

Figure 1 is a pinwheel of unit increments. It is pleasant, easy to see, and similar to nature.

Figure 1

Figure 2

These are concentric-like circles, but the placement of center keeps varying. This is easier to deal with than perfect concentric circles.

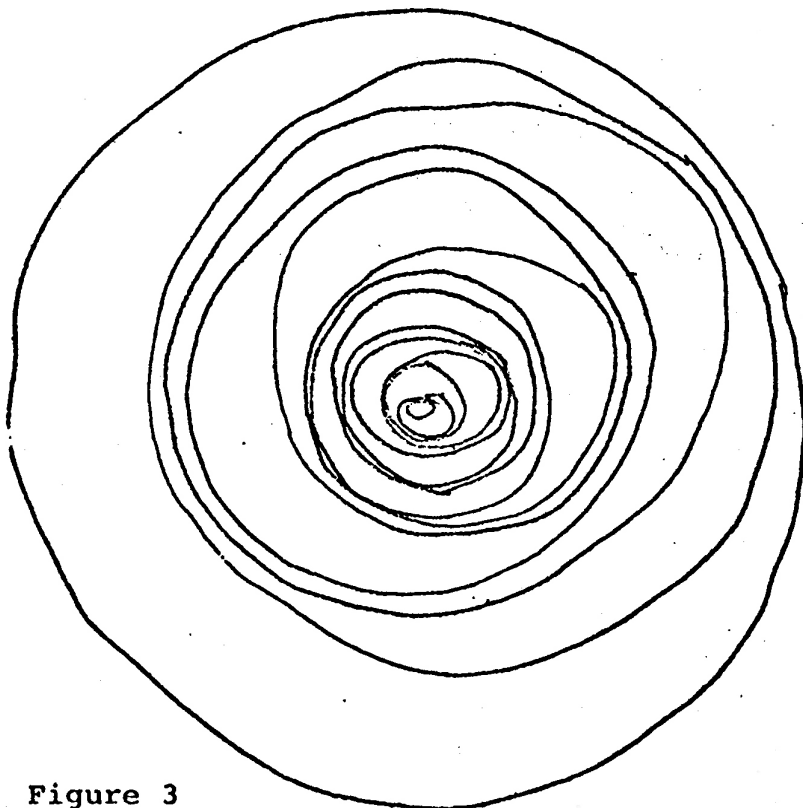
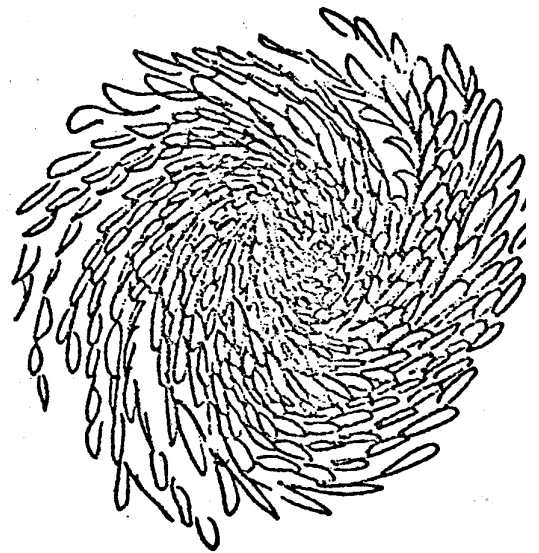
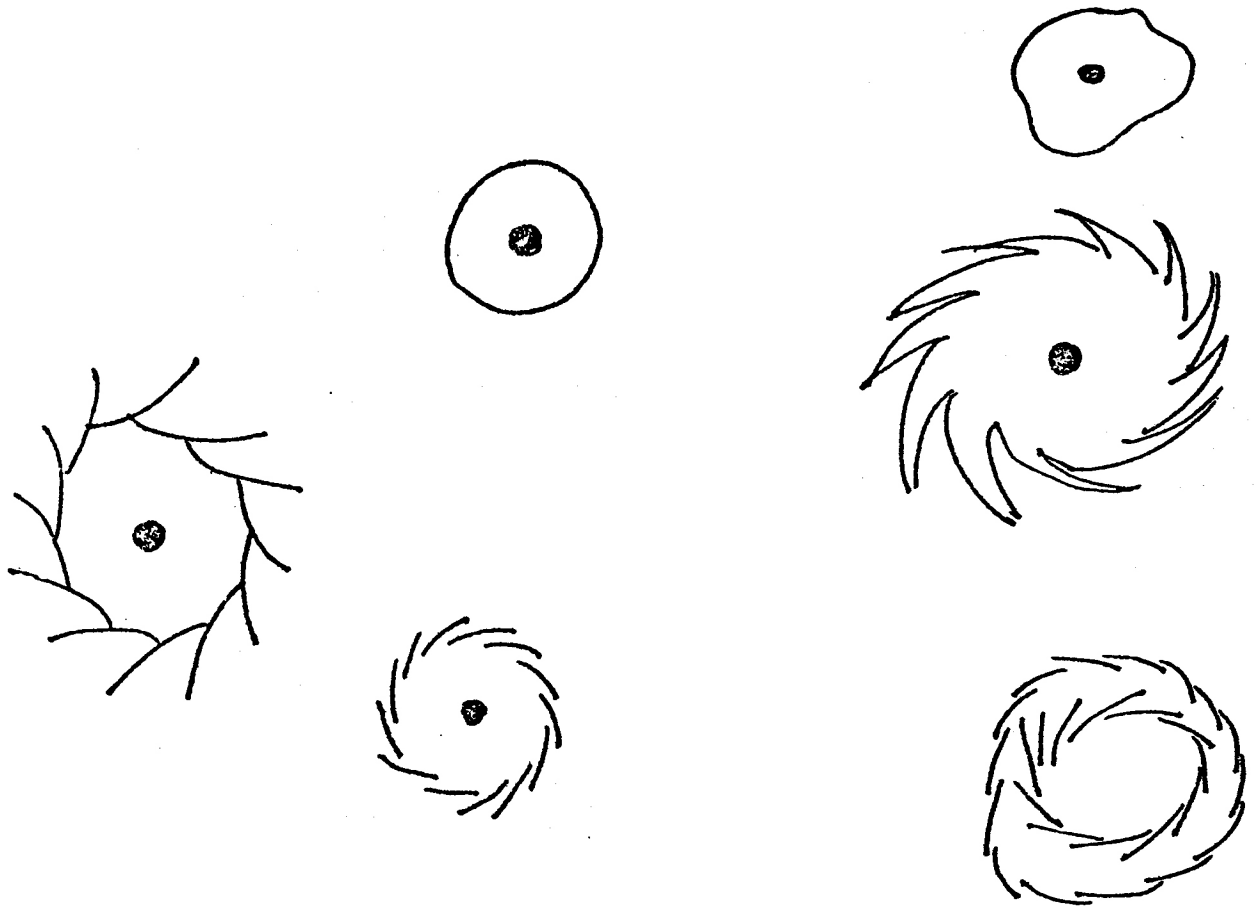


Figure 3



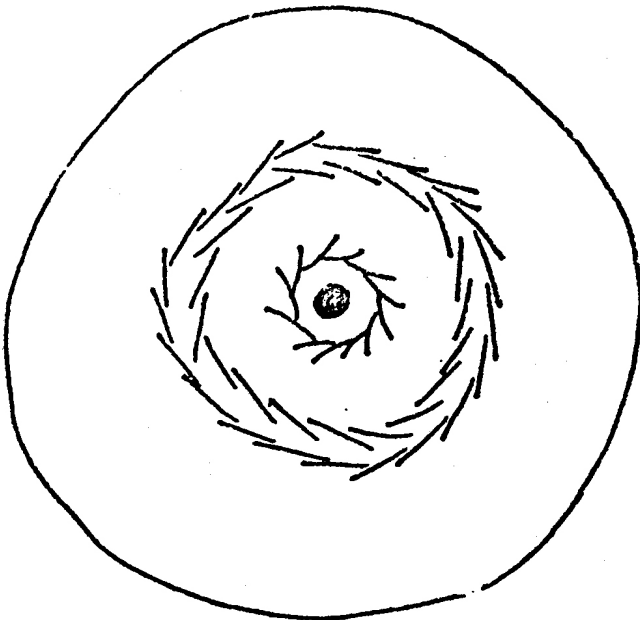
This is also form being reciprocal around its center.

Tension between power of center and power of edge .
Out and in.

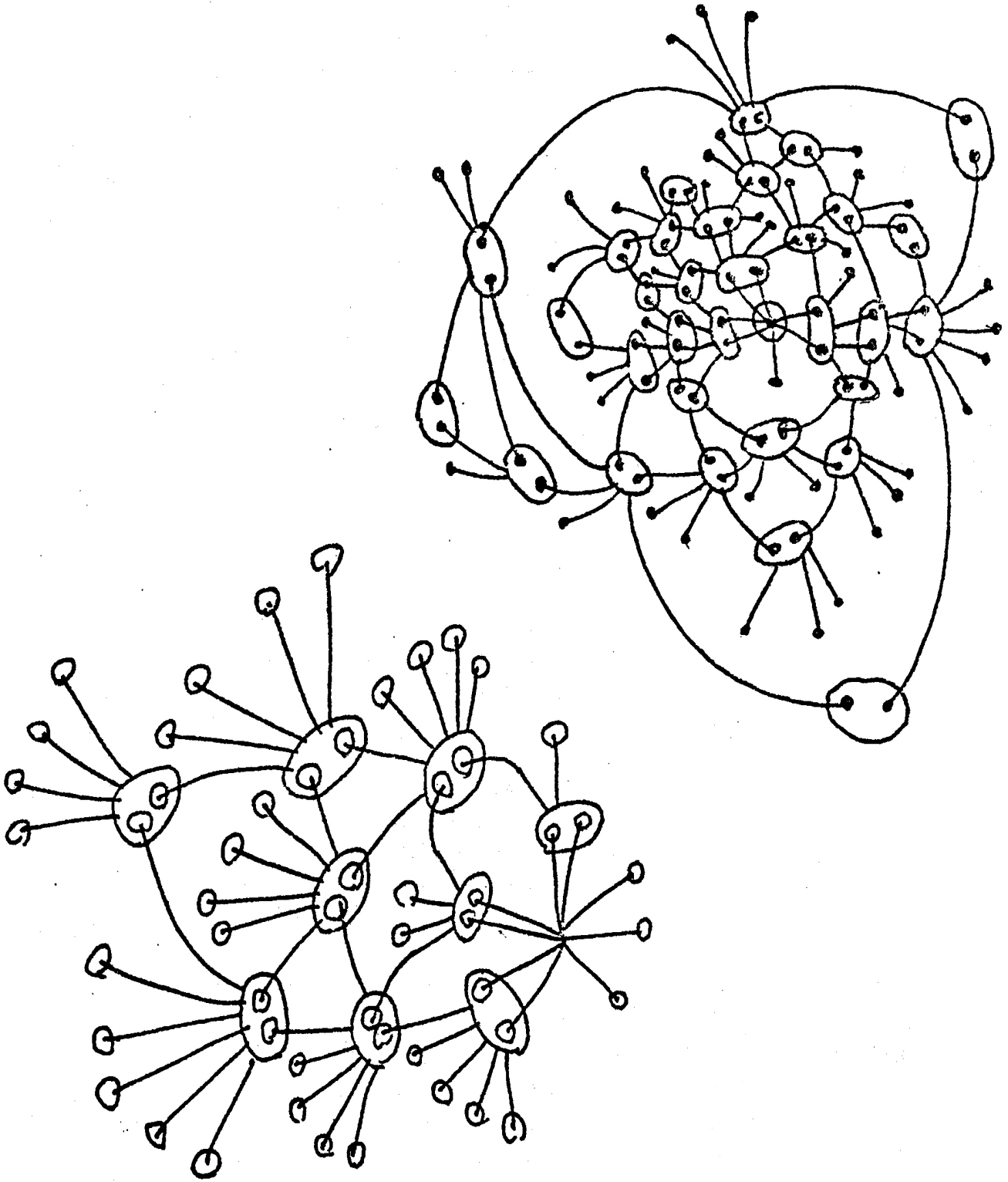


These are examples of concentric forms. Each ring and space is varied.
Compression to tension and motion relationships occur between rings and centers and rings and rings.

These forms are
like many natural
Structures.



Genetic structures of mating and offspring.



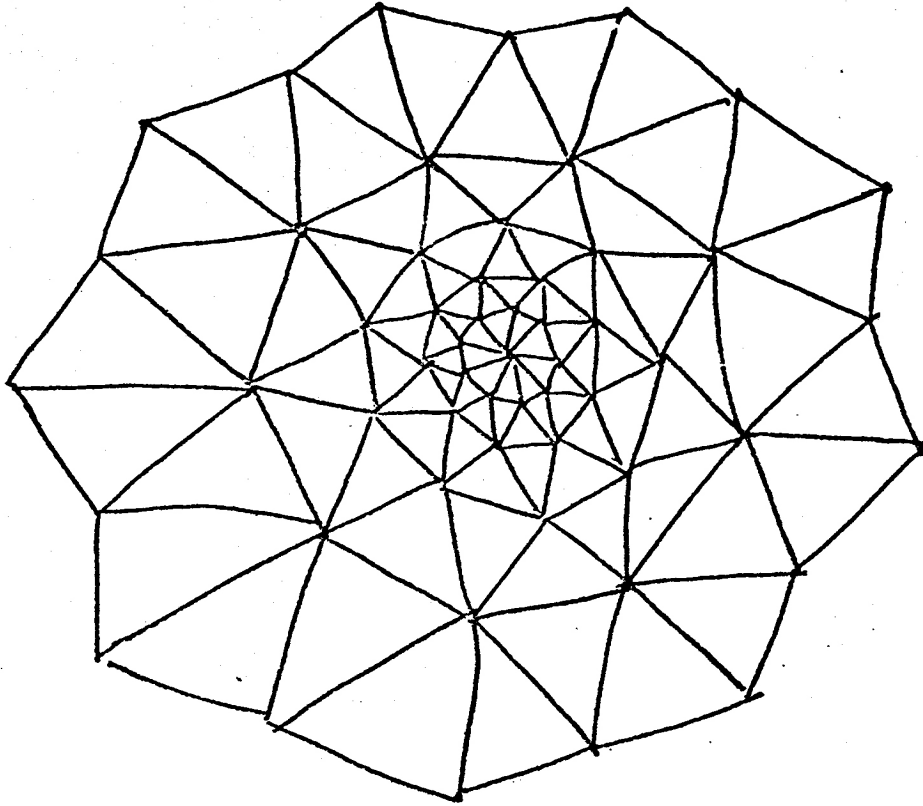


Figure 1

In systems under compression where centers are forced as close as possible until stability occurs, we have forms which can be called stacking orders. These orders need not be drawn with precision as the subunits being stacked are not necessarily precise and certainly are not equal.

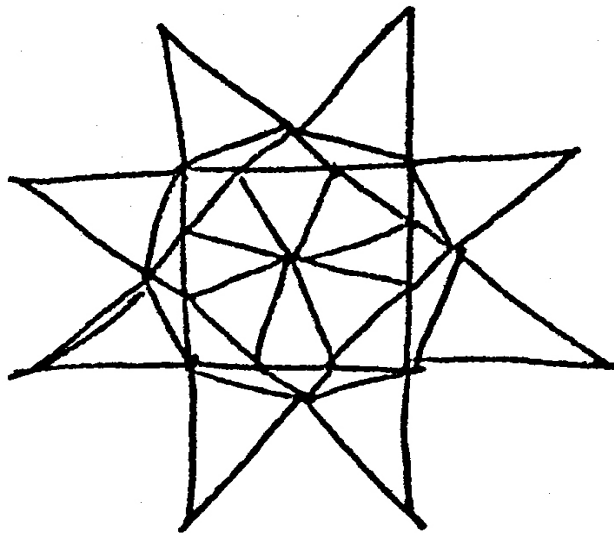
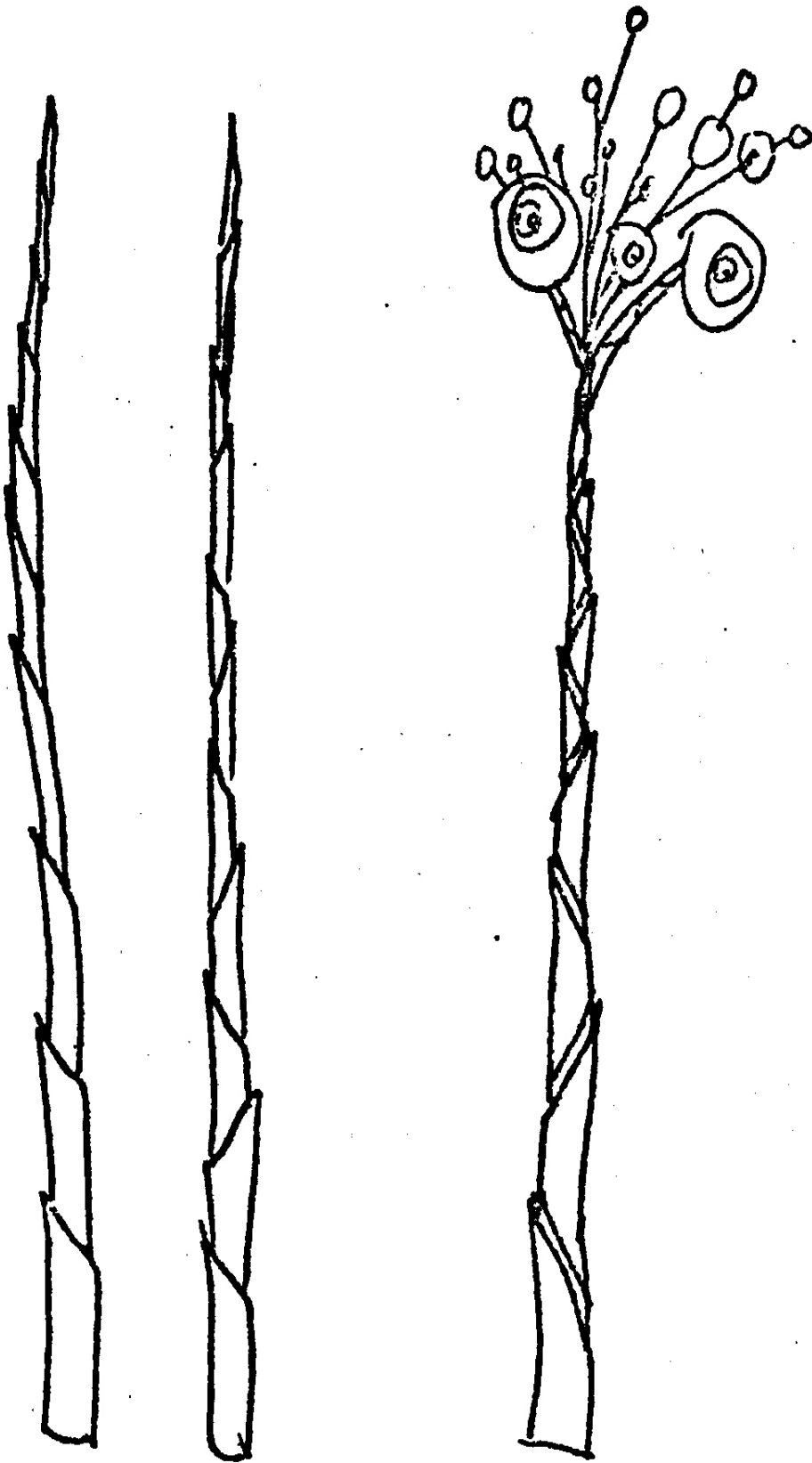


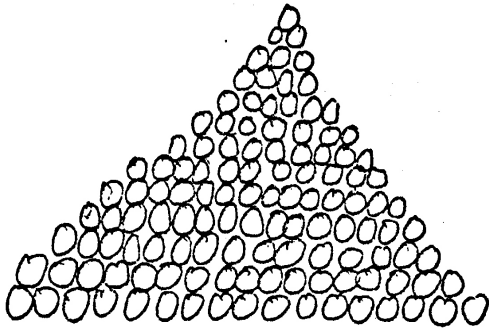
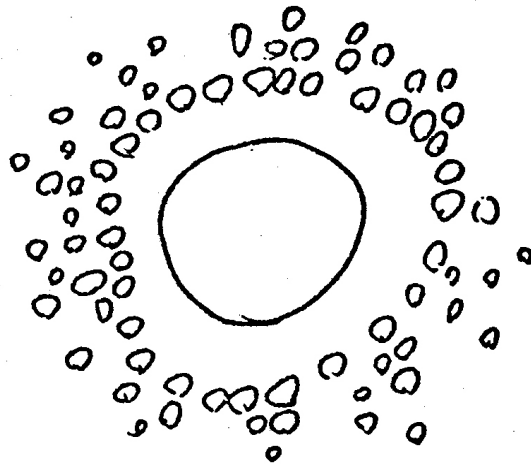
Figure 2

We can see many inter-relationships in these kinds of structures. We are pushed to perfecting the form so the inter-relationships are more clear. Though the abstraction is exciting, our eyes cannot handle it. It is too regular.



This figure represents a development of complexity in a linear progression

This drawing shows a varied relation between the center and the periphery. We sense the power interchange between the center circle and the outside ring of circles. Figure 1



The concept of perpendicular is expressed in figures 2,3&4 as it is in nature without an exact single line at a perfect 90° angle.

Figure 2

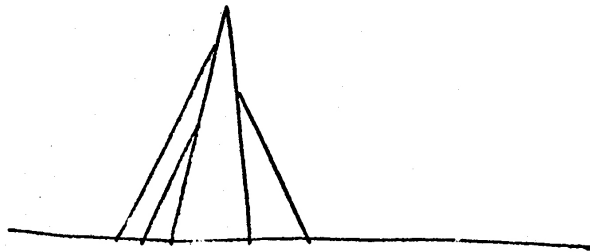


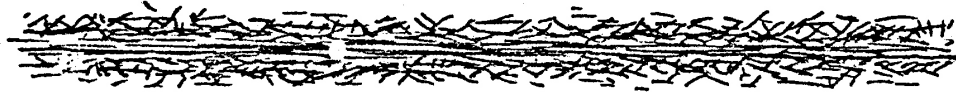
Figure 3



Figure 4

Various internal orders and forces can exist in any structures. In these linear forms, made of short segments, 3 different states are represented. In Figure 1 there is a power moving through the center, but the edges are still random.

Figure 1



In Figure 2 there is no power center, some outside force must be containing this form.

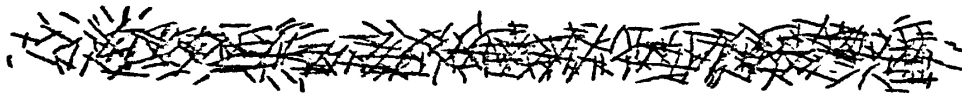
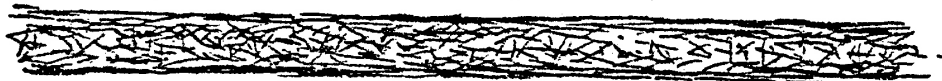


Figure 2

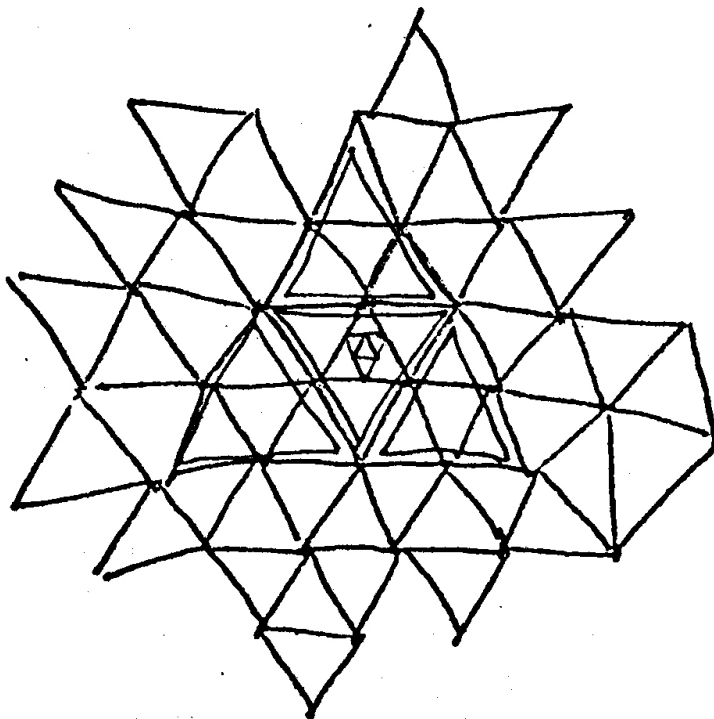
In Figure 3 a tube form is suggested. Forces have acted upon the edges of the form.

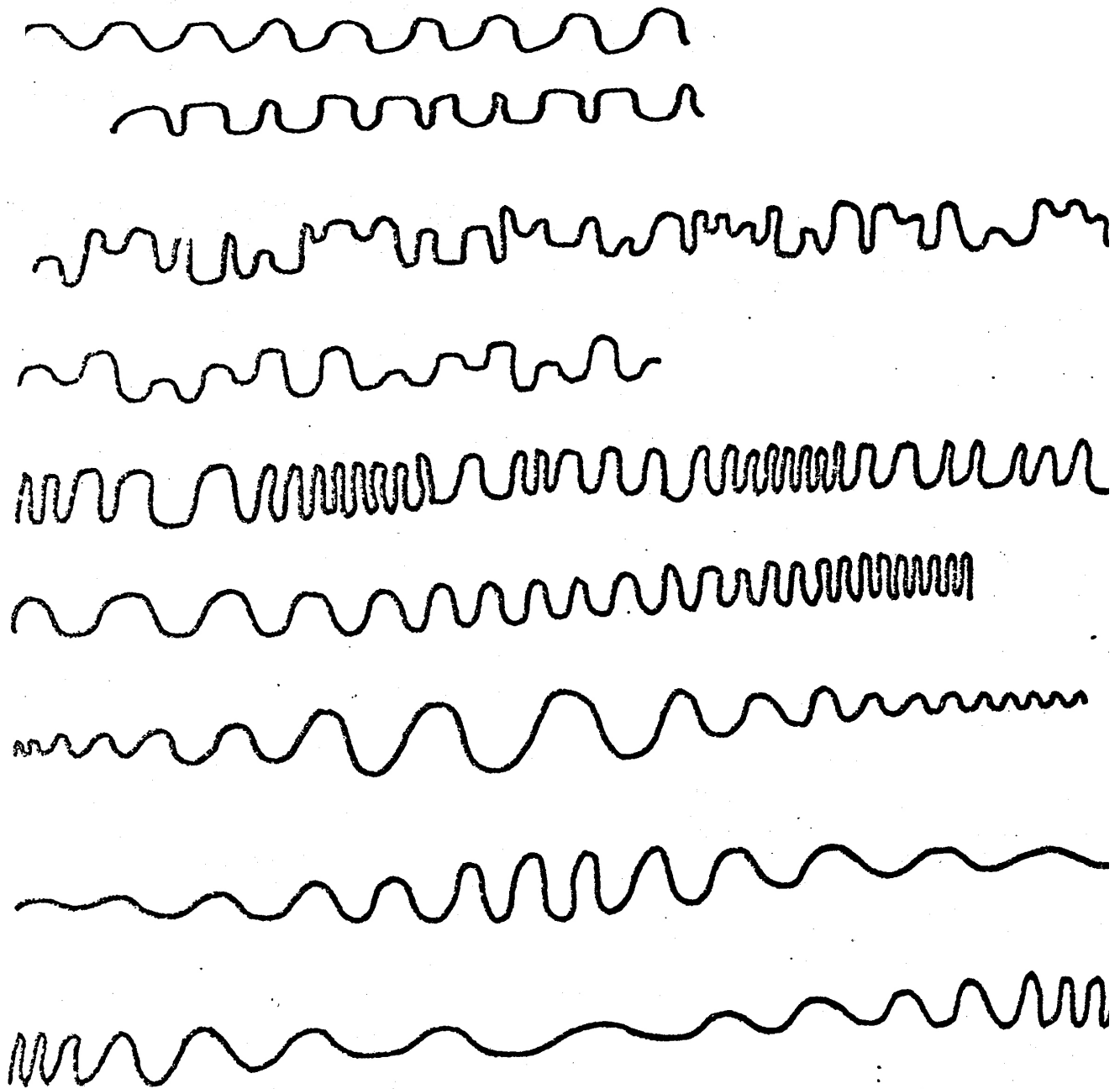
Figure 3



One of the most stable of the stacking orders. The simplest balance.

Figure 4



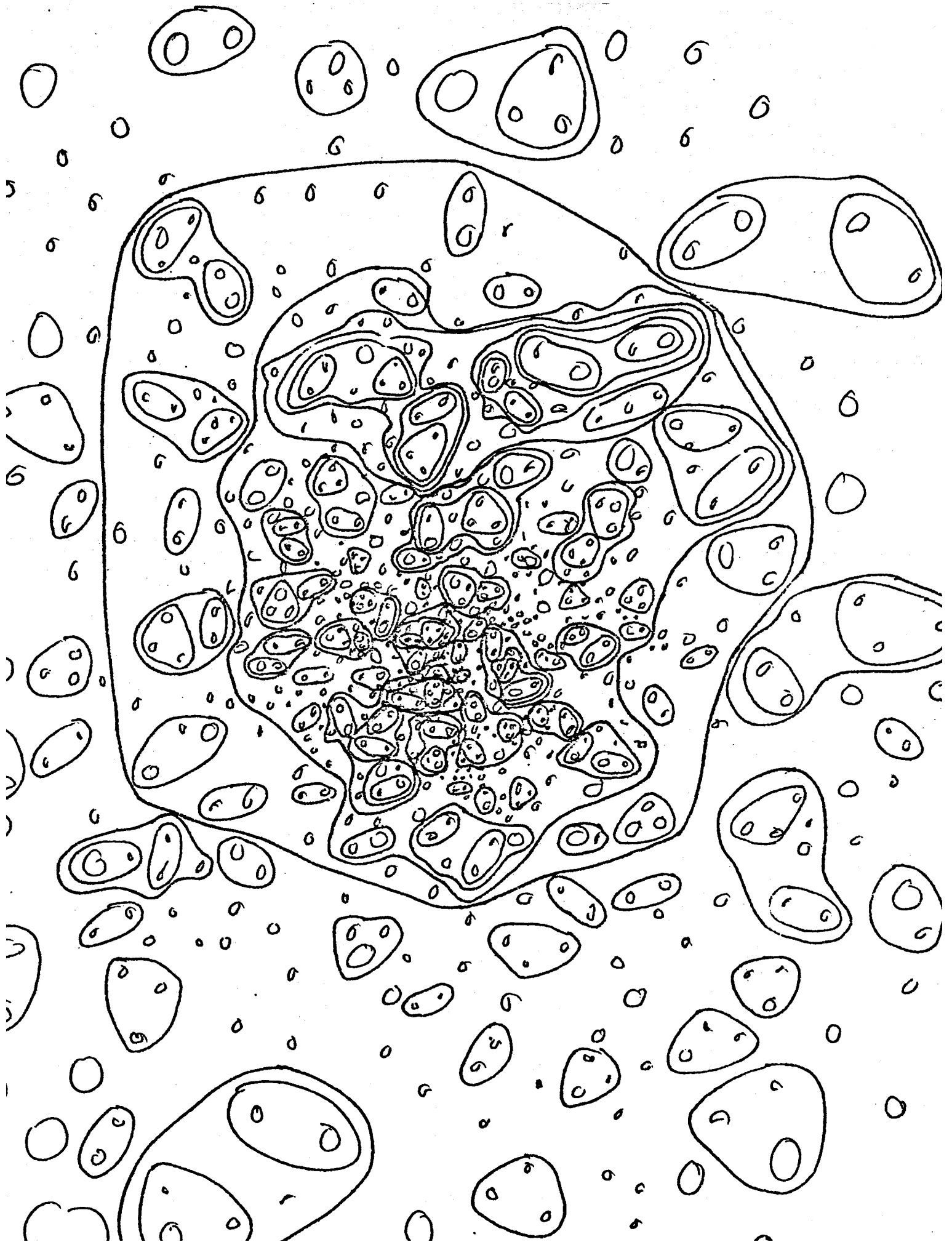


Patterns of linear increments - cycles

1. Regular repetition
2. Random variations of width
3. Random variations of width and height
4. Random variations of height
5. Cyclic variations of width
6. Scale of large to small variations of width
7. Large center, small ends in both height and width
8. Inversely proportionate --- center great height, ends great width
9. Inversely proportionate -- center small height, ends small width

Order by Conglomerate Bonding --- See drawing on the next page.

The beginning was random units; they were more dense at some center; they bonded in many kinds of groupings; any close twos or threes bonded; then there were ones, twos, and threes. These groups re-bonded and then there were larger groups of many kinds. Bonded groups continued to re-bond as long as there were more potentials to fill and strong enough bonds could be constructed.



Chapter 6

Processes of Form Building

As we slice or saw through organic materials, we expose in the cross sections complex, intricate, and beautiful patterns. The patterns are often too complex to copy at face value, but tell the story of the process of formation. as exposed than to copy the surface patterns. We find that dealing with form by enacting and controlling processes is a more fruitful method of creating or building than pushing materials around at a surface level.

All of the drawings of Chapter 5 are based on understandings of processes. While the processes were not always performed, they were consciously imagined during the act of drawing.

Processes are not only the methods of construction and the springboards of patterns, they are also the limitations of form. The processes of the natural world have been free to enact life. The evolutionary processes of nature power forms in directions we still don't understand, but the process continues, the complexities increase, and consciousness continues to grow.

A Process

1. Units
2. Action performed on units
3. Units altered because of action
4. Process repeated or interchanged with other processes

Evolutionary processes are growing complexes of form moving from simple supporting units through hierarchies of order leading to continuing and progressing states of being, form, and consciousness. A pyramid is a classic model of such a structure.

The key concept in evolutionary processes is growth beyond present and past form which experiences and guides the growing form and its complexities, and in turn is supported by this form.

In organic design we are concerned with the growth and support of our own consciousness. The conscious development of evolutionary processes of form building results in the growth and evolution of our own consciousness.

An interesting diagram of evolution can be seen in two pyramids placed point to point. The lower pyramid represents the hierarchy of support needed by the physical being while the inverted upper pyramid represents the conscious.

perceptual being, and all that it supports as greater consciousness evolves. Both beings meet at the point between both pyramids.

In organic design, when we accept an arrangement of units to be a new single unit, its performance becomes a step in evolution.

In the natural world the distinction between normal growth and evolutionary growth is that normal growth enacts the steps of past evolution to the point where it produces the known units of present form. Evolutionary growth extends the present beyond the known units of form. We can, by studying the growth stages of any natural form, find its past evolutionary stages.

As designers we normally enact the past stages of the evolution of our designs. Evolution in design allows its extension beyond past stages.

An extension of design beyond the past through the present is considered a live experience. In organic design live experiences are highly valued. This extended live enactment is more than structural, it is also spiritual. Origin-ality in design is part of an evolutionary growth process. It is not merely an attempt to be different.

As designers we need to be conscious of the evolution of the units we build out of. Though we need to be conscious of form from its beginning, we usually cannot draw form from its beginning or the drawing would be cumbersome. We continue to draw from more highly processed forms, while we continue to extend our consciousness to lower forms in the pyramid of evolutionary form. As an example, we draw a line though we know it is a progression of a point.

In the working methods of organic design we seek success through intuitive trials. We experience and evaluate the results, and we continue with more trials to seek success. We find success in rhythmic flows and learn to recognize them---a kind of water which nourishes evolution.

We do not have to know our mistakes to reach success.

A logical extension of a process to forms of greater and greater complexity might be exciting and interesting, but it is still not evolution as the logical concept of the process already embodies its extension.

A logical extension in a random based medium is more natural than its extension in a mechanical medium, but the potential of the processed form is still predictable and therefore already stated in the original concepts. So it is not an evolutionary process.

An evolutionary process is noted by the creation of new form which was not predictable as logical extensions of the past, although in retrospect new logical structures can be defined uniting the new form with that of the past. In

Darwinian evolution a random medium causes mutations, but it is not until the mutations are successful and survive that they are united with past form and present a new step. The path of evolution is not predictable from the abstract realm. The path is defined in terms of spirit. The path can be imagined.

There must be an element of form which leads the mutations, the random variations, in the path of spiritual evolution. There must be some degree of trial and success. Evolution must be a more positive seeking form than only a successful adaptation to physical conditions.

In organic design the evolutionary extension of process is not dependent on logical applications but on intuitive surges. We just feel like doing it a certain way, a new way, and it works. If it doesn't work we reject it and seek a better flow. Each time we are successful there is a new evolutionary step in our perception.

This is not an advocacy of unplanned and unprepared structures. Each new step in evolution is prepared by intimacy with previous steps, but after intimacy we must not be afraid to let go and climb the next step.

With the structure of evolutionary steps, form is meaningful because in these steps we can read the progress of spirit.

The following pages offer drawings and notes on various processes.

Variations of the Process of Division

Figure 1

Here the division is extended by thirds.

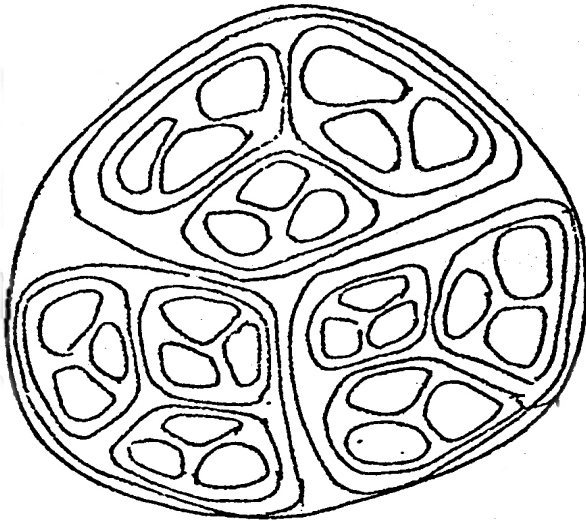


Figure 2

A compromise structure
between Fig. 5 and Fig. 3

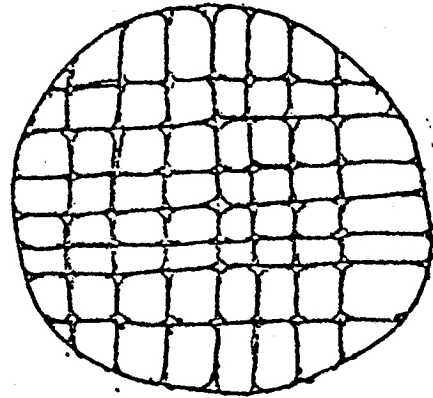


Figure 3 is division by halves

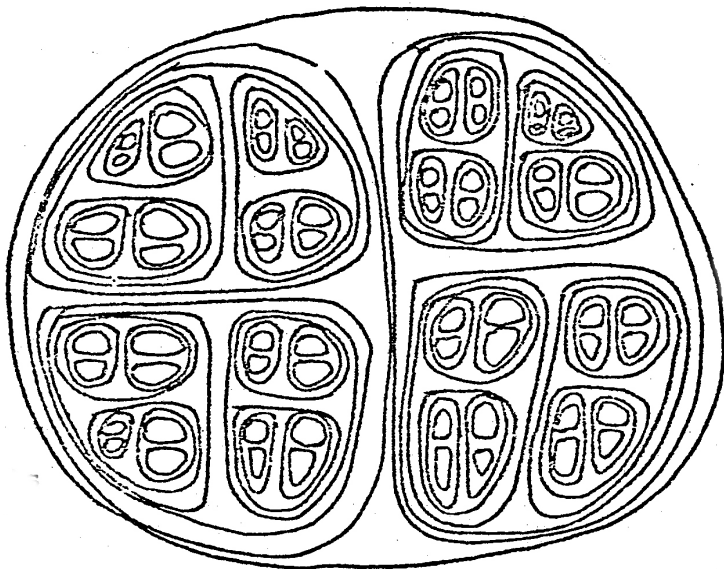
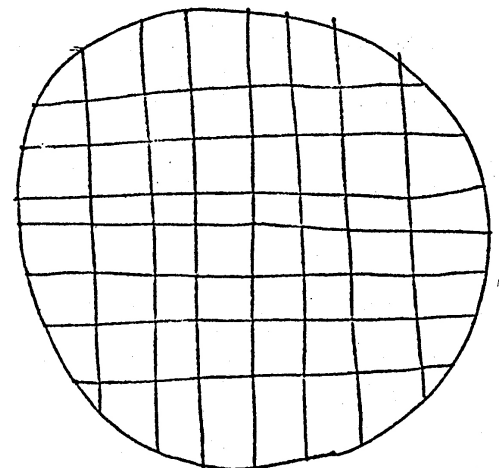


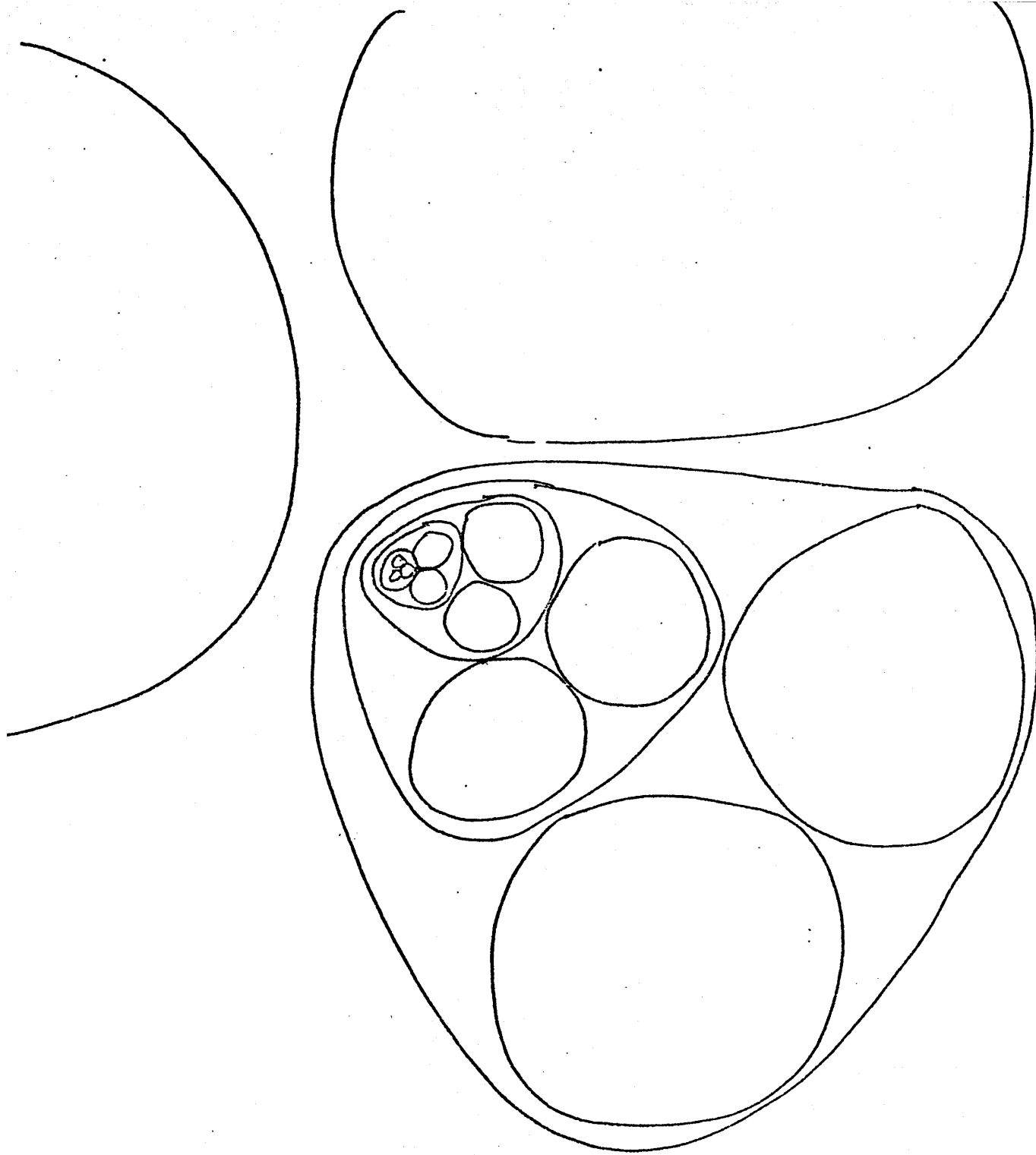
Figure 4 makes the lines
positive forms and keeps them
in hierarchical order by weight



Figure 5. Division by halves, the division is of space and is quite abstract. Adjacent squares have no real identity as the line between two squares is the same for each square. In Fig. 3 when the shape divides in two parts each part has its own boundary and there is space between them. This process is continued to smaller and smaller parts. This is how division takes place in nature.

Figure 5





This form is the result
of a direct extension
of a concept in a process
of building.

It is not an evolutionary process.

The Fibonacci Number Series

The Fibonacci number series presents an order which is found often in natural structures. It is also the basis of the golden mean, the proportion of the golden rectangle which has been used by various cultures as an important aesthetic form.

The Fibonacci number series is based on a process which can be stated as an abstraction but which is performed in a random medium (the concrete element). It is unlike other number series which are abstract extensions of form not related to concrete elements.

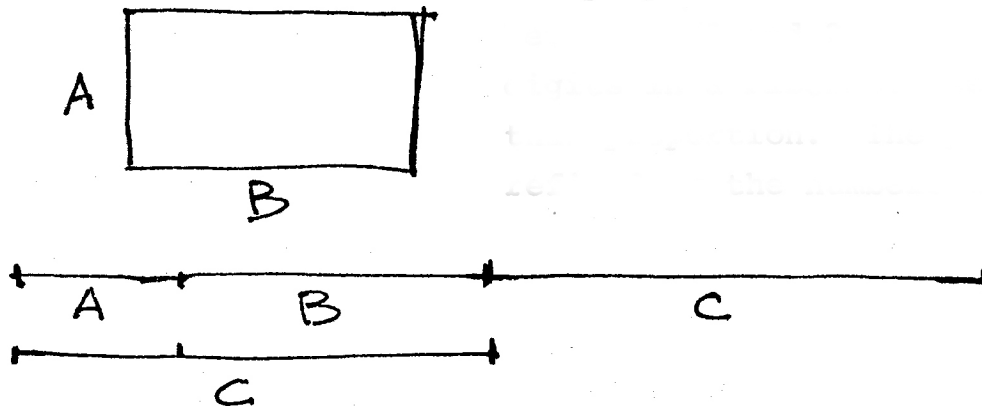
Even though the Fibonacci number series is an abstraction applied in a concrete medium, it is still not an evolutionary process. It involves no jumps to new steps of form.

The process is stated very simply in two parts, Part One: "A" plus "B" equals "C"; Part Two: "B" becomes the second stage, "A" and "C" become the second stage "B." Now the second stage "A" is added to the second stage "B" to give the second stage "C." This process is continued as long as possible.

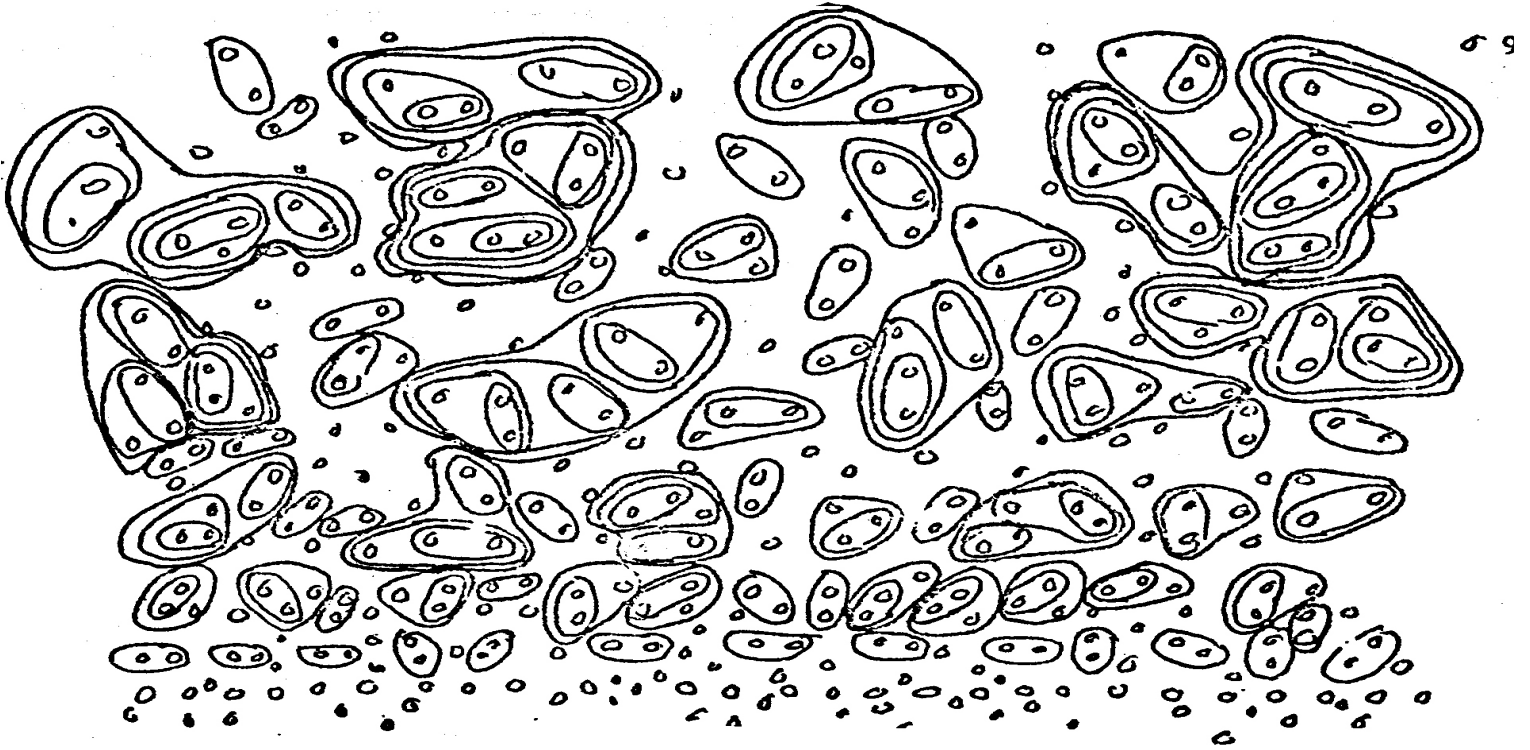
The following series is usually presented starting with numbers 1 and 2, but as a process it is possible to start with any numbers for the first "A" and "B". What makes any such number series alike even though the digits are different is that they all move closer to the abstract concept that "A" is to "B" as "B" is to "C" as each series progresses to higher increments. This means that this number series continues to move closer to a statement of the proportions of the golden rectangle which is A is to B as B is to C where "A" plus "B" equals "C".

1	2	3	5	8	13
<hr/>						
A	+	B	=	C		
		↓		↓		
		A	+	B	=	C
				↓		↓
				A	+	B = C
<hr/>						
3	4	7	11	18	29

The proportion of the golden mean is somewhere between $1/2$ and $2/3$. Any two successive digits in a Fibonacci series is a statement of this proportion. The proportion is more refined as the numbers are higher in the series.



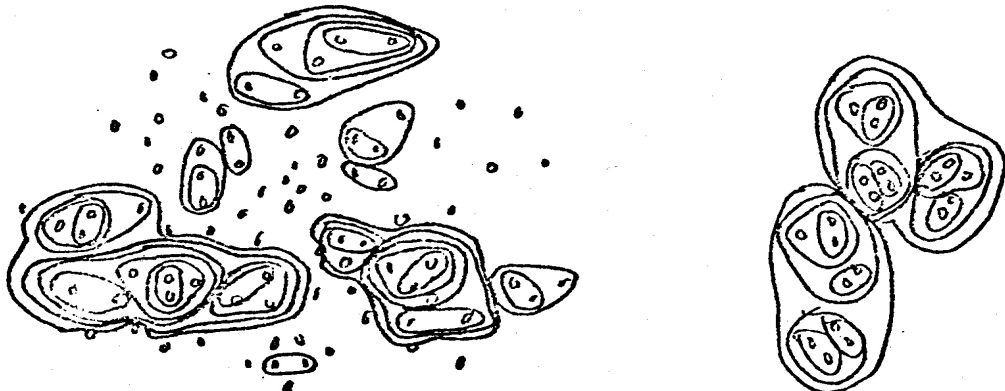
This process seems to be a key one in the formation of natural structure. The following drawings show how it can form natural building units.



This is an illustration of a hierarchy of bonds following the order of the Fibonacci number series. Beginning with random units at the bottom, first twos are bonded so there are ones and twos. Then twos are bonded with some ones making threes. Then threes are bonded with some twos making fives. Then some fives are bonded with threes making eights. This process continues as long as possible. The largest units carry a sample of all previous units within them and only one of each. This is sort of a genetic code.

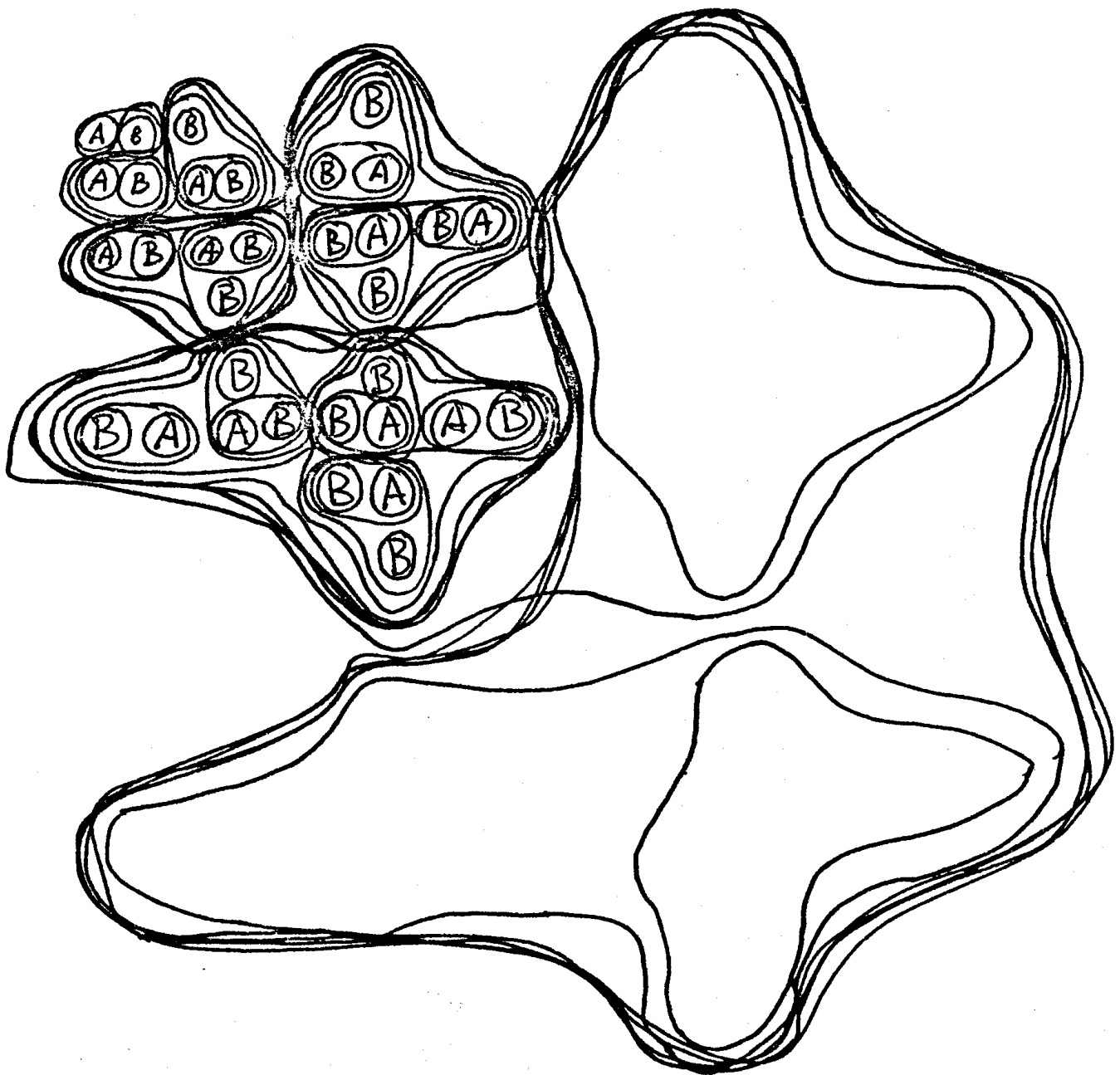
A + C = D
 A B C D
 1 2 3 4 6 9 13 19 28 41 60 88 129

The above numbers are of a different number series, illustrated below left. It is not as efficient and stable as the illustration at the top of the page.



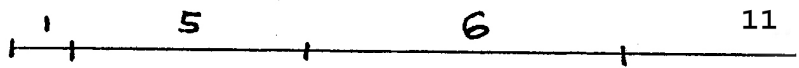
A + B = D _____ Illustrated above right
 A B C D
 1 2 2 3 4 5 7 9 12 16 21 28 37 49 65 86 114

This is a chart of the Fibonacci series as a growing form. A and B bond to make $(A+B)=C$. C reproduces itself and becomes the next stage B. It combines with the last stage B which has now become A. So again we have $A+B$ making C. "C" again reproduces itself and the same process continues. As the form continues to grow it always carries its genetic code. And it always discards the past portion of its form which would be repetitious of the code contained in the latest stage of growth.





The Fibonacci series starting with $A=2$ $B=2$



$A=1$ $B=5$



Diagrams of Evolutionary Growth

This column is an evolution from geometrically ordered units.

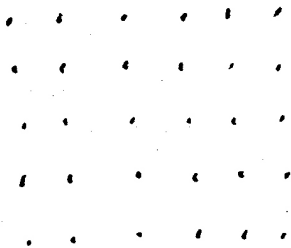


Figure 1

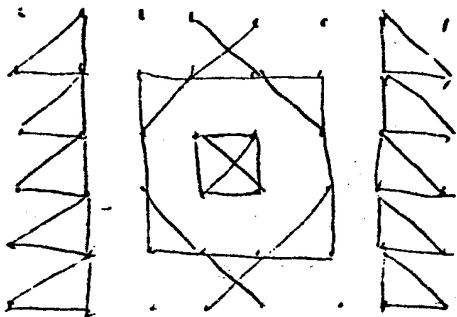


Figure 2

We assume curves could grow out of the previous forms.

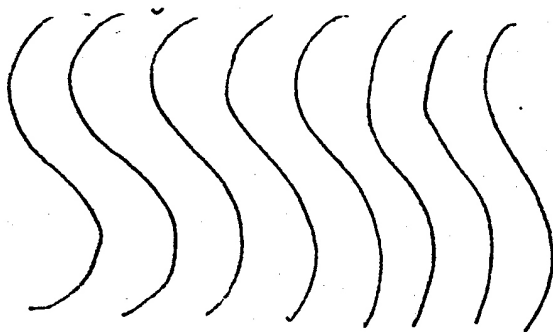


Figure 3

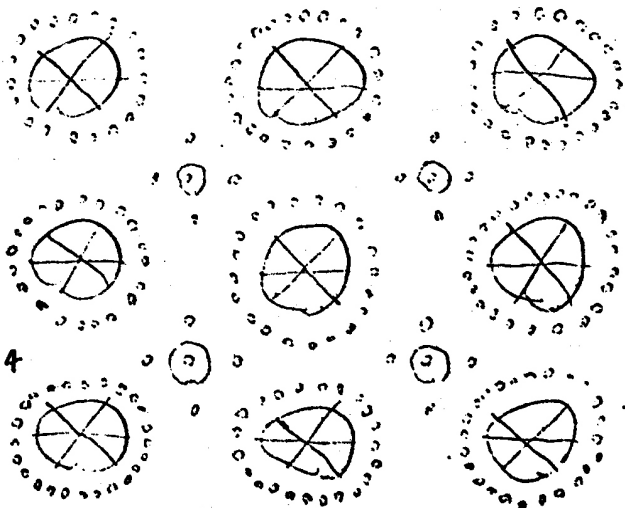


Figure 4

This column is an evolution from randomly ordered units.



Figure 1

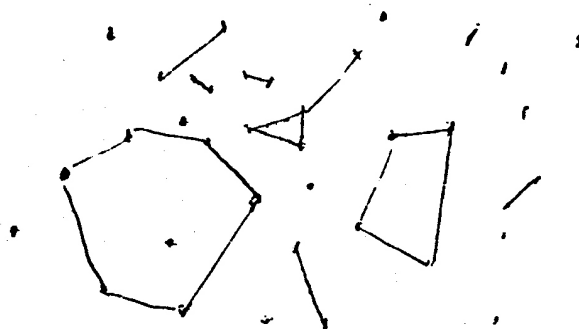


Figure 2

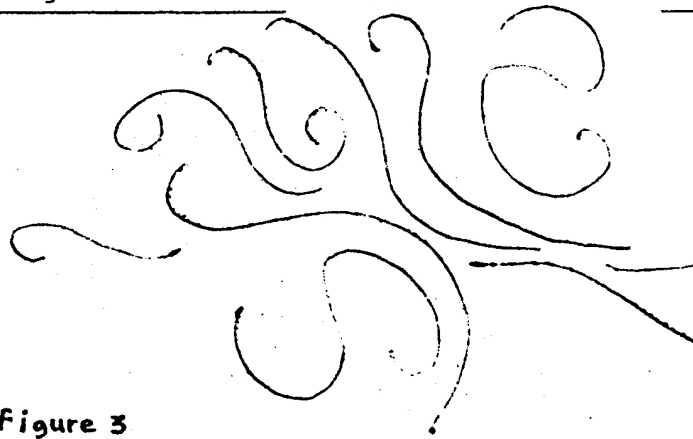
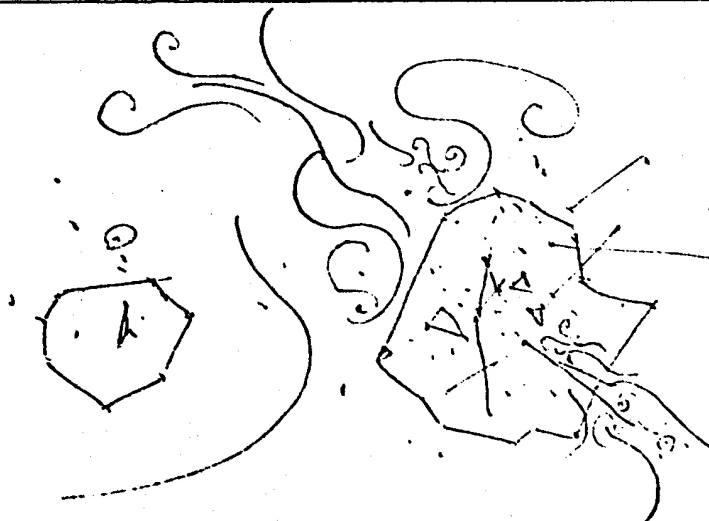


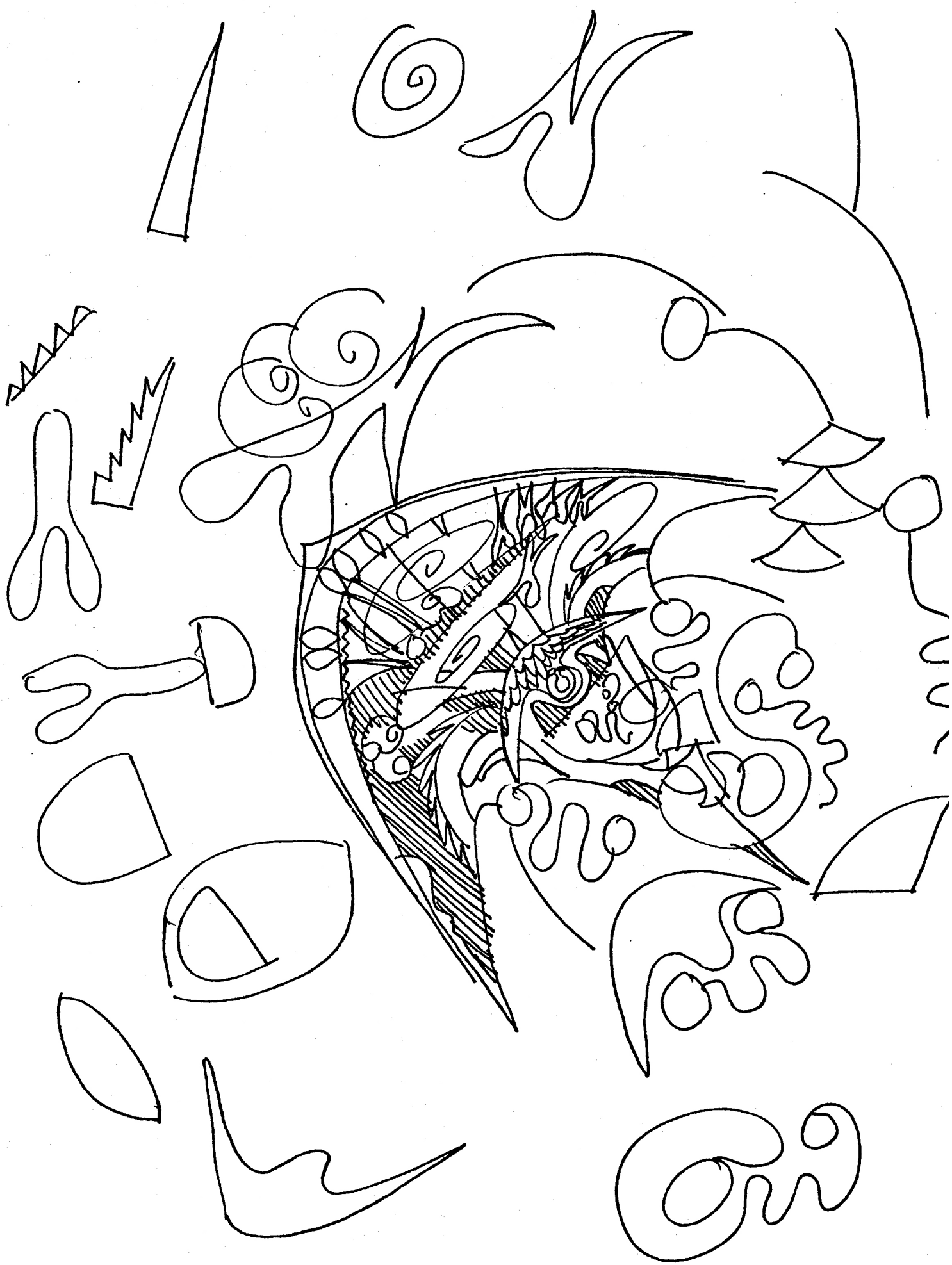
Figure 3

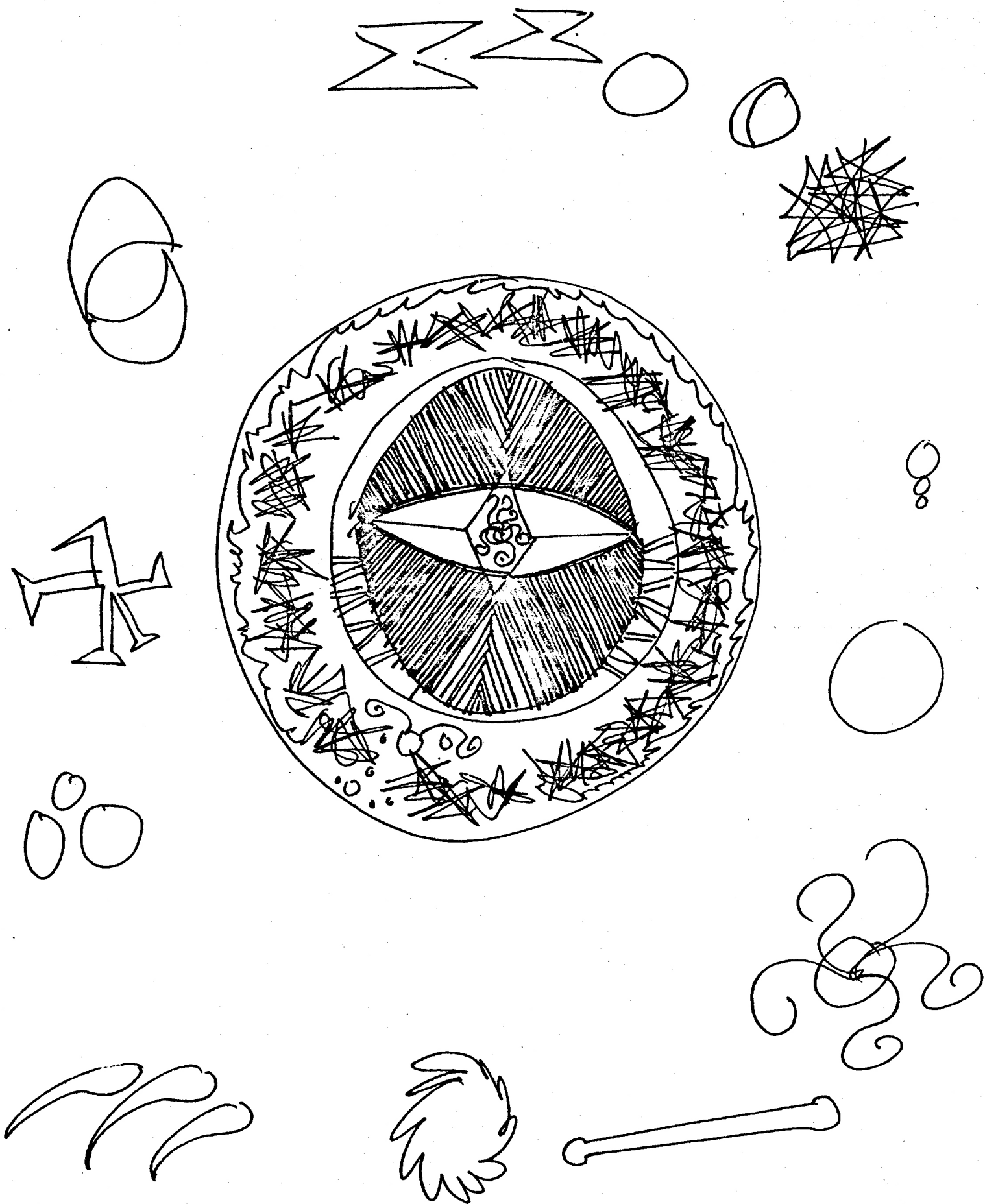


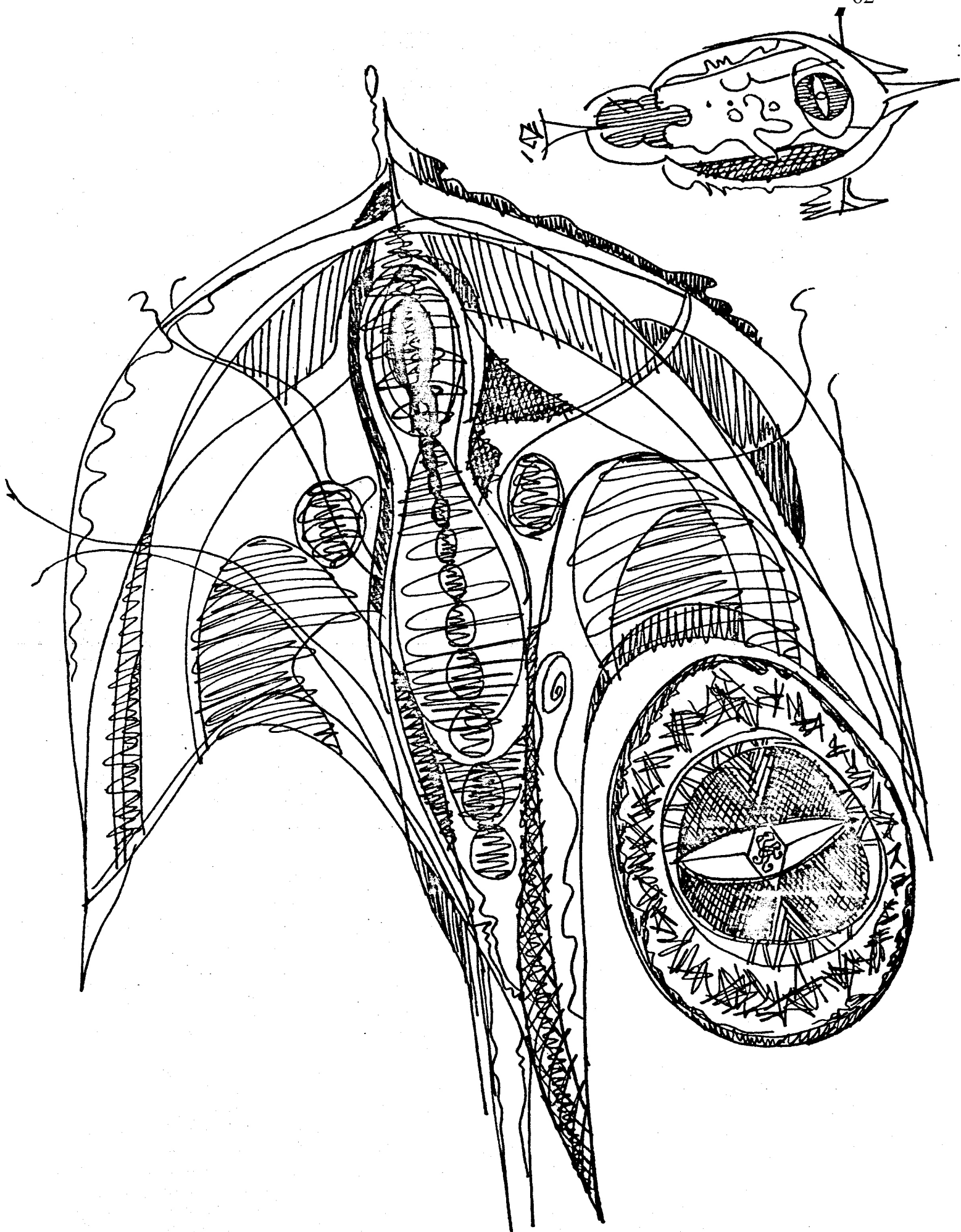
Pages 59, 60, and 61 present rings of forms around the outside edges which become progressively combined and evolved as the forms are moved toward the center of the pages. Each page has a major evolved form in its center. This is an imagined evolution which can only be judged for success by consciousness. This imagined evolution is the basis of all creative activity. But just as mutations don't always survive, neither do creations which are useless in the stages of the evolutionary development of consciousness.

Page 62 presents the three major forms from pages 59, 60, and 61 in a new evolved combination which makes a single composition of the three earlier forms.









Chapter 7

Morphology of Natural Form

The experience of many enactments of nature and mind lead us to believe that form is round. If the medium is two dimensional, the form is circular; if three dimensional, it is spherical; if the medium is of duration, the form is cyclic.

The roundness of form is the result of conformance to the power centers of units. There is a hierarchy of roundnesses just as there is a hierarchy of units and their centers.

Spirit is the power of absolute center. Concrete is the dispersed individual, undefined random. Abstract is the structured definition toward center. Since form is not continuous or uniform, neither is roundness continuous and uniform. Both form and roundness are incremental and cyclic and the voids are more vast than the units (increments and cycles). The power of center forms the subunits in as great a roundness as the subunits and structure will allow.

If the power of center is not great enough, there will be no conformance and the sub-centers or other greater centers will dominate and shape the form. If all units are individual, the form is random. If the power of one center is absolute over all subunits, the form is perfectly round. Neither limit is possible; fertility is somewhere between these extremes. Each extreme would result in static form. The continual action of power between these extremes is dynamic form.

Joining units do not mate perfectly. There is great space between units and the shape of this space is undetermined.

Our concern for the shape of units need not define this void space between units. Units are joined by the power and coordination of their centers more than by the mating of their edges. A series of joined round forms will never have perfectly mating edges.

The geometric concept of shape seems to have placed too much emphasis on the edges of units rather than the centers of units. All of the regular geometric shapes from circles, triangles, squares, to other multi-sided, centered figures are essentially the same shape when considered from the point of view of their unified centers.

Because of this geometric emphasis our attention has been diverted from wholes to divisions. We have a natural affinity for the perception of wholes and a natural frustration for the perception of divisions.

It seems that the nature of a shape can be determined more clearly by defining its inner workings than by defining its outlines.

Shapes are convenient to discuss as basic units of form and also basic units of perception, and historically much attention has been given to shapes. However, consideration of shapes is a complex concern because the shapes themselves clothe other forms interior and exterior to themselves, and the perception of shapes can be illusionary and personal. That is, we have conditioned and psychological association with shapes beyond the meaning of the given configuration. But here we are trying to deal primarily with the presence of the shape rather than with distant associations.

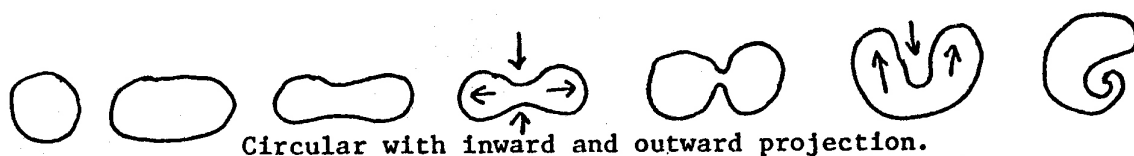
First let us consider the factors of the presence and formation of shapes. There is a quality of units which can be called shape. Shape refers to the configuration of subunits taken as a whole. Shape is an abstraction in that it generalizes particular appearances to some degree in order to achieve a general configuration appearance.

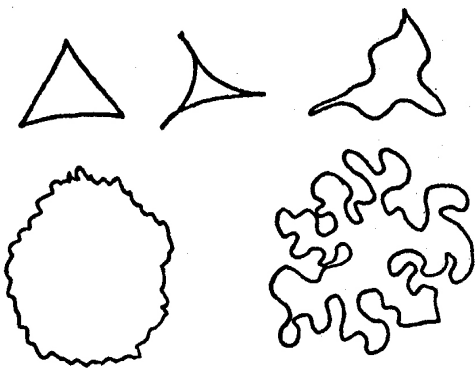
Shape appears at each instance of combining of subunits into new form. Shape is the appearance of the combined form which can be taken in place of the original subunits and in which their identity is still printed. Each new set of complexities in the hierarchy of form is shaped, and the shape represents the set of complexities in terms of its workable whole. This concept of shape cannot be adequately dealt with by eyes which see from only one point of view, nor can it be adequately dealt with by arms which enclose and only perceive an outward surface. It can only be dealt with by a mind which perceives all and from all sides or points of view. Our minds have this potential. Much of learning to see is learning to coordinate what the eye sees of an outward surface with what the mind sees of inward forms.

At this point, in this work, ultimate classifications are not known, but some thoughts are suggested and some phenomena have been observed.

In an objective classification of shape, one could define the general class of all the various actions which are circular. Then one could further distinguish the subclass of actions moving outward and the subclass of actions moving inward (Page 68).

Another general classification could be the actions of transitory uncentered states moving to and from center. This is the negative of the first class, stated in the preceding paragraph.





We can view a triangle as a shape with three outward projections; the straightness of the lines depends on the characteristics of the medium and the efficiency of the performance. Some shapes have much surface turbulence even though the centers are strong. However, this turbulence can pull the center apart. This gets into compression and tension relationships and mass and energy.

A general view of the shape (configuration) of actions suggests some kind of octave repetitions dependent on the size and complexity of form. There are similarities between atoms, cells, solar systems, and galaxies; even though they are at different scales they are of similar circular configurations. However, at the scale and complexity of our bodies, the scale at which our sense organs see other forms of our own scale, most forms seem not to be centered. (Form of plants and animals.)

This suggests form with octaves ranging from centered to uncentered states. It also suggests that our sensory apparatus responds to a level which is not centered.

Let's turn our attention to shapes as units of perception. Now let us be clear that we are discussing units of our conscious perception. Our perceptions can be stimulated by outward or inward experiences. Our consciousness stands at the threshold between the outward and inward. Shape seems to be an outward manifestation of experience. Outwardly experienced shapes trigger inward experiences and inward experiences can be expressed in outward shapes. There seems to be some correlation potential between a unit of conceived shape and a unit of inward experience. A completely centered experience can correlate with a completely centered shape.

While before we were considering shape as an objective form, now we are considering shape as a subjective form as perceived in consciousness. It is desirable that our subjective perception of shape conforms to its objective form, but many aberrations of perceptions exist and a learning process seems necessary to overcome them and see clearly. Some aberrations are seen as a conditioned response, unconsciously, but not consciously; surface conditioning which diverts attention from the real form (reading words); prejudiced points of view, limited points of view.

Just as in an objective consideration, each new complexity of form is printed in shape, so in shape perceptions are printed the experiences of each new complexity of form. As objective form evolves, so can perception evolve.

Figures on Page 67

Figure 1 is a centered form. It has many pointed projections which are releasing energy. The inward curves suggest a compression upon the interior space. The agitation of the edge almost overpowers the power of the massive center.

Figure 2 is the same structure as Figure 1 except that the points are in and the curves are out. There seems to be inside pressure expanding outward.

Figure 3 is circular with minor variations.

Figures 4 and 5 have single centers with a ripple and an impingement at the edge.

Figure 6 is a simple form with two centers.

Figure 7 is a circular form with an outward projection.

Figure 8 is similar to 7 but the point breaks the barrier of the edge and the projection releases its energy. We feel the mass being drained, perhaps resisting.

Figure 9 presents a reshaped circle. It is squeezed from the left, it bulges at the top and bottom. It is made linear to be part of the arc of a larger circle. We judge it against its completion as a whole circle again.

Figure 10 is a three-lobed "S" curve making points and rounds. Its configuration is central and balanced.

Figure 11 is similar to 9 but more dynamic, releasing energy because of the points and sharper curves.

Figure 12 is a linear shape with a considerable amount of randomness though there are some obvious repetitions.

Figure 13 has two centers pulling apart. We feel the tension and resistance.

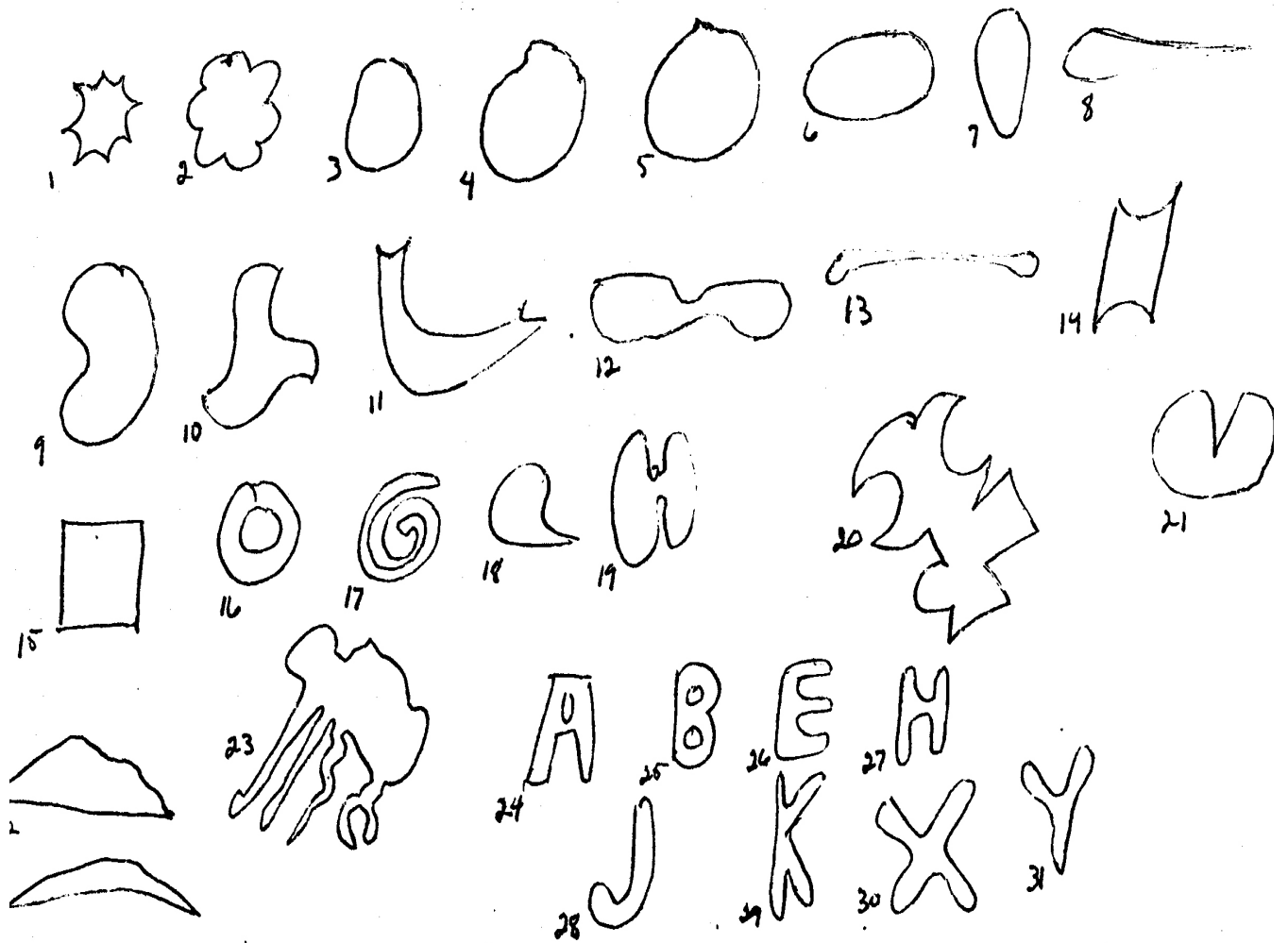
Figure 14 is two straights and two rounds, inward compression, points and a skew that asks for a return to balance.

The notes for figures 15-31 are on page 68.

Examples are presented in two dimensions and in static form. They are only examples and eventually need to be extended in dimension and duration and to the medium of mind rather than the senses.

We perceive a circle as a perfectly centered form; we look for clues of the tension or compression involved in its generation and support.

Our senses are scanning devices and find difficulty in centering on one point for any great duration. The static circle is in conflict with our sense of motion and change (yet it is in harmony with centered spirit).



Figures on Page 67

Figure 15 is centered with four straight lines, four points, and four lobes. It must take extreme control to hold such an unnatural shape. It is difficult to imagine the power of center since the edges are so straight. The corners emit energy. It is comfortable to imagine it as a section of a linear form (a shaft). Obsession with the detail of the edges may obscure the power of its center.

Figure 16 is a projection turned in a circle.

Figure 17 is a projection in spiral growth.

Figure 18 is a pointed projection curving from a centered form. Tension is effected between the point and the mass.

Figure 19 divides into two projections tied at their centers. There is a positive quality to the projections and a negative quality to the space between them.

Figure 20 seems to be affected by outside forms cutting into it. It has many centers, projections and complex configurations. It seems a composite of many forms with hardly the power to maintain its unity.

Figure 21 is an inward projection, pointed and cleaving.

Figure 22 is a projection pointed on both ends, a section of an arc. The irregularity and complexity of the edges contrast with the massiveness of the form.

Figure 23 is a massive form with many projections, one fork, an active and passive side. The scale of the edges is smaller and more complex than the massive center. Numerous subdivisions of its parts or organs could be made.

Figures 24 – 31 are the shapes of letters. Besides reading their code value we can perceive the configurations of their power centers, masses, and actions as we have with the previous shapes.

Notes for page 70

Viewed from the perspective of its process, shape has two major potentials.

1. projections outward, 2. projections inward. These are two major prototypes and seem to correspond with biological male and female. Each process calls on the other as its complement.

Figure 1 shows a simultaneous development of outward and inward projection from a circle. This seems to be the simplest statement of this process of form.

Figure 2 shows the same process as Figure 1, but double fold.

Figure 3 shows a projection from a circle and then a return to other circles.

Figure 4 shows an inward projection to the point of cleavage and division.

Figure 5 also shows a division process as a thinning from both sides and an elongation of the ends suggesting the compression and tension forces of this process which parallel inward and outward projection.

Figure 1

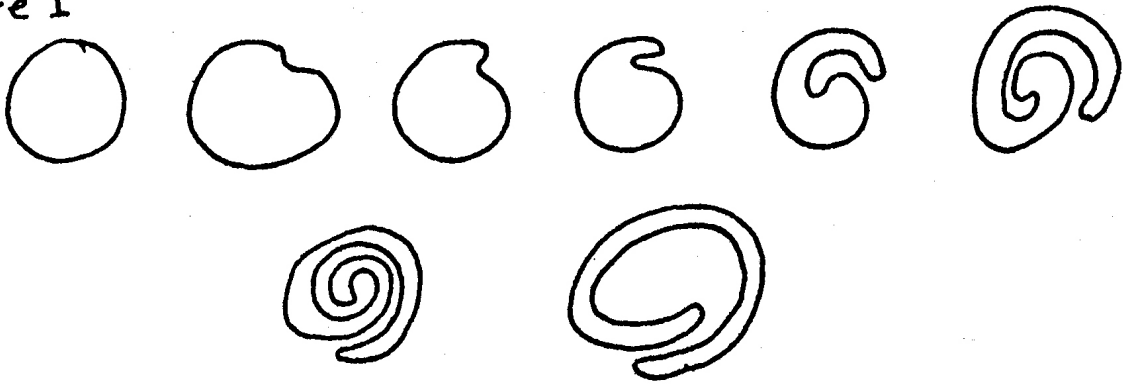


Figure 2



Figure 3

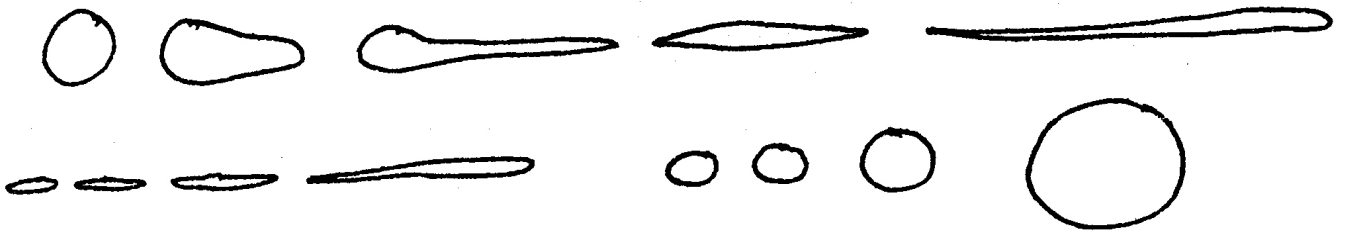


Figure 4

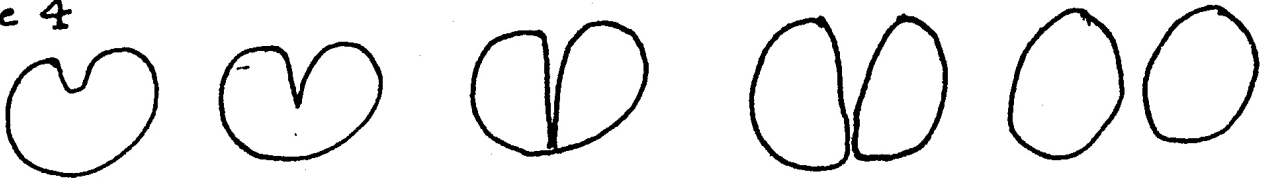
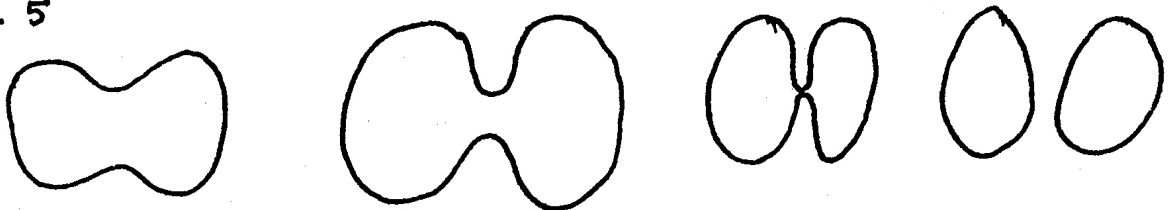
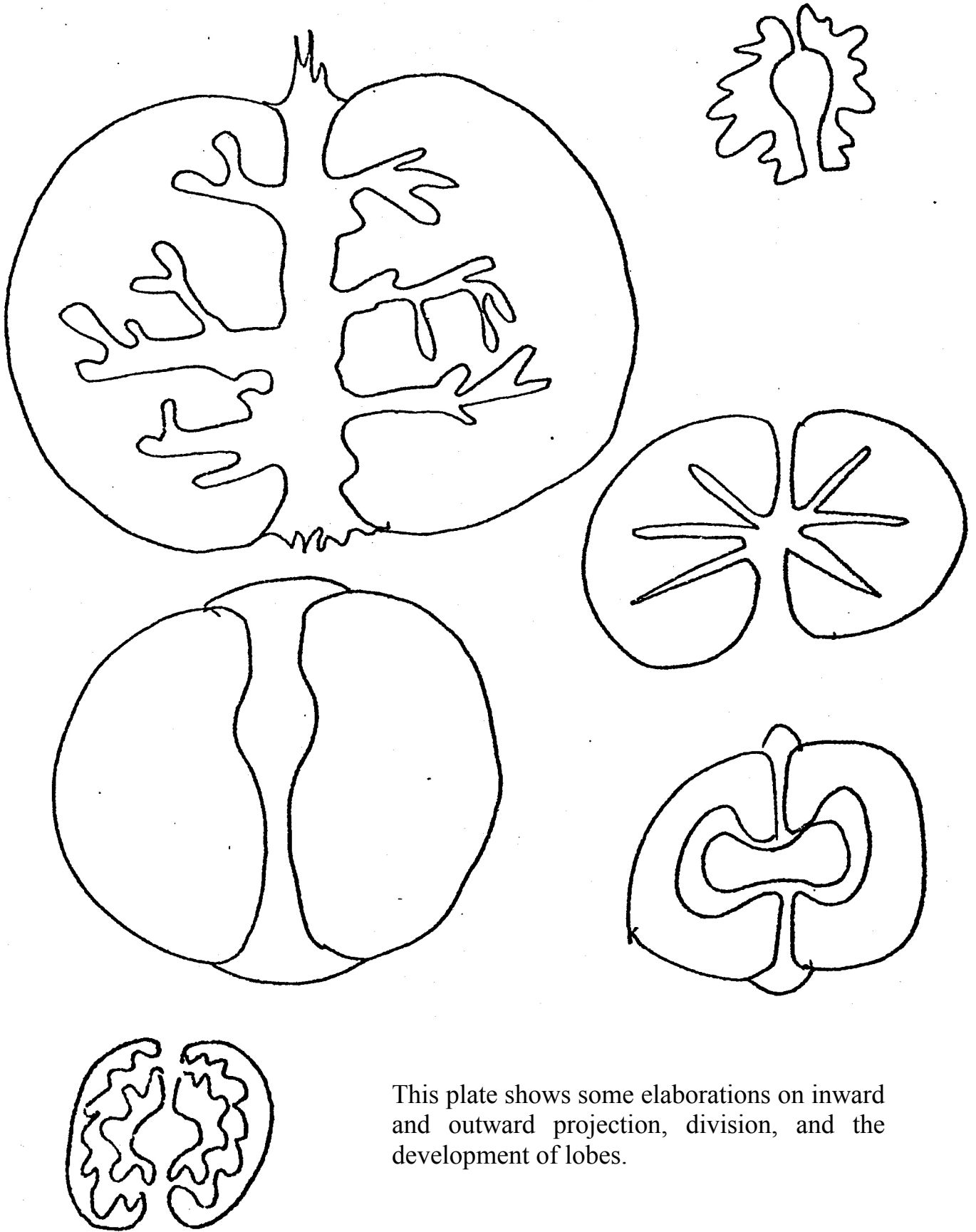
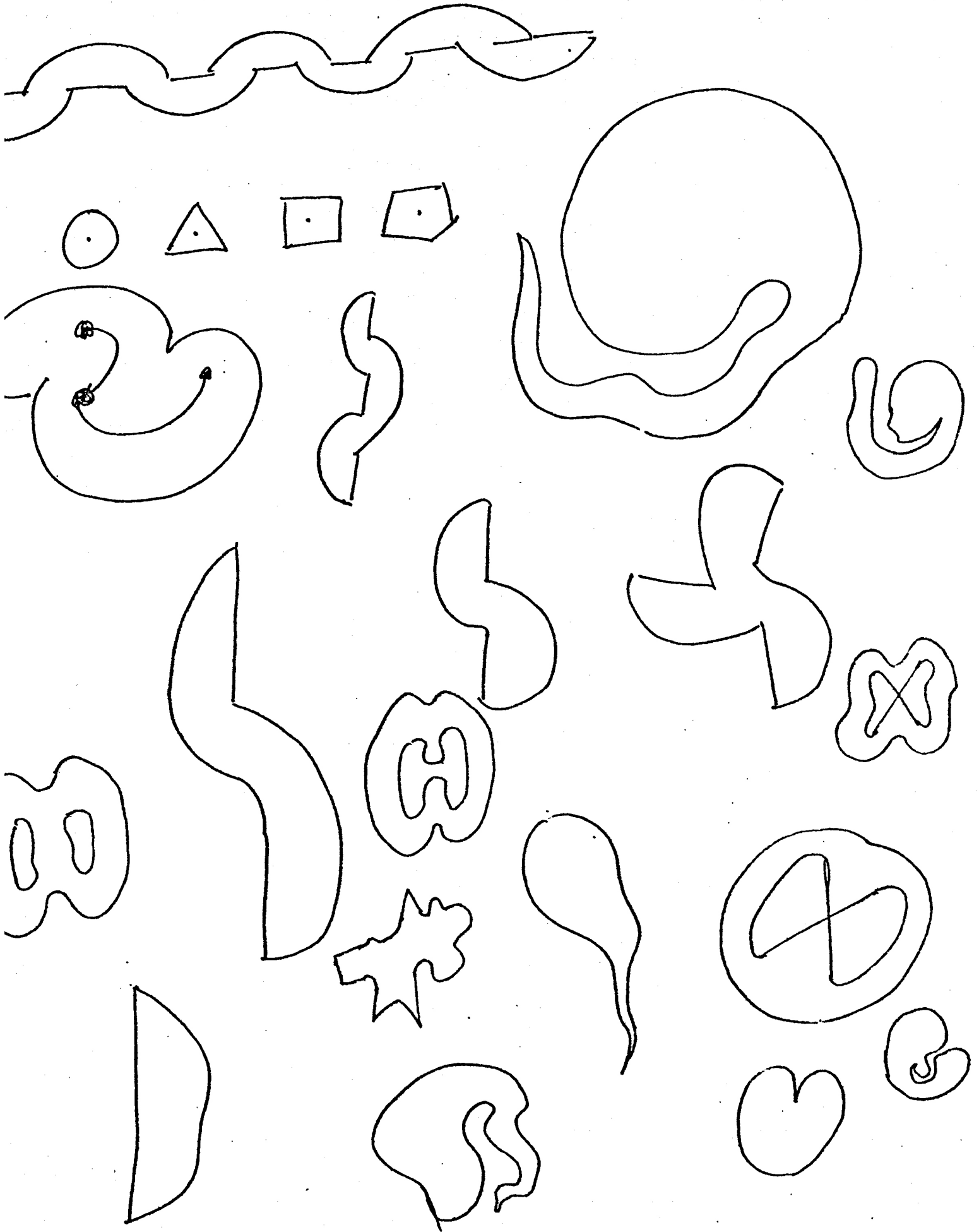


Figure 5





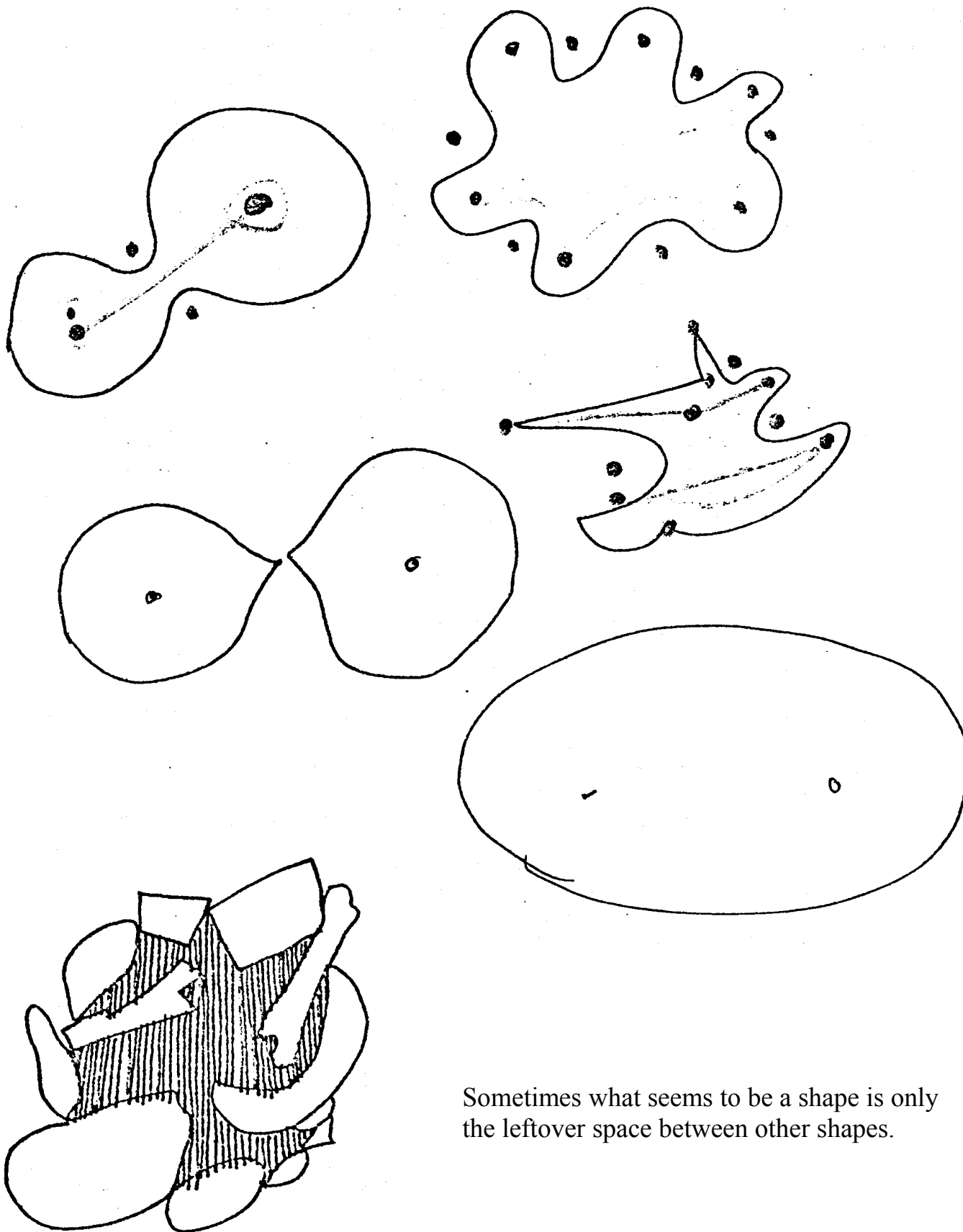
This plate shows some elaborations on inward and outward projection, division, and the development of lobes.



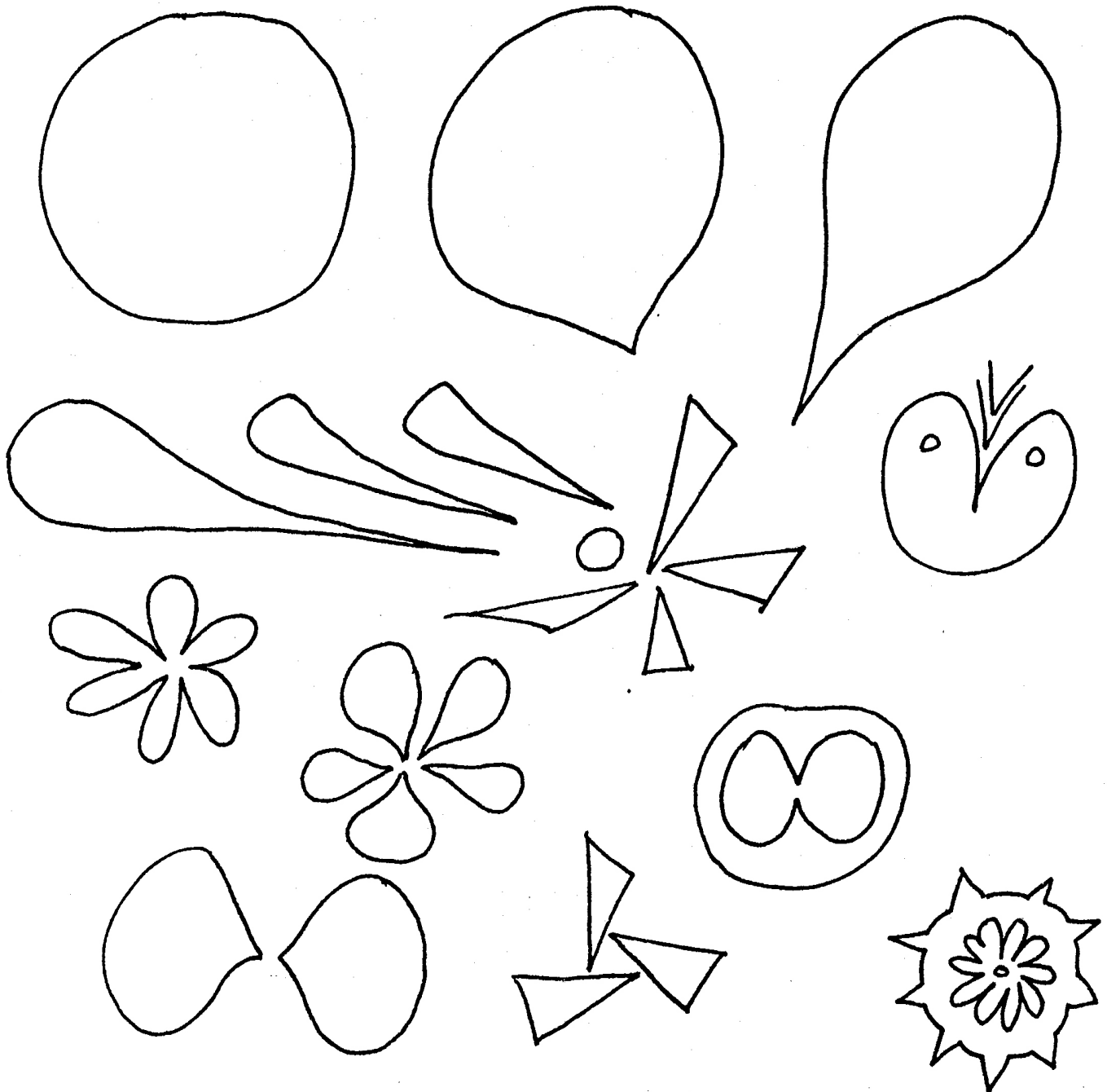
This plate continues to show increased complexities of inward and outward projections and their combinations.



Shape is controlled by the action of power centers both within and without the shape unit. The dots in these drawings suggest these power centers and their actions.



Sometimes what seems to be a shape is only the leftover space between other shapes.

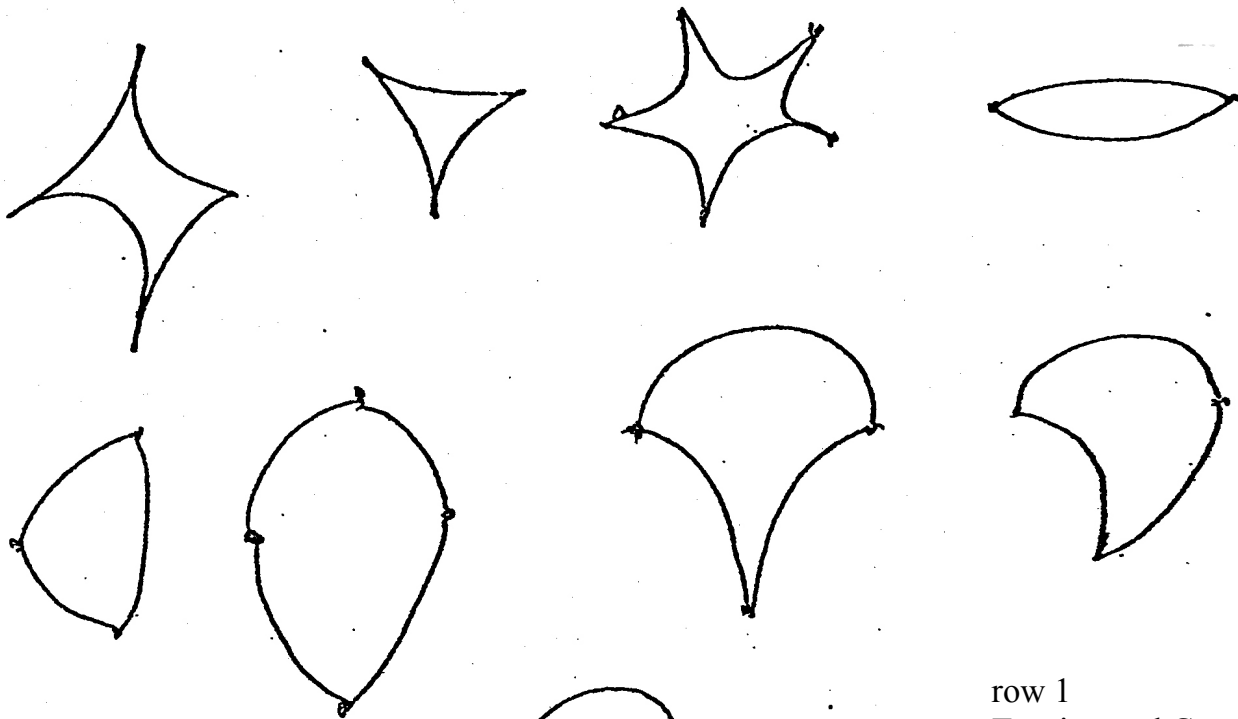


We react to contours and the real or imagined forces which shape them and which they in turn direct.

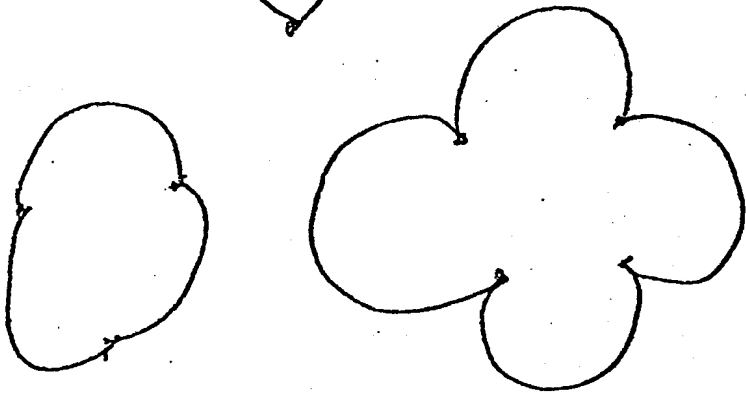
In this plate we notice that round contours contain energy while pointed contours release and direct it. We can make the comparison of roundness as massive and pointedness as energetic.



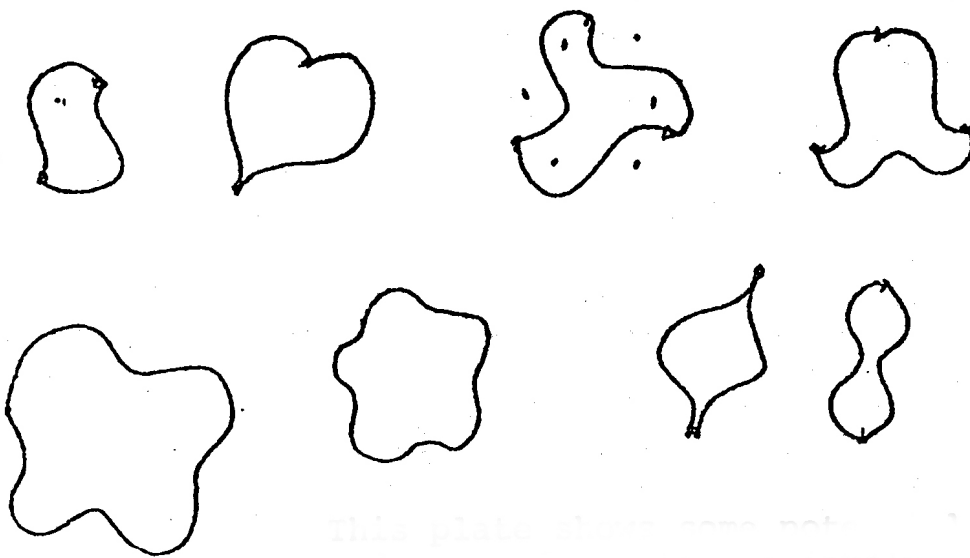
Many variations of contour are possible. These variations are often repeated in various lobes of a single shape. There are many possible orders and repetitions of these lobes.



row 1
Tension and Compression
row 2
Expanding and Collapsing
row 3
Movement from Fixed
Points



"S" Curves



Center of Focus

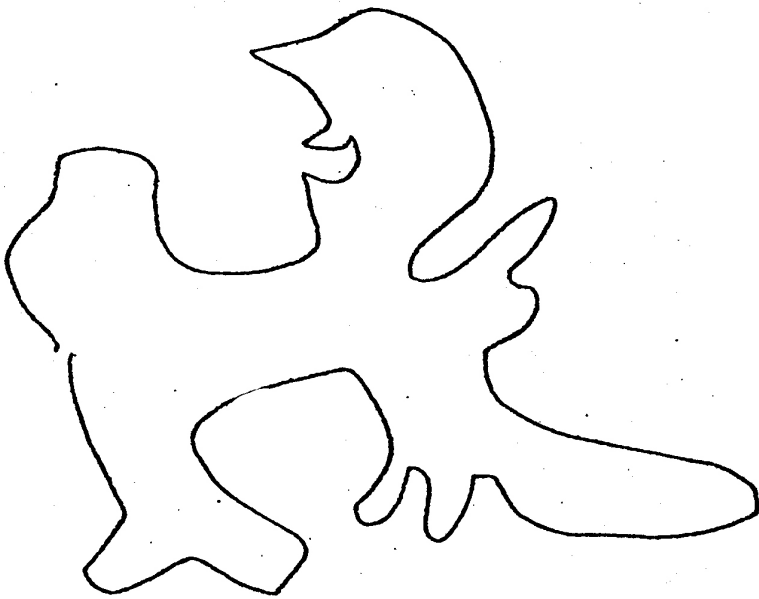
1. Inside shape
2. Outside shape
3. Hierarchy of centers

This plate shows some potential arrangements of lobes and some of the forces involved.



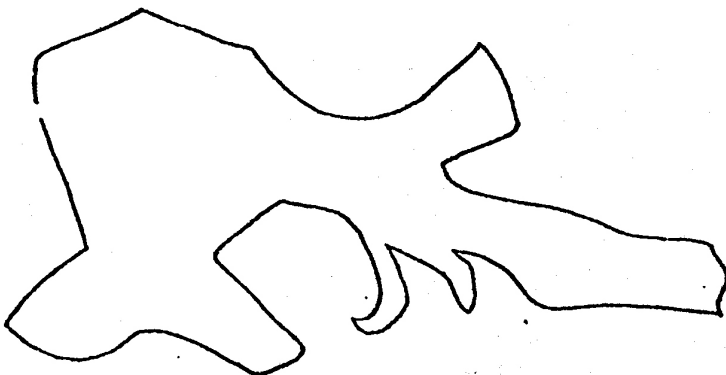
Through an analytical process, we can begin with a complex shape (p.78) and make a scale to a circle. This is a logical progression but it is not performed mechanically.

The shaded shape was stated through imagination. Then various kinds and degrees of simplification were performed. We can try projecting from the circle to the complex shape and then beyond, but no new kind of form will result as this is only a projection of form which has already been defined in the first scale



Inspiration or imagination is required to go beyond a known form. We can then always reason back to the body of knowledge.

Evolutionary process requires this leap of inspiration.



The three drawings on this page are imagined as progressions beyond the shaded shape.

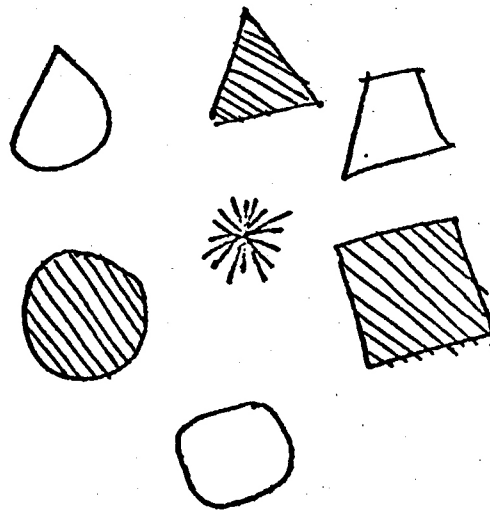
The following devices allow the creation of scales for systematic considerations of shapes. While these devices allow some analysis and classification of intermediate steps, only imagination can create the primary forms.

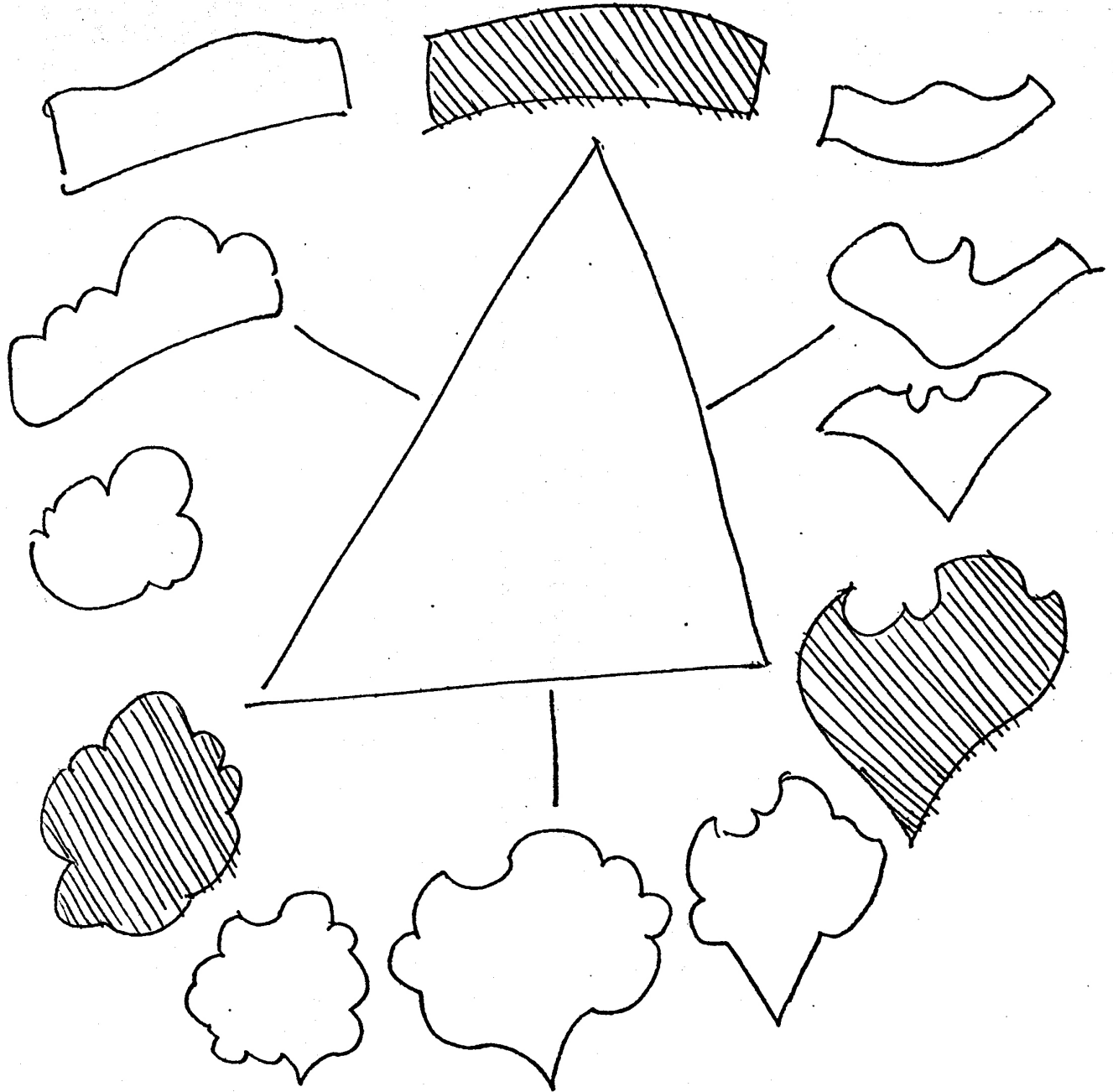
Structures of shapes can be built from this indexing of shapes according to principles of order as in the formation of color schemes.

A variety of shape wheels can be compared to search for a commonality of form, such as an active and passive side or correspondence to color or other generalized concepts.

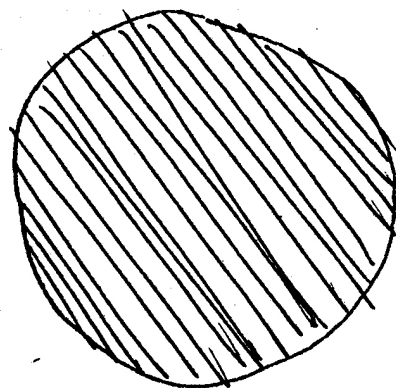
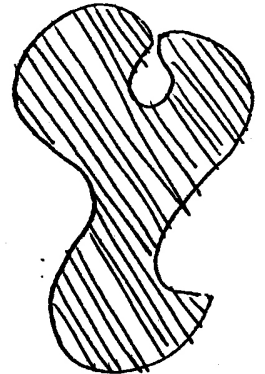
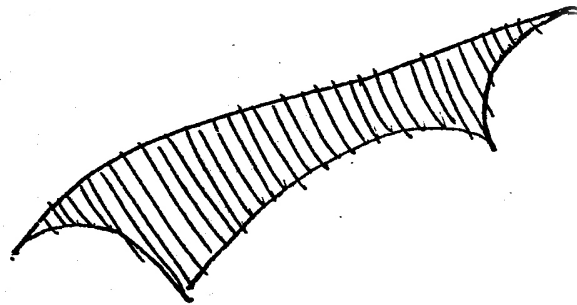
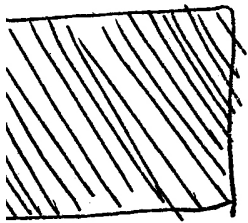
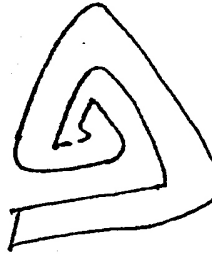
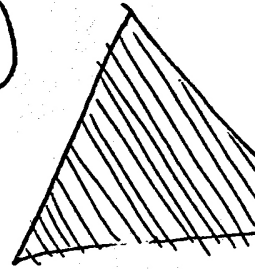
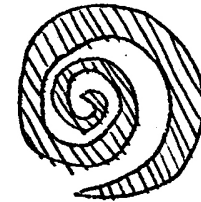
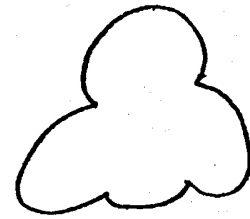
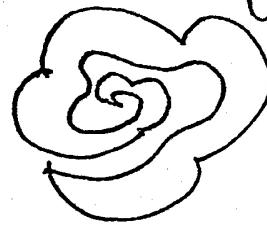
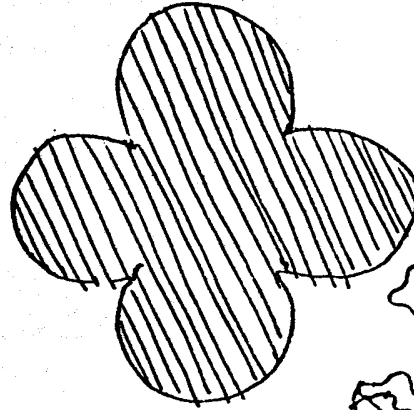
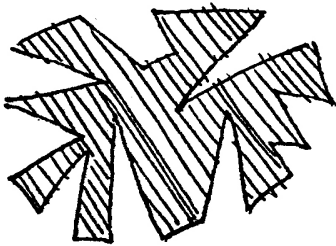
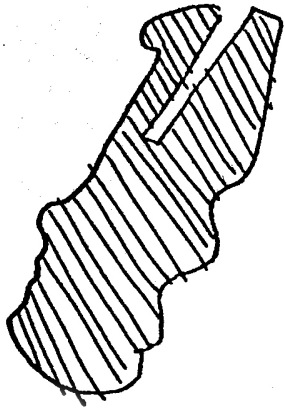
We are our perceptions. Our perceptions can correspond to shapes. We are whole units. Individual shapes which relate to individual perceptions have meaning as they are parts of our wholeness.

Another way to make a scale of shapes is to imagine some distinctly different ones, say three such as the shaded ones in the drawing above. Make a triad of them and continue analysis to find the intermediate steps. This sequence now presents a wheel which is analogous around its circumference and complementary across its center. It contains both a primary and secondary triad. It is analogous to a color wheel. This configuration can be an effective tool for the study of shapes and their inter-relations.



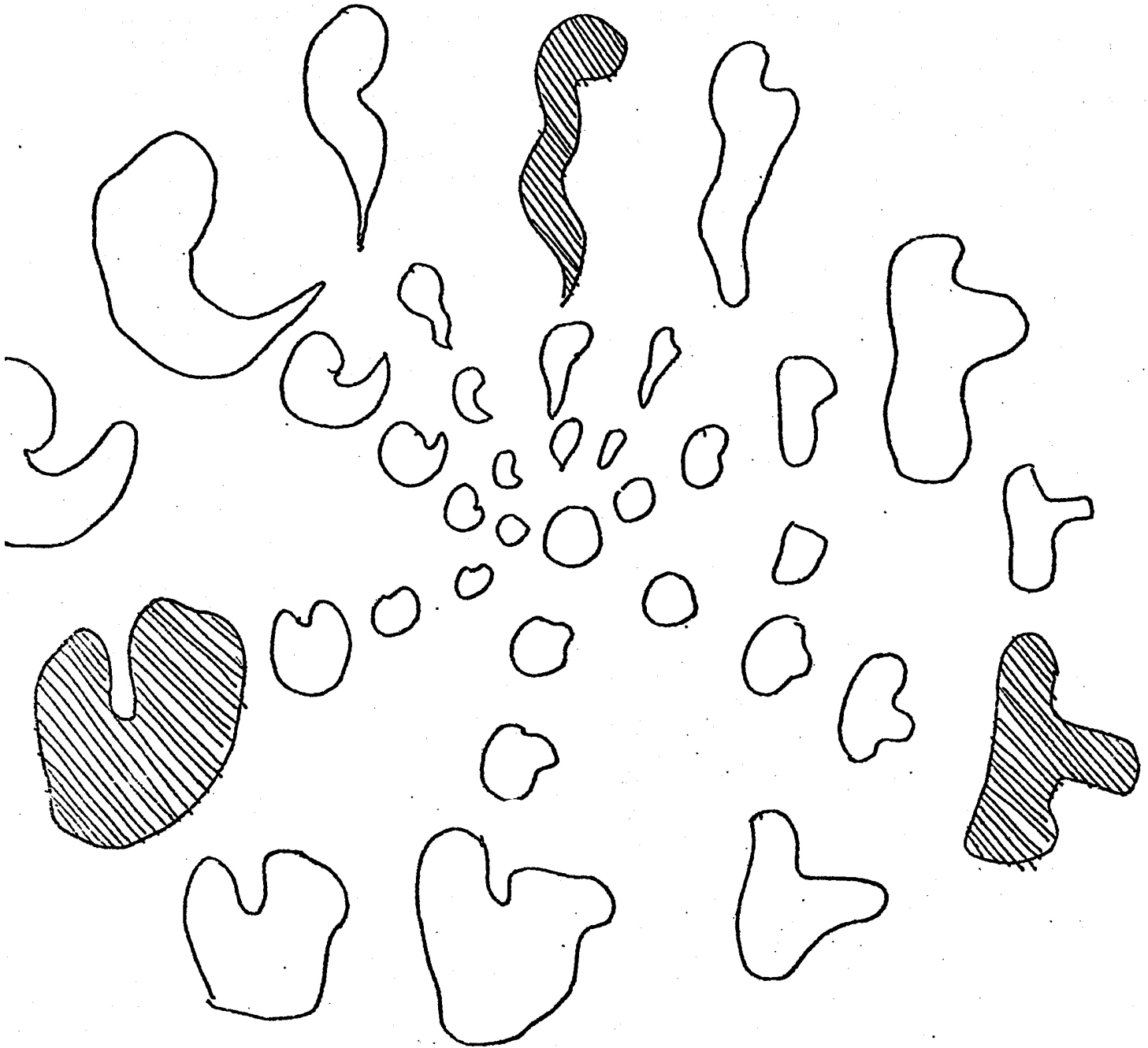


This is a shape wheel with a more imaginative primary triad than on page 80. Also, a greater range of intermediates are presented.

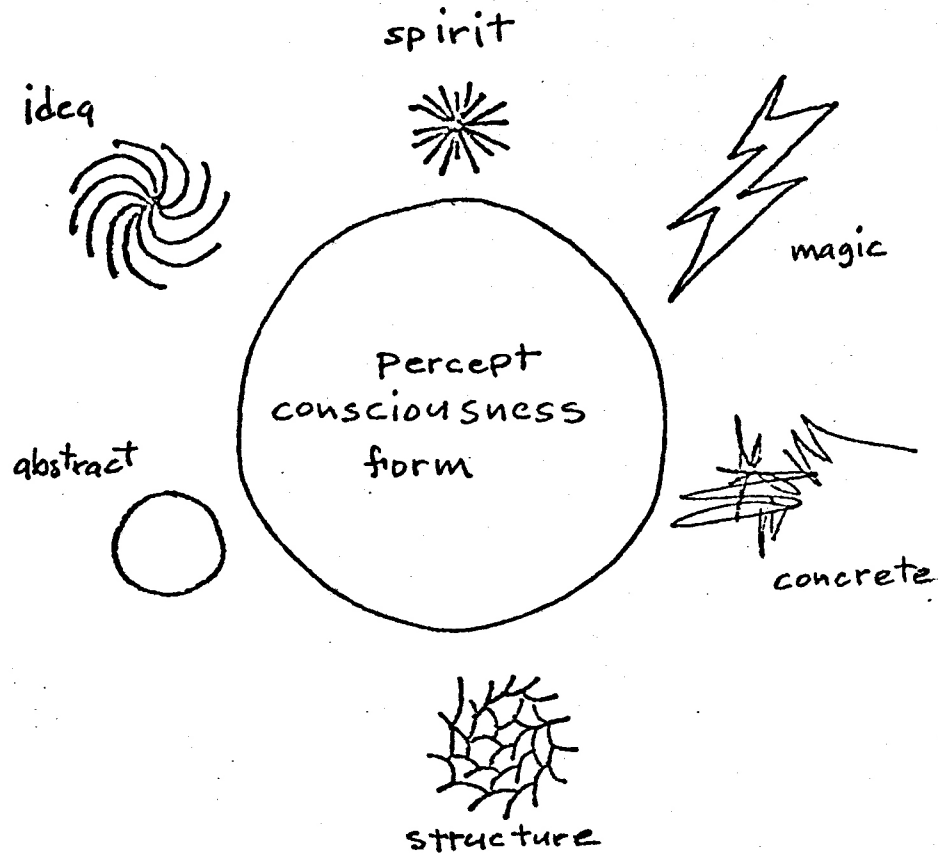


Each shaded shape is an attempt to imagine one that is distinct from all others

This is a mind stretching exercise. We should be able to move in this direction as well as in that of analysis.



This is a shape wheel with the intermediates filled in and scales developed from each complement to the balanced state of the circle in the center. The primary triad represents one outward projection, one inward projection, and one forked projection. A shape wheel such as this can be the basis of many ordered structures.



This is an attempt to describe the elemental triad of organic form as a visual form wheel. The construction of each element conforms to its meaning.