Principles of Two-Dimensional Design

WUCIUS WONG



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PRINCIPLES OF TWO-DIMENSIONAL DESIGN

王無邪

平面設計原理

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FOREWORD

Design, style, taste are among words which are difficult to define in any language. They are difficult because they can be applied to a multitude of different human accomplishments which all bear the imprint of man's hand and mind upon his surroundings and environment. The unpenetrable jungles of New Guinea cannot claim to have a style or design. But a garden might reflect the taste of its maker. Design and style are therefore attributes which man brings to his surroundings, his way of life, his art.

Different places and periods in history have formed different standards and values. What may be considered right in one place at a particular time would not be considered appropriate for another. There are therefore no absolute standards, and today's exponents of good design and exquisite taste are quite likely to be remembered as advocates of all that later appears banal and insipid. Quite clearly any discussion of what is good, mediocre or just bad is a dangerous intellectual quick-sand to be avoided until we have formulated a vocabulary.

Such a vocabulary is provided by this book which is concerned with the ingredients of a very small part of design – visual form. It is in turn the subject of only a small part of this – two dimensional design. Further books on three dimensional design and colour will complete the series.

The book is intended for manufacturers and industrialists as much as for students and housewives. We are all concerned with the things we see, we make them, choose them and buy them. The principles logically laid out in this book will help everyone to be more aware of their surroundings and the role of the designer in our society.

John Warner

Curator, City Museum & Art Gallery

前　言

香港的設計教育，一直都被廣泛地忽略着，直至兩三年前，由于各方面不約而同的努力，設計教育纔稍有進展。一九六六年底，本部倡辦了一個夜間進修的設計文憑課程，以適應廣大的需求，翌年，香港大學校外課程部也有同類課程的開設，而香港工業學院亦於這個時候成立了工商美術設計系，創設全日制的設計課程。另一方面，香港工業總會也于去年組成一個工業設計委員會，致力于工業設計的提倡與工業設計人材之訓練。

這些都是可喜的現象。設計是我們日常環境的一部份，日趨工業化的香港更需要大量的設計家賦予我們產品特有的面貌與機能。現階段的設計教育距離理想還遠得很。除一二處外，一般用以教授設計的課室都毫無設備，或設備十分簡陋，師資也極爲缺乏。各機構每屆招生的名額殊爲有限，因此，不少有志于設計工作的都不容易找到適當的進修機會。

在普及推廣設計教育方面，本書的出版或可能有所幫助。書中各章的理論與插圖都是作者實際地在課室中與學員研討的成果。雖然本書包括的範圍只限于基本的平面設計方面，但這是一般設計的基礎，初學者可循每章章末的練習進行自修。本書同時也爲已從事設計工作的人士提供新的觀點。

賴恬昌

香港中文大學校外進修部副主任

AUTHOR'S PREFACE

The present book is a result of my last three years of teaching the subject: Fundamental Design. Strictly speaking, I am more an artist than designer, but while I was studying in America, I had an extremely broad interest which prompted me to participate in a great variety of courses offered by the art school. When I returned to Hong Kong about three years ago, I had the opportunity of helping the Extramural Department of the Chinese University of Hong Kong in organising art and design courses, among which were Fundamental Design courses taught by myself. At that time, except for a few isolated efforts, design training was practically non-existent in Hong Kong. The Fundamental Design courses seemed to have filled an immediate need and proved rather popular, and were repeated several times. Finally they were integrated into a two-year part-time programme which I initiated for the Department.

When I first taught the subject, my own design theories were far from developed. I reorganized my thoughts each time the courses were repeated. Even now when I am writing this book, many modifications are still being made on my previous lectures. What I am after is to develop some kind of design logic by which students can be led to understand the various elements of design, the possibilities of organising them, and the limitations. Instead of describing at length the usual vague terms such as harmony, unity, balance, tension, rhythm, etc., which tend to provoke confusion, I hope to present definite paths each with infinite variations for one to explore.

So the book deals with concepts of forms and structure, covering most situations in two-dimensional composition, formal or informal. The more formal kinds of compositions occupy the greater part of the book because they are, in my belief, the basic disciplines which a beginner in design must understand. These are no shortcuts to design, but with this book I hope to be able to guide the beginner towards an analytic attitude and a clearer vision.

The colour aspects of design and three-dimensional design are beyond the scope covered by this book, as they will form the subjects of future studies.

Apart from diagrams specially prepared by myself for this book, all the illustrations contained here are examples of students' work from my previous classes. Exercises are suggested for most of the chapters. Students of design are encouraged to attempt them and to make the results as neat and presentable as possible. This will help to acquire a deeper understanding of the principles of two-dimensional design.

May, 1969.

作 者 自 序

本書的寫成是三年來任教基本藝術設計的結果。嚴格來說，我是一個畫家而非設計家，可是，當我在美國攻讀藝術時，我的興趣既廣，求知慾又强，藝術學院所設立的各類課程我都盡可能地參加聽講。三年前返港後，我恰巧有機會協助香港中文大學校外進修部組織一些純藝術及設計的課程，其中基本藝術設計一項是我自己任教的。當時，除了一些孤立的努力外，設計教育可謂是絕無僅有的嘗試，而我的基本藝術設計課程就似乎及時地滿足一些需求，報名參加的踴躍異常，因此連續舉辦了多次。最後，這些基本課程成爲了我所計劃的兩年制設計文憑課程的一部份。

當我第一次任教這些課程時，我的設計思想是凌亂得很的。每次重教同一的課程之前我都要新將我的思想組織一遍。即使現在寫這本書，我所要闡述的都和我在課室中講授的內容不一樣。我所希望建立的是一些設計方面的邏輯，引導學者理解設計的各項元素，以至元素間一切的可能性及限制。我的目的在於展露一些較爲切實的途徑俾學者循而探索無限的變化。對一些曖昧而導至混亂的名詞如和諧、統一、均衡、張力、節奏等名詞我都不擬詳述。

本書內容都是有關形象與骨格方面的概念，包括規律性及非規律性平面設計構成的各種可能場合。當然，有關規律的方面佔篇幅較多，因爲我認爲這是設計的最基本紀律，初學者絕不能忽略的。設計并無捷徑，但本書或能協助初學者建立一種視覺的分析能力和清晰的靈見。

設計中有關色彩或立體的方面，都不屬本書範圍，我們希望在短期的未來另出專書論及。

書中的插圖，除了一些簡略的圖式外，全是我主持的課程中的學生習作。本書每章後面大都附有練習，以便初學者更能深入所有的平面設計原理。

一九六九年五月

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CHAPTER 1 — INTRODUCTION

WHAT IS DESIGN?

Many people would think of design as some kind of effort in beautifying the outward appearance of things. Certainly mere beautification is design, but design is really much more than this.

Look around us. Design is not just ornamentation. The well-designed chair not only has a good outward appearance, but stands firmly on the floor and is comfortable. Furthermore, it should also be quite durable, produced at a comparatively economic cost, and have specific function, whether for working, for resting, for dining, or for other human activities.

Design is a process of purposeful visual creation. Unlike painting and sculpture which are the realization of artists' personal visions and dreams, design fills practical needs. A piece of graphic design has to be placed properly before the public and convey a message. An industrial product has to meet consumers' requirements.

A good design is the best possible form to express the essence of *something.* To express this faithfully, the designer should see into the best possible way this *something* is to perform its job and should create a form not just visually pleasing but functional, while reflecting or guiding the taste of the time.

FUNDAMENTAL DESIGN

Design is practical. The designer is a practical man. But before he is ready to tackle practical problems, he has to master a visual language.

Divorced from the functional side of design, fundamental design is the grammar of this visual language. It deals with general principles, rules, concepts, which underlie the formation of all designs. How do we originate a form? How do forms relate in a design? In how many ways can forms be arranged? Such are the kinds of questions with which we are concerned at present.

In the first year's curriculum of every art school, regardless of the specialised field the students are to follow later, there is a fundamental design course as a compulsory subject. Its main objective is to initiate students into the experience and discipline of the process of visual creation.

In one way, fundamental design is pure art. Its various theories are very much related to contemporary abstract art, especially to Constructivism and Op Art. We could go as far as to say that fundamental design is a science of form which is gaining in importance day by day.

ELEMENTS OF DESIGN

Just as we can separate a word into the letters of the alphabets, we can break down our visual language into its various elements. Elements of design are interdependent upon one other and not as totally distinct as the letters which form a word. However, to help in our future discussion we do have to single out these elements and try to distinguish each of them as clearly as possible.

CONCEPTUAL ELEMENTS

The conceptual elements are not visible. They do not actually exist but are elements which we feel to be present. We feel there is a point at the angle of a shape, and there are lines governing the border of an object, and planes enveloping volume, and volume occupying space. These points, lines, planes and volumes are completely conceptual. However, we start with these conceptual elements which lead towards the visual elements.

Point - A point indicates position. It has no length and breadth. It is the beginning and end of a line, and is where two lines meet or intersect. (Ill. 1a)

Line - As a point moves, its path becomes a line. A line has length but no breadth. It has position and direction. It is bound by points. It forms the border of a plane. (Ill. 1b)

Plane - The path of a line in motion becomes a plane. A plane has length and breadth, but has no thickness. It has position and direction. It is bound by lines. It defines the external limits of a volume. (Ill. 1c)

Volume - The path of a plane in motion becomes a volume. It has position in space and is bound by planes. In two-dimensional design, the volume is only suggested by means of illusions. (Ill. 1d)

VISUAL ELEMENTS

When conceptual elements become visible, they are forms (see Chapter 2) of certain shape, size, colour and texture. Visual elements form the most important part of a design because these are what we can actually see.

第一章 — 導論

設計是什麼？

許多人都以爲設計就是物象外形的美化。當然，美化也是設計，但設計不祇是美化。

我們環顧四周，就可知道設計不止於裝飾而已。一張設計得好的椅子不特外形美觀，亦須放得平穩而坐得舒服。它更要相當耐用，製作廉宜，并有一種顯明的用途（如工作、休息、用膳、或其他用途），或多種用途。

設計是有目的性的視覺創造。設計不同於繪畫或雕塑，後者爲藝術家靈見的呈現，前者爲滿足人類的實用需求。一件圖象設計須在適宜的環境中爲觀者所見，并須傳達一個意念。一件工業的製成品須符合用家的期望。

優良的設計應能以最佳形式表現出物品的本質來。設計家進行設計的時候，要表現這物品的本質，必須檢視如何發揮它的最高效能，并創造一個形象，既美觀，又實用，同時反映或引導時尚。

基本設計

設計是實用性的。設計家是一個具有實用頭腦的人。可是，他在能夠處理實用的問題之前，得先學會運用視覺的語言。

基本設計就是這種語言的文法。撇開實用方面不談，基本設計所關切的是一般原理、規則、概念方面，這些原理、規則、概念是存在于一切設計的構成裡的。我們如何創出形象？形象與形象之間怎樣聯繫？形象的排列有多少種方法，這些都是我們目前要研究的問題。

在每一間藝術學院的第一年課程裡，基本設計是必修科，所有的學生，不管其興趣爲何，均得修讀。基本設計課程的在於鼓勵學生嘗試視覺方面的創造，并接受嚴格紀律的訓練。

在一方面來說，基本設計是純藝術。基本設計的各項原則，很接近當代重理性的抽象藝術，特別是構成主義與歐普藝術。我們甚至可以這樣地說，基本設計是形象的科學，日趨重要。

設計元素

正如文字可以析解爲筆劃或字母，我們的視覺語言可以析解爲各項的元素。筆劃或字母可以析解得十分清楚，設計的元素互相關連，不易辨認。雖則如此，爲了討論上的便利，我們仍得找出這些元素來。

每一個設計理論家所找出的元素大都不盡相同的。我要列舉的平面設計元素可分爲四大類：概念的，視覺的，關係的，及實用的。

概念的元素

概念的元素是不可見的。它們并不實際存在，我們只感覺其存在。我們感覺到形象的稜角上有點，物的邊緣有綫，體的外表有面，而體存在于空間之中。這些點、綫、面、體，都是概念的，但概念的元素則引向視覺元素的構成。

點——點表示了位置。它沒有長度或濶度。它是一條綫的開始或終結，或存在于兩綫交叉之處。（圖1a）

綫——點移動時所經過的軌跡成爲了綫。綫有長度而無濶度。綫有位置及方向。它由點所規限而是面的邊緣。（圖1b）

面——綫所移動的軌跡形成了面。面有長度濶度而無厚度（或深度）。面有位置及方向。它由綫所規限而是體的外層。（圖1c）

體——面所移動的軌跡形成了體。體有長度

濶度及深度（或高度）。體有位置及方向。它由面所規限。在平面設計中體是一種幻覺。（圖1d）

視覺的元素

若概念的元素成爲可見，則它們成爲形象（見第二章）須藉形狀、大小、色彩與肌理而顯現。這些就是視覺的元素；它們是我們實際地見到的，因此是設計中最重要的部份。

形狀——任何可見的東西必有形狀。形狀是可見的東西的外貌。（圖2a）

大小——所有形狀都有大小之分。大小是比較性的，但可以用尺量度。（圖2b）

色彩——我們能自環境中辨認出各種形狀，因爲有色彩元素。這裡，色彩是廣義的用法，它不特包括光譜中各種色階，幷包括所有的中性色（即黑、白、及各種灰色），以及各色階諸類明暗與鮮晦的變動。（圖2c）

肌理——形狀的表面必有肌理。肌理可以平勻一片或花紋滿佈，可以幼滑或粗糙，可以兼有觸覺感。（圖2d）

關係的元素

視覺元素的編排，是由關係元素所管轄的。一些關係元素如方向與位置則屬可見的，另一些如空間與重心則有賴于我們的感覺。

方向——形象的方向決定於觀者的方位，亦決定于形象與框架（見第二章）或與其他形象的關係。（圖3a）

位置——形象的位置決定於形象與框架或骨格單位（見第三章）的關係。（圖3b）

空間——形象在框架中佔有空間。設計中某些形象可能有前進或後退的感覺，或在其他形象的前面或後面。在平面設計中，空間亦指幻覺的深度與立體感。（圖3c）

重心——重心的感覺純屬心理方面的。因爲我們都受到地心吸力牽引的關係，我們對形象會產生輕重感，及穩定與不穩定的感覺。重心與均衡有關，我們將在第八章論及。（圖3d）

實用的元素

實用的元素是指設計的內容及功能方面。這不是本書包括的範圍，但我們仍可列舉如下：

具象——若形象由自然或人造物體所衍變出來的話，那就是具象。具象可以非常寫實或造型化。

意義——這是指設計有特別的涵義。

功能——這是設計目的方面或使用方面。

Shape - Anything that is visible has a shape. The shape is the outward appearance of things seen. (Ill. 2a)

Size - All shapes have size. Size is relative if we describe in terms of bigness or smallness, but it can also be measured. (Ill. 2a)

Colour - A shape is distinguished from its environment because it contains colour. Colour here is used in its broad sense, and it comprises not only all the hues of the spectrum but also the neutrals (black, grey, and white), and all their tonal and chromatic variations. (Ill. 2c)

Texture - Any surface of a shape has texture. Texture can be plain or decorated, smooth or rough, and may appeal to the sense of touch as much as to sight. (Ill. 2d)

RELATIVE ELEMENTS

There are relative elements governing the placement and interrelationship of the visual elements. Some are to be perceived such as direction and position, and some are to be felt such as space and gravity.

Direction - Direction of a form depends on how the shape is related to the observer, and also how it is related to the frame (see Chapter 2, section on Frame) that contains it, or other shapes next to it. (Ill. 3a)

Position - Position of a form is judged by the relationship of this shape to the frame or to the structural unit (see Chapter 2) that contains it. (Ill. 3b)

Space - Forms occupy space inside the frame. Forms in a design may appear advancing or receding, or in front of or behind other forms. Space is an illusion of volume and depth in a two-dimensional design.

Gravity - The sense of gravity is psychological. As we are pulled by the gravity of the Earth, we tend to attribute heaviness or lightness, stability or instability to particular forms or group of forms. Gravity has to do with balance which will be discussed in Chapter 8. (Ill. 3d)

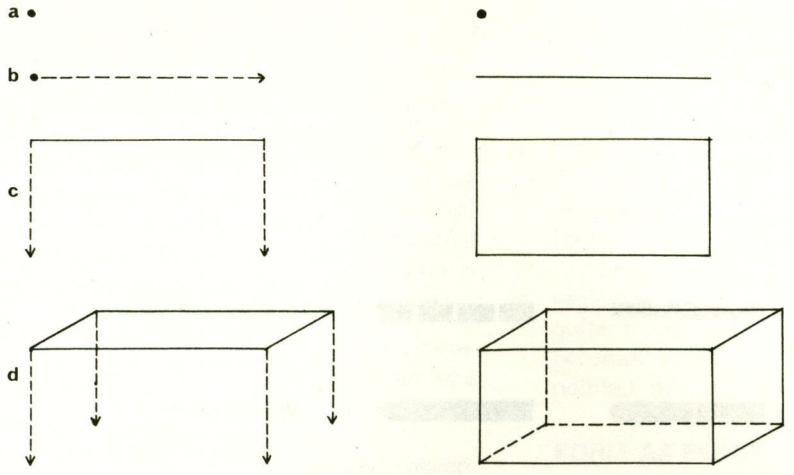
PRACTICAL ELEMENTS

The practical elements underlie the content and extension of a design. These are not the primary concern of this book, but we will mention them briefly.

Representation - When a form is derived from nature or from man-made objects, it is representational. Its representation may be highly realistic or stylized.

Meaning - Meaning is present when a design conveys a message.

Function - Function is present when a design serves a purpose.



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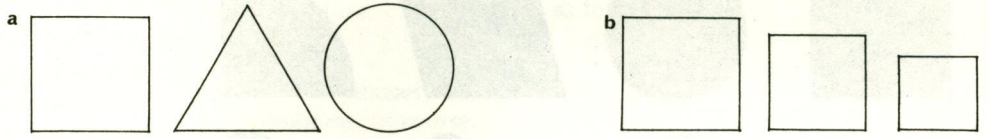

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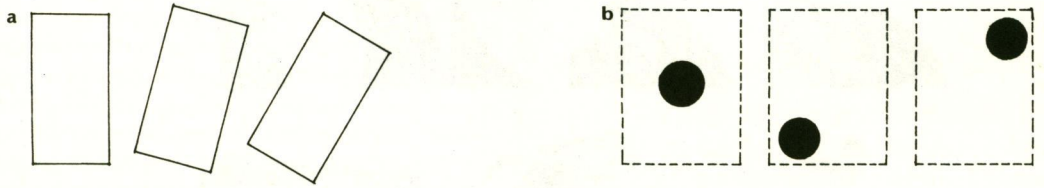

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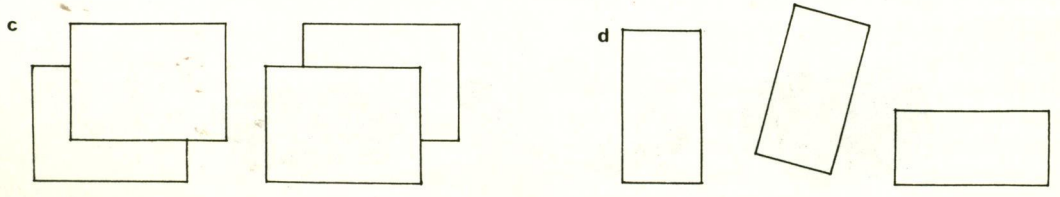

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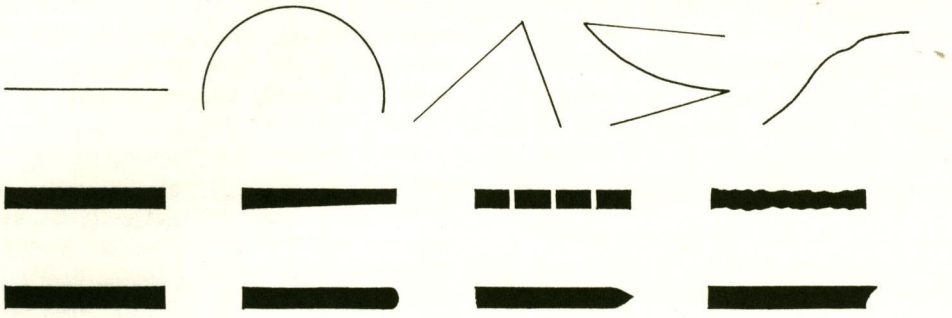

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6

CHAPTER 2 – FORM

DEFINITION OF FORM

It is a customary practice to analyze design in terms of "form".

In the present text, "form" is used as a collective term, to mean something embodying all the visual elements. It is visible, constructed with conceptual elements, and has shape, size, colour and texture.

FORM AND THE CONCEPTUAL ELEMENTS

There is no limit to the size and shape of a form. A form can be rather small to be regarded as a point, or it can be extremely narrow and long becoming a line.

In the last chapter we mentioned that conceptual elements are not visible. So when we have visible points, lines, or planes, these are forms in the broad sense, and they then possess all the visual elements: shape, size, colour and texture.

FORM AS POINT

Small forms, regardless of their shapes, are usually recognized as *points*. Smallness, of course, is relative; a form may appear fairly large within a small frame, and the same form may appear very small within a gigantic frame.

The characteristics of a *point* cannot be easily described except for its comparatively small size. A form regarded as a *point* is not determined by its own visual elements, but is determined by the relationship of its size to the size of the frame. It is difficult to say when a form should be regarded as a *point* and when not. For the designer, *points* are just forms and it makes no difference whether the forms can or cannot be recognized as *points*.

The most common shape of a *point* is that of a circle which is simple, non-angular, and non-directional. However, *points* may be square, oval, or of any other simple shapes. They can be joined together to become lines or grouped together to become bigger forms. (Ill. 4)

FORM AS LINE

A *point* is a form in miniature. A *line* is a form of excessive length. The extreme ratio between the length and the breadth of a form makes a *line*.

The overall shape of a *line* refers to its general appearance and the direction or directions it follows. Thus it may be straight, curved, bent, irregular, hand-drawn, or it may be the description of a shape of some kind. (Ill. 5a)

The shape of the body of the *line* is revealed when we examine it closely. A *line* when it is actually a form, has two edges. The shapes of the edges and the relationship between them determine the shape of the body of the *line* which may be uniform, tapered, broken, knotty, or irregular. (Ill. 5b)

The shape of the extremities of the *line* can be negligible if the *line* is very thin. But if the *line* is quite broad, then the shape of its extremities becomes significant. It may be square, round, pointed, or of a special shape . (Ill. 5c)

FORM AS PLANE

On a two-dimensional surface, all forms, not regarded as *points* and *lines* are planar *forms*.

Planar *forms* may have various shapes (Ill. 6) as follows:-

(a) Geometric - *forms* constructed in a mathematical manner
(b) Organic - *forms* made of free curves
(c) Rectilinear - *forms* made of straight lines
(d) Irregular - *forms* made of a combination of free curves and straight lines
(e) Hand-drawn - *forms* obtained by the unaided hand
(f) Accidental - *forms* obtained by controlled accidents

POSITIVE AND NEGATIVE FORMS

Generally speaking, form occupies space. On a two-dimensional surface, a form is usually regarded as a *figure* on a *ground*. A *figure* denotes anything that is above a *ground* which is the receding plane. The form, in this case, is recognized as a *positive* form. (Ill. 7a)

To reverse the situation, if the form is actually a hole in a plane, then the form itself is a *ground* whereas the area surrounding it becomes the *figure*. The form, in this case, is recognized as a *negative* form. (Ill. 7b)

The relationship between the figure and the ground is not always clear. It can be ambiguous especially when part of the form is cut off by the frame. The form, in this case, can be read both as a *positive* and a *negative* form. (Ill. 7c)

SINGLE FORMS

When a design contains just one dominant form, or contains some forms which are totally different from one another and from surrounding forms, these are called single forms.

A single form is usually a self-contained form, and can exist with or without a frame. It is not the component of a larger pattern, but may be composed of smaller forms joined together.

The presence of too many single forms is to be avoided as this destroys the unity of a design.

Points or *lines* may be used to construct single forms. Lines may produce single forms in outline. (Ill. 8)

UNIT FORMS

When a design is composed of a number of forms, those that are used repetitively or are related to one another are called unit forms. A unit form appears more than once in a design.

A single form especially a symmetrical one may be analysed into its component unit forms. A unit form can be made up of smaller unit forms.

The presence of unit forms helps to unite the design into an integrated whole.

In the designing of unit forms, simplicity is recommended. Complicated unit forms often tend to stand out as single forms and may disintegrate the design.

Points or *lines* may be used as unit forms.

RELATIONSHIP OF FORMS

Two or more single or unit forms which confront one another establish various relationships (Ill. 9), as follows:

(a) **Disjunction** - this means that the forms remain separate. The spatial relationship of the separate forms is determined by other factors.

(b) **Touching** - this means that the contours of the forms barely touch one another. The spatial relationship of the touching forms is determined by other factors.

(c) **Overlapping** - this means that the forms overlap one another. Overlapping creates an "above-and-below" spatial relationship.

(d) **Interpenetration** - this means that the forms interpenetrate one another. The contours of the forms are not partially covered as in the case of overlapping, but the forms appear as if they are transparent. The spatial relationship of interpenetrating forms is determined by other factors.

(e) **Union** - this means that forms are united into a new, bigger form. The colours and textures of united forms should be uniform or in subtle transition. United forms are generally on the same plane.

(f) **Subtraction** - this means that a portion of a form is hidden by an invisible form or forms. This is the result of an encounter between *positive* and *negative* forms. The subtracted form becomes a smaller, new form.

REPETITION OF UNIT FORMS

If we use the same unit form over and over, we use it in repetition.

Repetition is the simplest method in making up a design. Columns and windows in architecture, chairs in interiors, the legs of a piece of furniture, the patterns on fabrics, tiles on the floor, are obvious examples of repetition. Even geometrical shapes such as the equilateral triangle, the square, the hexagon, etc., are constructed of united unit forms in repetition.

Repetition of unit forms usually conveys an immediate sense of unity. Each repetitive unit form is like the beat of some kind of rhythm. When they are used in larger sizes and in small numbers, the design appears simple and bold; when they are infinitely small and in countless numbers, the design may appear as a piece of texture, composed of tiny forms.

VARIATIONS IN REPETITION

Absolute repetition implies that all the visual elements of the unit forms remain unchanged. Even so, relative elements such as direction and position can be varied. Illustration 10 shows the same group of unit forms arranged with (a) repeated directions, (b) indefinite directions, (c) constrasted directions, (d) graduated directions, and (e) repeated directions with a variation.

Variations with position will be discussed in the next chapter when we deal with structure.

Among the visual elements, with the exception of shape which has to remain unchanged, size, colour and texture of the unit forms may be varied if necessary.

THE FRAME

The overall shape and size of a design is determined by a frame. The frame also provides reference for size consideration of unit forms and for all the relative elements.

The shape of a frame, though usually rectangular, may be circular, oval, or even irregular.

A frame is often bound with invisible conceptual lines. However, visible lines of any desired breadth may be used and they certainly have an influence upon the design.

EXERCISE

(a) Design a single form for each of the following shapes:-

1. Organic
2. Rectilinear

The size of the forms is about 8" square. No visible frame is necessary.

Colour of the form: black outline or solid black on white ground.

Texture: Not applicable.

(b) Use the circle as unit form. Only one size of the circle may be used. Repeat the circles and make a design.

Colour scheme: Black and white. One shade of grey may be additional if desired.

Frame: 8" square or any bigger rectangular shape.

Texture: Not applicable.

In this exercise, you can determine the size of the frame, the number and size of the unit forms, the relationship between the unit forms, the colour variations of the unit forms within the limitations, and of course, the composition. (Ill. 11-14)

第二章 — 形象

形象的定義

我們習慣地用"形象"一詞來闡述設計。

在本書中"形象"是一廣泛的詞語，用以指謂一些涵蘊所有視覺元素的東西。"形象"是可見的，有形狀、大小、色彩、及肌理。

形象與觀念元素

形象可具有任何形狀，其大小亦由設計家決定。形象可以細小得像點一樣，可長而幼細而成爲綫。

在上一章我們提及概念的元素是不可見的。我們若有可見的點、綫、面，這些都被廣義地稱爲形象，而具有視覺各元素。

點的形象

細小的形象，我們習稱爲"點"。所謂細小是比較性的；同一的形象在細小的框架中可以顯得很大，在巨大的框架中就會顯得很小。

我們除了形容"點"爲細小之外，"點"并沒有若何特徵可言。一個形象之被稱爲"點"，不由它的視覺元素決定，而決定于它的大小與框架的大小所產生的比例。我們很難說一個形象要多麼細小始成爲"點"。在設計家方面，形象是"點"或不是"點"始終是形象。

"點"通常具有圓的形狀，簡單，無稜角，無方向。不過，"點"可成方形，楕圓形，或其他簡單的形狀。它們也可相聯或排列而成綫，或組集而成較大的形象。（圖4）

綫的形象

"點"是細小的形象，"綫"則是過長的形

象。形象長與濶的超特差異成了“綫”。

“綫”的形象可分三方面描述：(a) “綫”之總形，(b) “綫”本體的形，及(c)綫兩端之形。

“綫”之總形指其大致形狀及方向。“綫”可以是直的、彎的、曲折的、不規則的、徒手的，或用以界定任何形狀的邊緣。（圖5a）

“綫”本體的形爲何，我們得細察方見。若“綫”是可見的形象，則“綫”之本體必有兩個邊緣將之包裹。這兩個邊緣的形狀與及它們彼此的關係決定“綫”本體的形。“綫”本體的形可以是均一的、漸變的、斷續的、起節的、或不規則的。（圖5b）

若“綫”是幼細的，我們可以忽略其兩端的形。但若“綫”是頗粗的話，則其端的形是不容忽視的。“綫”之兩端可成方角、圓角、尖角或其他形狀。（圖5c）

面的形象

平面設計裡的形象，凡不被認爲是“點”或“綫”的，都是“面”。

各種“面”的形狀可列舉如下（圖6）：

(a) 幾何性——即用數學方式構成的。

(b) 有機性——即用自由弧綫構成的。

(c) 直綫性——即用直綫隨意構成的。

(d) 不規則性——即用自由弧綫及直綫隨意構成的。

(e) 徒手的——即不用任何器具輔助徒手繪寫的。

(f) 意外的——即用特殊技法意外偶得的。

正與負的形象

一般而言，形象佔有空間。在平面上，形象往往被稱爲“圖”而其周圍的空間被稱爲“地”，“圖”在前面，“地”是背景。這種形象就是“正”的形象。（圖7a）

反過來說，若形象實際上是平面上的一個洞，則此形象就是“地”而其周圍成爲“圖”。這種形象就是“負”的形象。（圖7b）

“圖”與“地”的關係幷不時常清楚。尤其是當形象的一部份受框架所切除，則何者爲“圖”何者爲“地”不易辨認。這種形象是“正”的同時又是“負”的形象。（圖7c）

單形

若設計只包括一個主體的形，或包括數個彼此不同的、亦與週圍形象不同的形，這些我們稱之爲單形。

單形常是一自成一體的形象，可依亦可不依框架而存在。單形不是一連續圖案的單位，但可由較小的形象聯結構成。

一個設計不宜藏有過多的單形，否則設計的統一性會受到損害。

綫與點的形象均可用以構成單形。綫亦可繞成單形。（圖8）

基本形

若設計由一組重複的形或彼此有關連的形所構成，這些形可稱爲基本形。

單形（特別是對稱的單形）可分解爲單位的基本形。一個基本形亦可由較小的基本形構成。基本形的存在有助於設計的內部聯結。

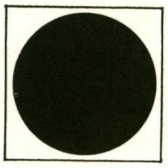
基本形之設計以簡爲宜。複雜的基本形常過份突出而有單形之感，幷使設計流于渙散。

“點”與“綫”均可作基本形使用。

形與形的關係

兩個或更多的單形或基本形在相遇時可產生

a



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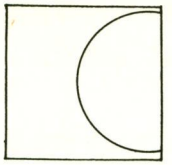

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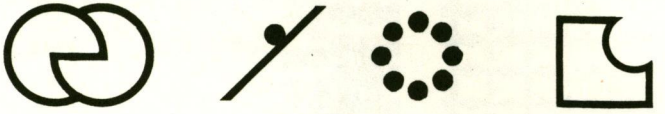

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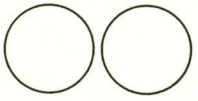

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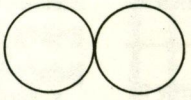

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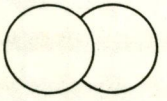

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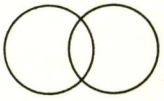

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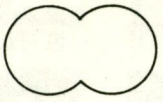

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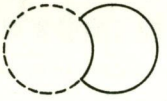

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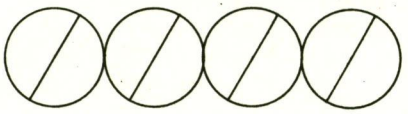
a



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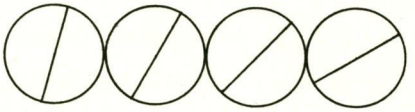

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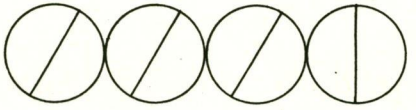


c



10

下列各種不同關係（圖9）：

(a) **分離**——這就是說它們可以保持一些距離而不接觸。彼此分離的形象之空間關係受其他因素決定。

(b) **接觸**——這就是說形象的邊緣恰好接觸。彼此接觸的形象之空間關係受其他因素決定。

(c) **覆疊**——這就是說一些形象覆盖另一些形象。覆盖的與被覆盖的形象產生“上與下”或“前與後”的空間關係。

(d) **透疊**——這就是說形象具有透明性而互相交疊。與覆疊不同，透疊不會掩盖形象的輪廓，并不一定分上下或前後之感。因此，彼此透疊的形象之空間關係由其他因素決定。

(e) **聯合**——這就是說形象聯合起來而成爲新的較大的形象。聯合的形象之色彩及肌理須一致或緩慢的變化。聯合的形象常在同一的空間平面。

(f) **減缺**——這就是說一個形象被另一不可見的形象所覆疊。這是“正”與“負”的形象相遇的結果。被減缺的形象較未減缺前爲細小，亦成爲新的形象。

基本形之重複

我們若在設計裡不斷使用同一的基本形，我們就是將基本形重複使用。

重複是設計構成的最簡易的方法。建築中的窗與柱，室內的椅子佈置，傢具的脚，織物上的圖案，地板上的砌磚，都是極明顯的基本形重複。甚至幾何形如等邊三角形、方形、正六角形等都是由基本形重複而成。

基本形之重複令設計產生清楚的統一感。每一重複的基本形都像旋律中的一個拍子。設計中若基本形大而少，其效果簡單有力，若基本形小而繁密，其效果則像一片由細小單位構成的肌理。

重複之變化

若基本形的各項視覺元素，始終不變，那就是絕對重複。即使如此，關係元素如方向及位置仍可變動。圖10顯示同一組的基本形所作的各種方向排列：(a) 重複方向，(b) 不定方向，(c) 對比方向，(d) 漸變方向，及 (e) 重複方向中帶有變異。

位置變化將於下章關及骨格時詳細討論。

框架

框架決定設計的整體外形和大小，并決定基本形的大小感覺，及界定所有空間因素。

框架的形狀，一般都是方形或長方形的，但也可以是圓形、楕圓形，甚至不規則的形。框架的邊緣通常由見不到的、概念的綫所構成。不過，我們也可以用可見的、適宜粗度的綫來構成框架，而這些綫當然影響到設計方面。

練習

(a) 設計兩個單形，其一爲有機性的，另一爲直綫性的。每個單形長濶約八吋，不設框架。單形用黑綫小心鈎成，或填成一片黑色。白底，無肌理。

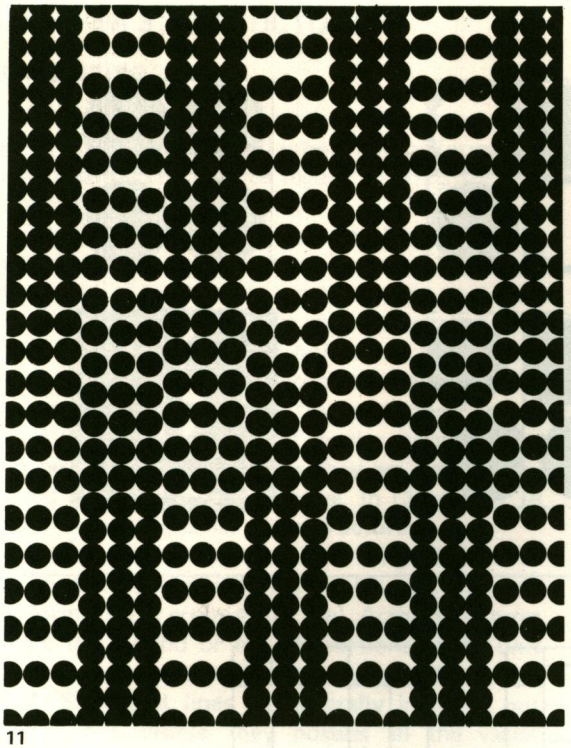
(b) 以圓形作爲基本形，將之重複使用，構成設計。圓形大小劃一。

色彩：黑白。如有必要，加用一種灰色。

框架：八吋正方形或較大之長方形。

肌理：不同。

在此練習中，你可決定框架大小，基本形大小、數量、及彼此間的關係，色彩在指定範圍中的編排，及整個構圖。（圖11-14）



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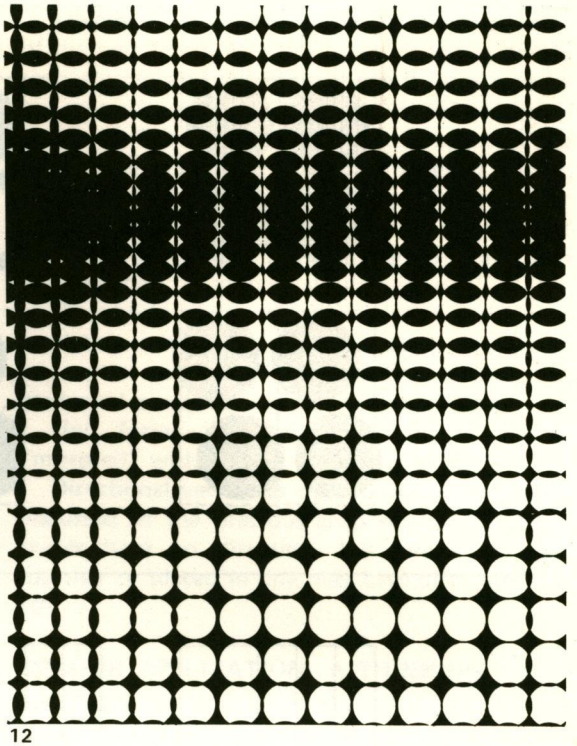

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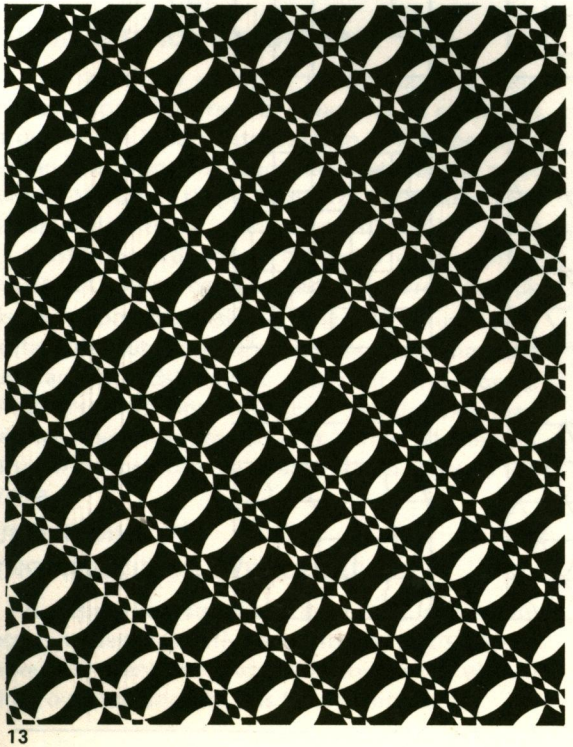

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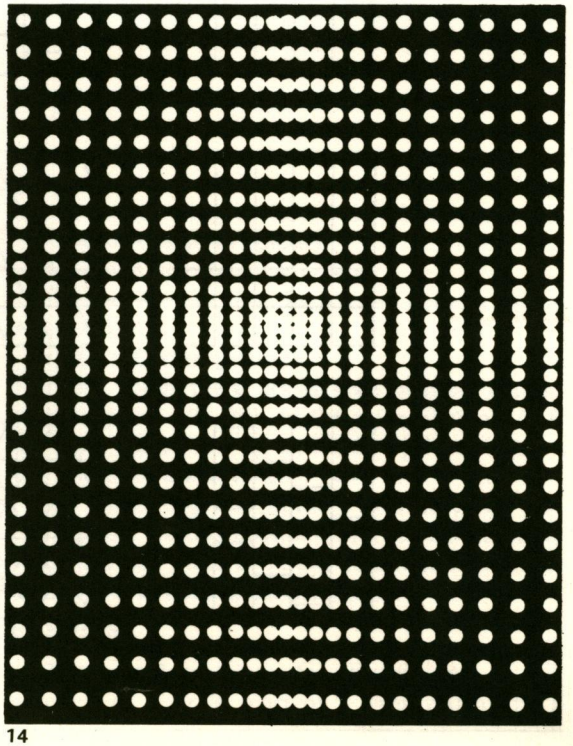

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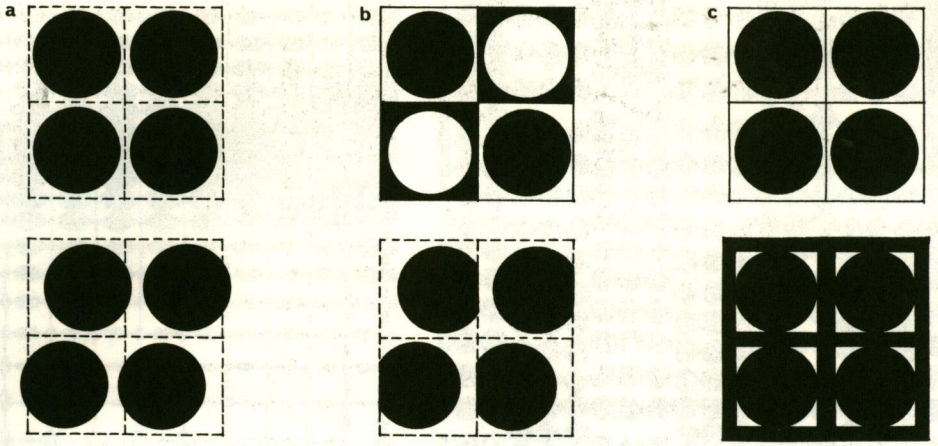

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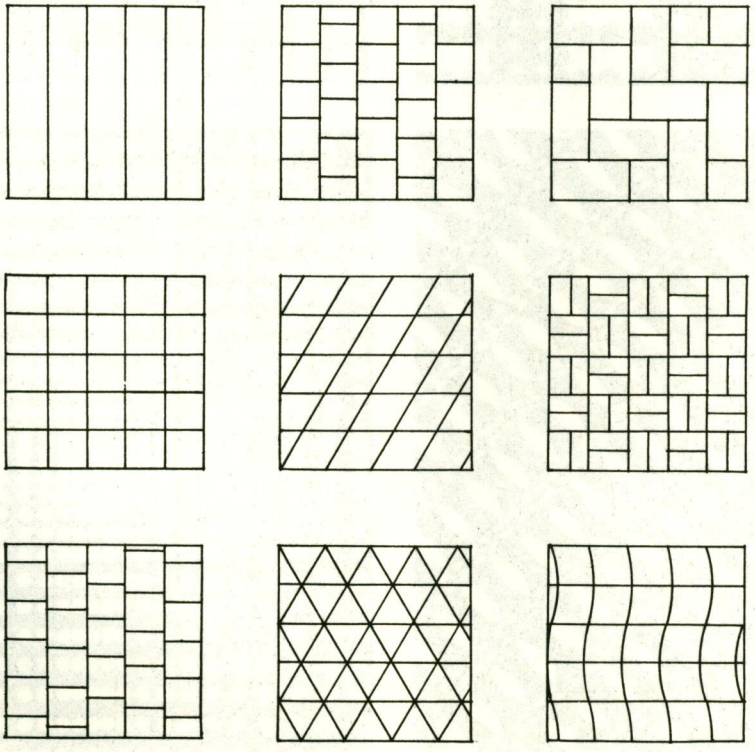

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CHAPTER 3 – STRUCTURE

STRUCTURE

Most designs have structure. Structure is to govern the placement and interaction of forms in a design. Structure may be regular or irregular, and it may be active or inactive.

Regular structures are those which are constructed in a rigid, mathematical manner. These are structures of repetition, gradation and radiation which will be discussed here and in chapters 5 & 6. They consist of structural points and lines which guide various forms to a preconceived order.

Irregular structures are free and loose. Sometimes they are deviations of regular structures and can be analyzed. Sometimes they are not preconceived and therefore very vague. In Chapters 7, 8 and 9 we shall consider these structures.

Inactive structures merely provide guidelines for the positioning of unit forms and have no effect on the forms or the ground (Ill. 15a). Active structures divide the ground or cut off portions of the unit forms which go beyond the structural lines. (Ill. 15b). Structural lines are generally invisible, but when made visible they possess all the visual elements. (Ill. 15c).

THE REPETITION STRUCTURE

The repetition structure is probably the commonest type of the regular structures. A repetition structure is a kind of structure in which the space within the frame is subdivided into equal areas (areas of same shape and size, probably with different directions, arranged repetitively).

Illustration 16 shows examples of repetition structures. More complicated structures can be derived from these simple ones. Structures with rectangular subdivisions are the most common and can accommodate most types of unit forms. Structures with non-rectangular subdivisions may require special types of unit forms. If desired, structural lines can be placed at an angle to the frame.

UNIT FORMS IN THE REPETITION STRUCTURE

A repetition structure does not necessarily accommodate repetitive unit forms. But since we have only mentioned repetitive unit forms, we will limit our discussion to this for the time being.

Usually the structure determines the positioning of the unit forms. But this is not always so. Inside each structural subdivision, the unit form may be put centrally, or moved aside, and its direction may be varied. The unit form may fit the space of the subdivision exactly, or it may be larger or smaller than the subdivision. The structural lines may be active or inactive, and when active they would divide the ground or cut off portions of unit forms going beyond the individual subdivisions.

Illustration 17 shows various ways of positioning repetitive unit forms inside repetition structures: (a) central positions, (b) indefinite positions, (c) graduated positions. (d) alternate positions,

Unit forms, when not symmetrical, can be "mirrored" with varying directions. (Ill. 18)

Directional variations of unit forms have been discussed in the previous chapter (Ill. 10). Plain circles have no direction, but circles grouped together or placed in line may have direction. (Ill. 19).

COLOUR APPLICATION: A THINKING PROCESS

This book is not intended to cover principles of colour interaction. However, while choice of colour is of no concern here, we can calculate the possible number of colour-combinations within a given number of colours in a design.

Suppose we are given two colours and a ground colour with which we work. And suppose the two given colours may be mixed or overlapped to form a third colour. Then we have the following colours:

Colour A (a given colour)

Colour B (another given colour)

Colour A + B (the two given colours mixed together)

Colour C (the ground)

From these there are sixteen possible colour-combinations. (Ill. 20). In the cases of A on A, B on B, A + B on A + B, and C on C, the unit forms just vanish or are outlined.

By tabulating the colours this way we can explore the various possibilities in colour-combinations and can place different colour-combinations among the structural subdivisions.

EXERCISE

The unit form given for this exercise is any segment of a circle (part of a circle cut off by a

straight line). This segment is to be used in repetition (both shape and size) in a design.

Frame: 8" square or any bigger rectangular shape.

Colour: Ground plus two colours. The two colours may not be tinted or mixed or overlapped to form a third colour.

Texture: Not applicable.

Structure: Repetition.

In this exercise, you can determine the shape and size of the unit forms, the number to be used, the colour variations of the structure, the directions and positions of the unit forms within structural subdivisions, and the frame size and shape. (Ill. 21-25)

第三章 — 骨格

骨格

許多設計都有骨格。骨格用以決定設計中形象之放置及關係。骨格有規律性的，有非規律性的，有作用性的，有非作性的。

規律性的骨格是以嚴謹的數學方式構成的。這些骨格是重複、漸變、及發射，將在本章及第五、六章述及。它們都包括一些骨格點與骨格綫，引導形象的編排。

非規律性的骨格是自由構成的。有時候它們是由規律性骨格衍變而成，因此是可析解的。有時候它們未有預定的秩序，其構成遂不清楚而無從析解。第七、八、九章將述及這方面。

非作用性的骨格除用以編排形象外，對形象或背景不產若何影響（圖 15a）。作用性的骨格可將背景分割成不同的色幅或將逾綫的形象沿綫切掉（國 15b）。骨格綫通常是不可見的，但亦可成爲可見而具有一切視覺元素（圖 15c）。

重複骨格

在各種規律性骨格中，重複骨格是最常見的一種。祇要我們將框架內的空間劃分成形狀大小相等的單位，我們就構成了重複骨格。

圖16顯示的是一些重複骨格的例子。較複雜的可由這些簡單的變化出來。用互成直角綫條構成的重複骨格最爲通用，適合承納差不多各種基本形。非互成直角綫條構成的重複骨格只宜于承納特殊形狀的基本形。如有需要，骨格綫不必與框架綫平行。

重複骨格中的基本形

重複骨格不一定要承納重複的基本形，但因

目前我們只提過重複的基本形，我們暫以此爲限。

骨格通常決定基本形位置，但不一定常時如此。在每個由骨格綫分成的單位裡，基本形可放正當中，但亦可側放，基本形的方向更可任意變動。基本形的大小可恰當地放入骨格單位內，但亦可大于或小于骨格單位的空間。骨格綫可具作用性或不具作用性，若具作用性時便將逾綫的基本形部份切除。

圖17顯示基本形在重複骨格內的位置變動：(a) 中央位置，(b) 不定位置，(c) 漸變位置，(d) 交錯位置。

非對稱的基本形，可將之反轉，并作各種方向變動。（圖18）

方向變動的法則早于上章述及（圖10）。簡單的圓形是沒有方向的，但兩個或兩個以上的圓相聚或排成行列時就有方向的因素。（圖19）

色彩運用的構思方法

本書不擬涉及色彩原理範疇。不過，撇開色彩的選配問題，我們可以從預定的幾種色彩計算出色彩組合的數目來。

例如我們預定只用兩種色彩及一底色，又例如此兩種色彩可以相混而成爲第三種色彩，我們共有色彩如下：

色彩 A（預定的一種色彩）

色彩 B（預定的另一種色彩）

色彩 A + B（預定的兩色相混）

色彩 C（底色）

照圖20所顯示，共有十六種可能的色彩組合。在A蓋以A，B蓋以B，A + B蓋以A + B，及C蓋以C的情形，基本形則完全消失，或只餘輪廓綫。

我們可從這個方法探索色彩組合的可能性，并在骨格內適當地編排。

練習

這次我們指定用半圓形（或任何圓弧與直綫所構成的弓形）作爲基本形。基本形的形狀及大小須重複。

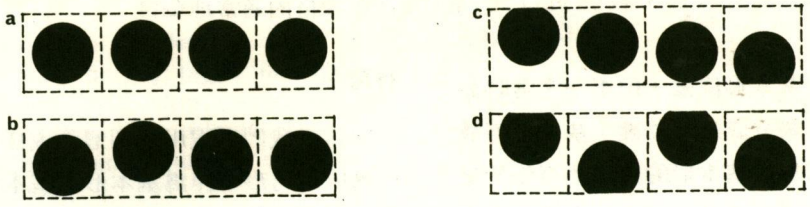
框架：八吋正方形或較大的長方形。

色彩：底色外只准用兩色。兩色不能變淡或相混。

肌理：不用。

骨格：重複。

在此練習裡，你可以決定基本形的形狀（半圓或任何一種弓形）大小及數目，色彩組合，骨格，骨格單位內基本形的方向及位置，以及框架的形狀及大小。（圖21-25）



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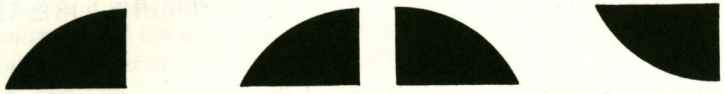

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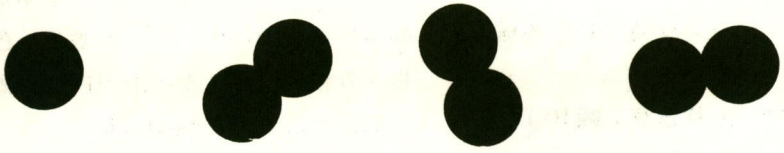

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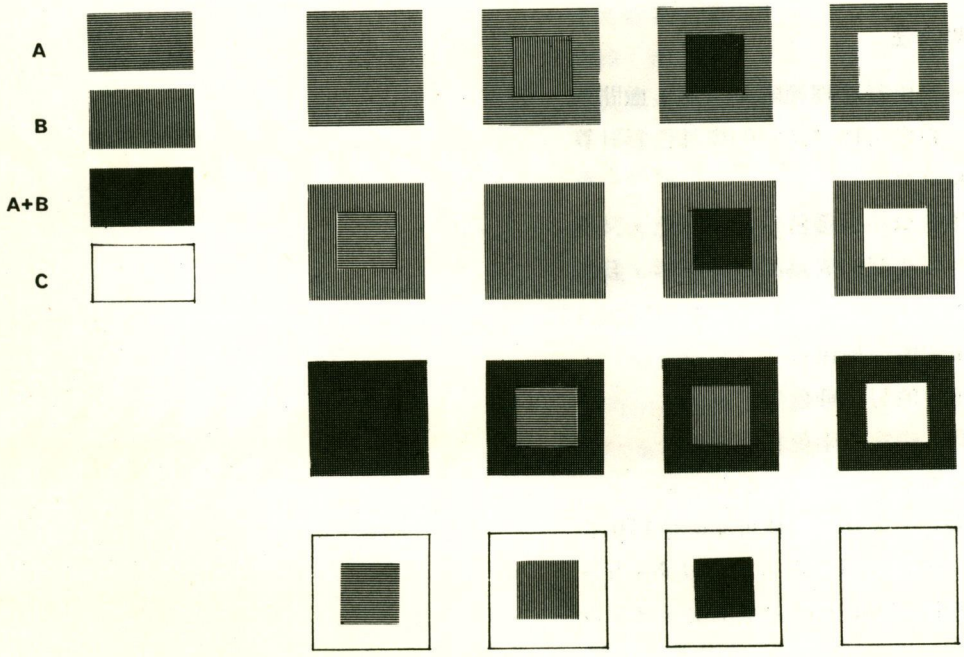

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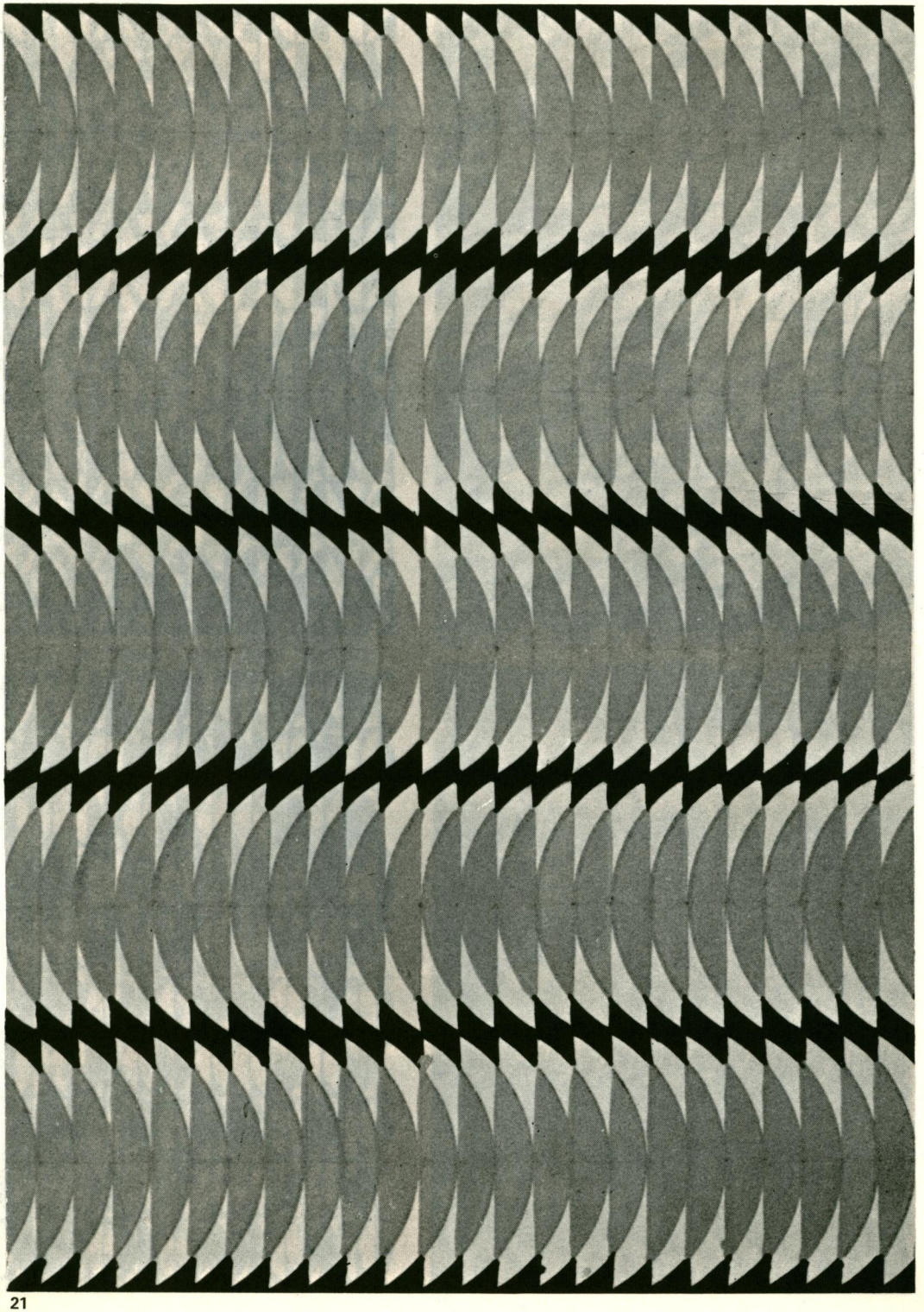

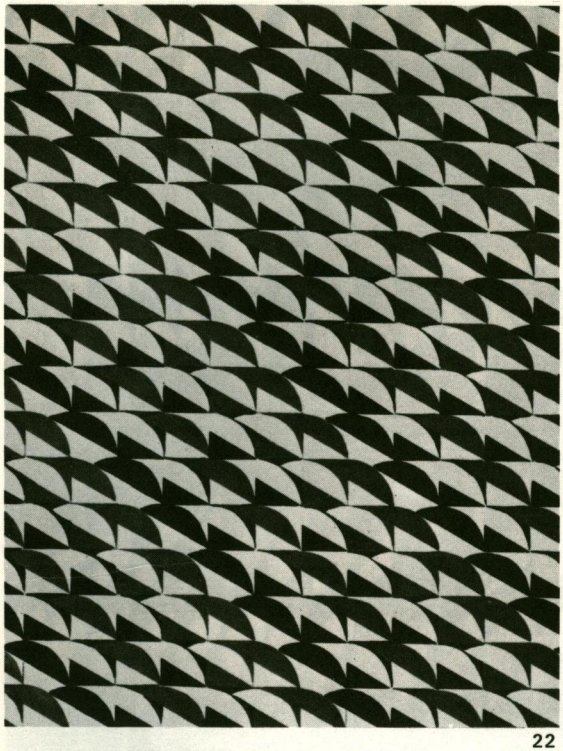

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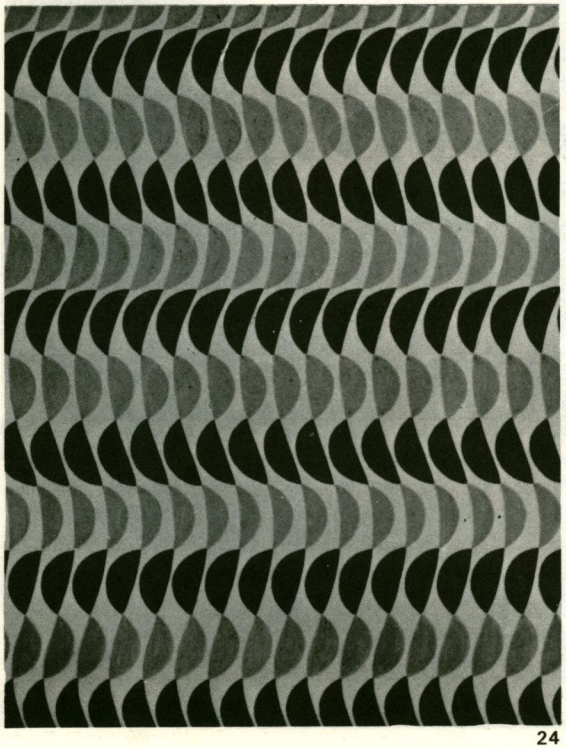

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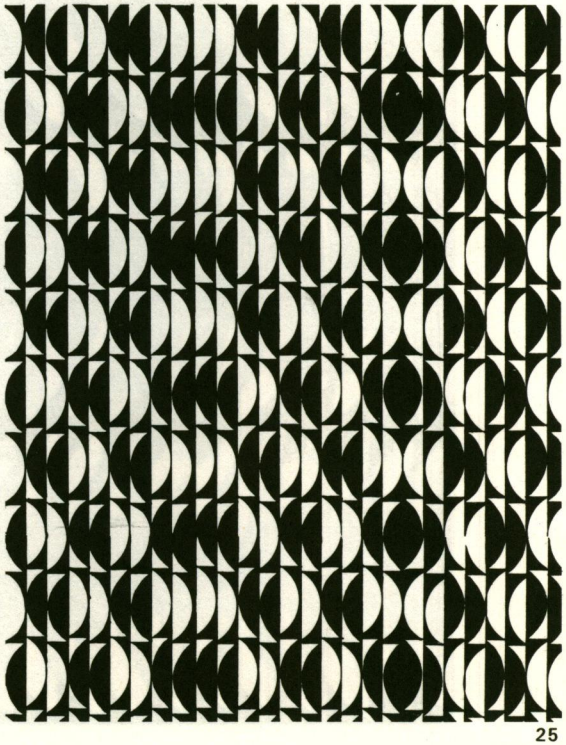

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CHAPTER 4 — SIMILARITY

SIMILARITY

Similarity is a slight deviation from repetition. It does not have the strict regularity of repetition but leads to a feeling of regularity.

Aspects of similarity can be easily found in nature. The leaves of a tree, the trees of a forest, the grains of sand on a beach, the waves of the ocean, are all vivid examples of similarity.

SIMILARITY OF UNIT FORMS

Similarity of unit forms refers to the similarity of shapes of unit forms. When similarity of unit forms is to be used inside a repetition structure, the sizes of the unit forms should also be similar.

When we design various unit forms in similarity, we often start with an "ideal" unit form and work out its variations within a certain limitation. If a shape departs too far from the "ideal" unit form, then there is the danger of losing the effect of similarity. Variation has to be made from the "ideal" unit form each time it is used, and the variations should not be in regular order. Illustration 26a shows an "ideal" unit form and its variations of similarity, whereas illustration 26b shows a series of gradually varying unit forms. The later group belongs to the principle of gradation which will be discussed in our next chapter.

Similar unit forms may have variations in direction and position only to the extent that the effect of similarity is not obscured. Changes in colour-combinations for similar unit forms is always helpful to enhance the richness of the design.

In the case of using similar unit forms in an active repetition structure, the forms may be united with forms or grounds in adjacent structural subdivisions, thus attaining surprisingly complex results while at the same time maintaining a harmonious order. (Ill. 27)

SIMILARITY STRUCTURE

Structural subdivisions may be similar instead of repetitive. This means the shape and size of each structural subdivisions are more or less the same, but not exactly the same. This kind of structure has to be active (i.e., dividing grounds or cutting unit forms) in order to be appreciable. (Ill. 28)

Another kind of similarity structure has no pre-conceived structural subdivisions. Unit forms are just evenly distributed visually within the frame. Space related to each unit form could be quite similar in this case. (cf. Chapter 9, section on massing and scattering)

DEVELOPMENT OF UNIT FORMS IN SIMILARITY

As discussed earlier, we can choose an "ideal" unit form for the development of unit forms in similarity. The "ideal" unit form could be designed as:

(a) A single form

(b) A form within a structural subdivision

In the latter case, the form is not necessarily a complete form. One or two lines of any desired shape could be used inside a structural subdivision to become our "ideal" unit form. (Ill. 29)

Variations of this "ideal" unit form may be obtained by slight distortions, such as by making a straight line curve this way and that, or by having details of a shape altered.

The union of two smaller unit forms or the subtraction of one unit form from another could produce a range of unit forms in similarity. In this case, both the two smaller unit forms may be varied in shape and size, and their directions or positions may be altered to form different combinations. (Ill. 30)

EXERCISE

The unit form is not given. You will design your own unit forms of similarity.

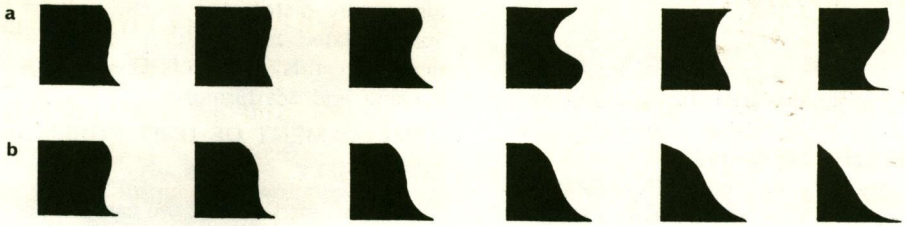
Arrange the unit forms in a repetition structure which may be active or inactive.

Frame: 8" square or any bigger rectangular size.

Colour: Ground plus two colours. The two colours may be mixed together to form a third colour.

Texture: Not applicable.

More freedom is given in this exercise. You are to determine the shapes, size, and number of the unit forms, their colour variations and their structure. (Ill. 31-35)



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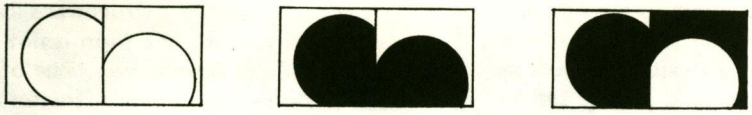

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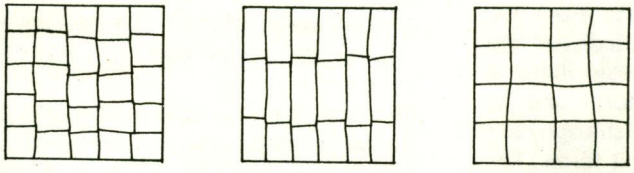

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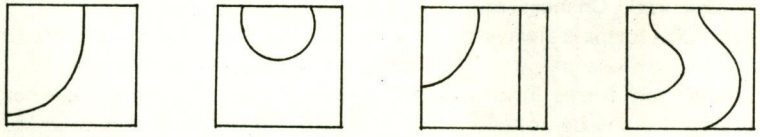

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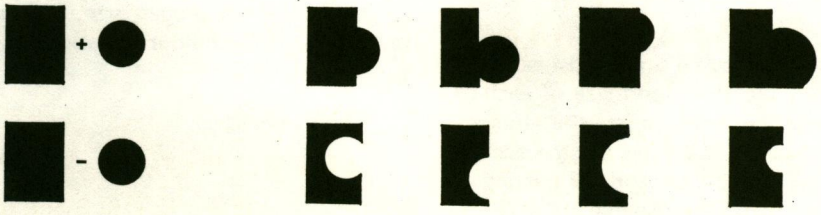

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第四章 — 近似

近似

近似是重複的輕度變異。它沒有重複的嚴格規律，但亦不失規律感。

大自然中近似的情形極多。樹的每一片葉子，森林的每一棵樹，沙灘的每一顆沙粒，海洋的每一個波浪，都是生動的近似例子。

基本形的近似

基本形的近似指形狀方面。若近似的基本形應用於重複的骨格中時，則基本形的大小亦要近似。

在設計各近似的基本形時，我們通常都以一“理想的”基本形爲起點，從而在一適當的限度中求出它的諸種變化。若某一基本形的形狀，與此“理想的”基本形發生太大的距離的話，則有喪失近似的危險。所有近似的變異必得以“理想的”基本形爲根據，各種變異亦不能循着逐次漸變的次序排出。圖26a顯示一“理想的”基本形及其各近似變異；圖26b顯示一基本形循序漸變，結果首與末距離很大。後一組屬漸變原則的範圍，我們將于下章述及。

近似的基本形可有方向及位置變動，但這些變動不能破壞近似效果。色組變動則可增加設計趣味。

在作用性骨格裡，近似的基本形因受骨格綫割切的關係，常可與附近的基本形或其背景聯合。這一來，設計就增加了繁複性，而仍然保持秩序井然。（圖27）

近似骨格

骨格單位可以不重複而互相近似。這就是說，骨格單位的形狀與大小差不多，但不盡相同。這種骨格須具作用性的（即分割背景或切除逾綫的基本形），否則就不明顯。（圖28）

另一類近似骨格是沒有預立骨格綫的。基本形在框架內平均放置，憑視覺決定。每基本形所佔空間大致近似。（參閱第九章有關擠集與播散一節）

近似基本形之設計

我們在前面談及過，設計各近似基本形應以一“理想的”基本形爲起點。此“理想的”基本形可設計爲：

(a) 單形

(b) 骨格單位內的形象

在(b)的情形，形象不必具獨立性。骨格單位內一兩條綫亦能構成“理想的”基本形。（圖29）

“理想的”基本形的變動可用輕度的變形求得，例如將其中一直綫向這邊或那邊微彎，或令形狀的細部稍作修改。

兩形象的聯合或相減可造成一連串的近似基本形。在此情形，兩形象的形狀、大小均可產生變動，并以不同方向或位置求不同組合。（圖30）

練習

基本形任由決定。

將近似的基本形放入重複骨格內。骨格可具作用性或不具作用性。

框架：八吋正方形或較大的長方形。

色彩：底色外只准用兩色。兩色可相混而成第三色。

肌理：不用。

本練習容許更大的自由。你可決定基本形的形狀、大小、數量、色彩組合及骨格等方面。（圖31-35）



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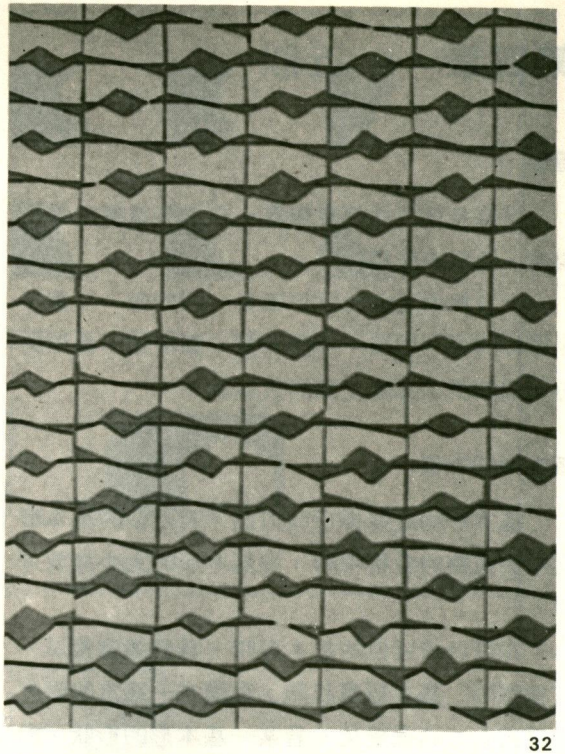

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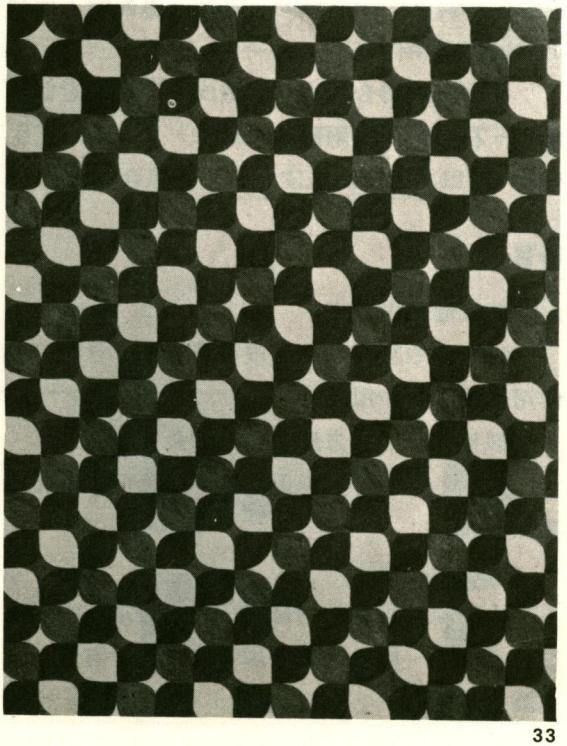

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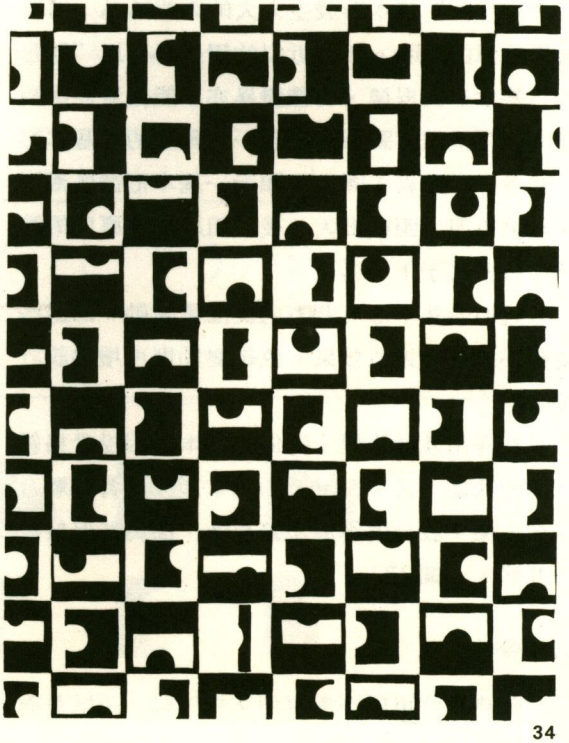

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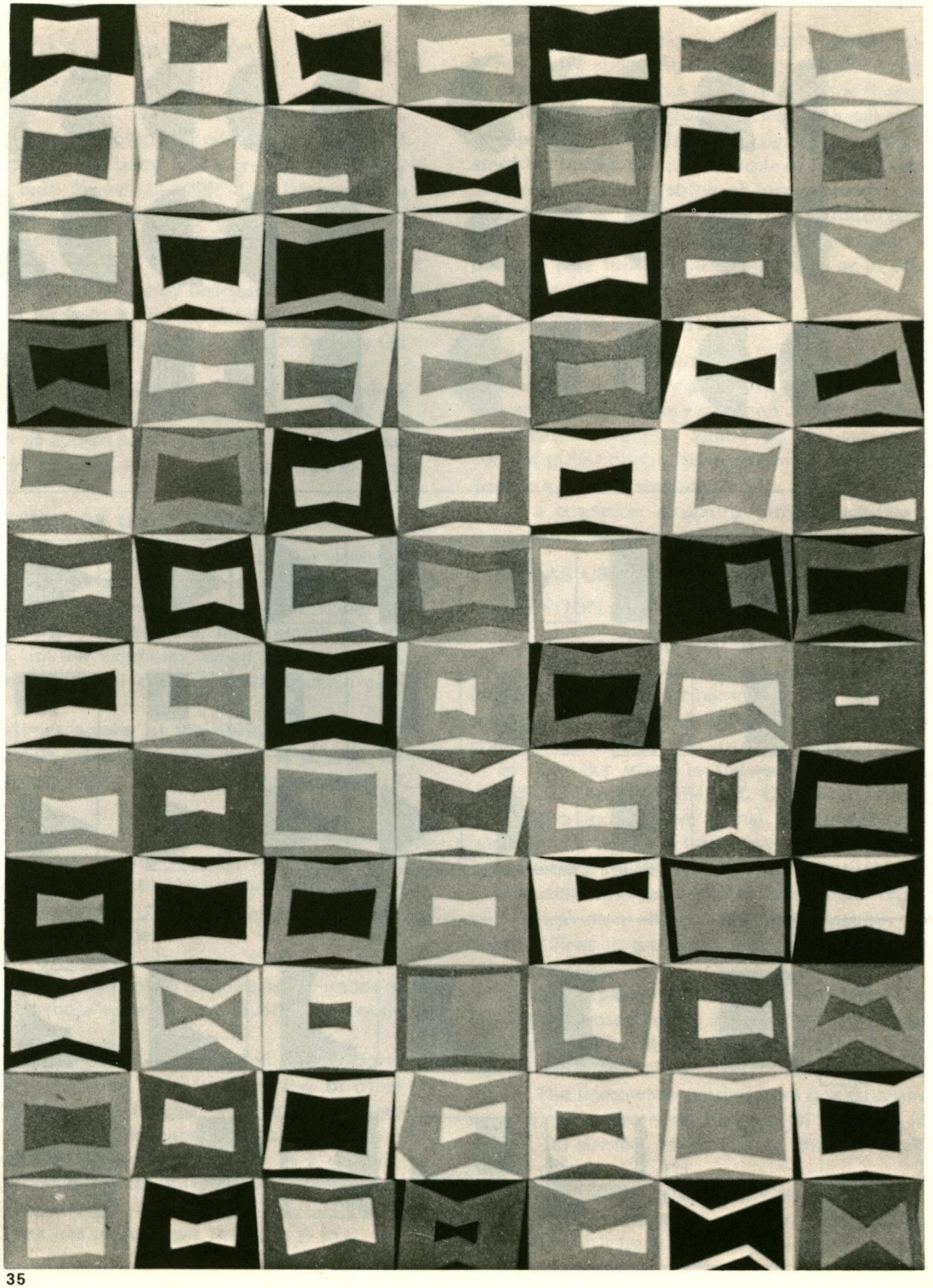

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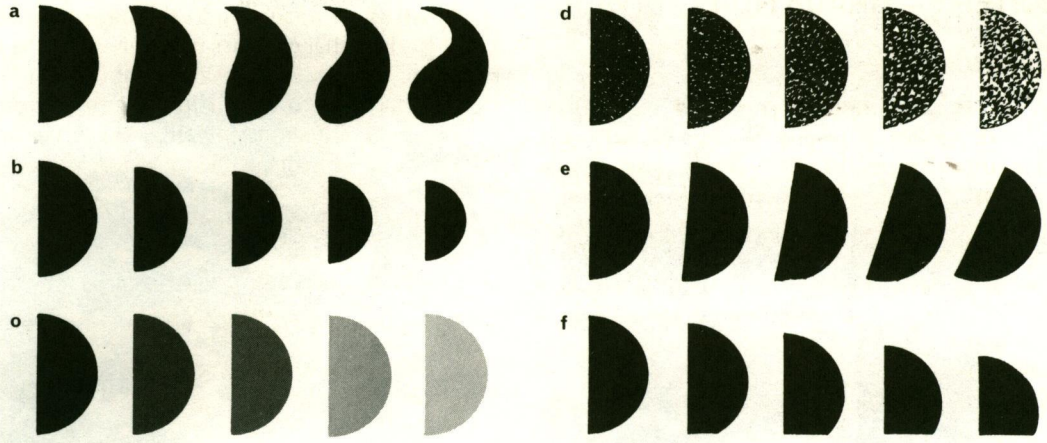

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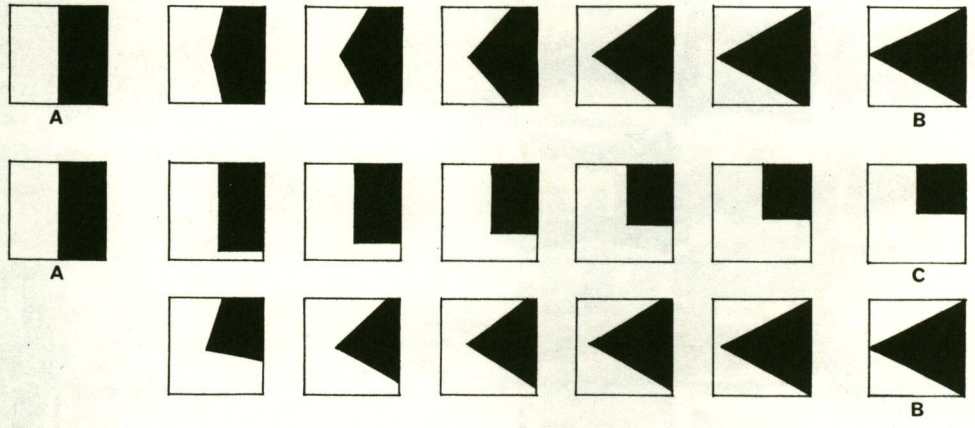

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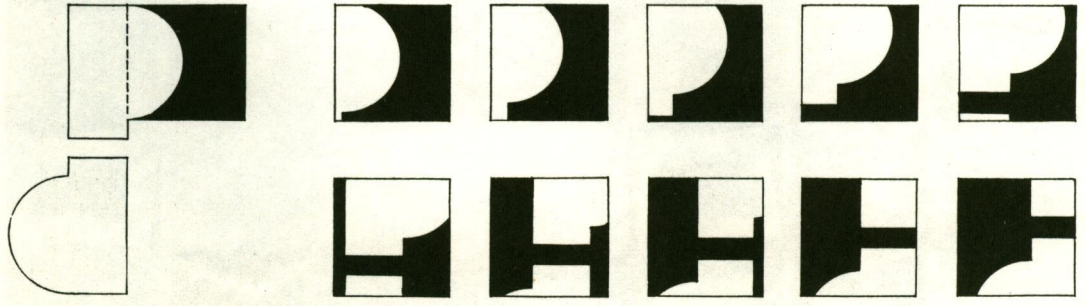

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CHAPTER 5 – GRADATION

GRADATION

In the last chapter, we compared a group of unit forms in similarity and a group of gradually varying unit forms (Ill. 26). The latter case is "gradation" which refers to gradual, regular and sequential change of unit forms as well as structural subdivisions.

Similarity has an evenly distributed pattern, but gradation leads to a climax. Gradation generates optical illusion, and is a method much used by Op Artists of today.

Gradation is a daily visual experience. Things that are close to us appear large and those that are far from us appear small. If we see a row of same objects at an angle, we can find gradation in their size.

GRADATION OF UNIT FORMS

All visual elements and some relative elements may be used in gradation. Illustration 36 shows the same unit form, in gradation of (a) shape, (b) size, (c) colour, (d) texture, (e) direction and (f) position. In the examples, when one element is slowly changing, all other elements remain constant.

Sometimes several of the elements may be in simultaneous gradual change, and, if desired, all the elements may be in simultaneous gradual change.

In gradation, we generally have to determine what elements are to change, and from what situation a form has to change through a number of stages to arrive at another situation. Practically any situation can be changed into any other situation. Of course, situations that are not too different from each other require less number of stages, and those which are quite different require more stages.

Occasionally, the gradation of a unit form (especially gradation of shape, but also of other elements) does not proceed in a straightforward manner from one situation to another. Situation A may proceed towards situation B in a straightforward manner, but situation A may proceed towards situation B via situation C. Certianly A to B via C requires more stages than just A to B. (Ill. 37)

Gradation of position can be highly complicated. A half-circle appearing in the beginning of a chain of gradual changes does not mean that the shape of the unit form is just that half-circle or a full circle. The portions to appear in the next stages may be anything united to the half-circle of the first stage. This may also be a string of forms linked or not linked together. The unit form may be much larger than the structural subdivision. The gradation of position may follow in a straight line, or in other directions. (Ill. 38)

GRADATION STRUCTURE

A gradation structure is one in which the structural subdivisions vary gradually, regularly, and in sequential order. A very common way of obtaining a gradation structure would be the varying of vertical and/or horizontal positionings of structural lines in a repetition structure. (Ill. 39).

In a gradation structure, either repetitive or graduated unit forms may be used.

LINES AS UNIT FORMS IN A GRADATION STRUCTURE

Lines as unit forms may be used in a gradation structure in two ways: (a) as a line or group of lines used as unit forms to fit each structrual subdivision, and (b) as lines of same or varying breadths to coincide with structural lines.

In (b), the space in between lines may be regarded as negative lines (cf. Chapter 2, section on positive and negative forms). Hence each set of *positive* and *negative* lines may conform to different orders. Illustration 40a shows *positive* lines in gradation whereas *negative* lines remain repetitive; Illustration 40b shows both *positive* and *negative* lines in gradation, but towards opposite directions.

Gradation patterns with lines as unit forms may be superimposed with a repetition structure, another gradation structure, or some other kind of regular structure, all of which may contain unit forms. The lines, when passing from one structural subdivision to the next, may be (a) reversed, (b) shifted, (c) slanted, (d) curved, or changed in any desired manner. (Ill. 41)

Graduated lines as a group can become a unit form to be housed in a repetition structure. The final effect still leads towards gradation.

EXERCISE

Design your own unit form (a simple one) and create a design of gradation by using a repetition structure or a gradation structure. (Ill. 42-46)

No limitation in colour applications for this exercise.

Frame: 8" square or any bigger rectangular shape.

Note the following elements of your unit forms:-

Shape: Repetition or gradation
Size: Repetition or gradation
Colour: Repetition or gradation
Texture: Not applicable
Direction: Repetition or gradation
Position: Repetition or gradation

Superimposition of structures may be used if necessary.

第五章 — 漸變

漸變

在上一章，我們曾將一組近似的基本形與一組漸變的基本形互相比較（圖26）。漸變是本章的範圍，這是指基本形或骨格逐漸的、規律性的、順序的變動。

近似造成均勻一片的圖案，但漸變產生高潮起伏。漸變導至視覺上的幻覺，是今日的歐普藝術構成的主要方法之一。

漸變是一種日常的視覺經驗。我們都知道近的東西顯得大，遠的東西顯得小。如果我們從側面的角度去觀看一列相同的東西，我們就立時見到大小的漸變。

基本形的漸變

基本形的所有視覺元素及一些關係元素都可漸變。圖36顯示同一的基本形每次只作一項元素的變動：(a) 形狀、(b) 大小、(c) 色彩、(d) 肌理、(e) 方向、及 (f) 位置。其他元素保持不變。

有時候，數項元素可以同時變動，或甚至全部元素均可同時變動。

在使用漸變時，我們通常都要決定那些元素須變動，幷從何情境經多少次變動而抵達另一情境。固然，起始的情境和結束的情境若相差不遠則變動層次較少，否則變動層次就多。

有時候，基本形的漸變（特指形狀方面，但亦可指其他方面）幷不直接地從一情境走向另一情境。換言之，情境A可直接地走向情境B，但亦可經情境C而走向情境B。當然，由A經C至B所需變動層次較由A至B爲多，而其歷程全不相同。（圖37）

位置漸變可以十分複雜的。在起始的骨格單位內顯現的基本形是一半圓形，但這不是說基本形就是此一半圓形或全個圓形。隨着顯現的變動層次，只要連接這起始的半圓形，可成任何形狀，基本形可以成串地，互相聯合或不聯合，逐漸在骨格單位內露現。基本形可比骨格單位大得多。位置的漸變可循直綫或曲綫移動，方向無限制。（圖38）

漸變骨格

若骨格單位的形狀或大小不是重複的，而逐漸的、規律性的、循序的變動，那就構成了漸變骨格。獲得漸變骨格的一最通常方法，就是將重複骨格的垂直或水平骨格綫位置移動。（圖39）

在漸變骨格裡，重複的或漸變的基本形均可適用。

在漸變骨格中以綫作爲基本形

在漸變骨格中，以綫作爲基本形有兩種方法：(a) 以單綫或綫組納入每一骨格單位內；(b) 以不同粗度的綫置于骨格綫上。

在 (b) 的情形，綫與綫之間的空間可當作“負”綫處理（參閱第二章有關正與負的形象一節）。因此，“正”與“負”的綫可有不同的秩序。圖40a 顯示“正”綫漸變，“負”綫重複；圖40b 顯示“正”與“負”綫朝相反方向漸變。

用綫條作爲基本形的漸變圖案可疊入一重複骨格，或一漸變骨格，或一規律性骨格之上（所有骨格均可藏有基本形）。綫條穿過骨格單位時可產生下列變動：(a) 由“正”綫轉作“負”綫，(b) 稍移位置，(c) 改變方向，(d) 彎曲，(e) 作任何適宜的變異。（圖41）

漸變的綫組可作爲基本形而納入重複骨格內。這樣，設計的效果也是漸變方面的。

練習

設計一漸變圖案，基本形任便。骨格可重複或漸變。（圖42-46）

色彩無限制。

框架：八吋正方形或較大的長方形。

注意基本形下列元素：

形狀：重複或漸變

大小：重複或漸變

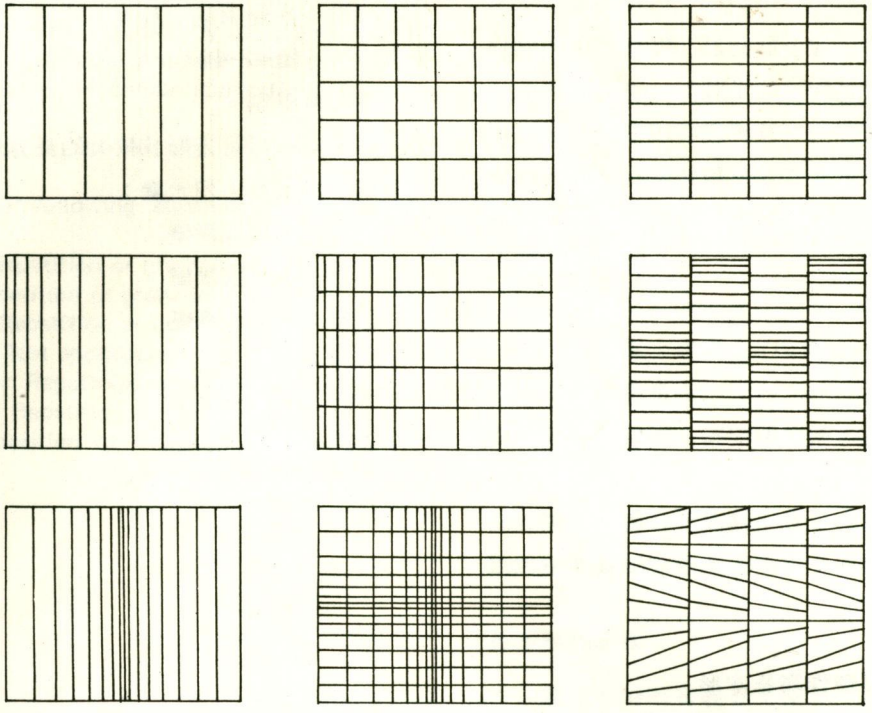
色彩：重複或漸變

肌理：不用

方向：重複或漸變

位置：重複或漸變

如有必要，骨格可重疊。



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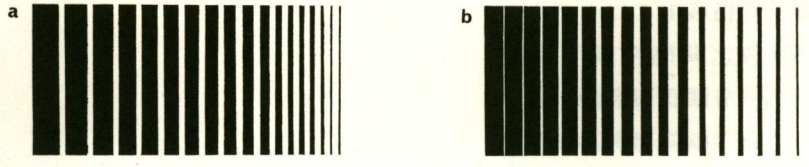

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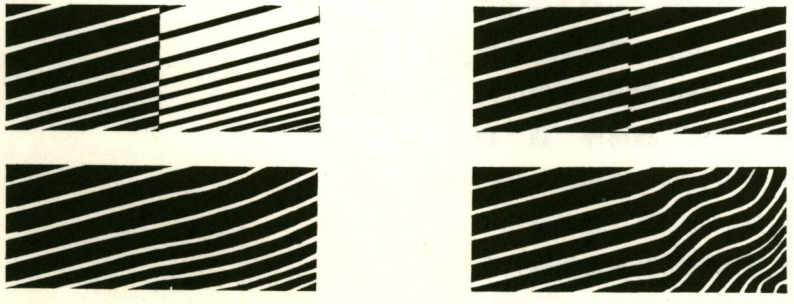

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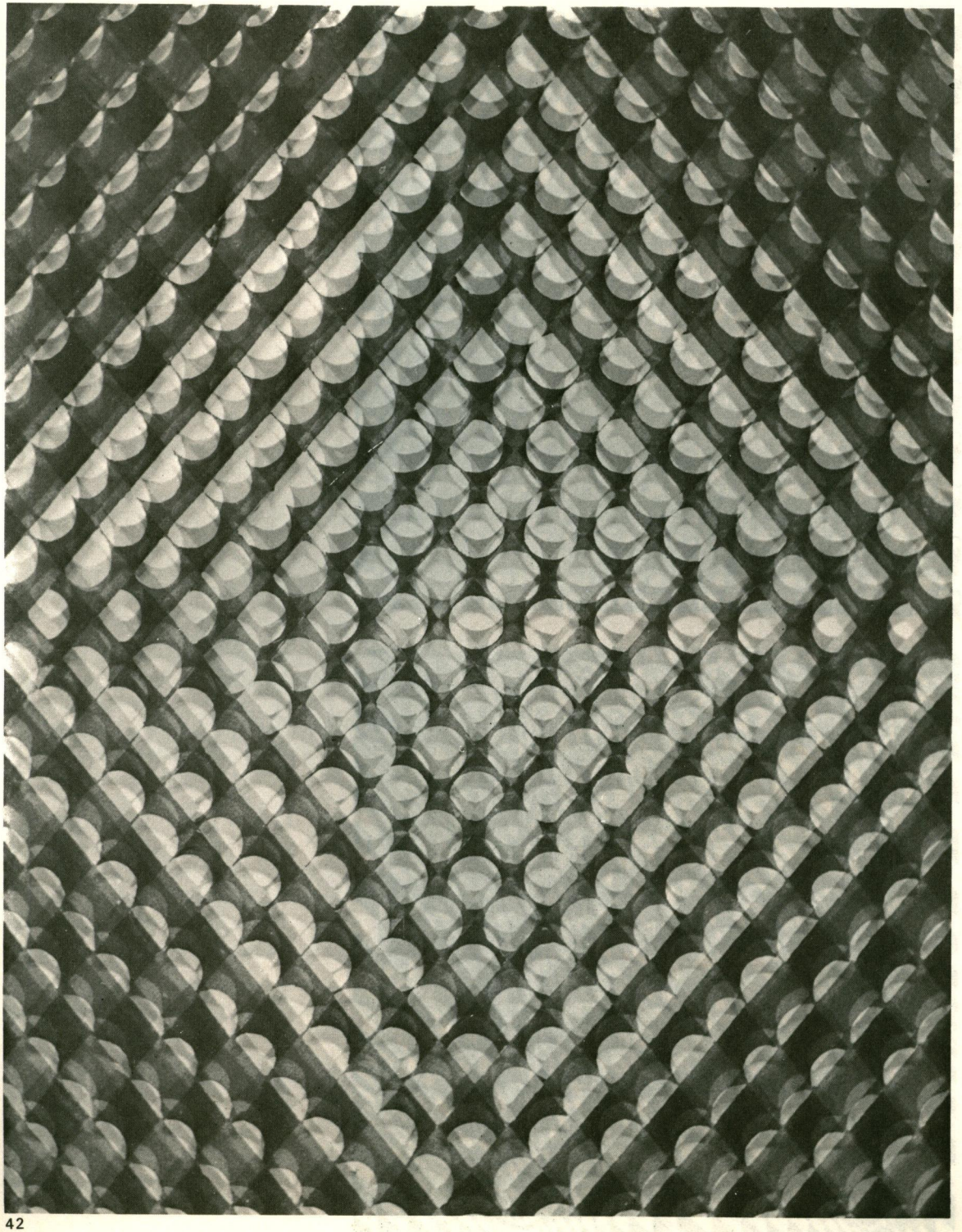

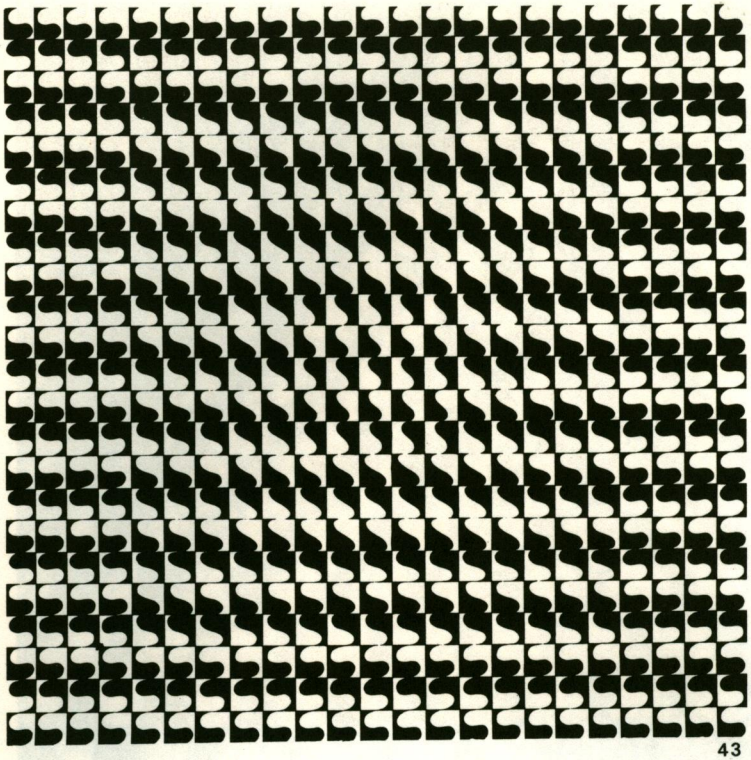

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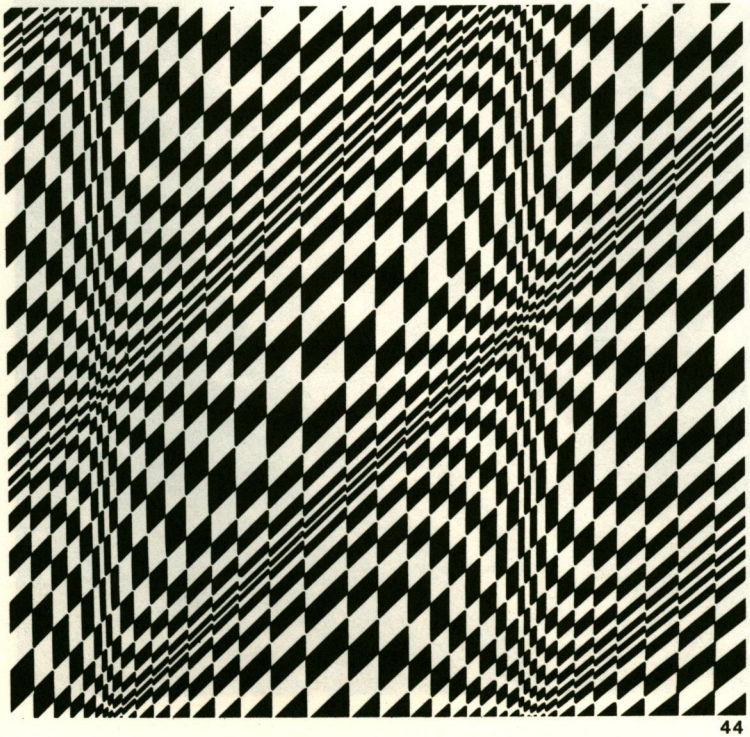

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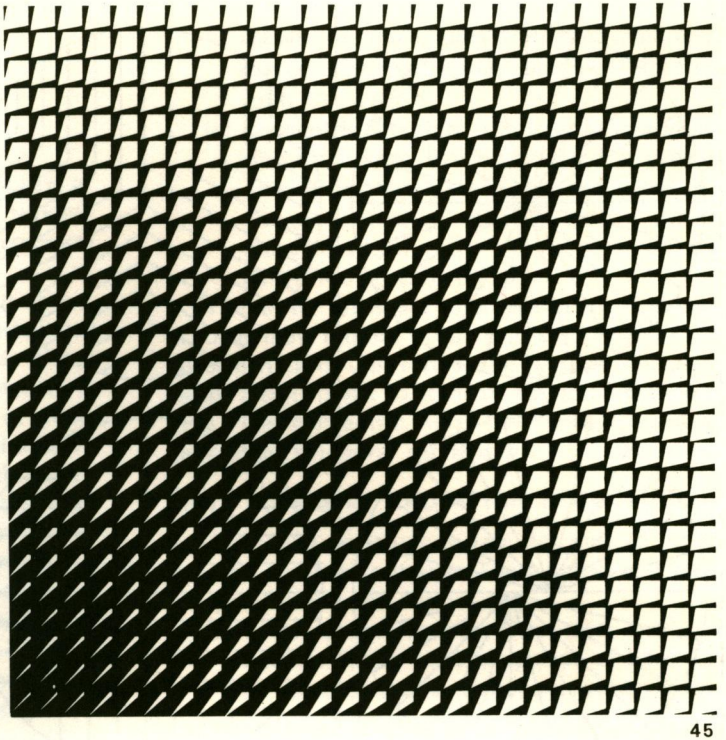

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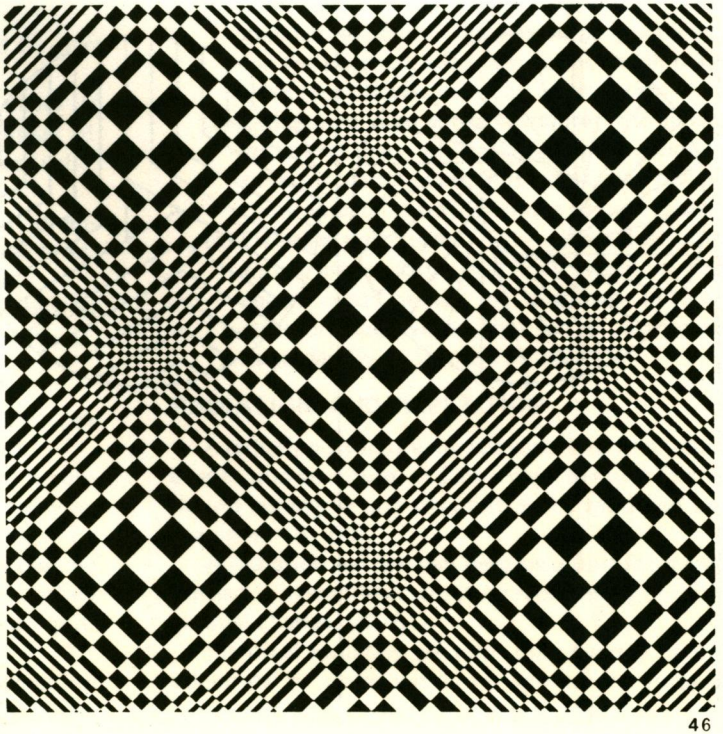

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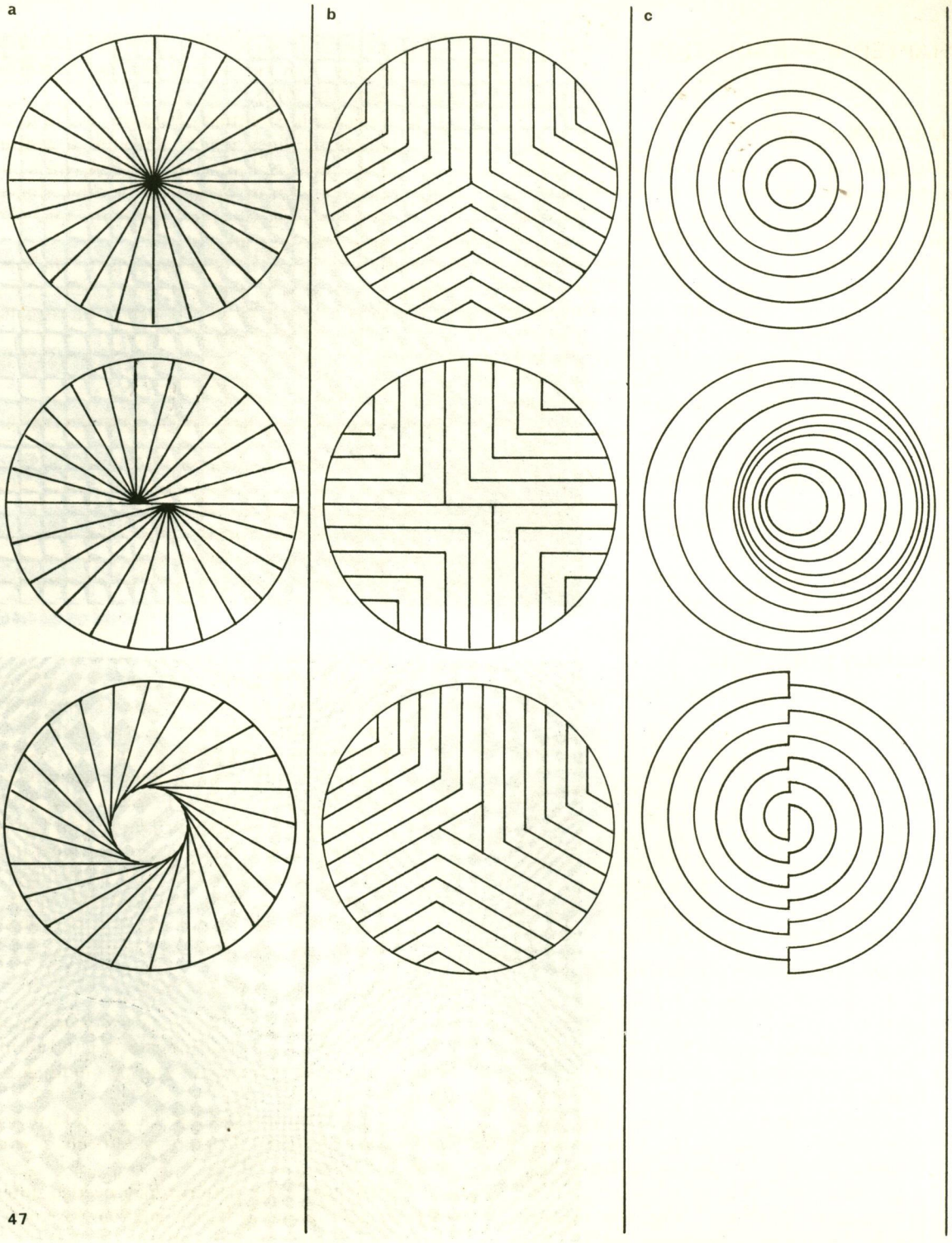
a
b
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CHAPTER 6 – RADIATION

RADIATION

Radiation may be described as a special case of repetition. Repeated forms or structural subdivisions which revolve regularly round a common centre create a pattern of radiation.

Radiation is a common phenonmenon in nature. The sun radiates light rays, so do most luminous objects. In design, those with a circular frame usually contain some sort of radiation structure.

Radiation usually has the optical effect of gradation. The repetition of forms or structural subdivisions around a common centre has to go through a gradation of directions. Therefore, radiation may also be called a special case of gradation. Sometimes the division between a gradation pattern and a radiation pattern is rather vague as in the case when the climax of a gradation pattern is located in the centre.

A radiation pattern usually arouses immediate attention. It is very useful when a powerful, eye-catching design is called for.

RADIATION STRUCTURE

All radiation structures are determined by two important factors:-

(a) **Centre** - In a radiation pattern, there is always a centre which marks the climax of the design. The centre may be shifted, split, or even multiplied.

(b) **Direction** - There are two kinds of directions, the direction of the structural lines, and the direction of the unit forms.

The interplay of these two factors establishes the complexity and variety of radiation structures.

TYPES OF RADIATION STRUCTURES

For the sake of convenience, three main types of radiation structures can be distinguished.

(a) **Centrifugal Structure** - This is the commonest type of radiation structures. In this type, structural lines radiate from the centre or its vicinity towards all directions. They may be rectilinear, curvilinear, or of any desired shape. The centre may be shifted or split. (Ill. 47a).

(b) **Centripetal Structure** - Here the structural lines are pulled towards the centre. These are sets of parallel lines or lines of graduated curves. The centre may also be shifted or split. (Ill. 47b)

(c) **Concentric Structure** - Here we have rings of structural lines which surround a centre. They form concentric or near-concentric circles, or a series of squares or other shapes one enclosing the other. The centre may also be shifted or split. (Ill. 47c)

The three types are interdependent. The centrifugal may require a concentric to help in the placement of its unit forms. The centripetal usually needs a centrifugal to guide its structural composition. The concentric must have a centrifugal to determine structural subdivisions.

UNIT FORMS IN RADIATION STRUCTURES

The radiation structure requires unit forms to become a radiation design. There are several ways of applying the unit forms:

(a) **Lines as unit forms** - Structural lines can become visible lines or groups of lines can be placed inside structural subdivisions. Strong optical effect would generally be achieved in this way. (Ill. 48, 49)

(b) **Unit forms in an inactive structure** - The inactive structural lines serve as guidelines for the positioning of unit forms which may be in repetition, similarity, or gradation.

(c) **Unit forms in an active structure** - The active structural lines, while making space subdivisions for placement of unit forms, may divide the ground or cut off portions of unit forms.

(d) **Oversize unit forms** - When individual unit forms are so large that they cover up the centre and cannot be confined in any structural subdivision, they can be positioned as guided by an inactive structure.

RADIATION AND REPETITION

A radiation structure may be superimposed upon a repetition structure. In such a case, the unit forms should belong to one structure to be modified by the other. (Ill. 50)

A radiation pattern can become a unit form and housed in a repetition structure repetitively or with gradual change. (Ill. 51)

Identical radiation patterns may overlap, interpenetrate or unite with one another to form a larger and more complex pattern. (Ill. 52)

RADIATION AND GRADATION

In the same way as described above, a radiation structure may be superimposed upon a gradation structure, and a radiation pattern can become a unit form to be housed in a gradation structure.

Radiation structures themselves, instead of having repetitive intervals, may have graduated intervals. (Ill. 53)

IRREGULAR AND DISTORTED RADIATION STRUCTURES

Any irregular departure from regular radiation structures may be made. The result is a free and informal pattern. (Ill. 54)

A regular radiation pattern can also be partially or completely distorted, by photographic or other means, to achieve astonishing results. (Ill. 55)

EXERCISE

Design a radiation pattern (Ill. 56-58). Structure and unit forms are to be determined. You may use up to three different colours which may not be tinted or mixed.

Frame: Circle of 8" diameter, or any other geometric shape of similar size.

Superimposition of structures may be used if disired.

Note the following elements of your unit forms:-

Shape:	Repetition or gradation
Size:	Repetition or gradation
Colour:	Repetition or gradation
Texture:	Not applicable
Position:	Repetition or gradation
Direction:	Repetition or gradation

第六章 — 發射

發射

發射可以說是一種特殊的重複。重複的形或骨格單位環繞一共同中心構成了發射圖案。

發射是常見的自然現象。太陽發射出光芒，所有發光體盡皆如此。在設計方面，任何圓形框架的圖案都可能蘊藏某種發射的結構。

發射常具有漸變的特殊視覺效果。當重複的形或骨格單位環繞一個中心時，它們是根據漸變方向排列的。因此，發射亦可說是一種特殊的漸變。有時候，若漸變圖案的高潮位于圖案的中央，則此漸變圖案亦可作爲發射圖案。

一般而言，發射圖案容易引人注目。若我們需要一個强有力的、特別觸目的圖案，則發射圖案就適宜極了。

發射骨格

所有發射骨格都由下列兩項因素決定：

(a) **中心**——中心是發射圖案焦點所在。此中心可以遷移、分裂、或多元化。

(b) **方向**——有兩種方向，一是骨格綫的方向，一是基本形的方向。

此兩因素之變動與不同組合，產生了各式各樣的發射圖案。

發射骨格的種類

爲方便起見，我們可以將發射骨格分爲三大類：

(a) **離心式**——此式在發射骨格中最普遍。所有骨格綫均自中心或附近出發散向各方。骨格綫或直或曲或成特殊形狀。中心可遷移或分裂。

（圖47a）

(b) **向心式**——在此式裡，骨格綫自各方向中心逼近。骨格綫作平行綫層或漸變弧綫層。中心可遷移或分裂。（圖47b）

(c) **同心式**——在此式裡，骨格綫層層環繞中心。骨格綫多屬圓形，同心或大致同心，但亦可屬方形或其他形狀。中心可遷移或分裂。（圖47c）

上述三式經常互用。離心式往往需要同心式協助各基本形之排列。向心式常以離心式帶領骨格綫之分布。同心式亦需離心式分出骨格單位。

發射骨格中的基本形

基本形配入發射骨格中而成爲發射圖案。基本形的性質可分下列四種：

(a) **綫作爲基本形**——骨格綫成爲可見的綫，或一組組的綫分別納入各骨格單位內面。以綫作爲基本形常可以獲致强烈的視覺效果。（圖48，49）

(b) **非作用性骨格中的基本形**——非作用性的骨格綫引導各基本形依序排列。基本形可以重複、近似或漸變。

(c) **作用性骨格中的基本形**——作用性的骨格綫，除界定各基本形位置外，幷將背景分割或將越界的基本形切除。

(d) **特大的基本形**——若基本形面積過大，超過任何骨格單位所能容納，甚或蓋入發射中心，則此類基本形可由非作用性的骨格引導其位置及方向。

發射與重複

重複骨格可疊入發射骨格。在此情形，基本形應先納入其中一種骨格而由另一種骨格將之加以變化。（圖50）

發射圖案亦可成爲一種基本形而重複或漸變地納入一重複骨格內。（圖51）

相同之發射圖案可彼此覆蓋、透疊或聯結而成爲較大及較繁複之圖案。（圖52）

發射與漸變

與上述同理，漸變骨格可疊入發射骨格，發射圖案亦可成爲基本形而納入漸變骨格內。

發射骨格的單位，除一般重複外，亦可產生漸變（圖53）

不規律及變形的發射

任何規律性的發射骨格均可衍變爲不規律。其結果爲一自由性的圖案。（圖54）

一個規律性的發射圖案可以部份地或全體地用攝影或其他方法將之變形。（圖55）

練習

設計一發射圖案。（圖56-58）骨格及基本形可自由選定。你可以用不超過三種以上的不同色彩不得轉移或相混。

框架：直徑八吋圓形或面積相若的其他幾何形。

注意基本形下列各元素之決定：

形狀：重複或漸變

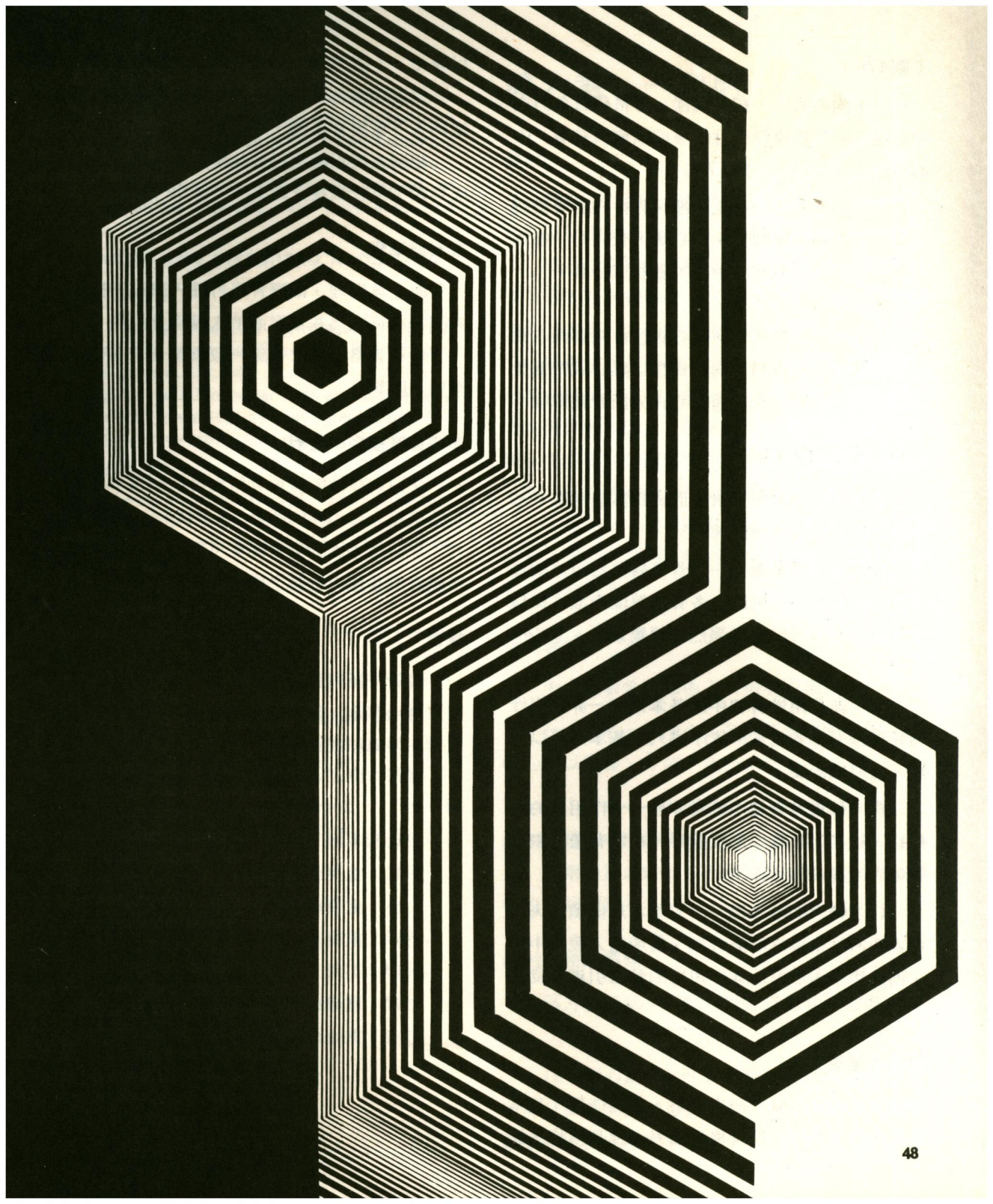
大小：重複或漸變

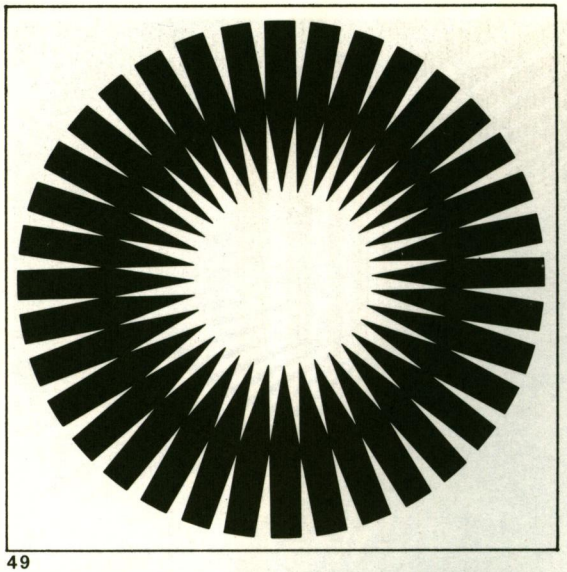
色彩：重複或漸變

肌理：不用

位置：重複或漸變

方向：重複或漸變





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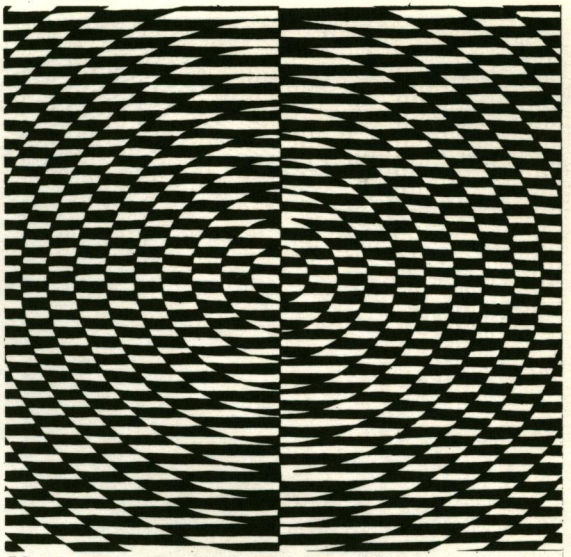

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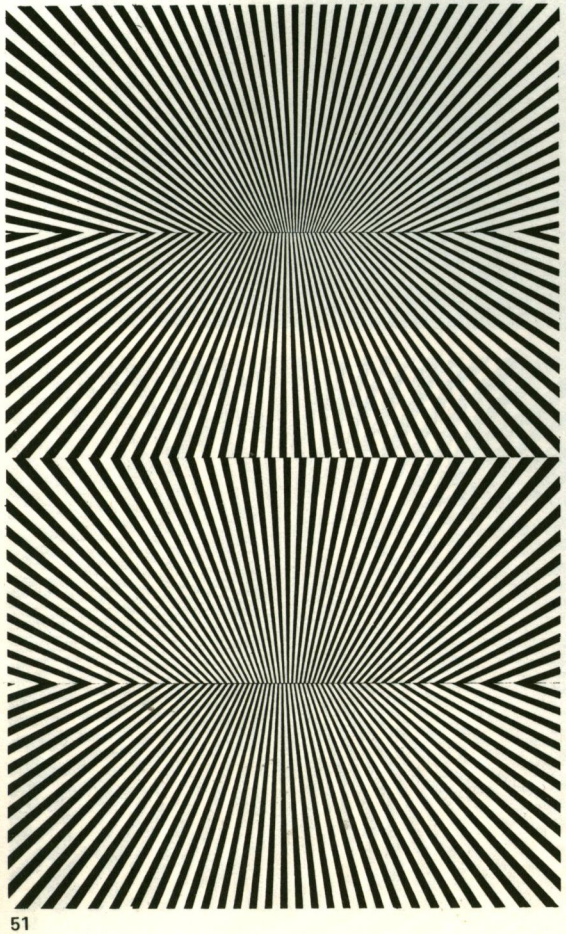

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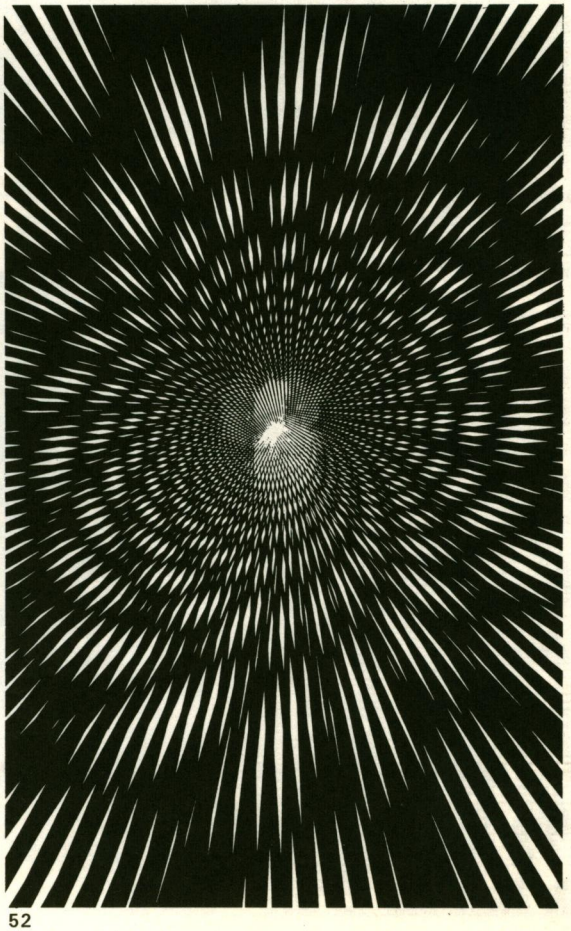

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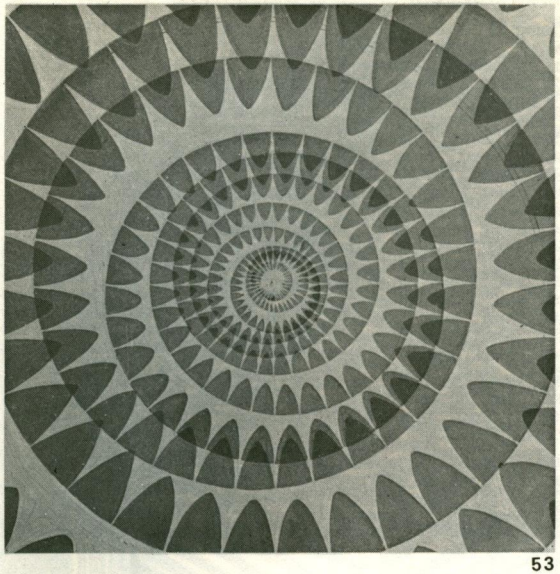

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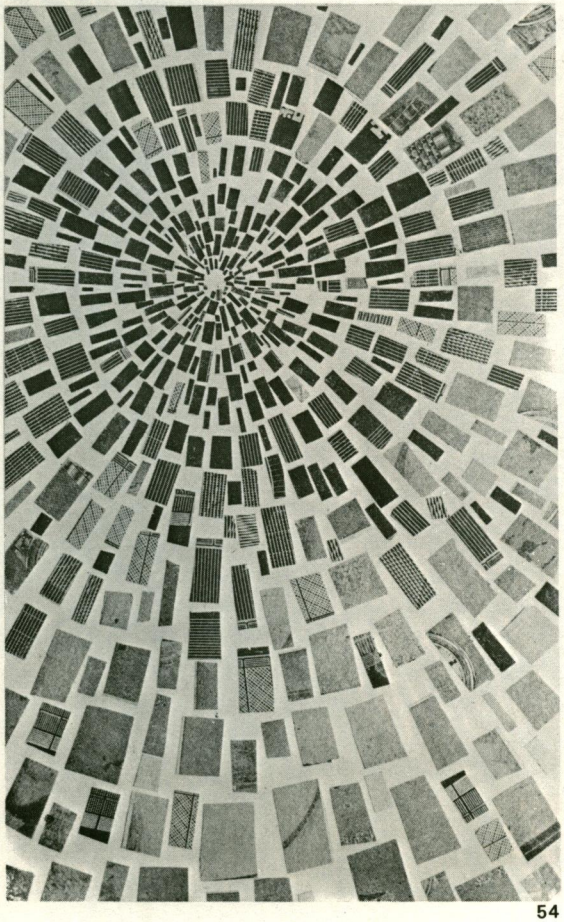

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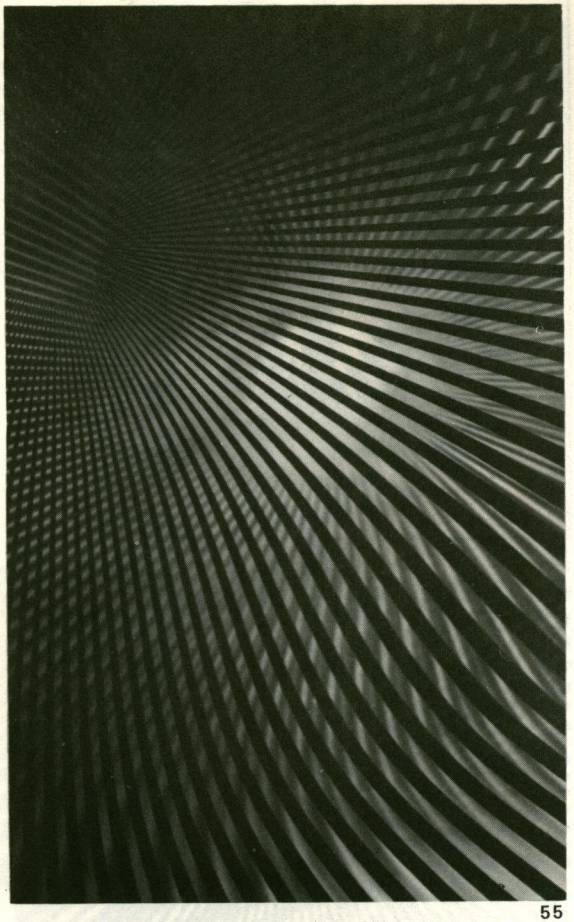

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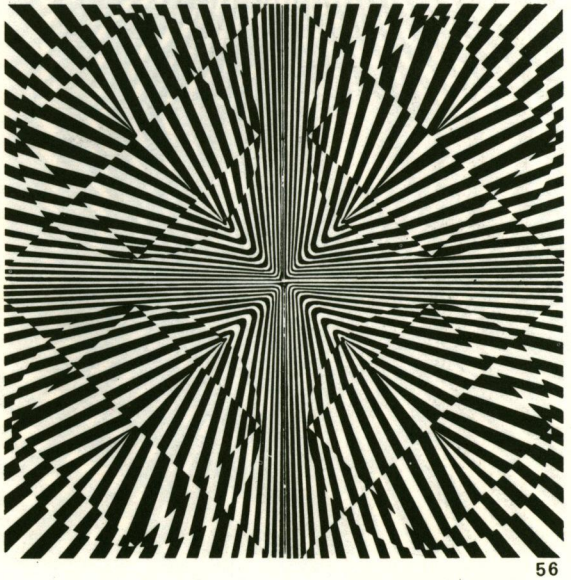

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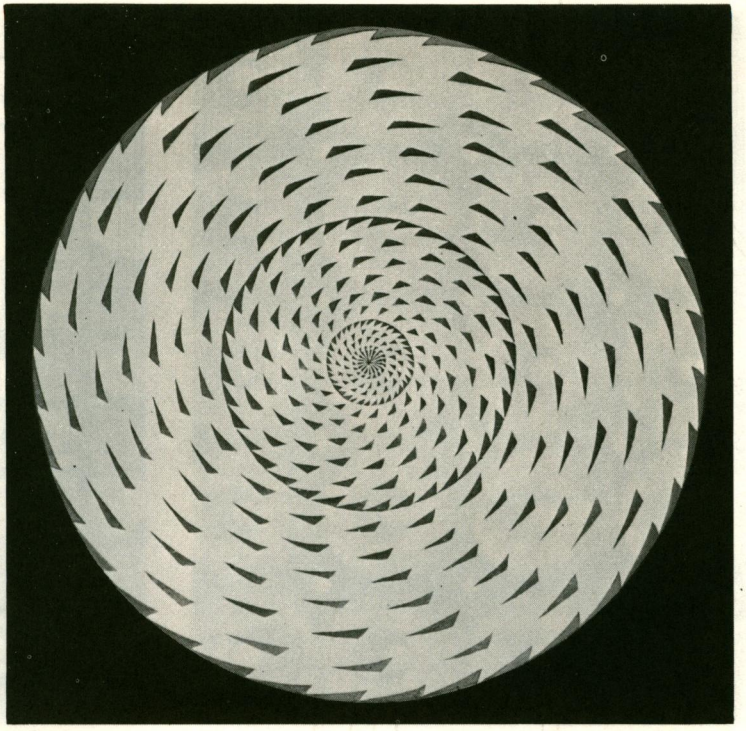

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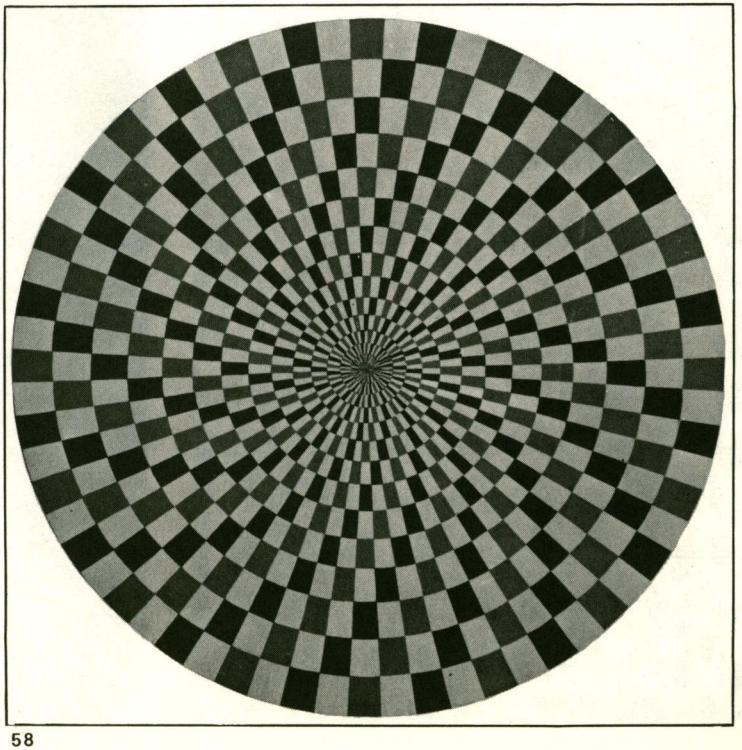

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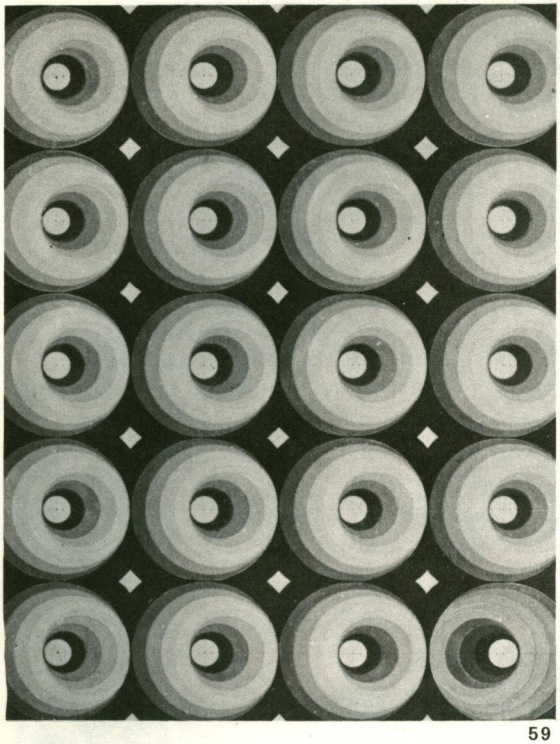

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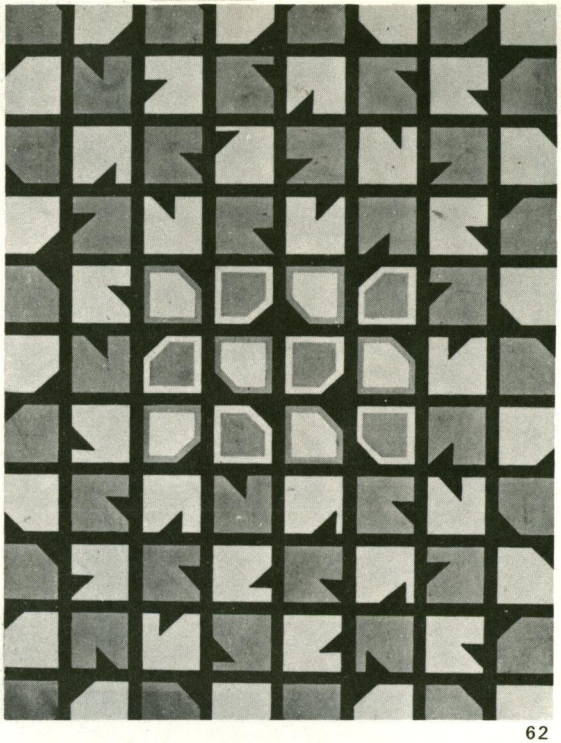

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CHAPTER 7 – ANOMALY

ANOMALY

Anomaly is a break-through in regularity. This is necessary when a design requires variation to break its general monotony. The anomalous elements, used sparingly, usually stand out.

In nature, red flowers among green foliage, the moon among stars and planets at night, plant life in a vast desert, are all examples of anomaly. Graphic designers often use anomaly to introduce the verbal message.

Anomaly is comparative. The deviation from general regularity may be great or small as determined by the designer.

Repetition, similarity, gradation, and radiation are various types of regularity in which anomaly can be introduced.

ANOMALY OF UNIT FORMS

Anomalous unit forms do not have to deviate from other unit forms in all aspects. In applying the principle of anomaly, the following elements have to be considered:

Shape: Conformity or anomaly
Size: Conformity or anomaly
Colour: Conformity or anomaly
Texture: Conformity or anomaly
Direction: Conformity or anomaly
Position: Conformity or anomaly

Conformity means that regularity is observed. A unit form can stand out sharply among others with only one of the above elements in anomaly, the other elements remaining in conformity. (Ill. 59). Certainly more elements may be in anomaly if necessary.

Anomaly does not mean contrast which will be discussed in our next chapter. Contrast is not a slight diviation. Anomaly may sometimes be achieved with just slight deviation. The designer has to decide the degree of anomaly necessary. If similarity is the general regularity in a design, a greater distinction of anomalous elements may be required.

ANOMALY IN STRUCTURE

Anomaly may exist in structure. This means that a regular structure is partially distorted or changed into a different kind of structure. (Ill. 60, 61) The distorted or changed portion of the structure would certainly affect the unit forms that are contained in it.

RELATIONSHIP AMONG ANOMALOUS UNIT FORMS

If there are more than one anomalous unit form present in a design, such unit forms may be completely unrelated, or related to one another in one of the following ways:

(a) Repetition
(b) Similarity
(c) Gradation

The number of anomalous unit forms in a design should be kept to a minimum because other unit forms still dominate the design and maintain a general feeling of regularity. Repetitive anomalous unit forms naturally become a new set of unit forms in the design.

EXERCISE

Make a design with repetitive unit forms in a repetition structure. The design should contain one or more anomalous unit forms for arousing attention or for accentuation. Shape and size of conforming unit forms and anomalous elements are to be determined. (Ill. 62-64)

Frame: 8" square or any bigger rectangular size.

Colour: ground plus three colours. The two colours may not be tinted or mixed.

Texture: Not applicable.

第七章 — 特異

特異

特異是規律的突破。倘我們要打破設計單調的規律，我們可以採用特異的方法。特異的元素，若不濫用，常能引人注意。

在大自然裡，綠葉叢中的花朵，夜空星群間的明月，荒漠中的植物，都是特異的例子。圖象設計家常用特異的方法傳達文字的訊息。

特異是比較性的。雜于規律中間，特異的程度可大可小，由設計家決定。

所謂規律，就是指重複、近似、漸變、發射等。特異可從這些規律中產生出來。

基本形的特異

特異的基本形不一定在所有元素方面部與規律性的基本形不同。在使用特異的時候，我們得考慮下列各項元素：

形狀：合規律或特異

大小：合規律或特異

色彩：合規律或特異

肌理：合規律或特異

方向：合規律或特異

位置：合規律或特異

特異的基本形只需有一項元素不合大體的規律，就會從設計中突出。固然特異的基本形可有多項元素變異。（圖59）

特異不同于對比，對比將于下章論及。自規律產生些微的變異，也可以獲致特異，但不能獲致對比。特異的程度任由設計家取決的。若近似是大體的規律，則特異應相當明顯方能突出。

骨格方面的特異

骨格可以產生特異的部份。特異的部份可由原有的規律變化出來，亦可以另外一種的規律代替原有的規律。（圖60，61）特異部份的骨格當然影響其中的基本形。

特異基本形之間的關係

設計裡藏有超過一個以上的特異基本形時，各特異基本形彼此之間可能毫無關係，或發生下列列任何一種的關係：

(a) 重複

(b) 近似

(c) 漸變

特異基本形的數目不能太多，否則其他基本形所遵守的規律受到掩蓋而不彰顯。重複的特異基本形則成爲新的一組基本形。

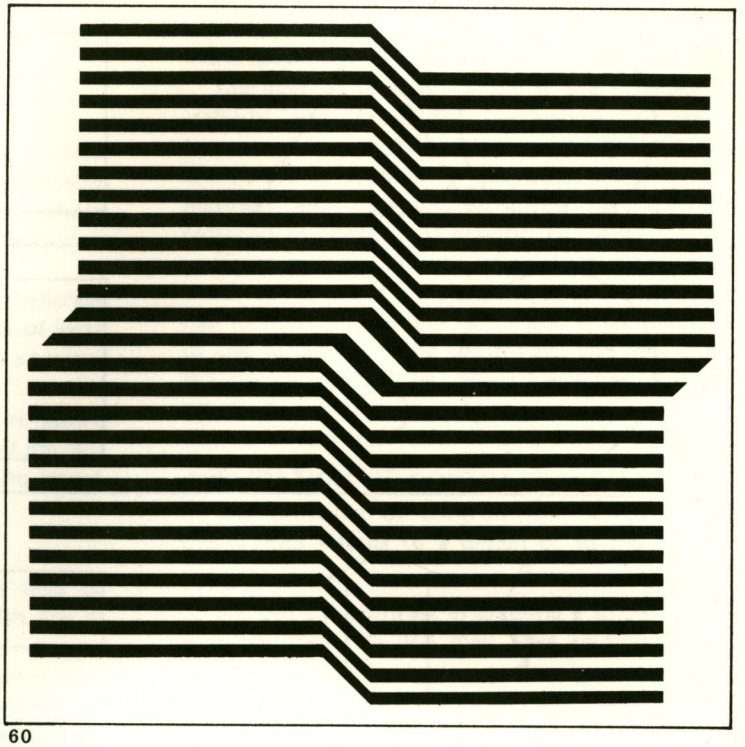
練習

以重複基本形及重複骨格構成一設計。設計當中應藏有一個或多個特異的基本形以突破規律。規律的及特異的基本形之形狀及大小任由決定。（圖62-64）

框架：八吋正方形或較大之長方形。

色彩：底色外只准用兩色。兩色不得變淡或相混。

肌理：不用。



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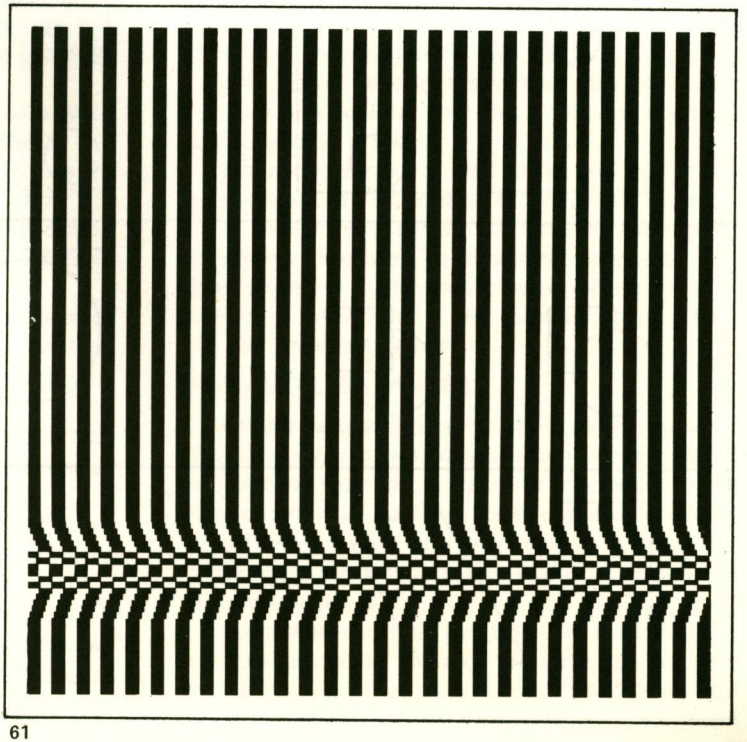

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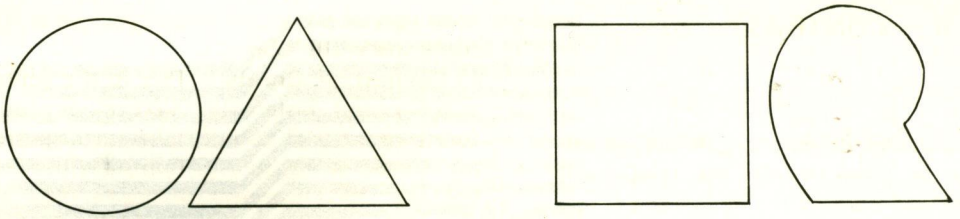

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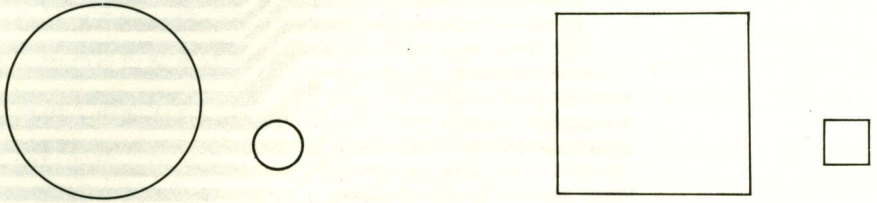

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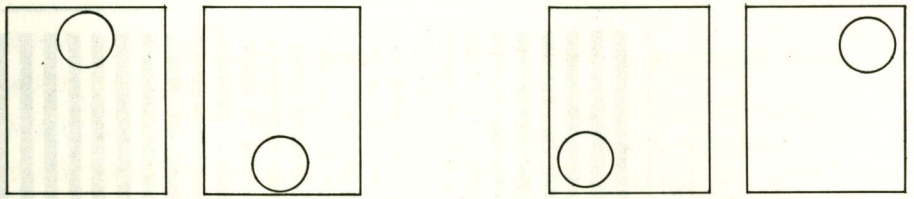

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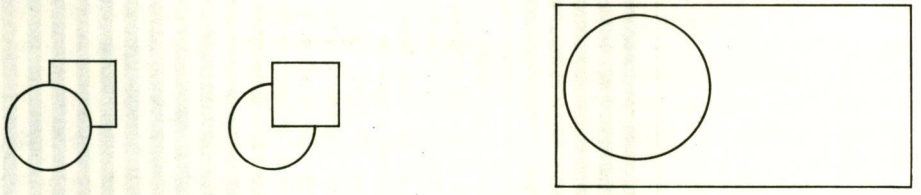

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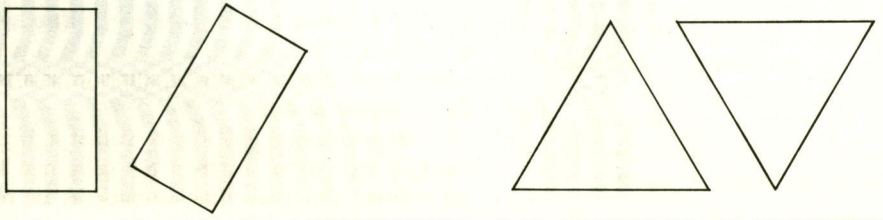

CHAPTER 8 – CONTRAST

CONTRAST

Anomaly denotes irregularity among general regularity, or in other words, the relationship between a few oddities and the design as a whole. Contrast refers to the relationship of individual forms themselves.

Contrast creates visual tension and challenges harmony and unity. It may lead to sense of instability and movement, but still maintains a kind of balance in the design.

We experience all sorts of contrasts in nature, such as the contrast between the earth and the sky, mountain and water, tree trunks and the leaves, etc.

TYPES OF CONTRAST

Various visual and relative elements may be contrasted. Forms may be contrasted with one or more of these elements.

Contrast of Shape - Shapes may be contrasted in many ways, such as the simple and the complex, the angular and the round, the rectilinear and the curvilinear, the geometric and the irregular. Within a complex shape, such as letter forms, we can sometimes analyze them into component contrasting shapes. (Ill. 65a)

Contrast of Size - This is the obvious contrast of bigness and smallness of the forms. (Ill. 65b)

Contrast of Colour - Colour contrasts may be achieved by having the light and the dark, the brilliant and the dull, or opposite hues confronting each other. However, theories of colour contrasts are beyond the scope of this book.

Contrast of Texture - Discussion of texture belongs to a later chapter, but contrast of texture may denote the contrast between the smoothness and roughness of a surface.

Contrast of Direction - Opposite directions or directions which meet each other at right angles may be regarded as contrasting. (Ill. 65c)

Contrast of Position - Contrast of position requires the reference of the frame or boundary lines of structural subdivisions. (Ill. 65d)

Contrast of Space - Contrast of space is created when we have advancing forms as against receding forms. Another type of contrast of space is the mass against a void, or an occupied space against a blank space. (Ill. 65e)

Contrast of Gravity - This is the contrast of stability and instability. Vertical or horizontal forms are forms of stability whereas diagonal forms are forms of instability. Contrasts between the lightness and heaviness of forms may also be regarded as contrast of gravity. (Ill. 65f)

There are also degrees of contrast. Some contrasts are slight and some are extreme. The designer has to determine which forms and what elements of the forms are to be contrasted, and how great the contrast should be. When a number of forms are to be contrasted in the same way, different degrees of contrast exist among them.

APPLICATION OF CONTRAST

The principle of contrast can be applied to the minute details of a design or to the overall design.

We can use contrast in creating a single line or a single form. A line may have rectilinear and curvilinear, angular and round, or geometric and irregular components, while size (length and breadth) and direction may also be contrasted. (Ill. 66). A form may be analysed into components with contrasts in shape, size, colour, texture, direction and/or gravity. (Ill. 67)

Unit forms among themselves may have contrast in size, colour, texture, direction, position, space, and/or gravity.

When two ranges of unit forms are used, these two ranges may be contrasted in various ways.

A design may consist of none of the regular structures discussed in foregoing chapters. It is then governed by the interplay of various types of contrasts, arriving at a kind of equilibrium which we call *informal balance*.

INFORMAL BALANCES

All the regular structures are in *formal balance.* This is like having two masses of same weight placed equidistant from the fulcrum of a balance. In the case of *informal balance*, the two masses would be of different weight and be placed at unequal distance from the fulcrum. Equilibrium is attained in both cases. (Ill. 68)

Formal balance may also be called *static balance* Designs of *formal balance* are governed by rigid structures, and they may sometimes be read as a

portion of an infinite, continuous pattern.

Informal balance may also be called *dynamic balance*. In most cases, a frame is highly important to define the space within which the various elements play their part. Different types of contrasts of varying degrees are used to create tension which pulls the elements together to a well integrated whole.

No specific rules can be listed for designs of *informal balance*. The designer's sensitivity is to determine everything.

DOMINANCE

In applying contrast, we often have to see to the problem of dominance. Dominance means that certain aspects dominate other aspects of a design. Dominance helps to eliminate unnecessary competition among elements, to avoid disorganisation, and to attain unity and equilibrium. Dominance is particularly essential in *informal balance*.

Dominance of Shape - This means certain types of shape should be predominant. This also refers to certain individual shapes, through contrast, rule over others.

Dominance of Size - Certain forms depend on their largeness of size to dominate other smaller forms.

Dominance of Colour - Certain colours or colour families have to occupy most areas in a design, whereas certain colours stand out to call for immediate attention.

Dominance of Texture - This means that certain texture occupies most areas, or dominates other textures.

Dominance of Direction - This means certain directions appear most frequently, or appear with a greater distinction.

Generally speaking, we can have dominance by majority (which occupies greater area) and dominance by anomaly (which stands out by arousing immediate attention). Both types do not cancel out one another, but often work together towards an integrated design.

EXERCISE

You have two types of unit forms which are contrasting in shape. Both types can be varied in shape while maintaining similarity. There is no limit in the range of sizes.

Frame: 8" square or any larger rectangular size.

Colour: Ground plus three colours. The three colours may not be tinted or mixed.

Texture: Not applicable.

The design should be in *informal balance* with contrast of space or gravity. (Ill. 69-74)

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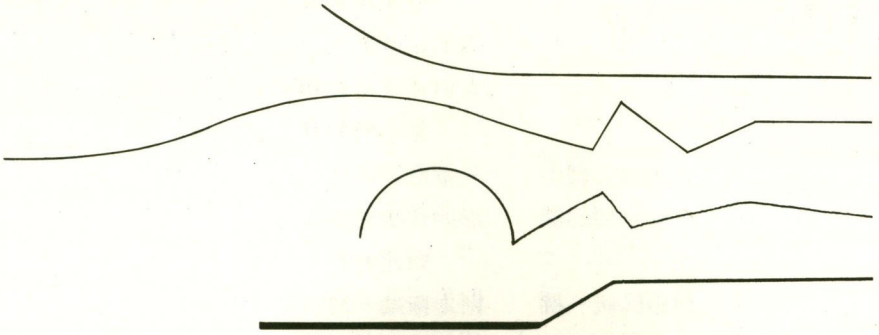

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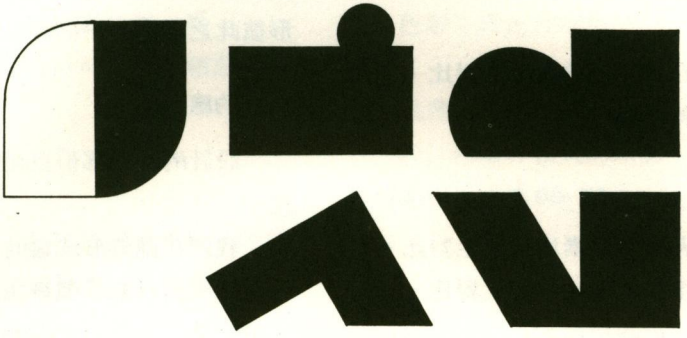

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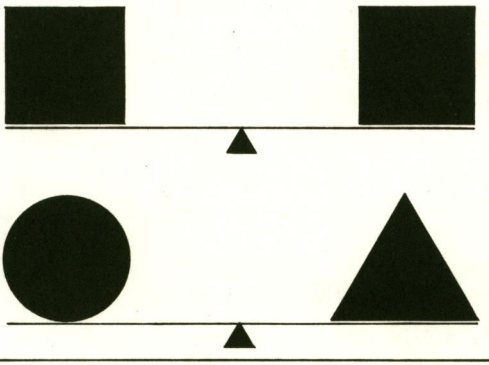

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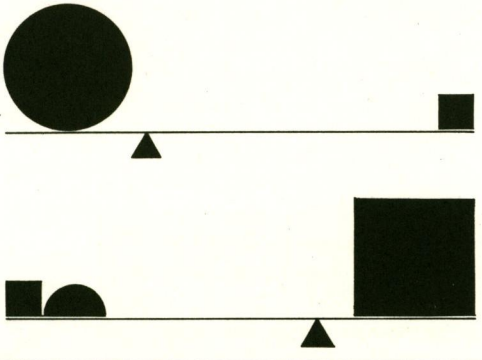


第八章 — 對比

對比

特異是大體的規律中少數的變異，無大體的規律則無特異。對比則存在于個別形象之間的關係。

對比形成視覺上的張力，幷向和諧與統一挑戰。對比可以引向不定感和動態，但仍保持設計的均衡。

我們可以在大自然間經驗種種的對比，如天與地，山與水，樹幹與枝葉等。

對比的種類

各項視覺元素與關係元素均可發生對比。形與形之間可以從一項或多項元素發生對比。

形狀的對比——形狀對比有多種方式，如簡單與繁複，稜角與圓滑，直綫形與弧綫形，幾何形與不規則形等。繁複的形如字母之類，可以分解爲較簡的互相聯結的形，這些形彼此之間亦可發生對比。（圖65a）

大小的對比——形之大小，其對比極爲明顯。（圖65b）

色彩的對比——色彩之明與暗、鮮與晦、及相對色組，均屬對比。不過，色彩理論超越本書範圍，不擬多敍。

肌理的對比——有關肌理方面，將于本書最後一章論及。肌理的對比可指形的表面平滑與粗糙。

方向的對比——相反的方向或互成直角的方向都有對比的感覺。（圖65c）

位置的對比——位置的對比必須憑藉框架或骨格綫以顯出上與下或左與右。（圖69d）

空間的對比——在平面上形之前與後的感覺做成空間的對比。空間之另一種對比是虛與實，有與無。（圖65e）

重心的對比——這是指穩定與不穩定的對比。垂直與水平的形都有穩定感，傾斜的形則否。形的輕重感亦屬重心的對比。（圖65f）

對比有輕重程度，一些對比可以輕微，一些則走極端。設計家決斷何項元素應有相比，幷衡定對比的輕重。若頗多的形同方式地對比，則各形彼此之間產生不同程度的對比。

對比的應用

設計的細微部份以至設計的全體均可採用對比。

我們在創造形或綫時，可採用對比的方法。一條綫可由直綫及弧綫相聯而成，或包括稜角與圓滑的部份，幾何性與不規則的部份。綫的粗度及長度亦可變動而產生對比。（圖66）一個形象可分解爲較小的形，它們彼此之間可以產生形狀、大小、色彩、肌理、方向、與或重心的對比。（圖67）

基本形彼此間可以產生大小、色彩、肌理、方向、空間、與或重心的對比。

若我們採用兩組不同的基本形，此兩組之間可產生各種對比。

一個設計可以完全不靠任何規律性骨格構成。在此情形，設計可以建立在各項對比關係之上。這類設計也應保持均衡的，不過那屬于“非正式的均衡”。

非正式的均衡

所有規律性的骨格都屬“正式的均衡”。這就等于把質量相等的東西等距離地放在天平的兩端。“非正式的均衡”的情形，那就等于把質量

不一樣的東西放在天平的兩端，較重的放得較近天平的承軸，較輕的放得較遠。天平是始終保持均衡的。（圖68）

“正式的均衡”又稱“靜態的均衡”。“正式均衡”的設計受到嚴謹規律所管轄，并可視爲從一無限的、延續性的設計截取出來的一部份。

“非正式的均衡”又稱“動態的均衡”。在大部份情形設計的框架頗爲重要，用以界定空間的範圍。形與形之間及各元素方面，均以不同程度的對比來造成張力，使設計團結爲一體。

“非正式的均衡”無定則可言，全賴設計家個人的敏感決定。

統領

在使用對比的時候，我們須注意到統領的問題。統領是指某些因素統領其他。統領可以協助減少設計中各種因素不必要的競爭，避免渙散，達至統一與均衡。在“非正式的均衡”中，統領尤爲必需。

形狀的統領——這就是說某些形狀出現次數最頻。在另一方面，某些形狀，由于對比，顯得特別重要，而統領其餘。

大小的統領——這就是說某些形的面積特大而有統領作用。

色彩的統領——某些色彩或某系列的色彩，佔面積最廣而成設計的主色，那就有統領感。在另一方面，某些色彩，因對比而顯得特强，亦可成爲統領。

肌理的統領——這就是說某種肌理爲全設計的主要肌理，佔面積最大，或最受注意。

方向的統領——這就是說某種方向最爲常見，或最爲明顯。

大致上，統領可分兩種，一種是以多數凌駕少數而有統領作用，另一種則以特異而引人注目，并有統領感。此兩種不互相抵消，但常相輔而行，引向結合爲一的設計。

練習

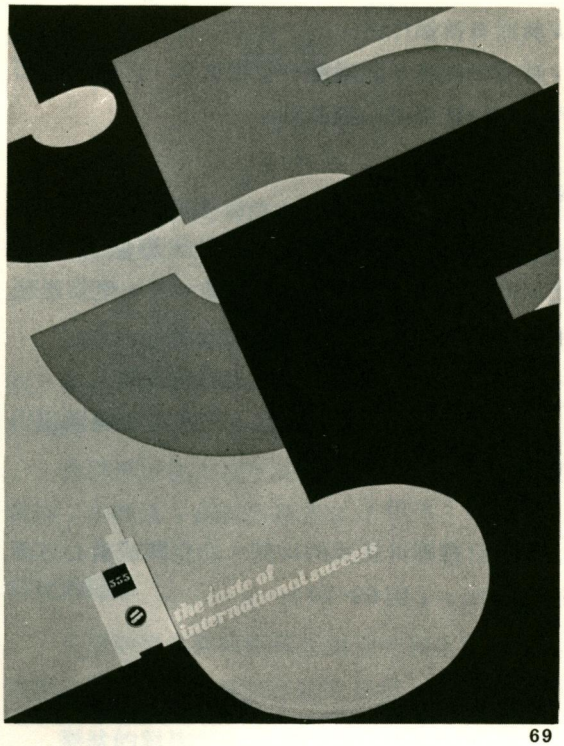
你可以採用兩種基本形，彼此形狀互成對比。兩種基本形均可作近似變動。大小變動無限制。

框架：八吋正方形或較大的長方形。

色彩：底色外准用三色。三色不能變淡或相混。

肌理：不用。

設計應屬非正式的均衡，在空間或重心方面使用對比。（圖69-74）



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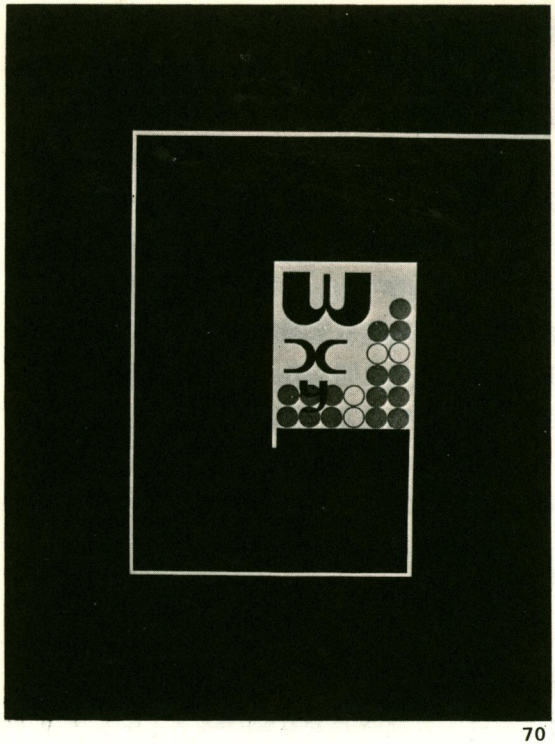

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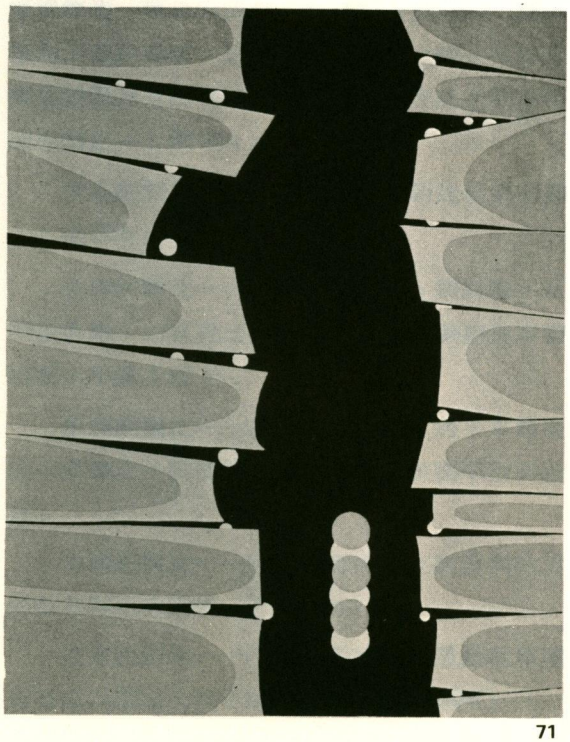

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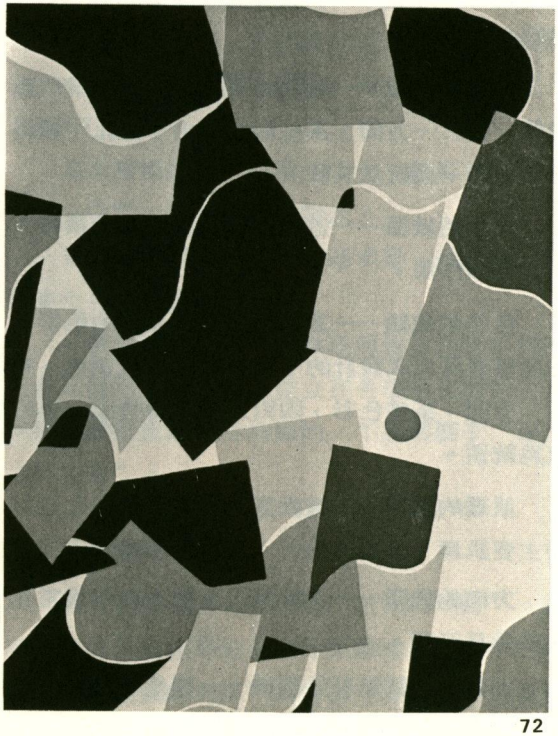

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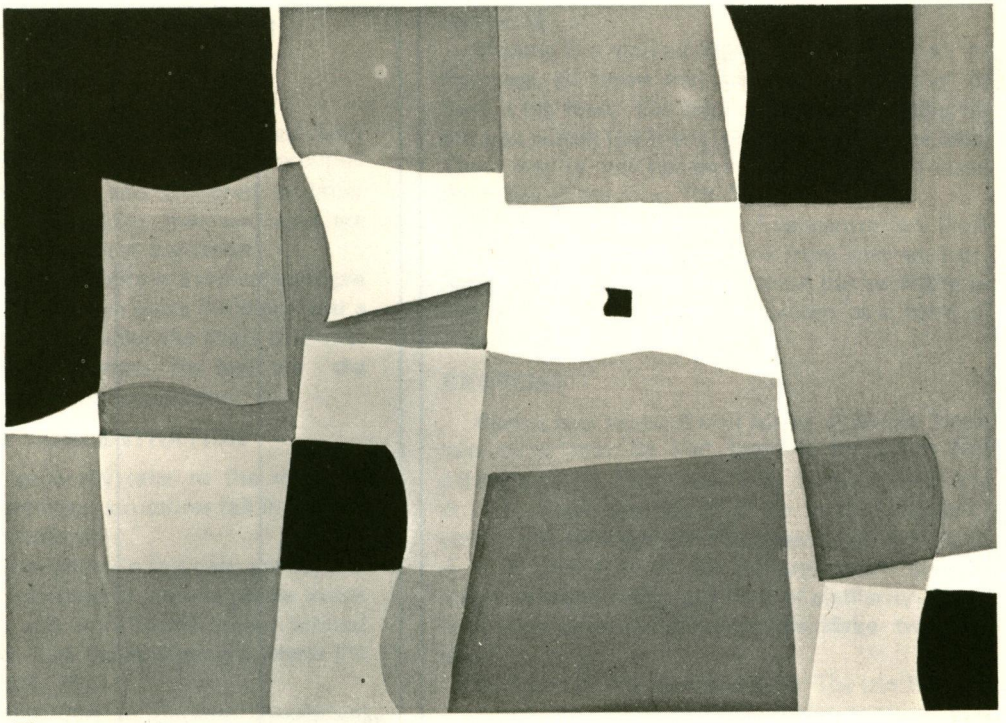

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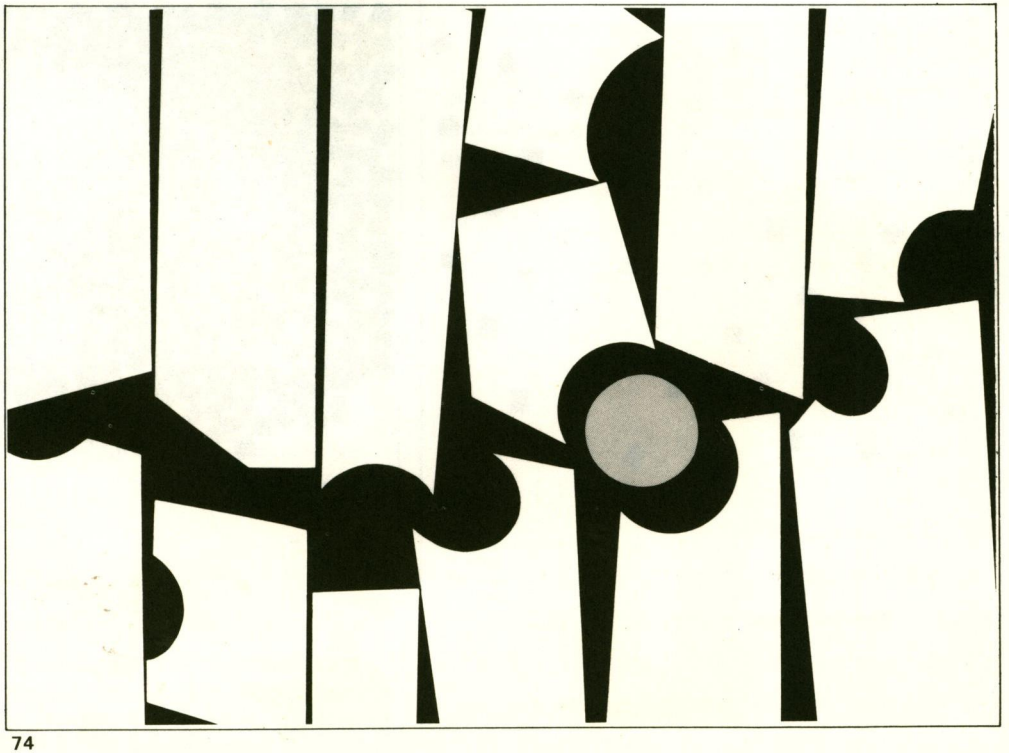

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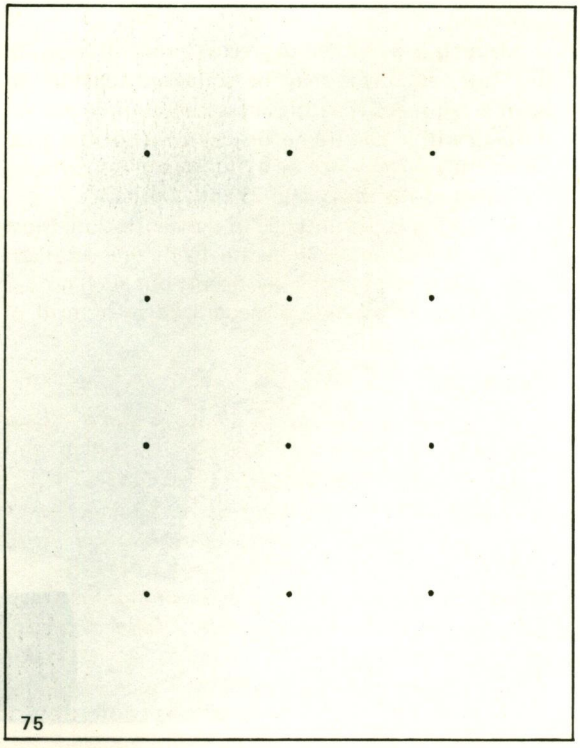

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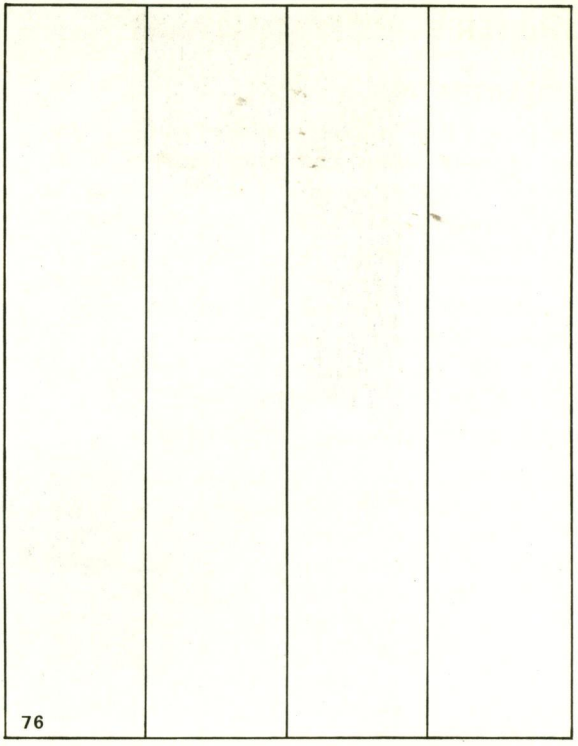

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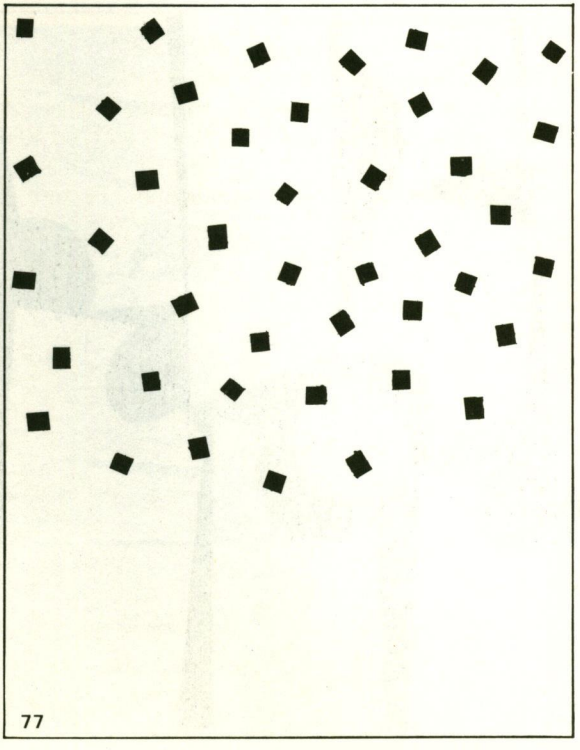

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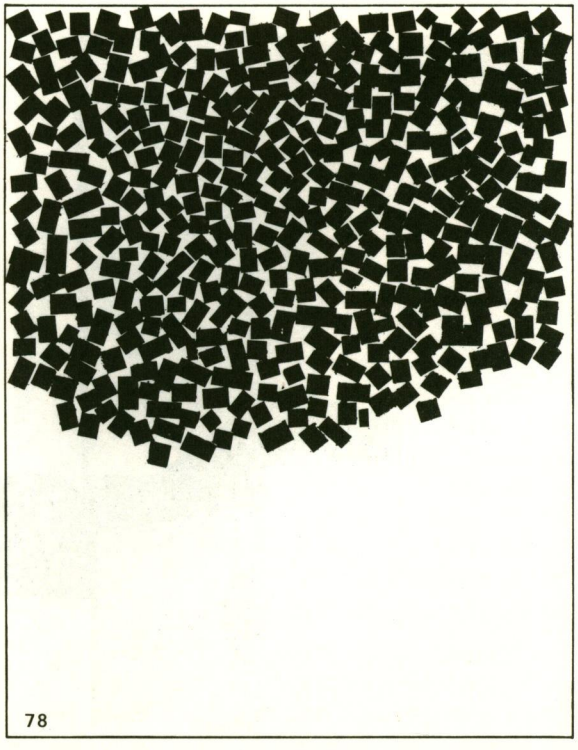

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CHAPTER 9 – CONCENTRATION

CONCENTRATION

Concentration is a special case of contrast. Unit forms, usually in considerable number, are grouped together in certain areas and scattered in other areas. Grouping and scattering, mass and void, are in contrast, but with a gradual transition.

In our environment, the city is a typical example of concentration. There are more buildings and a denser population surrounding the heart of a city. The further from this centre, the less are the buildings, and smaller the population.

STRUCTURE OF CONCENTRATION

Concentration generally refer to the structure of a design. Concentration structures fall into three main categories as follows:-

(a) **Point Concentration** - In this case, conceptual points are indicated at various places inside the frame, and unit forms crowd around such points. The dense areas are where the points lie. (Ill. 75).

(b) **Line Concentration** - In this case, conceptual lines form a certain kind of structure inside the frame, and unit forms crowd towards these lines. (Ill. 76).

(c) **Indefinite Concentration** - In this case, no preconceived points or lines prescribe the dense areas. The design is worked out in such a way that certain areas are denser than others, with obvious centres of interest and transitional passages.

In point and line concentration structures, the design could be very nearly regular if the points or lines have been arranged in a regular manner. Point concentration approaches the effect of radiation whereas line concentration approaches the effect of gradation. Indefinite concentration leads towards informal balance and may be related to contrast, except that the forms used in concentration patterns are generally smaller than those in contrast patterns.

Dominance is necessary in indefinite concentration for ensuring unity.

MASSING AND SCATTERING

In Chapter 4, we mentioned the even visual distribution in similarity structure. The two extreme cases in even visual distribution are massing and scattering.

Massing is a marked degree of concentration. In this case, all forms may be squeezed together to form a big mass. The big mass can completely fill the area within the frame, or just a part of the area. There may or may not be a "loosening-up" around the edges of the mass. (Ill. 77).

Scattering is the absence of concentration. Most of the forms remain separate from one another. Some vague groupings may occur, but such groupings are far from being recognized as a form of concentration. (Ill. 78).

EXERCISE

Design two types of unit forms, A and B. These two types may be knit together by union and subtraction to form new unit forms A + B and A – B. There are therefore up to four ranges of unit forms available for the present exercise: A, B, A + B, and A – B. All the unit forms may be varied in shape within the limit of similarity. There is no limit in the variation of sizes. Make two designs:-

(a) Point or line concentration. The positionings of the points or lines should conform to a kind of regular structure. (Ill. 79-82)

(b) Indefinite concentration. The design should be in informal balance. (Ill. 83-86)

Both designs should be about 8 inch square or of a larger rectangular shape. Different ranges of unit forms may be used for the two parts of this exercise.

No limitation in colour application. Texture is not applicable.

第九章 — 密集

密集

密集是對比的一種特殊情形。這就是說數量頗衆的基本形在某些地方密集起來，而在其他地方疏散。密集與疏散，虛與實，都有對比發生，但集與散或虛與實之間，輒有漸移的現象。

在我們環境中，城市是密集的最具體實例。建築與人口都密集城市的中心，而距此中心愈遠則愈疏散。

密集骨格

密集常指設計的骨格方面。我們可以將各種密集骨格概分爲三類：

(a) **趨近點的密集**——在此情形，概念的點預置框架內各處，基本形趨附這些點的周圍，愈接近這些點則愈密，愈遠離則愈疏散。（圖75）

(b) **趨近綫的密集**——在此情形，概念的綫在框架內構成骨格，基本形趨附這些綫的周圍，愈接近這些綫則愈密，愈遠離則愈疏散。(圖76)

(c) **無定的密集**——在此情形，框架內不預置什麼，設計隨意地構成，疏密有緻，幷有清楚的焦點及漸移的布列。

點與綫的密集均得以規律性的骨格來引導設計的構成，其結果較接近規律方面。點之密集趨近發射，綫之密集則趨近漸變。無定的密集引向非正式的均衡，跟對比的構成差不多，只不過密集所用的基本形較對比所用的基本形爲細小。

在使用無定的密集時，統領是必需的，否則設計流于渙散。

擠集與播散

我們在第四章中提及近似骨格中的視覺平均分配。視覺平均分配的極端就是擠集與播散。

擠集是過度的密集。在此情形，所有的形都堆積成一大塊。此大塊可佔有框架內的全部空間，或一部份的空間。塊之周圍可鬆散亦可不鬆散。（圖77）

播散是反密集。那就是說，極大部份的形彼此散離孤立。若干形或稍有聚近，但絕無密集的現象。（圖78）

練習

設計兩種基本形，A及B、此兩種基本形可相聯或相減，而變成新基本形A+B及A−B。因此，你可用上四種的基本形，A，B，A+B，及A−B。所有基本形在形狀上作近似變動。大小變動無限制。

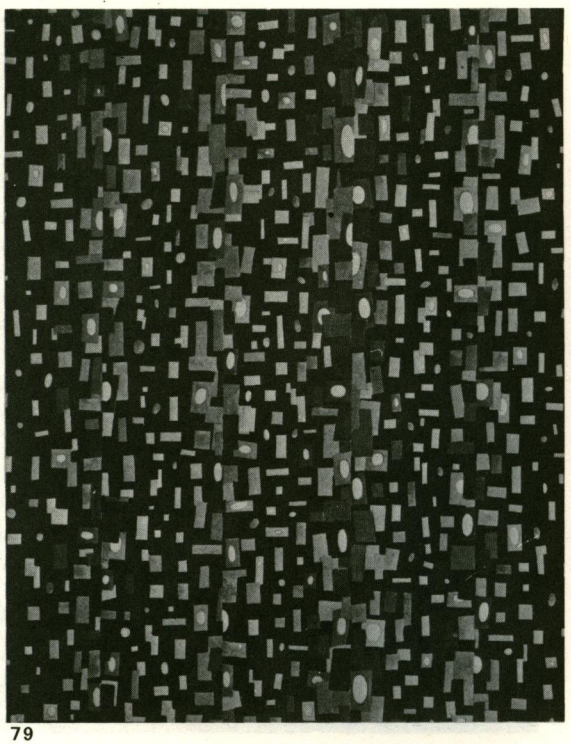
創作下列兩項設計：

(a) 趨近點或綫的密集。點或綫的布列須具規律性。（圖79-82）

(b) 無定的密集。設計須屬非正式的均衡。（圖83-86）

兩項設計之框架約八吋正方或較大之長方形。兩項設計之基本形不必相同。

色彩無限制，不用肌理。



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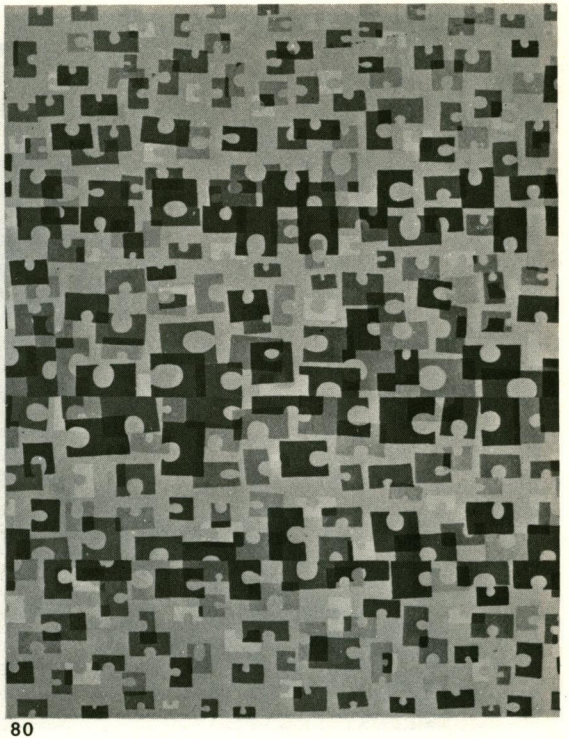

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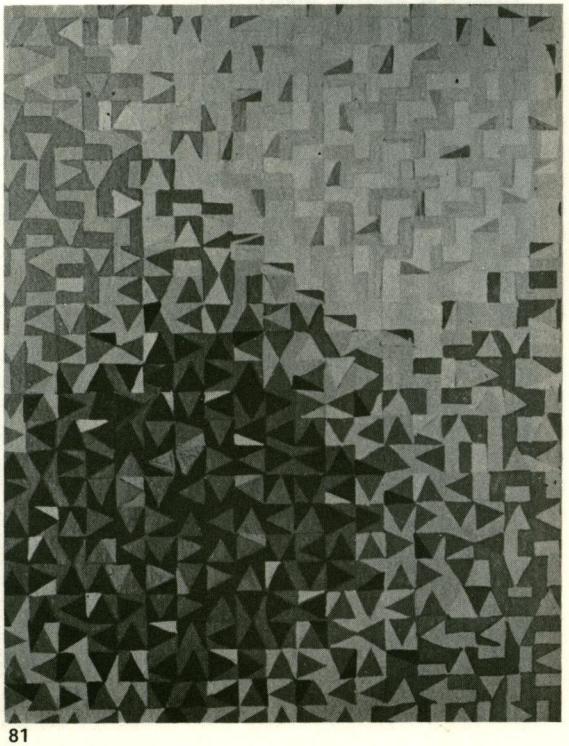

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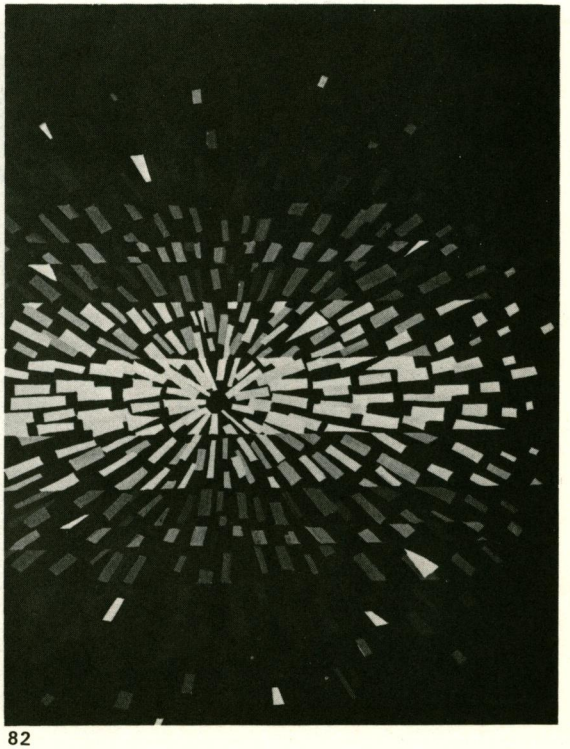

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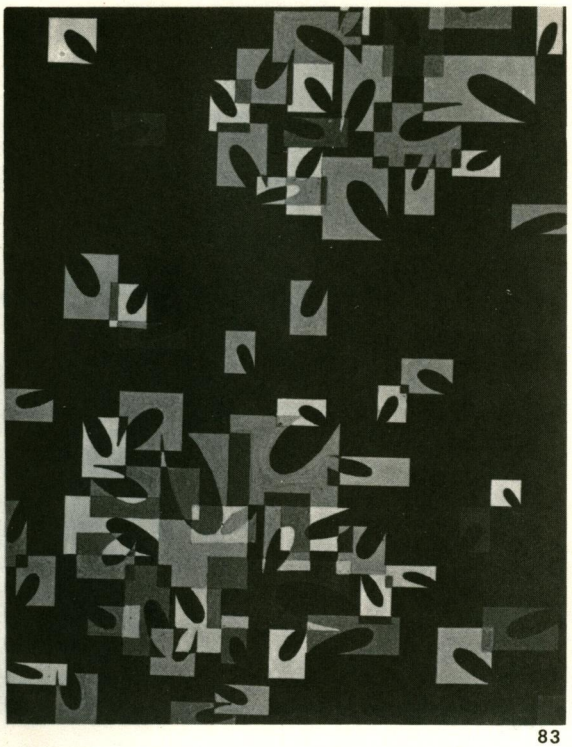

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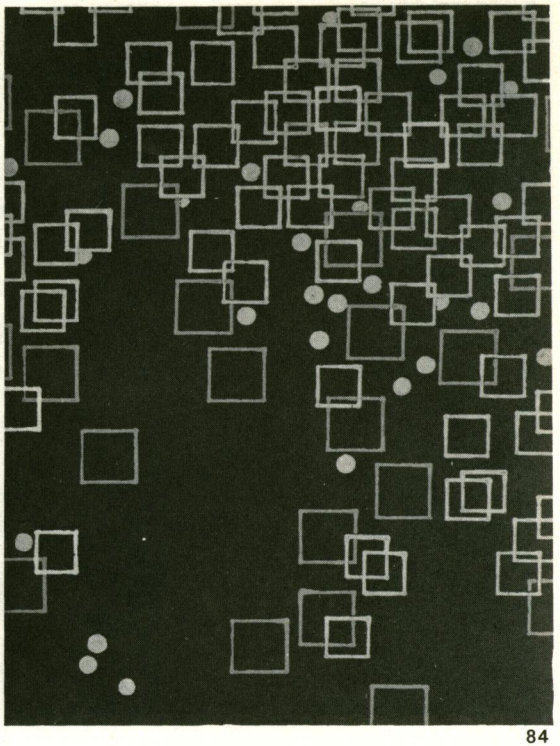

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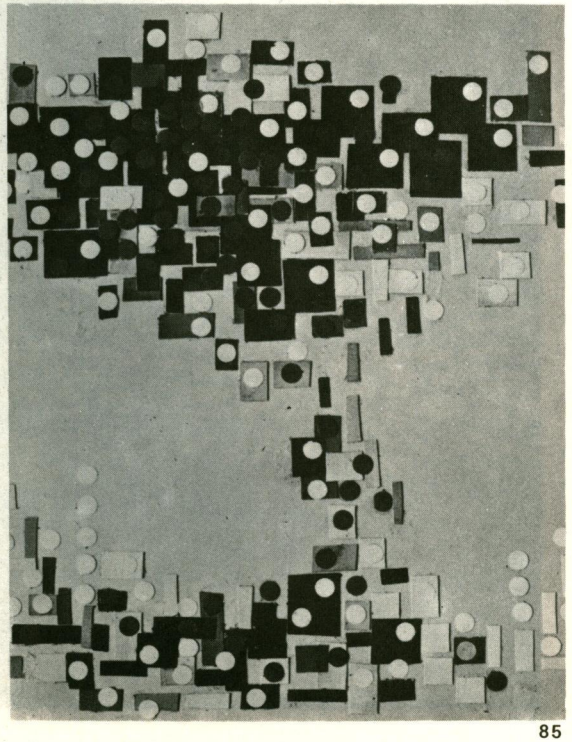

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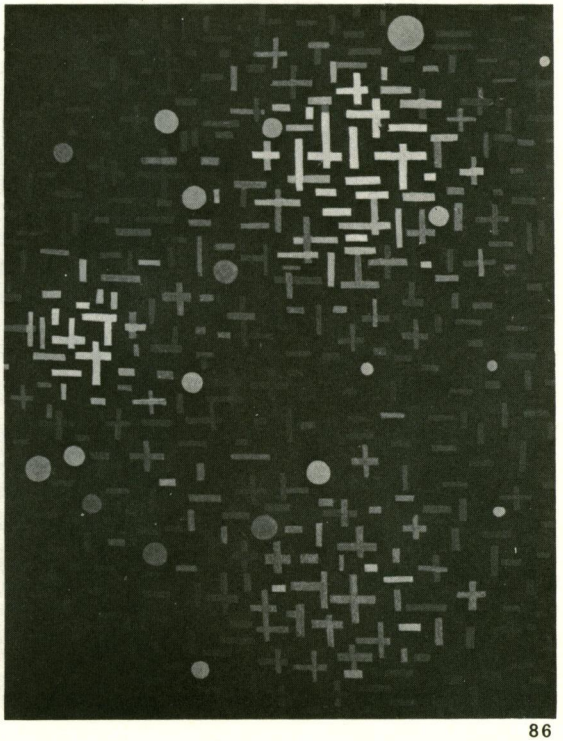

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CHAPTER 10 – TEXTURE

DEFINITION OF TEXTURE

Texture refers to the surface characteristics of a form. All forms have a surface; therefore all surfaces have texture, whether dry or wet, fine or coarse, soft or hard, plain or decorated, regular or irregular, matt or glossy.

Although we generally regard a flatly painted form as to contain no texture at all, the flatness of the paint is a kind of texture and there is also the texture of the paper. In printing, the texture of paper to be used is always taken into consideration, and various printing processes and various types of inks create different textures.

Nature contains a wealth of various textures. For instance, each kind of stone or each kind of wood possesses a distinct texture which an architect or an interior designer may choose for specific jobs.

Texture may be classified into two important categories: (a) visual texture, and (b) tactile texture. Appropriate texture usually adds richness to a design.

VISUAL TEXTURE

As the term implies, visual texture is strictly something seen, and has nothing to do with the sense of touch.

Visual texture is used to decorate or enrich a surface. It is in fact a miniature visual pattern, spread to cover the surface of restricted areas. It contains all the visual elements and even relative elements, and is governed by some kind of a structure.

APPLICATION OF VISUAL TEXTURE

Visual texture may be obtained in various ways. The following is a number of techniques leading to the creation of a visual texture:-

(a) **Painting** - This is the simplest method of obtaining visual texture. Minute patterns can be hand-drawn or hand-painted, with or without mechanical tools. Painted texture may be regular, near-regular, or irregular. Brushstrokes, dry or wet, can form the texture of a surface. (Ill. 87)

(b) **Printing, Transferring, Rubbing** - A carved pattern or a rough surface with raised patterns may be inked and transferred to another surface to make a texture by printing. We may paint on another surface and have the paint transferred to the surface of the design. Rubbing with pencil or any suitable material on soft paper over a rough surface also leads to textural effects. (Ill. 88, 89)

(c) **Spraying, Spilling, Pouring** - Liquid paint, diluted to any desired consistency, may be sprayed, spilled, or poured onto a surface to obtain a kind of texture. (Ill. 90)

(d) **Staining, dyeing** - An absorbent surface may be stained or dyed to obtain a kind of texture.

(e) **Smoking, burning** - Surface may be smoked over a flame to obtain a kind of texture. Sometimes burnt marks may also be utilized.

(f) **Scratching, scraping** - Painted surface may be scratched or scraped with some hard objects to gain in texture. (Ill. 91)

(g) **Collage** - The process of pasting pieces of paper or other materials onto a surface is called collage. For visual texture, the materials pasted should have no tactile appeal. Paper with textures obtained by all foregoing methods may be used for collage purposes. The process of collage-making is discussed in the following section.

COLLAGE

In collage-making, the materials may be shaped with one of the following methods:-

(a) **Hard Edge** - This means that the materials are trimmed or cut with a pair of scissors or any kind of sharp blade. The edge, whether regular or irregular, has a hard quality.

(b) **Soft Edge** - This means that the materials are hand-torn, or have edges burnt, or are split in some rough manner. Edges obtained in such ways are often irregular and fibres of the materials at the edges may be exposed or transformed.

The materials themselves can be separated into three different types according to the presence or importance of images:-

(a) **Material without Images** - This type of material contains only even colour or texture. The shapes of the cut or torn pieces are the only shapes to appear in the design. (Ill. 92)

(b) **Material with Images** - This type of material

第十章 — 肌理

肌理之定義

肌理意指形象表面之特質。所有形象均有表面；因此，所有表面都有肌理。肌理包括以下各種感覺：乾、濕，粗糙、幼滑，軟、硬，有花紋、無花紋，規律性、無規律性，有光澤、無光澤等。

我們常將顏色平塗的形當作毫無肌理，但事實上，顏色的平塗本身就是一種肌理，同時任何紙張也具有一種肌理。在印刷方面，紙張是重要的選擇，而油墨與印刷方式又做成不同的肌理效果。

大自然本身充滿各種的肌理。例如每一種木或石所具有的肌理都不同，可由建築師或室內設計家任意選擇以適合特殊的工作。

肌理可分爲兩大類：(a) 視覺肌理，及 (b) 觸覺肌理。適宜的肌理使用都能豐富設計的內涵。

視覺肌理

視覺肌理，顧名思義，是純粹地視覺性的，與觸覺方面無關。

視覺肌理的作用在于裝飾或豐富設計的表面。實際上，視覺肌理是一種平面的視覺圖案，不過所用的基本形具體而微，覆蓋界定的面積。它具有一切視覺元素甚至關係元素，幷有骨格結構。

視覺肌理的使用

有多種方法可以獲致視覺的肌理。我們把一些常用的技法簡介如下：—

(a) **繪寫**——這是最簡單的方法，細緻的花紋可直接地以手繪在設計上面。我們可以採用或不用機械或工具的輔助。繪寫的肌理可以有規律，無規律，或略有規律。乾或濕的筆觸亦可以成爲一種肌理。（圖87）

(b) **印拓**——我們可塗油墨或顏料在一雕鐫的或凹凸不平的物件上，然後印在設計上面而做成一種肌理。我們亦可繪寫在另一表面之上，然後趁未乾前將此移印在設計上面。我們也可以在雕鐫的或凹凸不平的物件上面覆紙，以鉛筆或適物料磨擦，而獲致肌理，這就是“拓”的方法。（圖88，89）

(c) **噴灑**——顏料可開成適宜的稀度或濃度的液體，噴、灑、或倒在設計的表面上而做成肌理。（圖90）

(d) **漬染**——具有吸收性的表面可以漬或染做成肌理。

(e) **燻炙**——火焰的燻炙可在設計表面做成肌理。有時燃燒的痕跡亦可應用。

(f) **擦刮**——已着色的表面可用硬物磨擦或刮刻而做成肌理。（圖91）

(g) **拼貼**——這就是把紙或其他物料拼貼在畫面上。若我們只想求得視覺肌理，則我們不宜採用具有觸覺感的材料來作拼貼用途。所有上述各項方法均可用來做成紙上的花紋，然後經過撕或剪再拼貼于設計之上。拼貼的範圍頗爲廣泛，我們在下節再加詳述。

拼貼

在使用拼貼的方法時，我們可將材料依下述任一方法處理成我們所需的形狀及感覺：

(a) **硬邊**——那就是說我們用剪刀或鋒利的刀片將材料剪割。用此方法獲得的形狀邊緣，無

論規律性與否，都有清晰堅實之感。

(b) **軟邊**——那就是說我們用手撕或其他粗豪方法，將材料撕裂。用火燒亦可。用此方法獲得的形狀邊緣，必然不甚規律，而有軟鬆之感。物料的組織纖維必因此而在邊緣間呈露，或受到改變。

材料本身可從其帶有圖象方面分爲三類：

(a) **不帶有圖象之材料**——這種材料是一片性的，沒有單獨可認之圖象。在此情形，其形狀就是剪割或撕扯出來的形狀。（圖92）

(b) **帶有圖象之材料**——這種材料帶有單獨可認之圖象（圖93）。印刷品、印花布、照片，都屬這類。不帶有圖象的材料可由上節所述的各種方法將之加上圖象。在此情形，材料受剪割或撕扯的外形，與其本身帶有的圖象，同等重要。圖象或爲具象，或爲抽象，或爲可讀的文字，但多作抽象方式使用。有時候，圖象本有的涵意可在設計中發生作用。

(c) **帶有重要圖象的材料**——若材料所帶有的圖象是具有重要性的話，則我們無論怎樣將之撕剪與拼貼，仍得保留原來圖象的基本外貌。我們在撕剪之後，可循新的秩序將材料排列，但原來圖象必須依稀可辨。因此，剪割或撕扯的形比起原來圖象的形較屬次要。若我們將材料剪割，則剪割的形在拼貼的時候可根據一種規律的骨格。（圖94，95）

這裡“圖象”一詞，意指任何印刷的、攝影的、手繪的、有意或意外做成的形或痕跡在材料的表面之上。我們用“圖象”以別於材料受剪割或撕扯而成的外形。

所有前述的各種骨格構成均可用于拼貼的設計。

觸覺肌理

用手撫觸而感覺到的肌理均屬觸覺肌理。在平面設計裡，觸覺肌理從設計表面凸起，而接近立體性的浮雕。

任何黏附於設計表面之上的物質均可做成觸覺肌理。製造觸覺肌理的方法很多，簡易的如糊貼、膠貼，以至皺摺、釘鑽、鎚鑿、銲接、及一切雕塑技巧。因此，這就遠遠超過一本平面設計的書所能包括的範圍了。

不過，我們仍可以將觸覺肌理分成下列三大類：

(a) **現成的觸覺肌理**——這類的肌理是最簡單的。任何材料附于設計之上就產生現成的觸覺肌理。設計所具的觸覺肌理就是材料本有的觸覺肌理。（圖100）

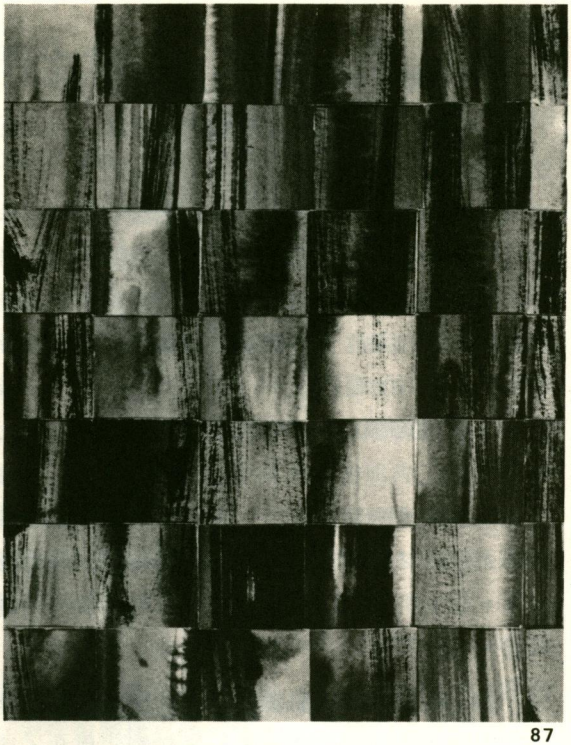
(b) **改造的觸覺肌理**——在此情形，所用的材料稍經改造，如皺摺、敲打、針刺、貫孔、或用其他方法，使其本有的觸覺肌理有了改變。（圖96）

(c) **特製的觸覺肌理**——我們可以用一批細小的肌理單位組織成一種特製的觸覺肌理，（圖97）肌理單位或來自自然（如穀粒、種籽、沙、碎葉等），或來自人造的物料（如針、珠、細小的機器零件），或特別設計的（用剪切、雕刻、模鑄、或其他方法造成設計家所需的肌理單位）。

光影色彩及觸覺肌理

由于觸覺肌理凸起平面之上，任何傾斜的光綫均可增進肌理的凹凸感。

一些設計是有意利用光影效果的。在此情形，肌理單位的排列須較疏落以露出單位與單位之間，使陰影能降落于適當的平面之上。若求最佳光影效果，肌理單位宜作綫形，垂直或傾斜地插



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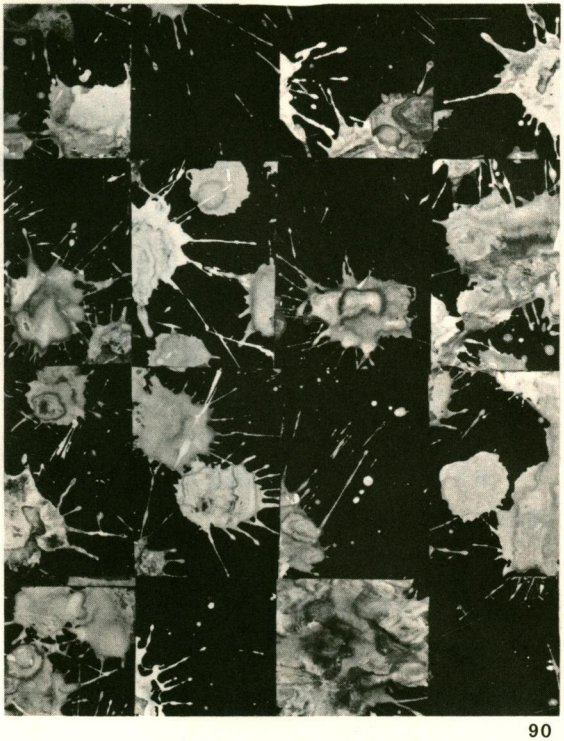

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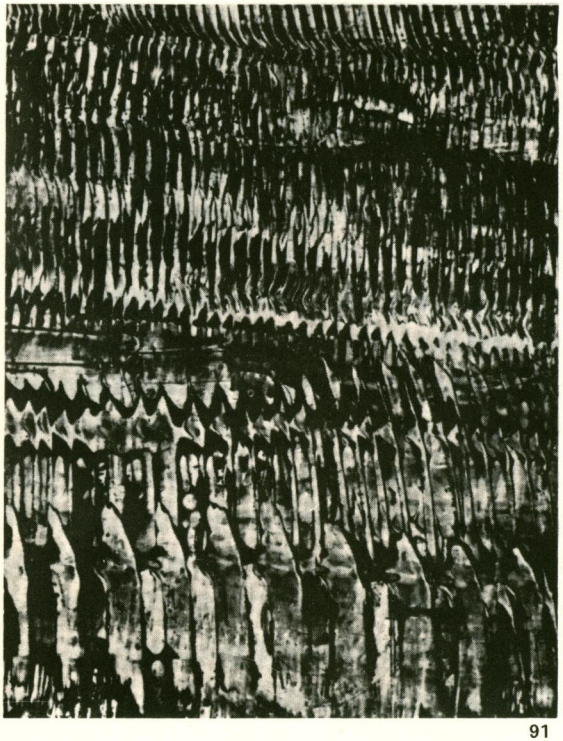

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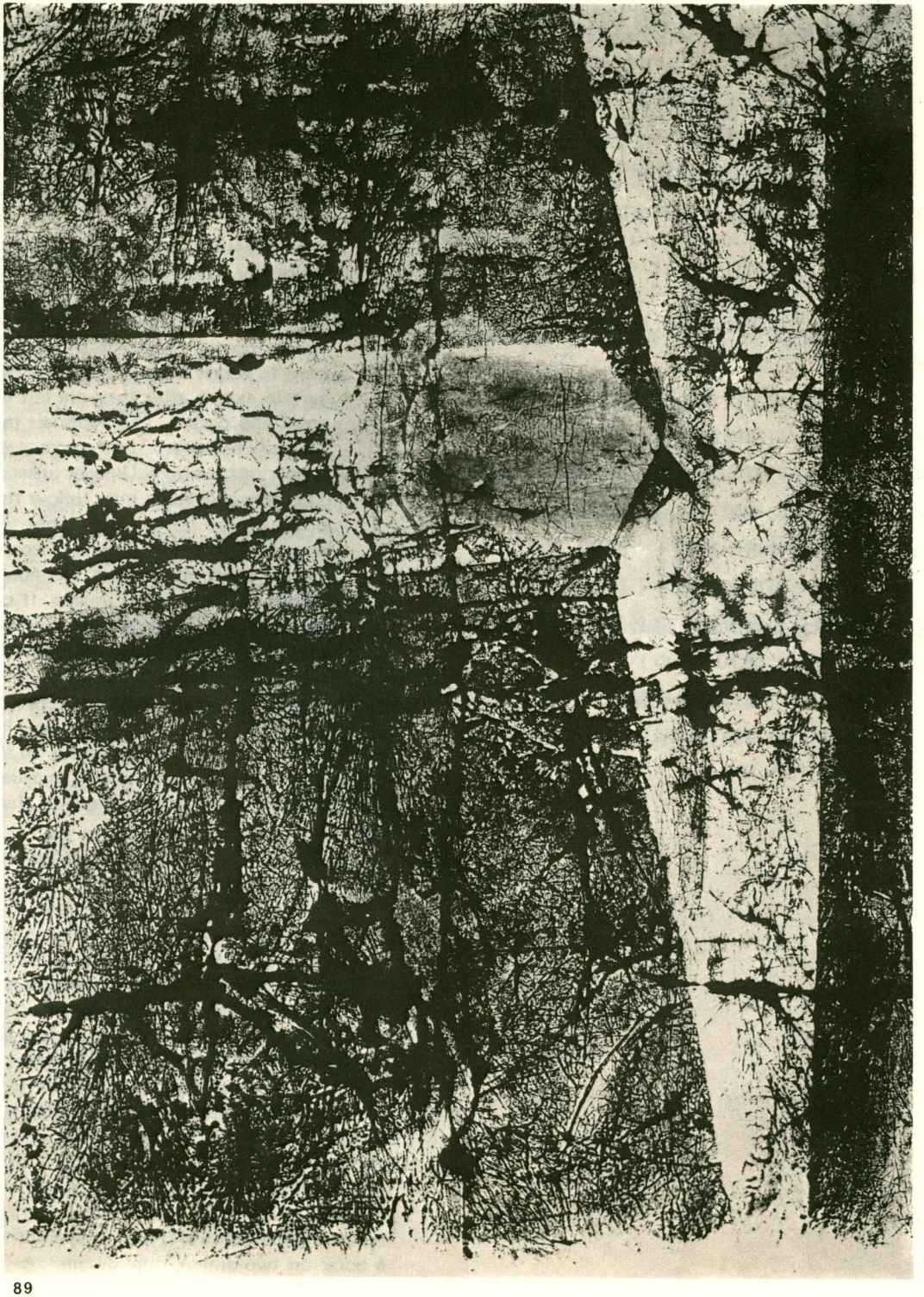


在設計的平面之上。强烈的側光最能做成戲劇性的光影圖案。

觸覺肌理多呈本有的色彩，但於必要時，我們可另塗色彩。我們可以一片過地着色，亦可以色彩做成一種視覺圖案于肌理之上。不過我們必須注意勿令視覺圖案破壞原來觸覺肌理的效果。

練習

(a) 創作視覺及觸覺肌理各十二種，每種面積爲一方吋。

(b) 從印刷品搜集各類字體，選擇字體用拼貼方法做成一規律性設計。大小近似及款式近似的字體可當爲近似的基本形，分別納在重複骨格內。大大小小的字體可作漸變的基本形處理，在重複或發射的骨格中排列。（圖98-103）

(c) 將一張或多張照片（或印刷的照片）割碎，重新組合而成設計，但必須保留照片原來圖象依稀可辨。（圖104-105）

(d) 創作一種特製的觸覺肌理。此肌理須爲一片性。你可選擇適宜的肌理單位，組織成新的表面。（圖106-108）

contains isolated images with considerable prominence (Ill. 93). Such materials are the printed matter, printed fabric, photographs, or paper pre-treated with uneven visual texture. The images are as important as the cut or torn shapes of the materials. Some of the images may be representational images (such as photographic images), or letters that form readable words, but they are generally used in an abstract manner. Occasionally such images may retain their original meanings.

(c) **Material with Essential Images** - When the images on the materials are essential, they have to retain their original appearance to a certain extent after they are cut up or torn apart and pasted. The materials may be cut up and rearranged, but rearranged without rendering the original images unrecognizable. The rearrangement may follow the original order of the images with slight shifting, or may follow a new order if necessary. The cut or torn shapes are secondary to the shapes of the original images. If cut shapes are used, the materials are usually cut and pasted in accordance with some kind of a regular structure. (Ill. 94, 95)

The term "image" used here refers to any printed, photographic, painted, or any intentional or accidental forms or marks present on the surface of the material. This term is used in order to avoid confusion with the outward shapes of the materials themselves.

All the previously discussed structures may be applied to collage-making.

TACTILE TEXTURE

Tactile texture is a kind of texture that can be felt with the hand. In two-dimensional design, tactile texture may rise above the surface of the design and approach a three-dimensional relief.

Any substance can be attached to the two-dimensional surface of a design to become a piece of tactile texture. Techniques for making tactile texture are various, ranging from simple pasting and glueing, to creasing, nailing, hammering, welding and all the many ways of making a sculptural relief. This, therefore, is quite beyond the scope of a book on two-dimensional design.

However, we can classify tactile texture into the following types:-

(a) **Natural Tactile Texture** - This is the simplest kind of tactile texture. Materials are just arranged on the design surface without special modification. The tactile texture is the natural texture of the materials themselves.

(b) **Modified Natural Tactile Texture** - The materials to be used may be creased, hammered, stippled, pierced, or treated in some way so that the original texture of the materials is transformed. (Ill. 96)

(c) **Designed Tactile Texture** - Tactile texture may be specially designed by arranging small texture units to form a new surface. (Ill. 97). Texture units may come directly or be modified from nature (such as seeds, grains of sand, cut leaves), may be ready-made (such as pins, beads, small machine parts), or specially made (cut, carved, moulded, in unit forms as required by the designer).

LIGHT AND COLOUR IN TACTILE TEXTURE

As tactile texture raises above the ground of the design, any light that falls on it would give emphasis to the pattern of the texture.

Certain designs may be conceived with light modulation as an essential element. In this case, the texture units are arranged somewhat scantily so that the ground is slightly exposed for shadows to fall upon. For best results, the texture units should be linear in character and fixed perpendicularly or slantingly to the ground. Strong side lighting creates the most dramatic results.

The natural colour of tactile texture may be coloured if desired. In colouring, instead of an overall application, sometimes a visual pattern may be added to the tactile surface. When this is done, caution should be taken so as not to get the textural effect spoilt by the visual pattern.

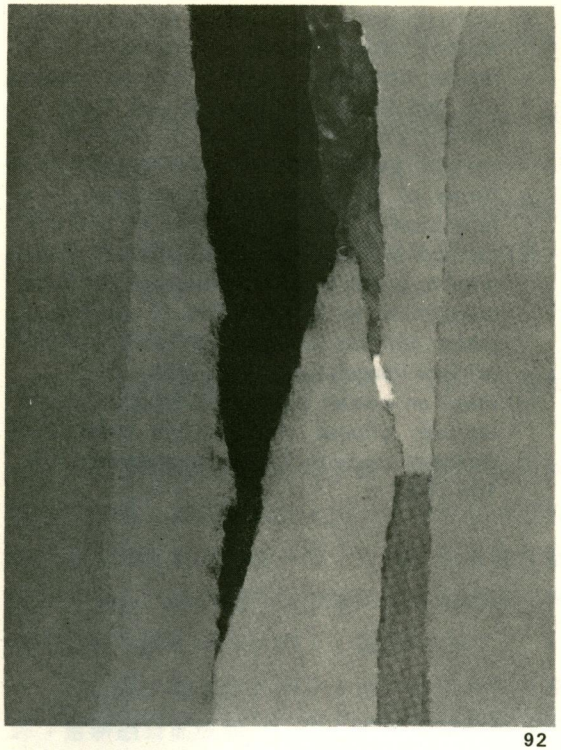
EXERCISE

(a) Create 12 specimens each of visual and tactile texture, with each specimen about 1 inch square.

(b) Using printed types from any sort of printed matter, create a design with some sort of a regular structure. Larger types of similar size and shape may become unit forms in similarity and be arranged in a repetition pattern. Large and small types may become forms of gradation and be arranged in a repetition or radiation pattern. (Ill. 98-103).

(c) Cut up one or more photographs (photographic prints or printed photographs from magazines) to be modified to become a design without losing recognizability of the original image(s). (Ill. 104-105)

(d) Make an overall pattern of designed tactile texture. Choose your texture units and arranged them to form a new surface. (Ill. 106-108).



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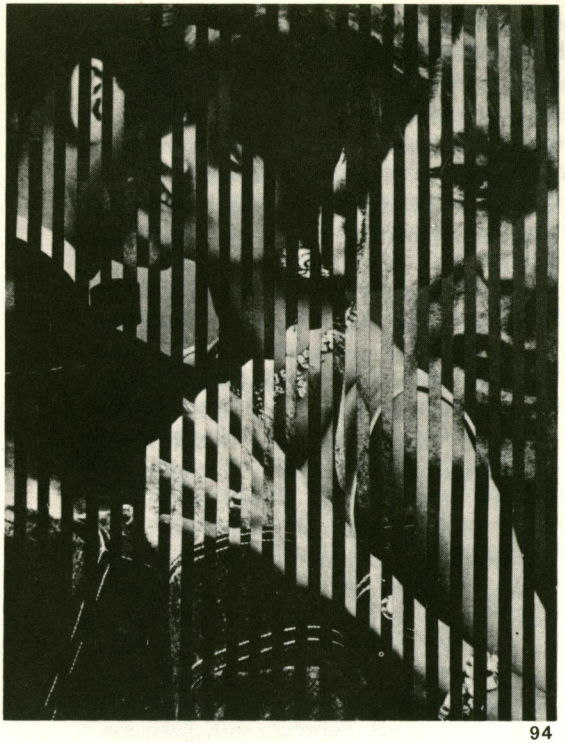

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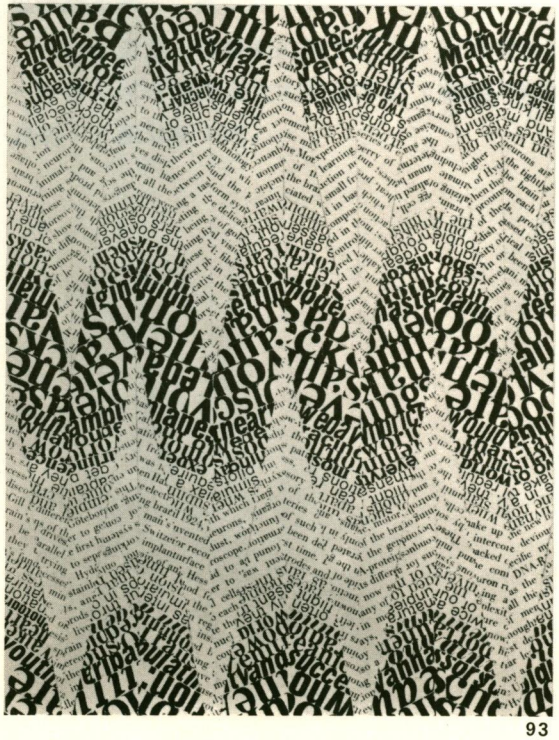

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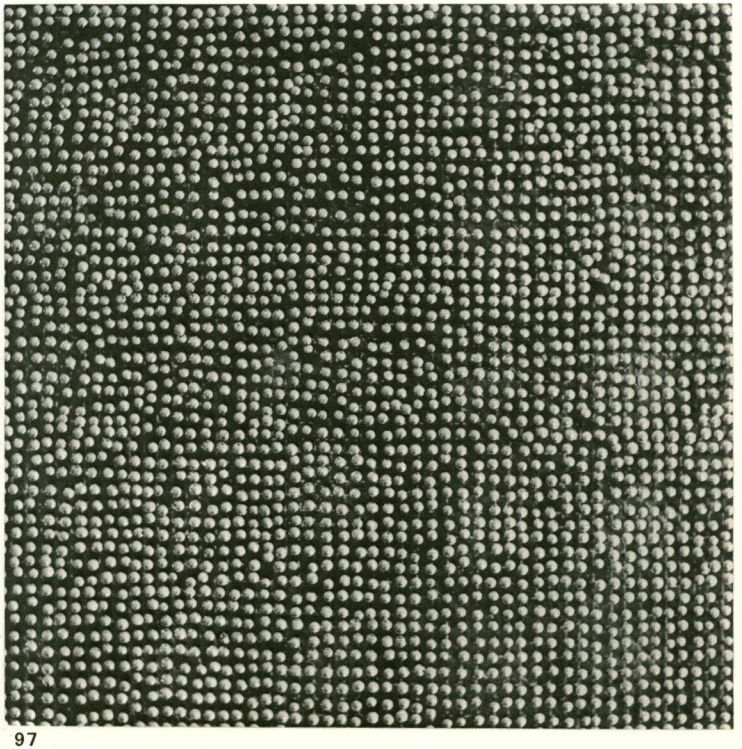

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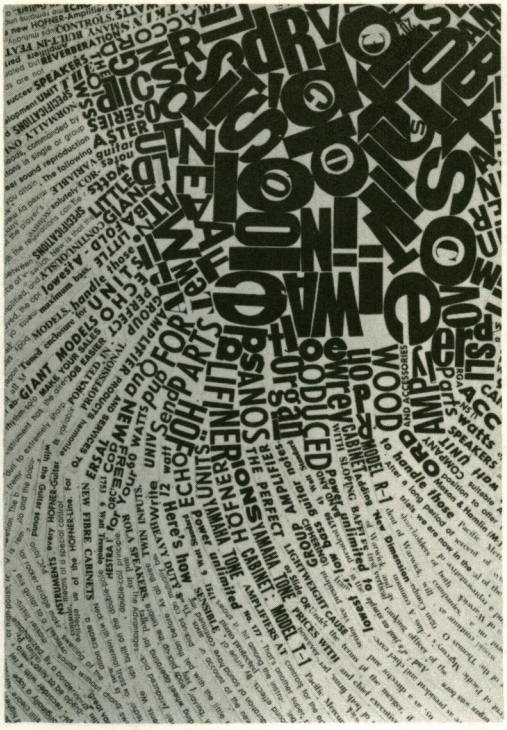

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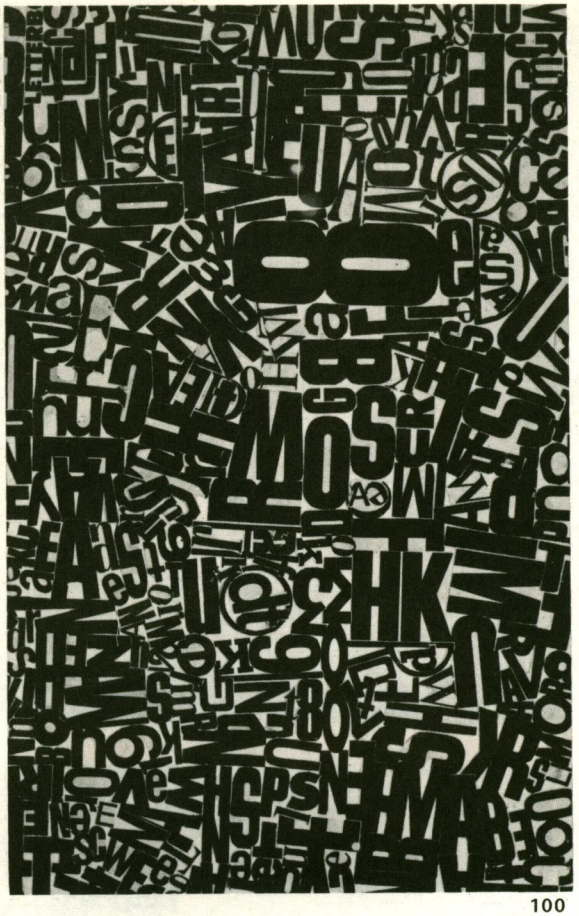

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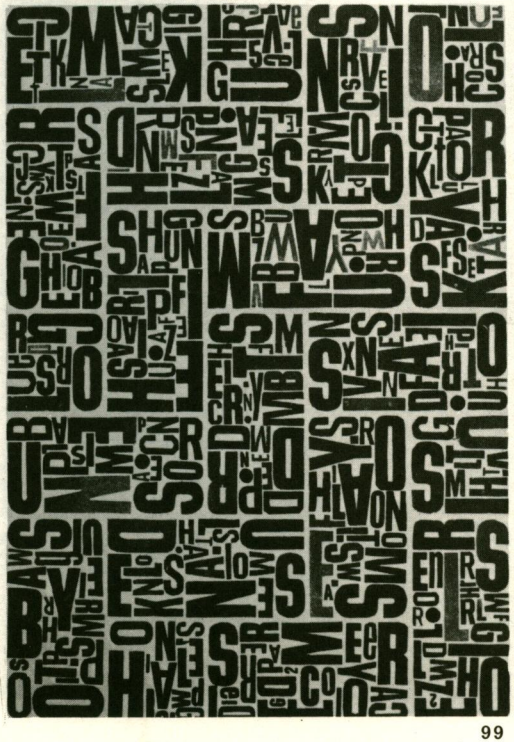

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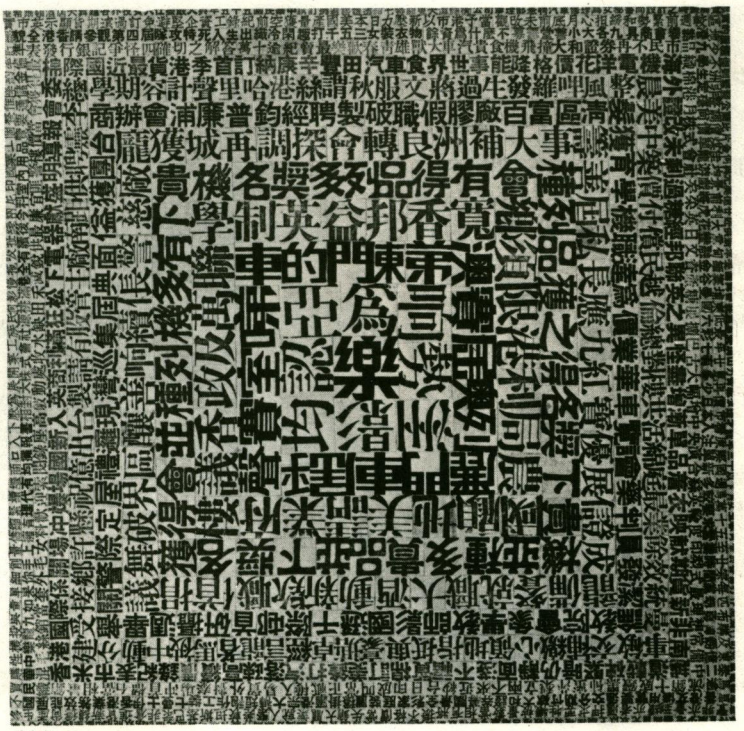

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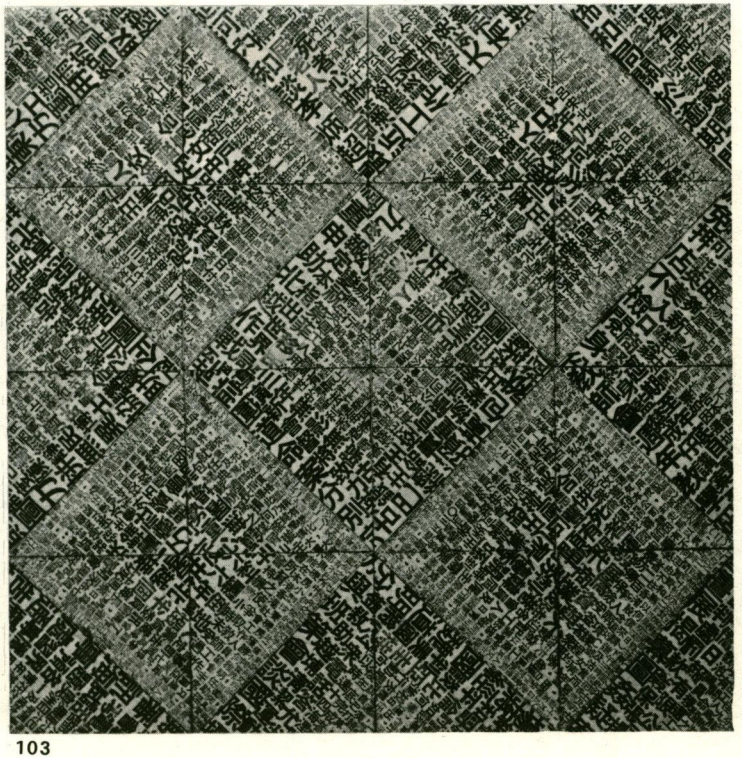

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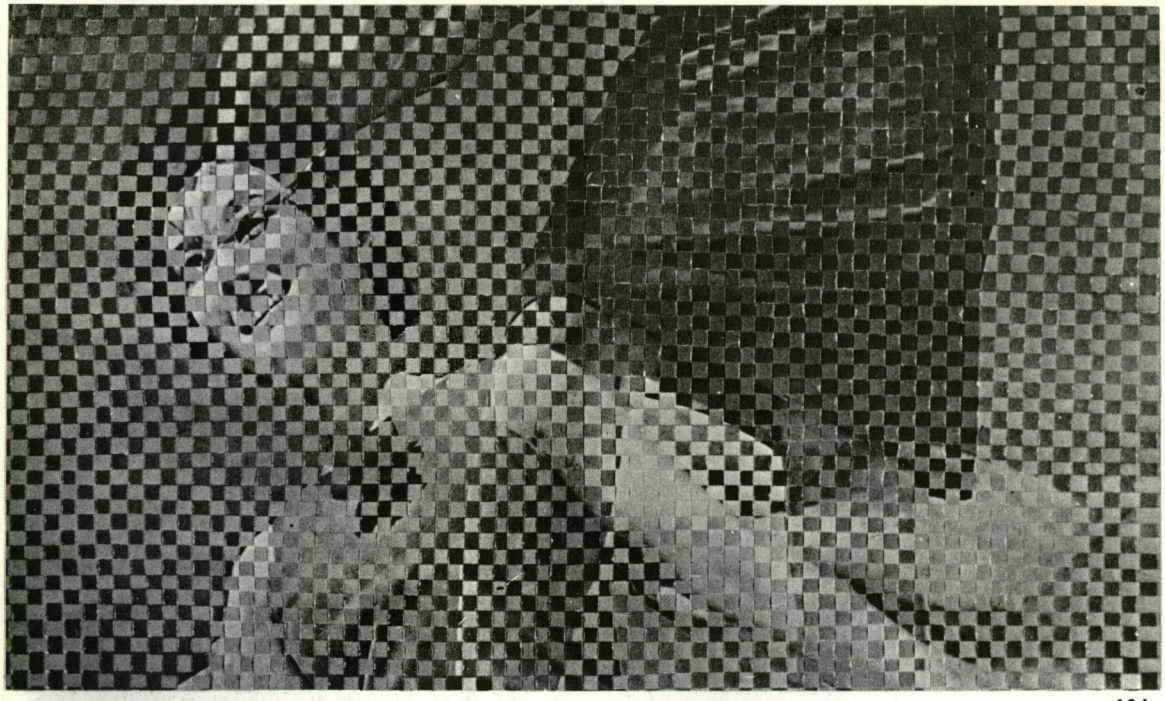

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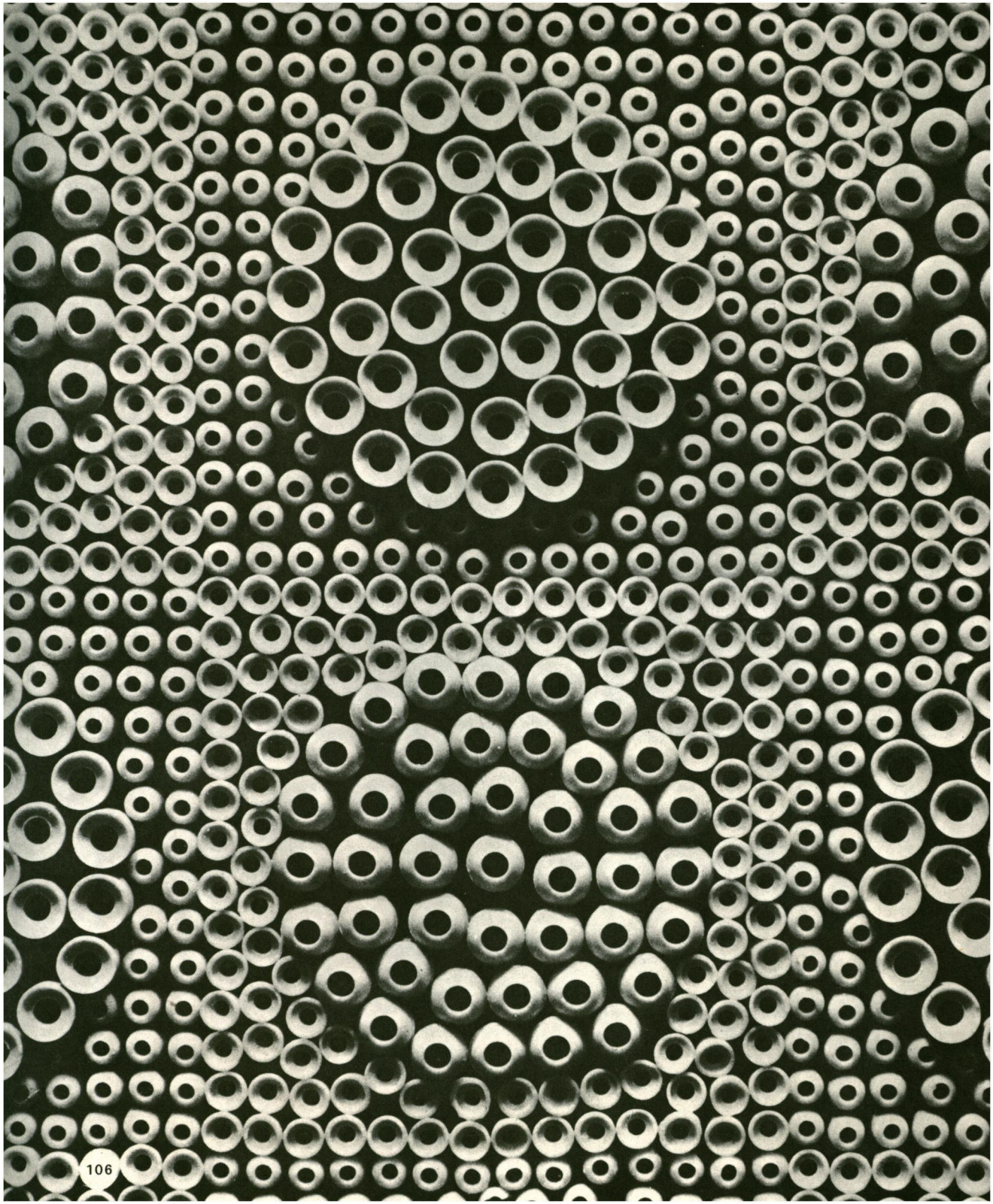

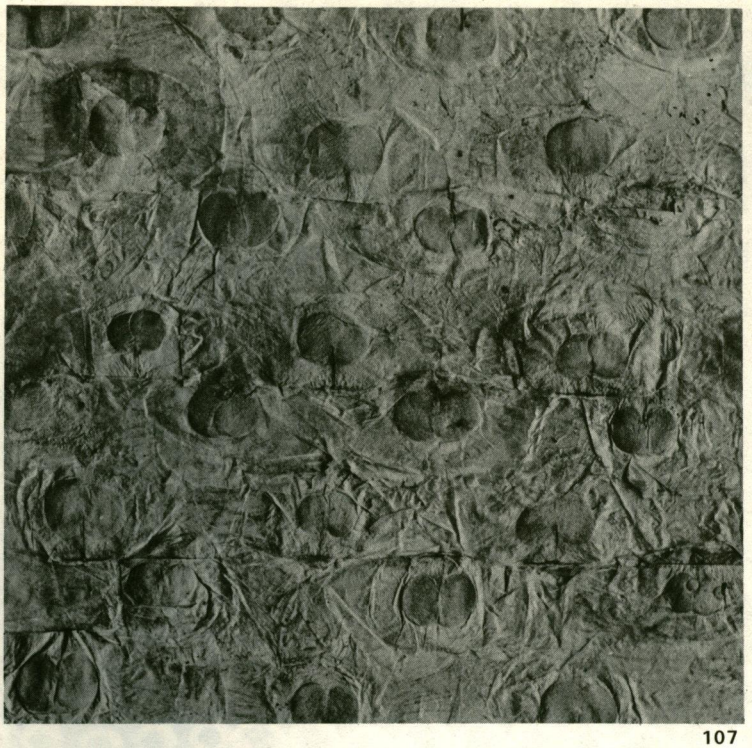

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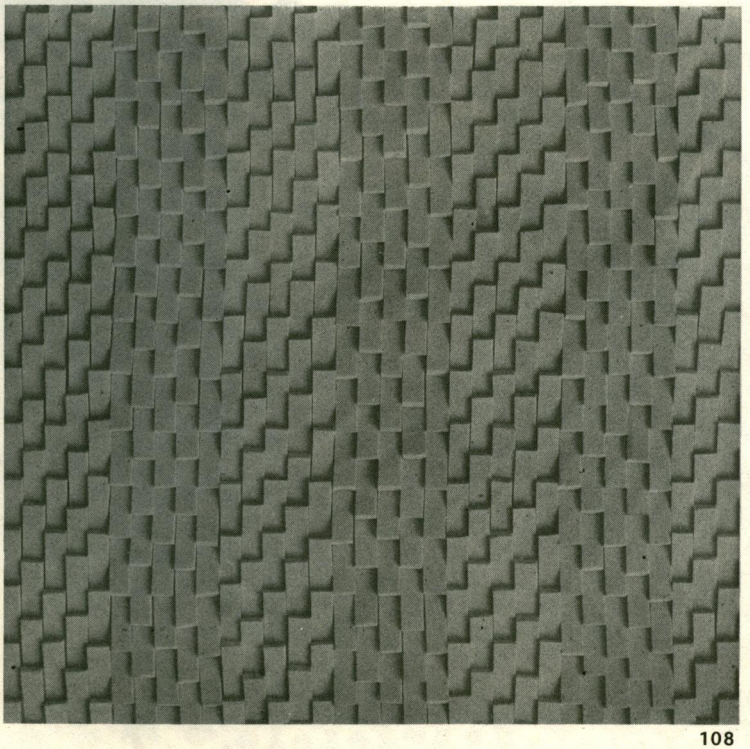

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理原計設面平

著邪無王

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