conceptual artists started out as second generation minimalists.
 128 Mel Bochner "Serial Art, Systems, Solipsism" from G. Battcock's "Minimal Art".
 129 See Chapter 5, Section 2, Differences between open and closed systems.
 130 The plastic was particularly sensitive to changes in lighting conditions.
 131 The project was sponsored by Alcorso-Sekers and the Aspen Centre of Contemporary Art.
 132 See Chapter 5, Section 2.
 133 It is not intended to take up the debate as to whether the photographs and written material are the media of the conceptual work—however it is the author's opinion that this is merely processed information about the work—and not the actual art data itself.
 134 See Chapter 3, Section 2, Aesthetic Goals in a Technocracy.
 135 Statement by ERG in *Art and Artists*, January, 1969.
 136 General Systems Theory was developed primarily to explain biological phenomena.
 137 It is the thermodynamic use of the word creative here—see Chapter 4, Section 4, Creativity.
 138 From a letter by Haacke to Jack Burnham.
 139 Jack Burnham op. cit.
 140 The implications of the incident over the cancellation of Haacke's Guggenheim show will be referred to later.
 141 See Chapter 4, Section 3, Richard Long.
 142 It is obvious that Haacke's systems have a limited life as an "art experience" because his systems exist as "on-going entities" away from the viewer. However if we consider that Haacke is in fact not producing art data (see Chapter 6 Section 3) to be processed to produce art information but that his activity is the selection and processing of already available data then the relevance of his activity becomes more obvious. This concern of recent art in the processing of art information from already existing data is a recognition of the art-world as a system and the desire of the artist to be more effective in implementing changes through art information. This matter will be discussed in the last chapter.
 143 Idealism in science has been mentioned already and is the basis of reductionist methods of analysis (e.g. laboratory rat experiments to determine human behaviour) and which typically produce oversimplified models of complex, unmanageable situations.
 144 See Chapter 2.
 145 Ludwig von Bertalanffy "Robots, Men and Minds" p. 27.
 146 See Chapter 3, Section 3.
 147 They have to avoid the idealisation of their activities through one of the software extensions (i.e. magazines, books etc.) The failure to do this may prove to be the ineffectiveness of this type of art. This problem is discussed further in the last chapter.
 148 See Chapter 4, Section 3, Michael Heizer.
 149 Letter from Dennis Oppenheim to Jack Burnham 1969.
 150 Dennis Oppenheim interviewed by Willoughby Sharp *Studio International*, November, 1971.
 151 Ibid.
 152 Note: Henderson compares the regulation of alkalinity in the ocean to regulation of alkalinity in human blood, see McHarg "Design with Nature" p. 51.
 153 John Cage "Silence"
 154 Dennis Oppenheim, op. cit.
 155 "Gilbert and George" Michael Moynihan, *Studio International*, May 1970.
 156 The Art-Language-Group—the 'purest' conceptualists are discussed in Chapter 7.
 157 Sol Le Witt January 1969—"Sentences on Conceptual Art".
 158 Jack Burnham *Artforum*, February, 1970.
 159 See Chapter 5, Section 2, Information and Entropy.
 160 See Chapter 4, Section 4, Creativity.
 161 i.e. the interrelationships between organisms.
 162 See Chapter 2, Section 2.
 163 McHarg and Bertalanffy are both in fact presenting a new aesthetic.
 164 See Chapter 3, Section 3, Role of Art.
 165 Seth Siegelaub quoted by Jack Burnham op. cit.
 166 Ludwig von Bertalanffy "General Systems Theory" p. 63.
 167 Jack Burnham, *Artforum*, September, 1969.
 168 See Chapter 3, Section 3.

169 See Chapter 3, Section 2.
 170 See Chapter 6, Section 6, Hans Haacke.
 171 From press release by the artist. April 3, 1971.
 172 From a letter by Thomas Messer to the artist, dated March 19, 1971.
 173 See Chapter 5, Section 4, Image of Man.
 174 From an interview with Joseph Beuys by George Jappe Studio International, September 1971.
 175 Charles Harrison, Studio International, May 1971.
 176 Ian Burn from interview with author, October, 1972.
 177 Joseph Kosuth, "Art after Philosophy", Studio International.
 178 Ibid.
 179 This involves the construction of a number of alternative frameworks (frameworks are isomorphic to systems in science) in which to put clusters of ideas related to art.
 180 Charles Harrison, op. cit.
 181 Ibid.
 182 Ibid.
 183 See Chapter 4, Section 3, Richard Long and also Chapter 6, Section 6, Real-time Art.
 184 Charles Harrison, op. cit.
 185 Les Levine, Artforum, April 1970.
 186 Ibid.
 187 Ibid.
 188 Galbraith and Reich in their analysis of the Corporate State (see Chapter 2, Section 3 and Chapter 3, Section 2) confirm this view.
 189 See Chapter 5, Section 4, Guiding Metaphors.
 190 Which are non-materialistic in nature, embracing man's relations with man, man's relation to technology and man's relations to nature.
 191 See Chapter 5, Section 4.
 192 i.e. art taking place in the context of day-to-day life as a continuous process in actual experiential time while still remaining art. (The activity becomes art information when the artist formulates significant reasons for using the activity as art data).
 193 Jean Clay, Studio International, June 1970.
 194 Changes in society according to Marcuse must be preceded by changed values which this art seems to provide—i.e. qualitative as well as quantitative changes must be present if the new society is to be significantly different.
 195 Meteorologists, geologists, geomorphologists, hydrologists, soil scientists, plant ecologists, animal ecologists, limnologists, cleanographers, ethologists, ethnographers, cultural anthropologists, political scientists, sociologists, economists, etc. seem to be in a better position to do this than artists considering their greater understanding of the physical and social environments.
 196 See Chapter 3, Section 3, Liberation from the Corporate State.

Appendix: Image-Frame Transformation

"To put the final touch to your painting a frame is necessary".

Input = Image: Likeness a status, an idol; a picture or representation (not necessarily visual) in the imagination or memory; that which very closely resembles anything.

Transformation: change of form, constitution or substance; metamorphosis; transmutation.

Output = Frame: the body; a putting together of parts; structure; a case made to enclose; border or support anything; the skeleton of anything.

Joan Grounds, Imants Tillers, Alec Tzannes.