

Organic Design

by Howard Ganz

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Preface to the 2007 reprinting

In 1977 I wrote “Organic Design” because at that time many artists and architects were doing works that were termed, organic. And I didn't think anyone made an adequate definition of the term. I thought that I could influence our civilization to stop building boxes and square cities. I thought I could help us understand our Earth environment, our need to respect it and stay connected to it as we continue our civilization and evolution. To this day much of my art personality has been a result of this book.

I wrote about a basic reality at the core of existence, a triad of spirit, abstraction and concreteness. I applied this theory to how processes perform, and to our performance as creative beings. I presented Ideas and drawings showing how rounded forms, linear progressions and branching patterns occur. I also wrote about perceptual knowledge and how we can learn through visual experience and other sensory experiences, not just through words. And I continued to issues of how we can construct an environment nurturing to us as we build our homes and cities.

Now in 2007, and certainly earlier, I realize that our culture has not followed my lead. Art today is seriously involved with city life and the human condition, negotiating the mechanical structures we built in the space of our cities and in our mental concepts. We are still building our environments with boxes and overlooking the possibilities to be more sensitive to our organic nature and our need for inspiration.

City life and the human condition are important subjects. But looking for our beginnings and for where we could be going is also extremely important. And what better medium than art is there to show us the dimensions of our reality and to help us experience them. I think I've made a good start, as my continuing work demonstrates more possibilities --- and not with diagrams as in the book, but with continually growing inspiration.

Though I have grown and gone many new directions since 1977, this book still is a core from which I have come. It shows my personality and direction at that time. And it is a help in understanding the continuity of my work and my current abstractions. As my output continues and my work is experienced by more people the consensus of who I am will develop and become more clear, as will the understanding of my art. I see many years of continued work ahead.

Table of Contents

1. Introduction, Our inadequate perceptions of our environment, page 5
2. A Philosophic Model of Organic Form, page 9
A presentation of a model of form which adequately describes natural form; the organic triad: abstract, concrete, spirit; statements of terms and relationships,
3. Organic Design, page 17
A definition of organic design
4. Characteristics of the Form Units of Nature, page 19
Individual variations; a process between the abstract and the concrete; conscious enactment of form; form and satisfaction
5. Patterns and Arrangements of Form Units in Nature, page 23
A principle of arrangement that all units form reciprocating patterns around power centers; illustrations
6. Processes of Form Building
Hierarchies; growth; evolution; intuition; rhythm; flow progress; Fibonacci number series; illustrations, page 47
7. Morphology of Natural Form, page 63
Shape; shape perception and meaning; octaves; illustrations
8. Knowledge and Aesthetics, page 85
The artist's method of knowing; subjective knowledge
9. Designed Objects Placed in Our Natural Environment, page 89
Placement in three systems: 1) physical structure; 2) consciousness; 3) evolution
10. Our Needs for Stability and Diversity, page 92
From the relationship between abstract and concrete, a principle of form building
11. Mechanical Forms in Our Environment, page 94

12. Organic Methods of Designing and Building Our Environment, page 96
Inspiration; economics; design; construction; illustrations,
examples
13. Building Cities, page 117
Description of the organic forms and processes of cities and city
building; list of ways to improve existing cities; illustrations;
examples

Introduction

This present work has grown from an artist's view of our environment. Apart from verbal explanations is the visual experience of a schism between natural Earth environment and the one we are producing.

In this comparison the natural environment is seen to be pregnant with potential, complex in order, and vital with life. Impressions of its richness are printed even on its simplest surfaces. In contrast we have produced an environment which in many aspects looks confused, is lacking in natural rhythms and vitality, and seems insensitive to life forms and their continued generation.

This contrast of visual form is very clear, yet most of us don't seem to understand the value of the natural environment or the missing elements of the environment we are producing.

Before the industrial revolution an inability to understand and deal with the forms of nature had a relatively minor effect on the totality of our environment though some environmental problems existed in large cities. Hand craftsmanship was very close to nature and though we could dream of and discuss ideas, which if practiced would be destructive to our natural environment, we had little power to carry them out. Though we might produce an awkward building or row of buildings or even make the lives of some people difficult, these forms still did not overpower the forms of our natural environment.

The industrial revolution and successive developments changed this, and we now have great power over the natural environment. It seems that now we could institute programs which would sterilize the earth, if not by intent, perhaps from ignorance.

Our need to understand and deal successfully with the forms of nature grows stronger every day.

Many people sensed problems at the beginning of the industrial revolution, but eventually most agreed we could not turn back, and that the the new processes were of great value to us.

The issue of the value of these processes is still to be decided, and the solutions to problems they are creating are still forthcoming.

Our ability to determine value in these matters and to solve these problems is closely related to our understanding of natural form. Of course we have received many benefits from the industrial revolution, but we must be concerned

with developing a larger perspective which encompasses the whole of living processes and organisms on Earth and when possible beyond Earth.

Both in the past and at present some of us have produced and are producing forms which are close to the forms of nature. In art these forms have often been called organic. Antonio Gaudi, Frank Lloyd Wright, and Henry Moore have been concerned with organic form. At present Paolo Soleri in Arizona and James Hubbell in California are producing what can be called organic forms.

These artists and architects show highly developed perceptions of natural form in their work, but very little has been written about organic form, and there are few paths to follow to learn about organic design. At this time knowledge of organic design is vital to our well-being.

This present work is not a study of the forms produced by these designers. It is an original statement of concepts which seem to describe the forms of nature in a way that can help us proceed with the successful production of our environment. These concepts can be helpful to our understanding of both the forms of nature and the forms of our own civilizations. Hopefully, we will bring the two realms closer together.

Our Inadequate Perceptions of Our Environment

Does it make any sense that we destroy the ecological systems that support us? Does it make any sense that for money we give up clean air and water? How could we have been blind for so many years to our pollution of air and water?

How can we now be blind to our pollution of the many natural systems around us? How can we view our mass produced environments and feel satisfied? How can we prefer them to the challenge and beauty of nature?

The systems of nature run through us and support us, yet our consciousness has been unable to deal with what we unconsciously are. It seems that our evolutionary path is to develop our consciousness to know and deal with these systems of nature that we are.

Our environment of machines threatens to cut us off from many of the vital natural experiences we need for our continued development and evolution. Though machines and shelters can be of help to us, we should remember our eventual need for direct experiences with nature.

How can we prefer square, flat walled rooms to the beautiful shapes of caves or the arch of the sky? How can we prefer working eight hours a day on an assembly line to hunting and fishing and building our own homes? How can we prefer traveling through the grid patterns of our cities to traveling a natural waterway? How can we prefer to experience life in programmed form on television? How can we prefer our step-terraced hillsides, our cluttered skylines, our utility poles and signs? How can we prefer to know life through tests, experiments and measurements? Need we watch clocks and thermometers, count calories, be measured for happiness and knowledge?

Certainly there is value in measurement, but looking at a thermometer can hardly substitute for feeling the heat. A test score can hardly substitute for successful performance in real situations, and earning money can hardly substitute for successful living.

We need more highly developed perceptions of form than the ones we have been generally using. We need to develop more sensitivity toward our natural environment and the vitality within us. When we see the forms we build, we need to find them in harmony with nature.

We need to perceive more clearly the distinctions between natural systems and the mechanical systems which we are creating.

The next section of this writing presents a description of organic form.

The ideas presented can help us develop the aspects of our perception supportive to our continued growth and evolution. They can also help us evaluate the various systems of our environment in light of evolutionary progress.

Chapter two presents a model of the basic components of organic form which allows us to consider fully the various aspects of form found in nature. These considerations lead to a clear understanding of our own nature and the basis of our own structuring.

Chapter 2

A Philosophic Model of Natural Form

As human development and civilization have augmented our natural environment, we have believed reason and logic to be our most important tools for advancement. The formulation of laws of physical and biological nature are our most prized accomplishments. As we have searched for knowledge, we have conceived the realm of the abstract where enduring relationships can be known, where logic operates infallibly in the general case.

The high position we have given to logic and logical intelligence is commonly accepted. With the power of logical intelligence, we have learned to control our environment for our advantage. We have built structures throughout our civilizations and throughout the world which do our work, which provide for our vital needs, and which protect us.

The use of our logical intelligence has been so effective in the control of our environment and the satisfaction of our quest for knowledge that we have tried to reduce all of reality to the abstract realm (the realm of logic) where principles could be defined and futures could be predicted. This attempted reduction of reality to abstraction has taken two obvious forms.

One is an inward bearing where we allow ourselves to perceive only in the general case of the abstract realm. From this bearing we suspend belief in particular variations until they can be abstracted to a generalized system. If a spaceship traveling many times the speed of light landed in our Capital, and we were addressed by a space person speaking perfect English, who then left never to be heard or seen again, we likely would eventually deny the experience because we couldn't fit it into our present system of logical percepts. From this viewpoint all experiences are logical and although we admit there are things we don't understand we usually find it easier to deny them than to accept them.

The second form of our attempted reduction of reality to abstraction is an outward bearing where we build the structures of our civilization in the general case of the abstract realm. In this form we turn our environment into mechanisms which exemplify our percepts of abstraction. We build flat planes, perfect arcs, grid systems, exacting schedules, idealized forms, et cetera. Our percepts of abstraction deal well with these things, but they don't do so well with the organic forms of our original environment. Here again we see abstract laws in nature but find it difficult to admit other aspects of natural form.

The model of natural form presented in this chapter admits that *abstraction* is a part of all natural form, but this present model explains two other parts of natural form which are as important as abstraction. One is the part of form which is *concrete* and the other is the part of form which is *spirit*. The perspective of form presented in this model is centered among these three elements rather than on any particular one.

Abstraction is present in natural form any time two or more concrete entities operate in coordination. Abstraction is the order which unites concrete entities despite their diversities. We have not yet been able to divide nature to a single concrete entity and probably never will. It seems correct to believe that abstraction will always be an element of natural form. Let abstraction be the first element in our model of natural form.

Concreteness is the second element in our model of natural form. The second element allows us to see that each instance of form is individual and unique.

We must see that abstraction does not operate upon itself. Abstraction operates upon the concrete and each instance of form is a separate resolution of these two elements. Since concreteness is not abstract we do not perceive it through thought, but rather through various touchings of body and mind.

Form and our perception of it involves the relationships between the abstract and the concrete elements. These relationships cannot exist when there is only one element.

We find a satisfaction in perceiving the relationships between these two elements of form. Our perceptions of these relationships produce in us a satisfying tension. These relationships can be likened to those involved in a work situation where energy (abstraction) is exerted upon matter (concreteness) and a new order (perceived satisfaction) results. While abstraction is the element of order in form, concreteness is the element of uniqueness and, therefore, of unending variations in form. Concreteness means that no two forms are equal. Concreteness makes variation implicit in form.

As we view the forms of nature, we find endless variations. There are no two forms in nature which are identical. Abstract principles of form in nature repeat endlessly, but each instance of form is individual and unique. Even molecules and atoms have individual variations.

It would also follow that there are no straight lines, planes, or perfect geometric figures. The concrete element does not allow the equal repetitions necessary for the production of these forms. These inequalities are not imperfections to be ironed out. They are not errors or accidents, rather they are substance.

Substance is consciousness in the relationship between an abstraction and the variations it controls. These variations are an aspect of form which require consciousness to deal with. It would seem there is a natural consciousness of them and in our consciousness we find both the order and the variation of form satisfying to deal with.

So just as we need abstraction to deal with the world, we also need concreteness as the medium to deal with. As we develop our civilizations we need to remain aware of the concrete aspect of form and its implications.

Here are some examples of the effect of the concrete element on form. All forms in nature are of variations without identical repetitions, perfect straightness, perfect geometry, or perfect congruence to whole number systems. When such forms seem to exist they are the result of natural sorting and selection processes where fine sensitivity and control are exercised over the random nature of the concrete element (but even in forms such as crystals, the perfection is only apparent, there are always variations). At other times when perfect forms seem to exist, the apparent perfection is the result of the form being at a scale beyond the range of our normal sense perception, such as the horizon seeming to be perfectly straight, or the sun seeming to be perfectly circular, or molecules, atoms, and sub-atomic particles seeming to be identical. In these cases we perceive the generalizations of the abstract realm but do not perceive the variations of the concrete realm.

Here is a characteristic example of the distinction between form which is conceived as purely abstract and form which is both abstract and concrete where abstraction operates in a concrete medium. Form "A" which is purely abstract is defined as a line of given length divided in half with all halves successively divided in halves to infinity. Form "B" which is abstraction operating in a concrete medium follows the same process; but since the concrete medium does not allow equal divisions, there will always be variations and because of the particulate nature of the concrete medium the process cannot be projected to infinity. In fact, the nature of the concrete medium makes a process involving the extension of equal halves unharmonious, awkward, and inefficient. To fit the concrete medium the process should be restated to allow unequal division each time with reciprocal compensations towards the abstraction "half" as long as the medium allows extension. Here abstraction recognizes the resistance of the medium and a union rather than a compromise takes place.

Considering these two elements, the part of Newton's law of motion which states, "To every action there is always an equal and contrary reaction." should

be restated, "Every action is of reciprocal variations around its center."

Further, we can perceive that the centers of form exist in variations around higher centers, thus creating a hierarchy of form. At the same time that form may fit edge to edge or particle to particle it also relates center to center. In nature we can see centered relationships in gravitational systems, physical and chemical structures, organisms, plants, and animals, and even in systems of evolution. These forms are not only structured edge to edge; there is a power and unity of centers.

At this point the form model consists of the element of abstraction which is all the potential order and the element of the concrete which is all the material to be ordered. The intuitive reaction of people of all civilizations is that in form there is a motive force, a spark of ignition, a flame of continuance, a community of spirit.

Indeed, can one imagine that only through the potential of the abstract and the materials of the concrete that formations occur and evolutions succeed to life and for no value other than function and efficiency?

A third element is needed in our form model. It is **spirit** and it provides the spark, the flame, the consciousness, and the community.

We know a history of dishonesty and obstinacy in the name of spirit and one hesitates to use this concept where clarity of explanation is desired. However, the view that belief in spirit is the result of ignorance of material functions is also unsatisfactory.

Even form which can be explained on the basis of material functions can be explained more fully by the inclusion of the concept of spirit.

Certainly the exclusion of the spirit concept results in only a partial explanation of form.

There are positive reasons for the attribution of spirit by peoples of all cultures. It is not merely to fill the ignorance gap left by the lack of material explanations. One might argue equally well that material explanations only fill the gap left by underdeveloped perceptions of spirit.

The effect that spirit has on our form model is a realm of meaning beyond that provided by abstraction and logic, a meaning beyond efficiency and function, a realm perceived only through consciousness, a realm whose standards are undefined in math, logic and materials, a realm which we only perceive through empathy, feeling, intuition, and communion.

This spirit realm is the mother of form as abstraction could never be, and we now have a model where form is born of spirit, an element which provides the unifying power of the form and remains inseparable for the life of the form.

From a subjective or interior point of view it is easy to discuss spirit. It is the realm in which our feelings are founded, love, joy, integrity, honesty, faith, devotion, hate, suffering, dishonesty. These feelings develop meaning only in the realm of spirit.

As we have viewed the world from a form model lacking in spirit, we have denied our feelings, there was no place for them. Feelings have no meaning as abstract or concrete elements.

We have a feeling response to every form we perceive, not just a measurable difference in metabolism. And these feelings find meaning and value as they are integrated in the realm of spirit.

Now we can view form as a dynamic structure of reciprocal actions clustered around a hierarchy of centers powered by spirit.

Substance is consciousness of the relationships of the system.

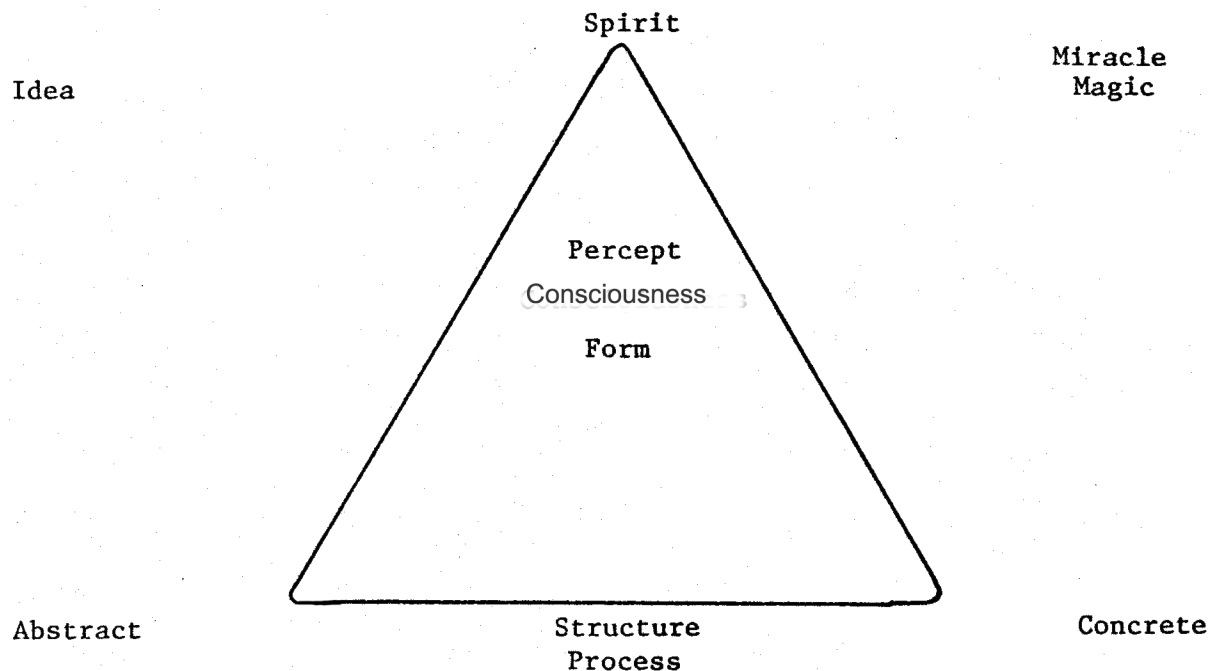


Illustration of the
elemental form wheel

If the form model is drawn as a triangle with an element at each corner (see illustration), we can construct some other interesting relationships.

Let us represent consciousness at the center of the triangle and take a moment to note the relationships between consciousness and form.

We know form through our consciousness, and the three elements are a triad of the dimensions of our consciousness. We are always conscious of all three elements though one may be dominant and others subordinate to the degree that we hardly notice some at all.

There can be individual consciousness, community consciousness, and universal consciousness. A person has individual consciousness, unified and functioning groups such as a species or ecological systems have community consciousness, and the total universe has universal consciousness. There is consciousness of all form in the universe. Though an individual person's consciousness operates at an individual level, it also operates at community levels and at the universal level. What we call the subconscious or unconscious is a person's consciousness operating at levels of community form such as species, ecology, or family. Knowing God is a person's consciousness operating at the universal level.

Consciousness is inseparable from form. Consciousness is form.

A unit of consciousness we call a perception and the unit of perception involves the experience of all three elements of the triad.

A Secondary Triad

If we place between each of the primary elements concepts indicating their combinations, our model becomes a wheel of form and we have a secondary triad of idea, structure/process, miracle/magic/faith.

This wheel of form demonstrates analogous relationships in adjacent concepts around the wheel and complementary relationships in concepts on opposite sides of the wheel.

Contemporary science and technology deal with the concepts idea, abstraction and structure/process almost exclusively. The concept of concreteness is still relevant to science and technology but is particularly distorted in technology to mean equal quantities and units; spirit is debated as a valid concept and usually held to be completely outside the scientific disciplines if it exists at all. Spirit certainly would be thought to have no consequences concerning technology.

The concept of miracles, magic, and faith is generally completely denied by science and of no relevance in technology.

Our knowledge of form needs to move away from the biases or limitations of these scientific methods and attitudes and embrace all sides of the form wheel. Miracles and magic are unthinkable to us because they are the direct opposite of abstraction; they are the direct joining of spirit with the concrete and the complete subordination of abstraction. Yet they are a path to knowledge and the

building of form. Magic and miracles are approached through faith, prayer, and ritual.

Our civilization has been blinded by a consensus reality which ignores miracles, magic, and spirit; which ignores the values of faith, prayer, and ritual; which distrusts feelings, and which finds concrete contact with individual variations inconvenient, inefficient, and technologically useless.

We need to re-balance our view to include these things. We must re-value these elements of form.

Progress means the development of consciousness not the development of technology. Technology which comes mainly from the abstract realm must be balanced and made whole with the concrete and spirit realms or technology can impede the evolution of consciousness. The form of the future may be not so much of advanced technology as of advanced feelings, faith, and spirit.

The relationships presented in this chapter are the basis of organic design. This chapter is the result of deductions from many situations; the power of these relationships are tested when they are applied. The following chapters detail this information in various situations and applications.

Chapter 3

Organic Design

Organic design is a concept which rightfully belongs to the world of nature. It is the order of form in nature, or the study and statement of form in nature. It can be used to mean the order of organisms such as plants and animals in relation to both their structure and their interrelations and evolutions.

Artists and architects have borrowed concepts of organic form and order and the word "organic" has been used to describe these qualities in their works. The sculpture of Henry Moore and the architecture of Frank Lloyd Wright and Antonio Gaudi exhibit some of these qualities which can be thought of as organic.

Though organic form influenced these artists, we tend to think of organic in art as a look and understand little of the foundations of that look in structure and form. Let us extend the concepts of order from the forms of nature to the forms designed, produced, and maintained by people. Let us call the study and application of these concepts of order organic design.

The obvious difference between the forms of nature and the forms designed and built by people is that while nature's forms maintain themselves, people's forms must be maintained by people and defended against the forces of nature. While we think of the organic forms in nature as being alive, we do not think of people's forms as being alive. We often think of the forms designed by people as mechanisms.

While the forms of nature are of the three elements, the abstract, the concrete, and the spirit, the forms designed by people taken apart from the people are usually lacking the concrete element and always lacking the spirit element. But when designed well they can embody the concrete element; and when viewed in context with people, the spirit of the people is present. The study of organic design needs to realize the unity between people and the forms they design.

Let's use a house as an example of a form produced by people. The form of a tract house is conceived primarily as an abstraction. Each house is built like the next from the original concept. The site and materials of each house are thought of as identical.

For the design and production processes of each house to involve the concrete element, they would have to recognize the diversity of materials and sites. In organic design this diversity is a part of the process and the form. In organic design the ground is not assumed to be uniformly flat nor are the materials of construction assumed to be identical. Each house form is individual and of variations responsive to its particular site and materials.

In organic design the spirit element involved in a house and its design and production would be the spirit of our perceptions of the house and the processes of its production. Tract houses could be built by machines with no consciousness or spirit involved. The tradesmen building them need to make the building experience as mechanical as possible. They need not interpret, feel, or be spiritually involved. In organic design, building is a live perceptual experience involving consciousness and spirit as particular materials are joined through invented and inspired processes.

The perception of a form is a creative act which unifies an instance of our experience involving the three elements of form (see form model, Chapter 2). A perception involving the forms of nature always embodies all three elements. A perception involving our imagination is usually lacking the concrete element.

A perception involving forms produced by people involves the spirit from the people while the form produced has no spirit of its own. However, the forms we produce can be working examples of abstraction and perhaps can also embody concreteness. Organic design then involves not only the external forms people produce, but also our internal experience and perception of these forms and the effects of these forms in our consciousness.

If we are faced with an environment where we cannot experience the concrete element in our products, it is an impediment to the advance of our consciousness; and if our products have no meaning in the spirit realm of our consciousness, it is also an impediment. Our machine products usually clutter our environment with false cues to which we do not relate.

Chapter 4

Characteristics of the Form Units of Nature

Form is incremental rather than continuous. In our experience our minds as well as our senses are oriented to perceptions of increments. We focus both our minds and senses from point to point, from unit to unit. There are the form units of nature, the form units (percepts) of our perceptions, and the form units of our constructions.

In the natural environment we experience the full range of form (abstract, concrete, spirit), but we have found it necessary to build our own environment for the main reason that we are not prepared for the total conscious experience of natural form. Particularly, we can't deal with our physical needs, the weather, food needs, and protection through our consciousness alone, nor can we deal consciously with the power and complexity of natural form.

We build our own environment as a learning experience to prepare ourselves for the full conscious experiences of the natural environment.

The form units we define in our applications of organic design need to encourage us to develop our perceptions in preparation for the total conscious experience of natural form. We must learn from natural form units. Atoms, molecules, crystals, cells, seeds, eggs, plants, stars, galaxies are examples of form units in the natural world. The complexity of these units varies and they are all composed of subunits. The characteristics of order and structure of these units need to be studied so that we design our environment in harmony with them and contribute to our evolutionary advancement.

The form units of organic design are of the following characteristics.

I. Individual Variations

In any form there is a hierarchy of form units so that a particular unit is composed of other particular units which are composed of other particular units, et cetera.

Because of the concrete element of form, all units are unique and individual. Though the subunits of a form are a unified group, they are always always of individual variations.

Individual variation is a key characteristic of organic form. It satisfies our need for the perceptual experience of the concrete element. We perceive that in nature all forms are of variations. No two maple trees are identical, no two fingerprints are identical, no two people are identical, et cetera.

As we design organic forms in our environment, we must realize that the building blocks (subunits) we build with are not identical and should not be thought of as identical. Though we may select and form with care and clarity, our plan should not require identical parts.

This concept is in conflict with concepts of mass production; and though we receive obvious benefits from mass production, we should re-evaluate its uses in relation to the needs of our perceptual experience and the advance of our consciousness.

2. A Process Between the Abstract and Concrete

Units are formed through processes and their structure or pattern cannot be considered apart from the process of their formation. Processes are controlled through abstractions, and the process of formation of a particular kind of unit repeats basically without variations.

Each particular kind of form is based on abstractions which allow the unification of parts and the application of processes. The set of abstractions and processes for a particular kind of form always remains the same. It repeats.

Our perceptual experience of form needs both the unifying effect of abstractions as well as the individualizing effect of concreteness. As an example, let's follow a process of formation. A person, through abstract thought-processes, reasons and imagines a point: the abstract concept of unification for the simplest concrete entity. The person also reasons and imagines that points are repeatable and static. In similar ways a static plane is reasoned and imagined. Then points are projected on the plane, and formations of points are also reasoned and imagined. We now have circles, squares, triangles, and whatever other figures that can be reasoned through abstraction.

So far we have an imagined process which has resulted in a flat plane with geometric figures on it, but the process is essentially an illusion because it didn't involve a full perceptual experience, or it was not an actual process of formation involving an actual form.

If we try to actualize the process or experience it as a full perception, we find some changes necessary in the way we imagine the process and the resulting form. It is necessary at every moment and at every stage of process to experience the concrete element, as it is one of the three necessary elements of form. We can experience concrete elements, but we cannot reason them. They cannot be abstracted.

When in formations, sets of abstractions affect processes, they interact with concrete elements. Since concrete elements are unique (not uniform) in order to function in a structure set by abstractions, either the structure must be continually modified to accommodate the varying concrete parts, or the concrete parts must be selected or changed to conform to the needs of the structure. Whatever the situation, the concrete parts cannot be assumed as equal, uniform or predefined. It seems that this necessitates a controlling consciousness to act between the sets of abstractions and the concrete parts.

The concrete experience should be performed. Now we perform a set of points; we are conscious of them and know the effort of their abstract functioning in the process. We find that the static, flat plane and geometric forms take too much effort; we can never apply enough effort to completely still and unify all points. It is more efficient and satisfying to create or perceive form in dynamic relationships of diverse parts.

The most satisfying and efficient form is centered between the uniformity of abstraction and the diversity of the concrete. It compromises neither and is the form which requires the greatest consciousness.

On the other hand, static form requires no consciousness because there is no relationship between the abstract and the concrete elements. The concrete elements don't exist in static form. The designated points are only abstractions.

3. Consciousness

In natural form consciousness is needed as the power to bring together in the formative process the regularity of the abstractions with the irregularity of the concrete parts to deal with things like flexible joint systems, innovative structures, and selection of components. In a sense, we can see consciousness as inhabiting the form. That is, somehow consciousness is an arbitrator dealing with the control of subunits and patterns feeling all the relationships in the hierarchy of form.

Human-made form apart from humans has no consciousness, but considered with the people who create and use it, the important form is the person's perceptual experience with the form where the person's consciousness deals with the perceptual experience of the form people create and use. In human-made form the creators must be conscious of the relationships of parts and the unification of the whole. Users (perceptively) recreate the form with each use.

Of course, one can use an automobile without a conscious experience of its parts and their unification. The form of experiences recreated each time one drives is not the same as the form created in the experience of designing the car, or in the experience of building the car, or repairing the car.

Forms such as automobiles and their systems (roadways, fueling stops, manufacturing processes) present many kinds of perceptual forms for us.

The forms people create through conscious experiences impose in the environment new potential for perceptual form. Each use is in degree a re-creation of form but not the same or identical with the original creation, nor with other instances of use. Nevertheless, the creation of form in our environment influences and limits our perceptual recreations of form.

Our potential for extending our consciousness as we fill our environment with a repetition of mass produced form in "duplicate" is severely limited. If, instead, form were produced in variations with no "duplicates" as in nature, we would find unlimited encouragement for the extension of our consciousness. This would result in feelings of satisfaction rather than boredom.

In all our practical acts of building, we need to deal consciously with all parts and be aware of the individuality of each structure.

4. Satisfaction

Form units made by people are satisfying to people. There is an aspect of consciousness which hums to the form it perceives and produces; it is an expression of the spirit element. All form hums, the physical and mental, the aesthetics and utilitarian. As any form is perceived we hum whether it is form we eat, understand, or work with. We have the ability to distinguish many qualities through the hum of our consciousness. It is a form of knowledge and it is extensive. This knowledge evolves to sensitive states as consciousness is extended. This is the form of knowledge which the arts deal with. It is through this hum that we commune with universal consciousness and it is through this knowledge that we can evaluate the forms in our environment. (Chapter 8 is a further statement of these relationships.)

This aspect of form is common in all experience whether it is that of the scientific researcher, theoretician, or the artist or holy person.

Chapter 5

Patterns and Arrangements of Form Units in Nature

The following description of the patterns of form grows out of the concepts previously presented in the form model. The form patterns being described are at the same time the patterns of form in nature, the patterns of form in our perception, and the patterns of form applied as designs in the human-made structures of organic design. This is a description of how to proceed and of the frames of reference in the design of the structures of our environment.

In order to concentrate on the relationships among the form units, the units here will be generalized. We will think of them as points, centers, or sources; and rather than consider their individual variations, we will consider the variations of their arrangements. Of course, our eventual consideration needs to be of form units as individual and various.

Though we are concerned with the relationships among form units rather than the character or structure of the individual units themselves, since the relationships of units create new, larger units of which the generalized units are parts, we cannot avoid considerations of structure and characteristics of units.

Though we can consider our conscious perceptual experiences as the form units being studied, here the primary emphasis is on external form units and their arrangements and relationships. These are the forms with which we are re-arranging and creating our external environment.

Further, this presentation is basically of form drawn in two dimensions in the belief that this will provide a clarity of consideration which could later be extended to other dimensions, scales, and media. This presentation also presents static structures; these structures are single frames of continuing processes. This is also for facility in presentation though eventually the theories must operate dynamically.

This presentation provides insight into the form our environment should take if it is to be an organic extension of ourselves and our natural world foundations.

The concept of reciprocation of units around power centers is the basic organizational device of form. (See pages 11 and 12 for a further statement of this concept.)

It is the power of spirit which effects this action. To designate a power center rather than just a center indicates an actual performance rather than an imagined abstraction.

All structures are based on relationships of parts to centers. (See page 27)

The patterns of structures are always changing. The patterns are the results of the action of power centers on the always changing subunits. This is the unity to diversity relationship. This is the same relationship that exists between the abstract and the concrete. It is also the definition of substance and the basis of value in designed forms; good design (substance) is in the relationships between unity (abstract order) and diversity (concreteness). An old rule of visual design is that the best design contains the greatest diversity in the greatest unity.

Arrangements of units are never even but distribute weight or attention towards centers (See page 27). The shapes of arrangements of units are centered, circular.

This concept of center and centering must be viewed as more than a concept of organization. It defines a power source within the realm of spirit. Form units can be centered by a direct action of power as well as by concept. In the natural world the arrangements of units are centered to real power sources of the spirit realm (the arrangements of units in any living organism). In organic design on a two dimensional surface there is no spirit; but as the organic design affects a person's perceptual units, in those units there is spirit. And as a person's perceptual units affect the drawing of a design, it is drawn from spirit.

The proof of any drawing is in its perception not in its formula. If the mind finds no spirit element to deal with, it is not satisfying. Units which seem to be identical are not centered in the form wheel. They are close to the abstract pole of the wheel, they are only identical. And they don't relate to spirit. They are not perceptually satisfying to spirit.

Any arrangement of form units in organic design is also partly controlled by a concept of randomness. Perfect centeredness is never achieved. There is always a tension between the power centers and the forces of randomness. But perfect randomness is no more achievable than perfect centeredness.

Value seems to be in the joy of the work being done by the power centers (spirit). Value is in neither the centered nor the random states as such (Illustrations---mass production).

Perspective concerns our viewpoint of an arrangement. From many viewpoints we cannot see enough of the arrangement to know its centeredness (pages 30-33).

In organic design we often work with only portions of an arrangement, but we must learn to know its more complete form. We must not block our perceptions of the complete view. We must also know a view may be so distant that particular variations are overlooked.

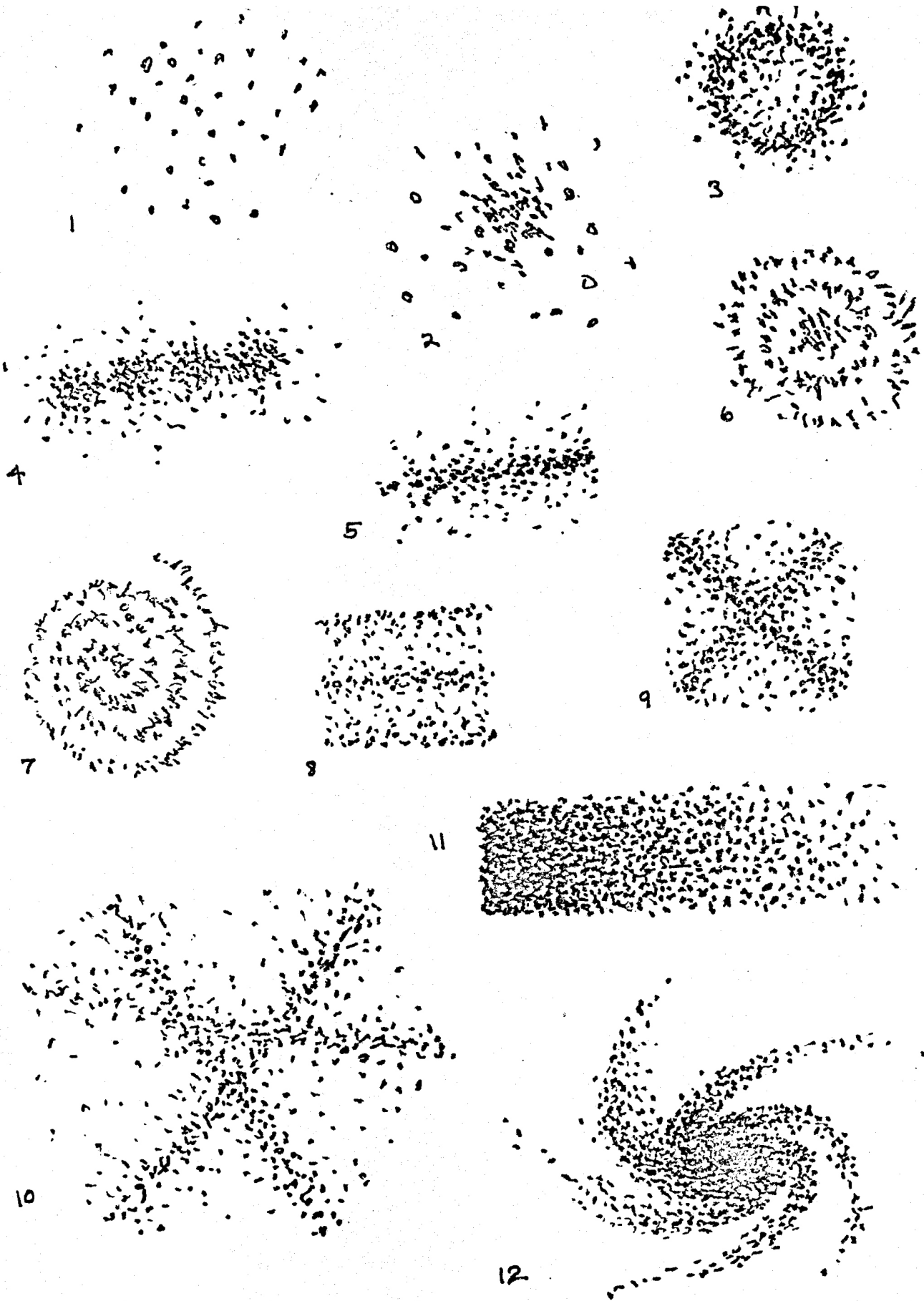
Now the most practical way to present information on the organization of units is through drawings demonstrating various approaches.

The following points are some typical kinds of arrangements in organic design, and some are illustrated on the following pages.

1. Centeredness through increased density at center—positive/negative
2. Simple randomness
3. Centeredness in linear progressions
4. Linear structures
 - a. circular
 - b. spiral
 - c. radial
 - d. combinations
5. Definition of space
6. Frequencies, progressions, rhythms (Fibonacci Series, Golden Section)
7. Sorting and arranging varied sets (aggregate structure)
8. Grouping and bonding random units (application of the Fibonacci Series)
(See Chapter 6)
9. Stacking orders, compression structures, crystals
10. Forking structures
11. Chains and links
12. Tension---compression relationships
13. Progressions from random to centered arrangements
14. Repetitions of arrangements with individual variations of each performance

Illustrations on the following page

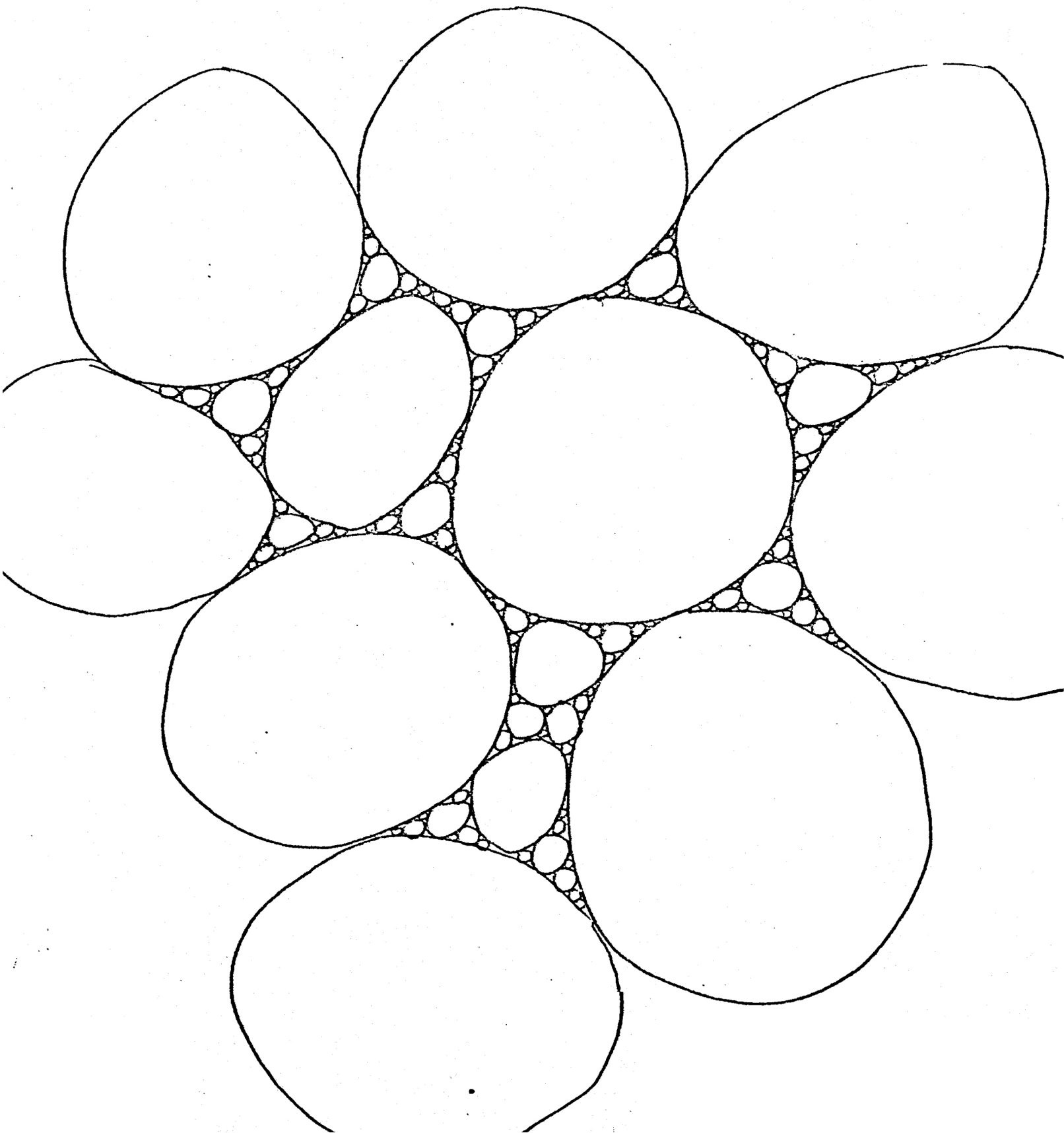
1. The pattern that units present when at random
2. Units affected by a power center – a simple concentration. They are really random but generally configured.
3. Units in a negative form, a hole is left in the configuration. They are away from a common center.
4. Units forming a linear progression of centers. The concept of centers repeats,
5. A linear progression of concentrated particles – a generalization of Figure 4. The basis of line. In a line motion of either the observer or the form being observed is implied
6. Lines concentrated in rings affected by a single center.
7. A single line in circular configuration making a spiral. Spirals are frequent in nature.
8. A series of lines in the same direction. Motion is implied – whenever motion is implied a single frame is fragmentary .
9. Directional opposition, great tension at the point of contact.
10. A triangular conjunction of lines
11. A gradual change in proportion between spaces and particles,density.
12. Central concentrations of units can be affected in many kinds of structures. This kind of pinwheel is a frequent form in nature. It implies circular motion and periodic frequency.

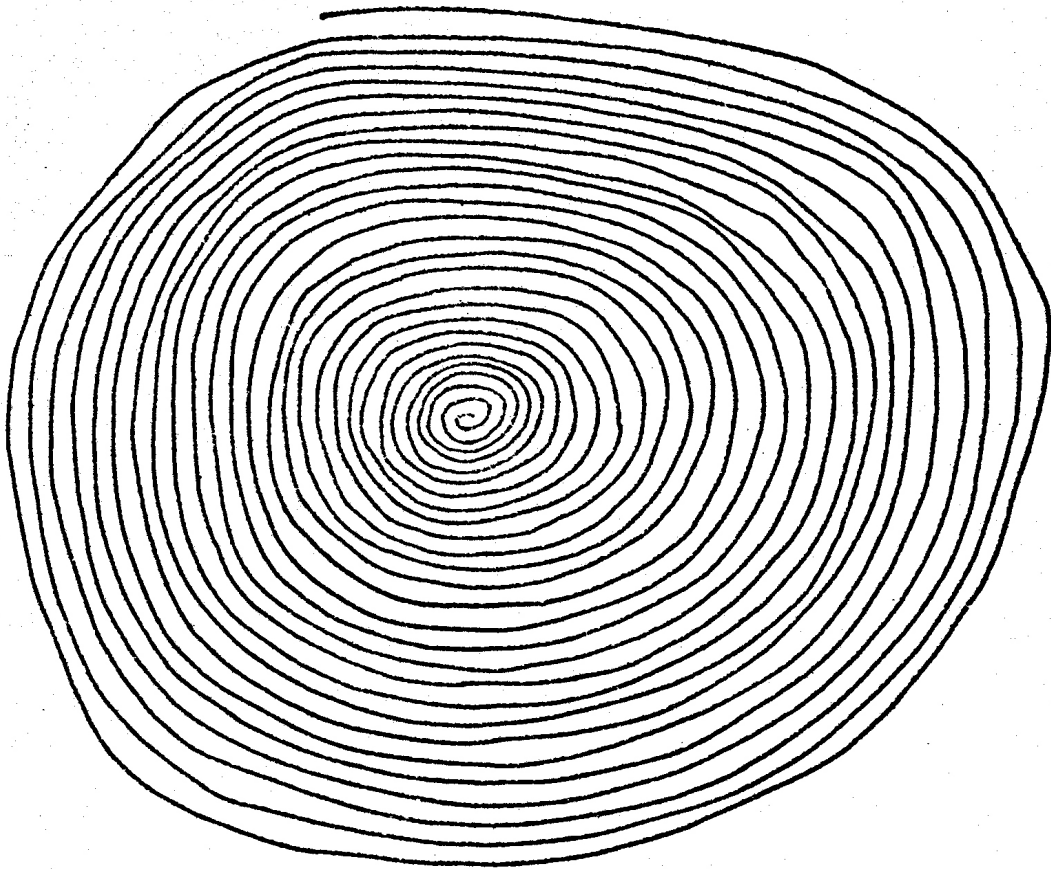


These drawings and the following ones, of course, do not exhaust the possibilities for the arrangements of units in organic design, nor do they necessarily catalog all the basic types of order possible. Essentially they present an approach to designing which is consistent with the statements made on the characteristics of organic form. They are developed out of concepts of process. They are developed with awareness of their position in some wholeness of form. And they are generated from perceptions of form enacted through the elemental triad.

These drawings are a statement of the nature of form construction with a distinctly new emphasis from that we had learned through Euclidean Geometry. This new emphasis is consistent with nature and will allow us to build form out of nature instead of against nature.

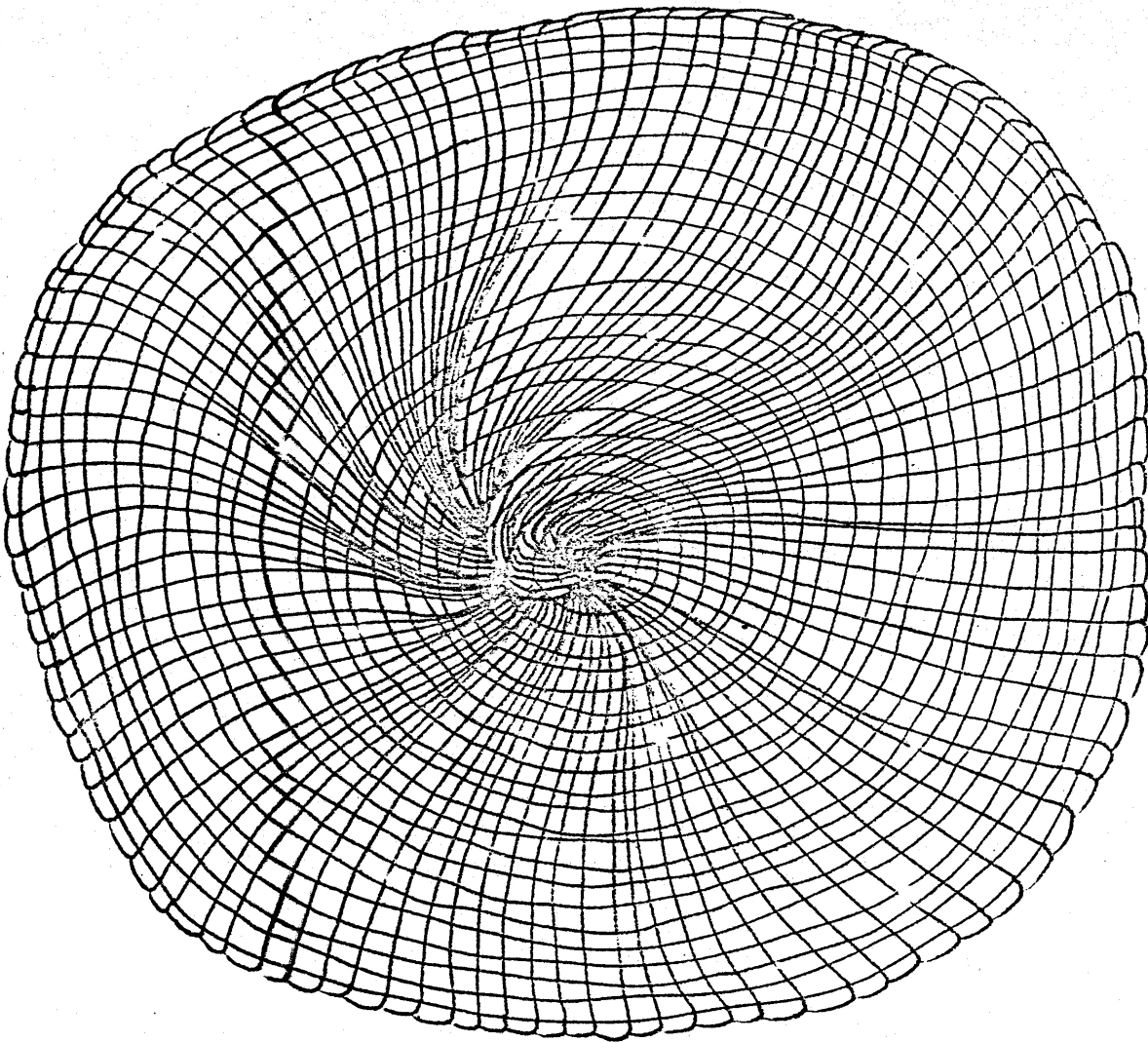
This aggregate of units is configured by a natural sorting process distinguishing among various sizes – the smaller units progressively filling the spaces between larger units. The units are centered simply through some massive force. There are no linear chains of growth patterns.





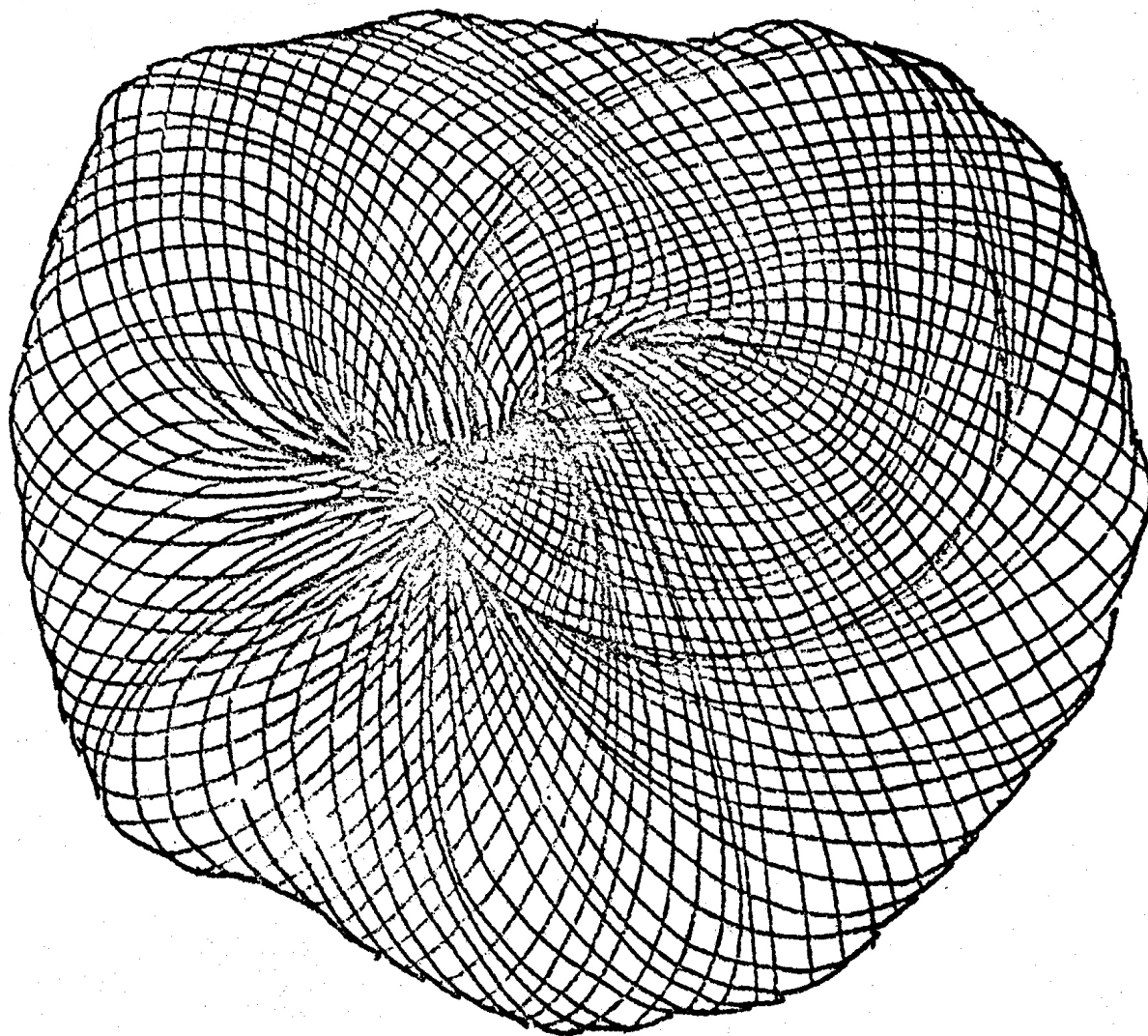
This line configuration implies that either the observer or the line is moving in a spiral. A distant view of it shows strong conformity to a single power center, but a close view of a peripheral section would show many lines instead of one, and they would all seem straight and parallel. In nature there are no straight parallel lines; all form is circular. It is important that we learn to consciously perceive the shapes of nature even when our limited view is confronted with fragments.

We are faced with what we think of as an optical illusion when we look at this form. It seems to be moving and light flashes from it. Our eyes seem to have evolved in such a way that they see in units. We focus our eyes on one unit at a time. Nature is also formed in unit increments. That also correlates well with our minds which think in units. Our eyes are confused as they try to restructure this line in unit increments. They are not prepared to deal with continuous form. But nature is incremental. Its form is not continuous; this is a local distortion.



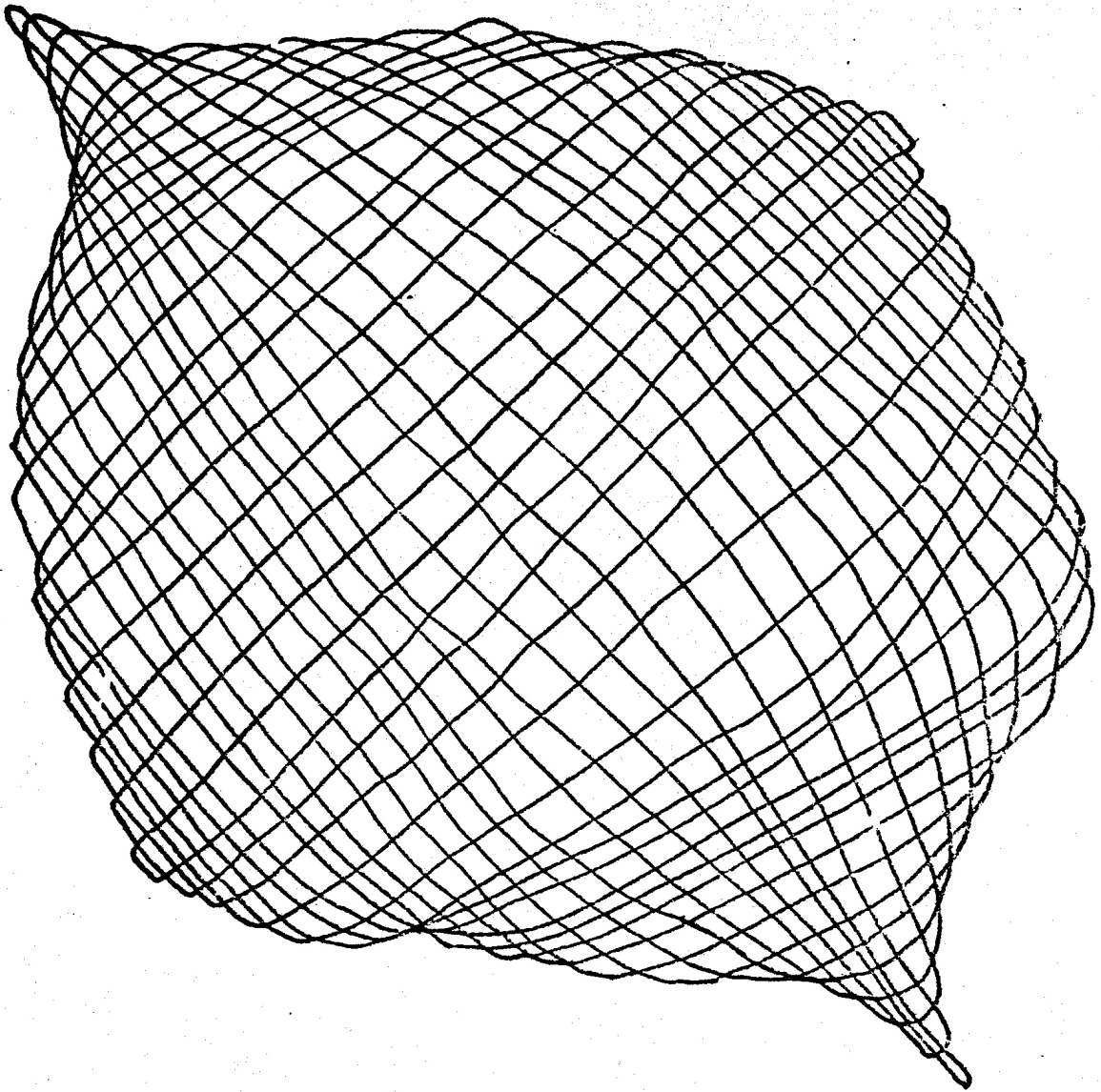
A way of making the continuous line spiral incremental is to intersect it with a system of radial spokes. This is a little easier to look at than the continuous line spiral alone, as our eyes can now focus on individual segments and intersections. We still have a problem in seeing equal segments. Here again our inability to see equals compared with nature where no equals exist suggests there is no need to see them. However, this drawing is irregular enough so that it is not too difficult to see the individual segments.

There are two problems with grid intersections. One is that two forms cannot occupy the same space, which seems to happen at the intersection. Two is that the intersections are not really units at all. They have no power centers. They are only crossings.



Removing the original spiral (page 30), a grid system is achieved with pinwheel like radial spokes. Two sets of spokes are drawn, each moving in opposite directions. A localized view of this form might show a checkerboard pattern with right angles and parallel lines, but the complete view shows that the forms are circular and of a single unit.

This form could be drawn with greater care for uniformity in each line and part, but in this drawing the irregularities might enhance our perception of the form. The generalized order is observable even though the particular variations are great. Since there was not enough room to place so many spokes in a single center, the center moves and folds on itself.



Here is another grid system composed of continuous lines. Two sets of lines are drawn, each in opposite directions. What seems to be a checkerboard from a local view is actually a rounded form.

Here is a spiral form in increments. This incremental unitized construction allows our eyes to see it more clearly than the continuous spiral. This incremental form suggests the growth patterns of nature. Our consciousness and perceptual organs are prepared to deal with this kind of form.

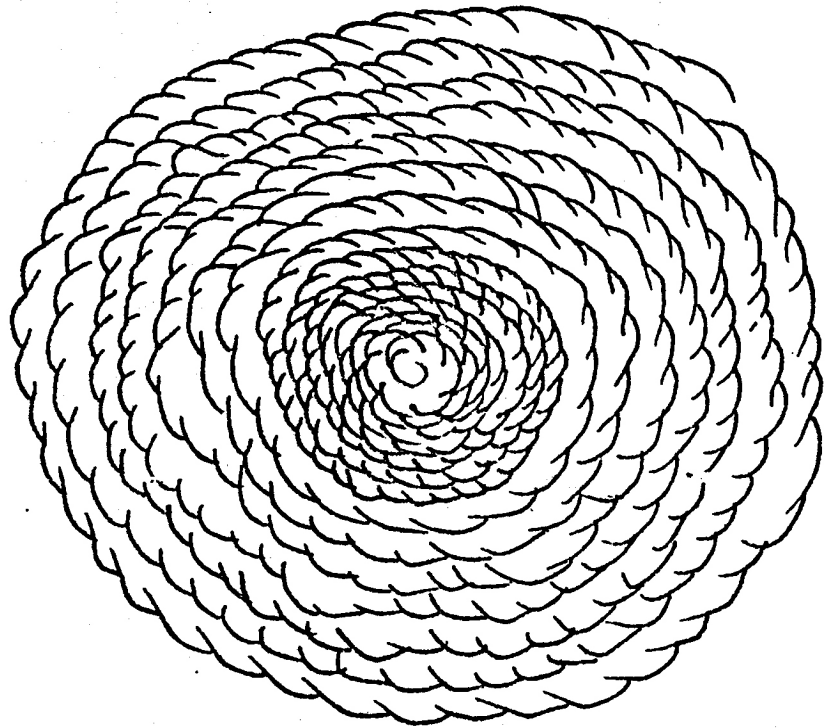


Figure 1

No form is continuous.

We do not perceive continuous form.

People have a serious perceptual problem in a designed environment which seems to be continuous.

When units such as these circles are placed in the continuous line spiral, our perceptual problem is resolved as we can now focus on the units. Notice the differences between the central and peripheral areas of this drawing. The spacing of the circles is deliberately varied to make the row of circles incremental.

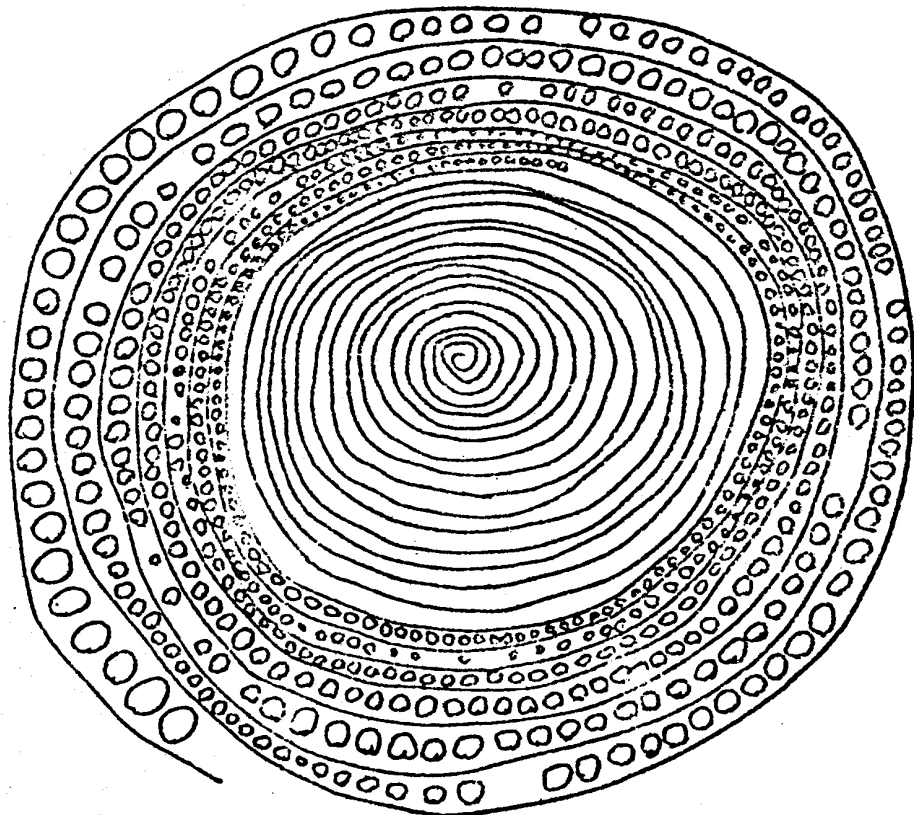
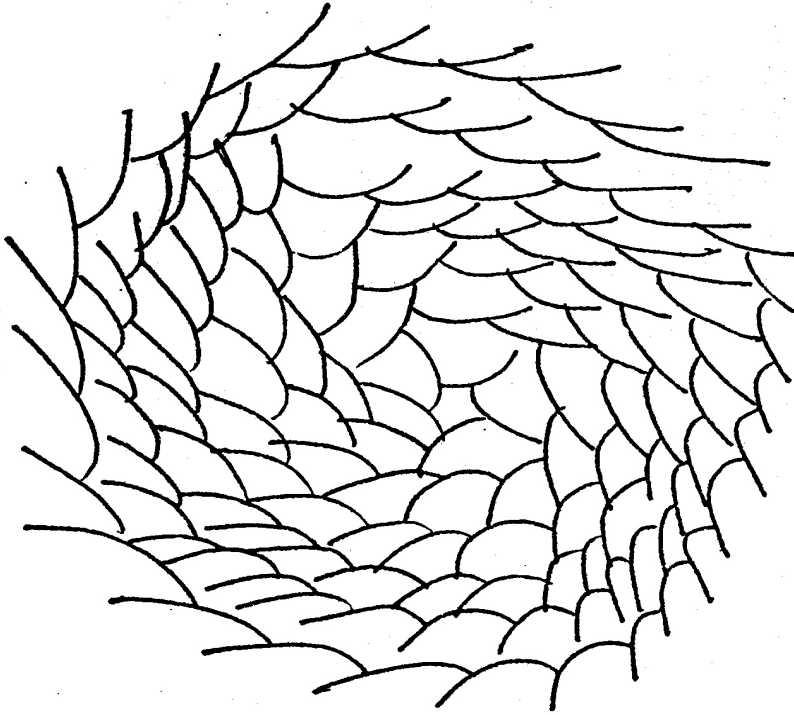


Figure 2

Figure 1



Here is a spiral form in increments. Its only difference from page 34, Figure 1 is that each segment points out instead of in. However, there is a considerable feeling difference.

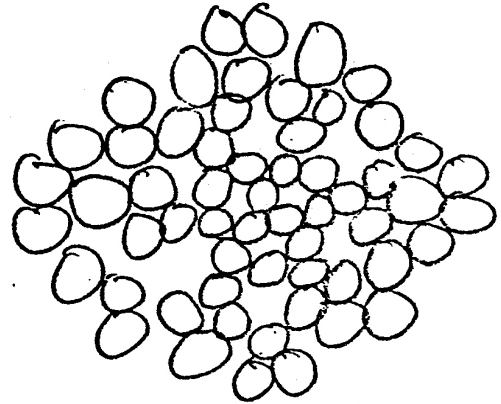


Figure 2 shows a stacking order of circular units.

Figure 2

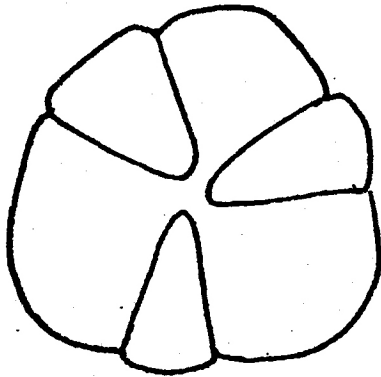


Figure 3

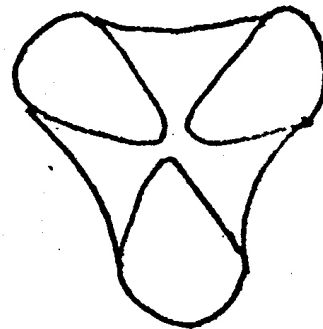


Figure 4

Figures 3 and 4 are spoke systems, the differences being in the outside contours and the treatment of energy flow at the center. The feelings from the two figures are quite different.

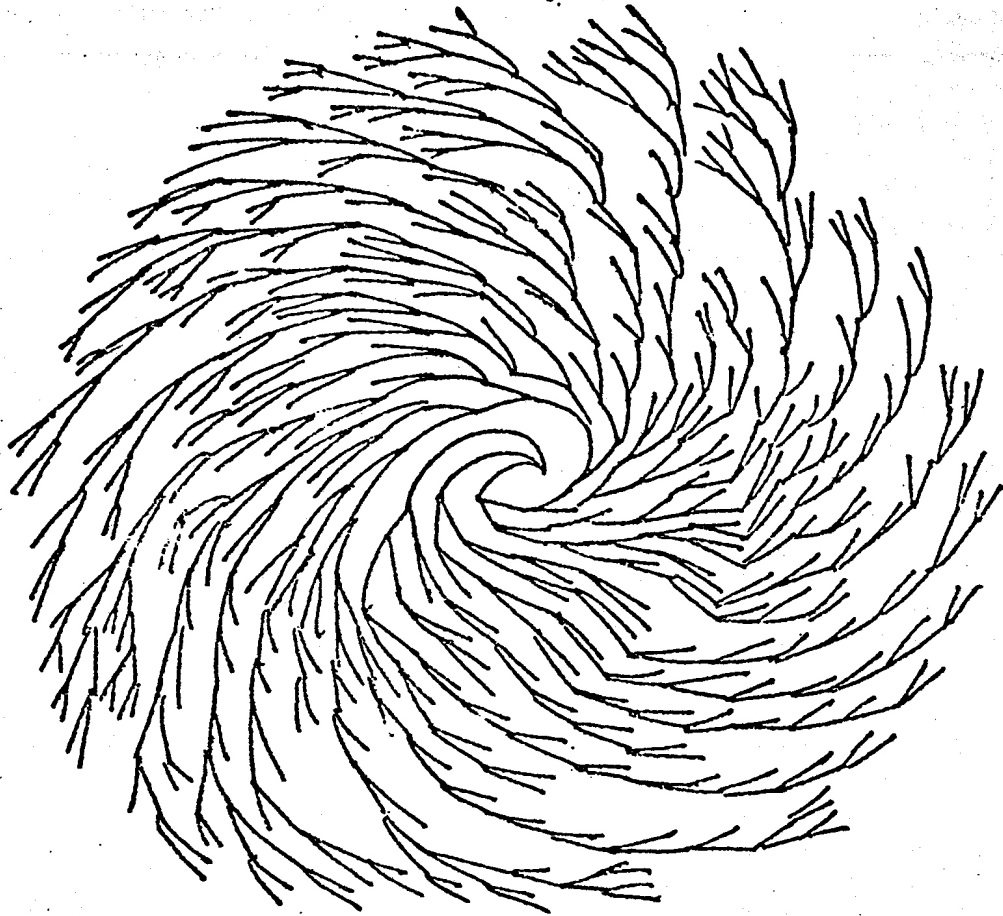


Figure 1

Forking patterns are frequent growth structures in nature. Here a pinwheel spiral is drawn in forking increments. It is easy and pleasant to perceive. The growth of new ends on the spokes is faster than the space allows so many ends must be discarded. This is also a frequent natural occurrence.

A circle placed around the other active pattern is a calming influence. It is also limiting. These two kinds of forms often occur together in nature.

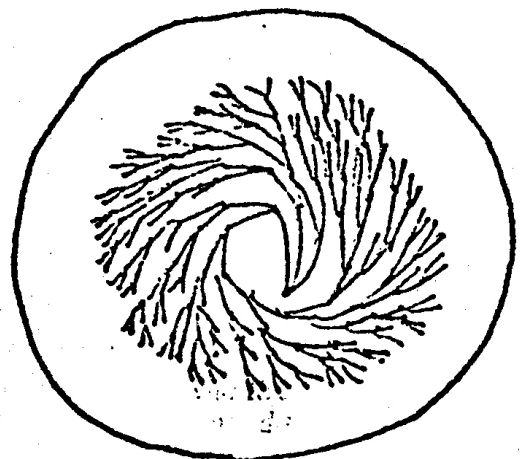


Figure 2