THE DEVELOPMENT OF A CLASSIFICATION SYSTEM FOR TWO-DIMENSIONAL PRINTED AND DYED TEXTILE MOTIFS AND THEIR ARRANGEMENT

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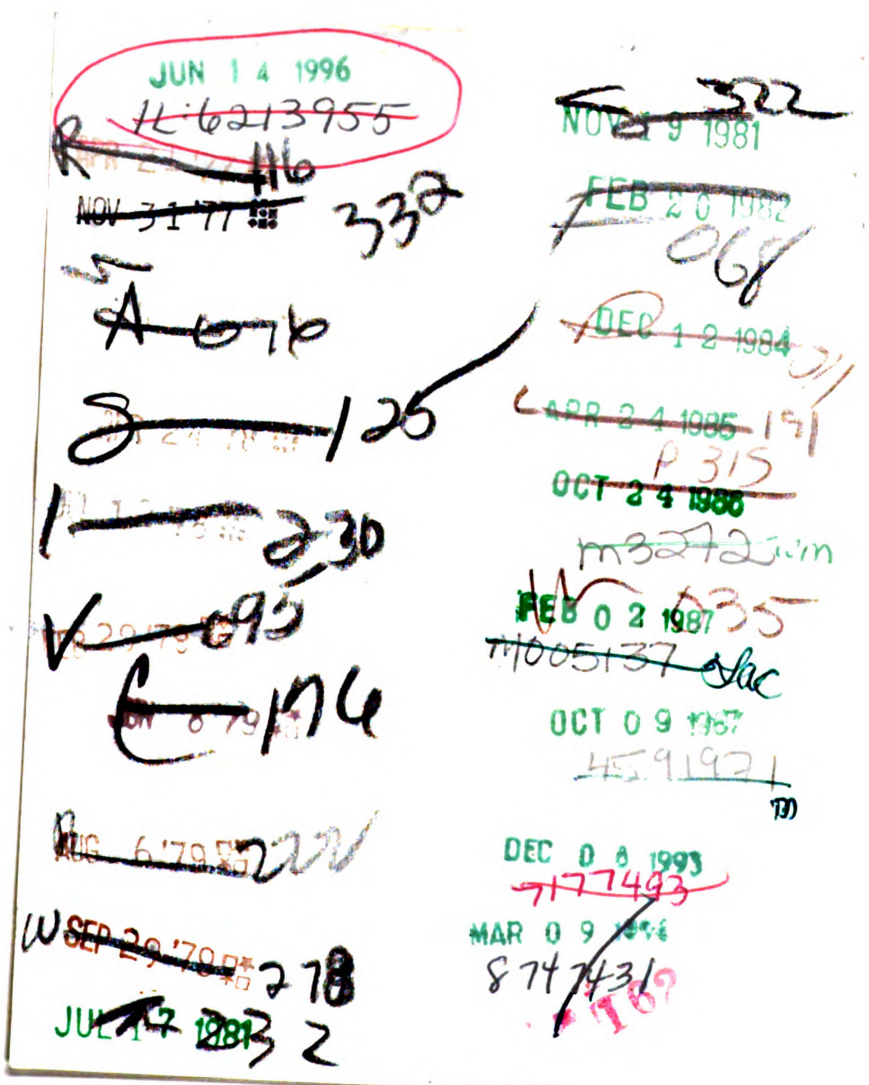
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ABSTRACT

THE DEVELOPMENT OF A CLASSIFICATION SYSTEM FOR TWO-DIMENSIONAL PRINTED AND DYED TEXTILE MOTIFS AND THEIR ARRANGEMENT

by

Sharla Jean Hoskin

A system of textile design classification for two-dimensional printed and dyed patterned textiles based on the character of motifs and their arrangement was developed. The classification was proposed as a tool for a researcher studying textile designs for description, comparison, or development of design. It is an organizational, not an evaluative system; so conclusions would be drawn about the material classified after classes are defined in relation to a specific problem, such as a comparison of line use in two cultures. Revisions were made at three points in the study, resulting in expansion of the subheadings and in reorganization. Successful use of the outline in its present form requires a working knowledge of classification schemes.

The objectives of the study were to develop the system of classification using the elements and principles of design; to test the system on cultural textiles examples; to

recommend ways which the system could be used, and to recommend alternatives for studying other textiles besides patterned designs. A personal objective was to reinforce the idea that textiles are an art form.

It was assumed that an objective system could be developed to analyze design elements, that an objective system could apply cross culturally, and that two-dimensional printed and dyed textiles would not be too restricting for creation of necessary categories.

The study was limited to patterned textiles and to description, not interpretation of textile design. Historic textiles were used as guides in the development of the classification rather than a cross sampling of ethnic textiles. The review panels were limited to graduate students and faculty in the Department of Human Environment and Design at Michigan State University, not professionals in the textile design or classification areas.

The first step in the procedure was the listing of desirable criteria for the classification system. Among these were ease of use, simple and clearly defined terminology, objectivity, categories that are mutually exclusive, internal consistency, flexibility, applicability to more than one aesthetically oriented problem, relevance of features, and a comprehensive number of features.

The form of classification chosen was paradigmatic, so that features would not be weighted by importance. The classification system was presented in outline form.

The attributes selected were line, space, form, value, density, direction, position, structure, balance, symmetry, scale, proportion, dominance of motif, subject matter, and style. Rejected attributes were texture, color, emphasis, rhythm, inspiration sources, and symbolism. The attributes were chosen based on objectivity, ease of subdivision, and importance of conveying a total picture of the design. The features were grouped to describe three hierarchies of the textile design. Hierarchy I was the General Characteristics of the Textile Design. Hierarchy II was the Specific Character of the Motif and Hierarchy III was the Specific Character of Arrangement.

The classification outline was presented as a pretest to ten graduate students and faculty in the Department of Human Environment and Design. Revisions for clarity and ease of use were made. The system was again tested by ten members of a graduate student seminar. For both tests all participants had a previous knowledge of the elements and principles of design. Each was asked to classify two textiles and evaluate the classification system based on the desirable criteria listed at the beginning of the study.

Not all the criteria were satisfied; so further revisions were made resulting in the subdivision of the large outline into separate headings, each with its own instructions, definition, and example sections. Application to other textile forms and use in comparison studies were recommended.

It was concluded that more revisions toward simplification were necessary for ease of use and that the classifier needed a working knowledge, rather than a familiar knowledge, of design elements and principles.

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CHAPTER I

INTRODUCTION

Statement of Purpose

The purpose of this study is to develop a system of textile design classification based on the characteristics and arrangement of textile motifs. The design classification categories are structured on aesthetic elements and principles, but fiber, weave, function, method of design application, date, and country of origin will be documented for each piece.

The resulting system is intended to be objective and specific in that a number or letter will be assigned to each mutually exclusive characteristic analyzed. It is to be specific enough to isolate varied details, so as not to oversimplify comparisons or contrasts, but not overburdensome so that each design is in a class by itself, proving only that the design is different from all others.

A classification system for universal analysis of structure and content of textile designs, considering subtle variations in form, minute motif detail, and multiple repeats has not been done. This type of system seems possible because systems of classification have been achieved in the study of pottery and other archeological artifacts

with equal variety in shapes and ornament. These pottery and the proposed classification systems are not inherently cross-cultural, but should be flexible and adaptable to several cultures. It is necessary that the possibility for expansion or limitation be included because the range of motifs, variation in arrangement, and diverse regional styles cannot all be revealed by studying a single textile group.

Statements by authors who expressed belief in a possible classification system encouraged this study. Arnheim stated that all existing things, no matter how complex, are made up of geometric building blocks (Arnheim, 1954). Justema believed that most patterns could be classified by surface "coverage" and stated "the different kinds of motifs and their combinations are not as numerous as they first appear to be" (Justema, 1968, p. 41). He said that repetition is the basis of pattern and since types of repetition can be classified, pattern can be classified. Christie proposed a classification by structure, which included type of repeat and location of axes of symmetry (Christie, 1969). Meyer grouped motif types, such as animal form or plant form (Meyer, 1957). Gardin said that the great variety of design compositions is tempered by the frequent recurrence of a few themes (Gardin, 1958, p. 341) and Goodyear implied that all motifs are borrowed and revived from earlier civilizations; thus the basic source must merely be determined and classified (Goodyear, 1891).

The classification system will be developed using photographs and sketches from selected historic textile sources. Historic textiles and the investigator's original designs will demonstrate terms and give examples. A pre-test panel of faculty and graduate students will be asked to use the system as a test for workability, objectivity, and general understanding of terminology. A revised classification system is to be tested by a second graduate student panel. Results will be reported with recommendations, limitations, and objections defended.

The classification system is not an end in itself, but a means or a tool to study an aspect of textile design. The problem at which the system is directed is the analysis of form and content of motifs plus structure of repeats using the aesthetic elements and principles. Distorted conclusions will result if users are not aware of the concepts behind the system's development and its limitations. No conclusions are to be drawn on possible pattern history and development and no classes are formed, since classes are formed only in relation to a specific study, such as comparison of line use. Further techniques, such as statistical clustering or numerical taxonomy, are necessary for determining class and drawing comparisons or contrasts. The classification system is a guide or key to questions that a student of formal analysis should ask. The questions provided will shorten preliminary steps in the student's own research program.

Assumptions

The following assumptions apply to the development of the proposed textile design classification system:

1) An objective system can be developed to analyze design elements and their interrelations.
2) The system can be used to objectively analyze textiles of all cultures.
3) An inclusive system can be developed within the design range limits of textiles with two-dimensional ornamentation (dyeing, painting, stamping, stenciling, printing).

Limitations

The following limitations apply to the development of the proposed textile design classification system:

1) The study is limited to two-dimensional patterned textiles and their analysis by design elements and principles.
2) The study is limited to use of historic textiles in the development of the classification system rather than a cross sampling of several ethnic textiles.
3) The sample available for testing the classification system was limited to graduate students and faculty in the investigator's department.
4) The study is limited to the description of textile design, not the interpretation or development.

CHAPTER II

REVIEW OF LITERATURE

The review of literature for the development of a textile motif classification system was concentrated in four areas: (1) classification theory and types of classification, (2) desirable characteristics of a classification system, (3) existing information on organizational systems for textiles, ornament, and archeology, and (4) comparative and descriptive design motif studies.

Classification Theory

General Purposes and Limitations

McKern suggested the purpose of classification. He said that classification reduces a great deal of information into simplicity and order and supplies standard terminology, so that students can converse intelligently and with ready comprehension (McKern, 1939, p. 304).

Krieger listed the purposes of classification as three: (1) "to standardize comparison of specimens over wide areas," (2) "to save time in sorting, tabulating, and describing masses of material," (3) "to provide convenient reference forms and terms to expedite field recording, surveying, and cataloging (Krieger, 1944, p. 275).

Brew stated that classification is a tool of analysis--a means to an end, not the end itself. The purpose of classification is to "enable classifier to make inductive generalizations concerning sense data he is classifying" (Brew, 1946, p. 48).

Brew's main points relating to this study were that a classification system is created by the student, the diagnostic criteria which are the characteristics used in description are defined by the student, and the objects are placed in classes or units by the student. Types or units containing like designs are made, not discovered. No classification system is inherent in the material to be analyzed. The classes are arbitrary and designed for an immediate end (Brew, 1946, p. 46). Rouse wrote that the opportunity for variation in classification systems and the information they provide comes in the selection of diagnostic criteria for the classes (Rouse, 1960, p. 313).

> The important thing here is that the making of these groups is an activity of reason and can and should be manipulated at will to serve the purpose of the student (Brew, 1946, p. 48).

A group of objects can be classified a number of different ways depending on the information sought. It is important that any system be flexible as new facts are obtained. This procedure involves classifying materials in all the ways which will provide information. More and new classifications should be made since no single analysis will show all the evidence (Brew, 1946, p. 65).

> The main value of a published description of a given system is that it may then be adapted by another student to his problem, not that he should force his material into it (Brew, 1946, p. 65).

Brew stated that classification systems need to be revised and continually analyzed. Distortion should be looked for and users must always be informed of the concepts behind the classification system's development (Brew, 1946, p. 65).

Dunnell clarified the following general statements relating to the proposed classification system:

1. Classification is arbitrary. Attributes defining classes must be based on a specific problem. There is no logic in using all attributes--even if it were possible--for the end result would be the division of the field into an infinite number of unique classes showing what is already assumed, that everything is different from everything else (Dunnell, 1971, p. 47).
2. Classification is a matter of qualification. Attributes of classes must be articulated or qualified (Dunnell, 1971, p. 52).
3. Classification only shows relationships between units in the same system (Dunnell, 1971, p. 56).
4. Classification units are more important than their labels, that is, a label is only a name. The label could be changed, but the class would remain the same (Dunnell, 1971, p. 59).

Dunnell summarized,

> Classification assumes that the phenomenological world is capable of order. To bring order and meaning to phenomena four assumptions are made, two which locate the classes (field and level), and two which stipulate the means for ordering (distinguishing attributes and selecting some as definitive). The product is a set of equivalences (classes) and non-equivalences (relations between classes) (Dunnell, 1971, p. 59).

According to the quote, four decisions are made in the development of a system outside the classification: (1) selecting the field (the common feature of all objects), (2) selecting a particular point at which classes are to be formed, (3) recognizing boundaries for creating classes, (4) selecting from those boundaries definitive attributes. A system can only be evaluated on these decisions and their relation to the proposed problem.

Limits of classification are that they only organize phenomena. Classification is a formal structure and does not provide explanation. It must be problem oriented, and the organization resulting depends on the attributes and other initial decisions mentioned above (Dunnell, 1971, p. 64).

According to McKern (1939), Krieger (1944), Brew (1946), and Dunnell (1971) the general purpose of the classification system is to organize a mass of information for ease of use and to standardize terminology for improved communication. Classification systems have limitations, but when these limits and the inherent characteristic of artificiality are recognized and understood the process of

classification can be a valuable tool.

Types of Classification Systems

Dunnell distinguished classification from grouping in the following manner. Classification is definitive, it relates to the ideational realm. Classification involves listing necessary and sufficient conditions for membership in an arbitrary class. A class is a unit of meaning created by boundaries. The boundaries, being criteria, state necessary and sufficient conditions for membership (Dunnell, 1971, p. 45).

Grouping is descriptive and relates to the phenomenological realm. It involves listing the attributes of an individual case, which is bound to a position in time and space (Dunnell, 1971, p. 45). Grouping can be based on similarities (phenetically), descent of common line (cladistically), or time (chronistically) (Sokal, 1966, p. 108).

A process called identification links the two operations, classification and grouping. Identification is the "process of using classes to assign phenomena to groups" (Dunnell, 1971, p. 49).

Types of classification discussed by Dunnell were paradigmatic and taxonomic. A paradigmatic classification has distinctions that are equivalent, unstructured, and unweighted. It is considered dimensional (Dunnell, 1971, p. 70).

> Individual class definitions will consist of one feature drawn from each dimension, the number of definitive features in each definition being a direct reflection of the number of dimensions used in the classification (Dunnell, 1941, p. 73).

For example, a definition of line could have three parts, one from each of the dimensions of line. Direction is one dimension with features such as vertical, horizontal, and diagonal. Type is second dimension with features such as straight, restrained curve, and rococo curve. Character is a third dimension with features such as fine, heavy, or broken. Each dimension mentioned is equivalent, unstructured, and unweighted. Sokal stated that it is not logical to order or weight characteristics, since this influences and limits the application of the system to other problems (Sokal, 1966, p. 109).

Taxonomic classification uses features which are non-equivalent, structured, and weighted. It is nondimensional and there is an ordered set of oppositions (Dunnell, 1941, p. 70). Ordering requires judgment of importance of defining criteria (Dunnell, 1971, p. 76). This form of classification restricts the number of features (Dunnell, 1971, p. 77). Sears objected to the "formal" taxonomic classification system on the basis that it is imposing a system on data and is not oriented to multiple analysis (Sears, 1960, p. 325). A taxonomic system is not flexible or suitable to description, only time-space placement of artifacts.

Using line as an example again, two directions would

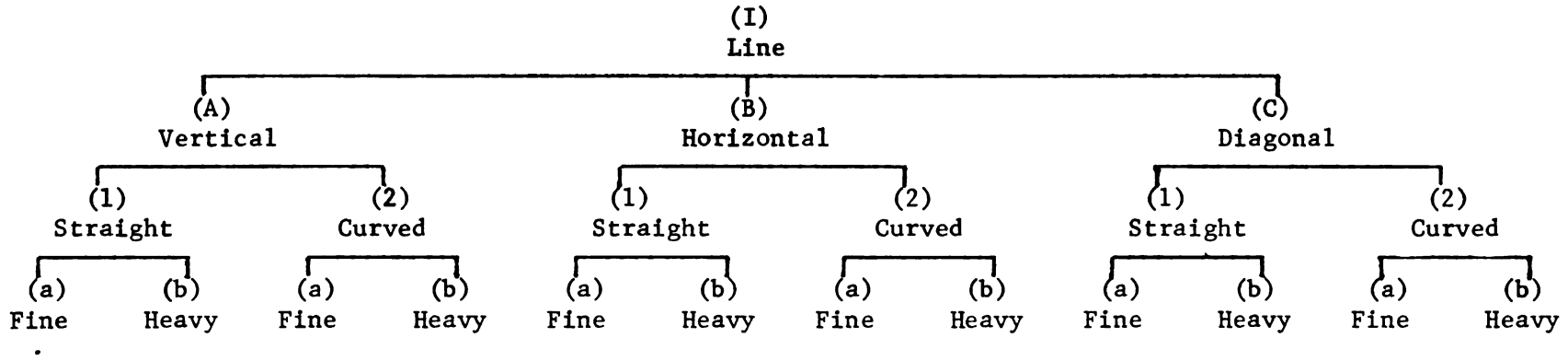
be paired in opposition, such as vertical versus horizontal, instead of an opportunity to choose from any of the directions of lines. Binary oppositions for types of line and character would follow. If direction of line is chosen as the first attribute to be decided upon, then it is given primary importance. If type of line is chosen as the second attribute to be decided upon, then it is given secondary importance with character of line having the least importance.

Diagrams of the two classification forms follow in Figure 1 for comparison. One should note that on the taxonomic diagram the opposition 1-2 is relevant for the Superclass A on the left hand side of the diagram. This does not mean that objects or events which might be assigned to h will not display attributes assignable to 1 or 2, but since they display Attribute B, Features 1 and 2 will not be considered (Dunnell, 1971, p. 77). The classes formed from the following diagram are:

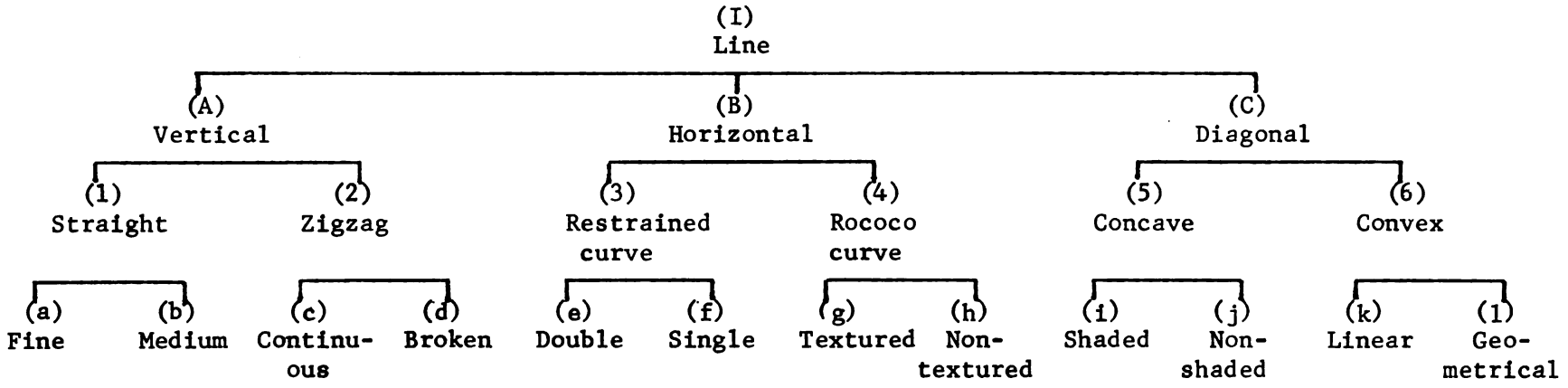
Classes from paradigmatic classification:

I A 1 a; line, vertical, straight, fine
I A 1 b; line, vertical, straight, heavy
I A 2 a; line, vertical, curved, fine
I A 2 b; line, vertical, curved, heavy
I B 1 a; line, horizontal, straight, fine
I B 1 b; line, horizontal, straight, heavy
I B 2 a; line, horizontal, curved, fine
I B 2 b; line, horizontal, curved, heavy
I C 1 a; line, diagonal, straight, fine
I C 1 b; line, diagonal, straight, heavy
I C 2 a; line, diagonal, curved, fine
I C 2 b; line, diagonal, curved, heavy

Classes from taxonomic classification:



Paradigmatic Classification



Taxonomic Classification

Figure 1. Diagramatic comparison of paradigmatic and taxonomic classifications

I A 1 a; line, vertical, straight, fine
I A 1 b; line, vertical, straight, medium
I A 2 c; line, vertical, zig zag, continuous
I A 2 d; line, vertical, zig zag, broken
I B 3 e; line, horizontal, restrained curve, double
I B 3 f; line, horizontal, restrained curve, single
I B 4 g; line, horizontal, rococo curve, textured
I B 4 h; line, horizontal, rococo curve, nontextured
I C 5 i; line, diagonal, concave, shaded
I C 5 j; line, diagonal, concave, nonshaded
I C 6 k; line, diagonal, convex, linear
I C 6 l; line, diagonal, convex, geometrical

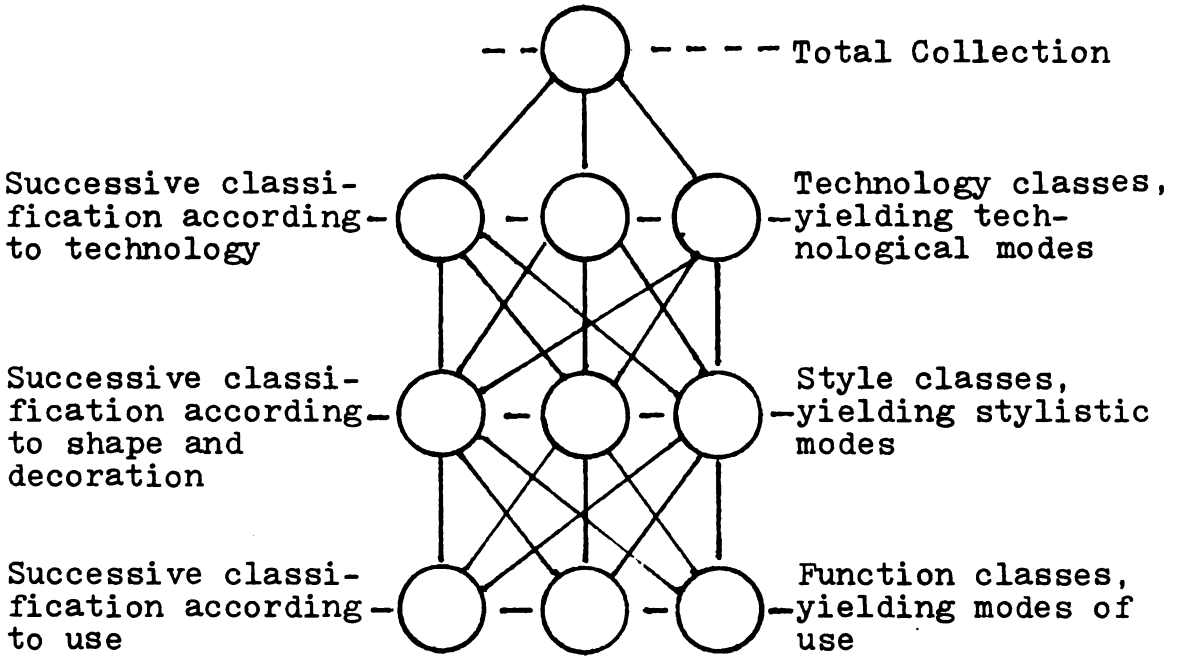
Rouse (1960) differentiated between analytic classification and taxonomic classification (Figure 2). The investigator suggests that Rouse's analytic classification and Dunnell's paradigmatic classification are the same form.

Using the line example, the diagram is revised as shown in Figure 3.

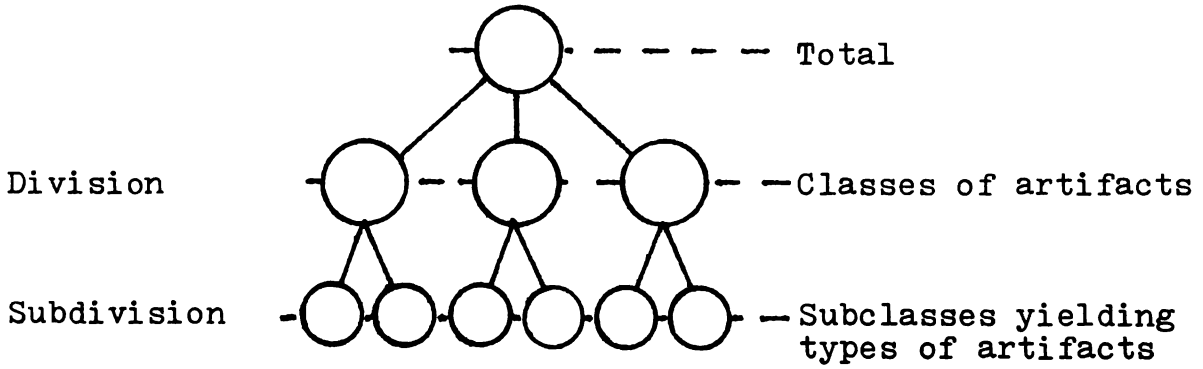
Although the diagramatic appearance of Rouse's (Figure 2) is different from Dunnell's, the method and end result are the same. All objects in the total collection are classified in regard to all possible features in the successive attributes. Placement in any feature is possible.

Taxonomic classification results in a single series of classes and analytic classification in a successive series (Rouse, 1960, p. 316). Rouse concluded that both analytic and taxonomic classification are needed to study any collection completely.

Dunnell (1971) and Rouse (1960) were the authors who discussed types of classification systems. Paradigmatic or analytical systems have unweighted or unordered features,



Analytic Classification
(Rouse, 1960, p. 315)



Taxonomic Classification
(Rouse, 1960, p. 316)

Figure 2. Diagramatic comparison of analytic and taxonomic classification

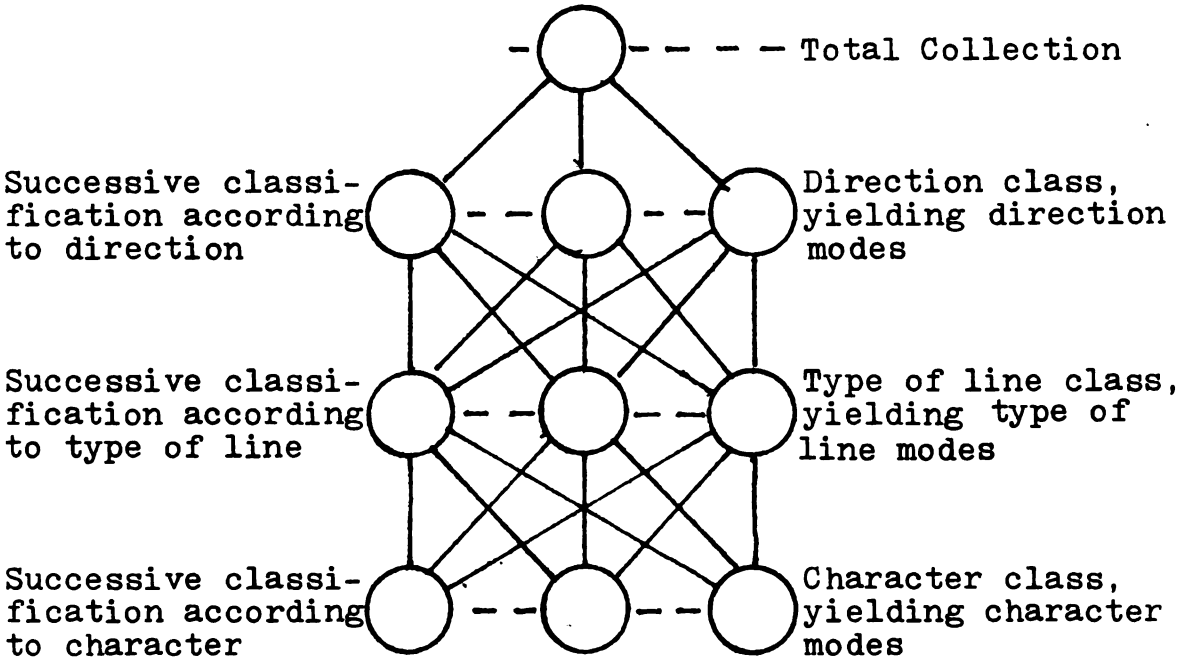


Figure 3. Diagramatic analytic classification using line

whereas taxonomic systems have weighted features. Paradigmatic systems are more flexible and suited to descriptive studies, since all objects can be classified in regard to all possible features rather than paired opposites. Taxonomic systems are limited to the study for which the attributes were ordered in importance.

Mode and Type

Rouse differentiated between mode and type. Modes are the end result of analytic classification and are defined as

> any standard, concept or custom which governs behavior of the artisans of a community, which they hand down from generation to generation, and which may spread from community to community over considerable distances (Rouse, 1960, p. 313).

In a design classification system, such as the one proposed, a mode could be a single design technique or specification, for example motif content, which several artifacts share. Modes need not be all inclusive, that is, modes can concentrate on technology, on shapes, or on designs and need not include all three (Rouse, 1960, p. 314). Modes are of two types, concepts conformed to by the artisan, such as material, shape, decoration or procedures in manufacturing and use. Conceptual modes can be seen in the artifacts, procedural modes must be inferred by the researcher. Rouse believed that modes are inherent in a collection (Rouse, 1960, p. 315).

He singled out cultural modes and stated that one way to determine them is to

> examine a collection in terms of the artisan's procedure starting first with the materials he used, continuing with his techniques of manufacture, and then considering shapes, decoration, and uses (Rouse, 1960, p. 314).

After the system has been established new artifacts can then be added.

Types result from taxonomic classification. Types can be formed from original attributes or as suggested by Rouse, from modes. A type is defined as a complex of modes or a list of attributes, whereas mode is one attribute. Relating type to design, type could be "style" (Rouse, 1960, p. 316).

Rouse noted several ways to form types.

> The most systematic one is to divide the specimens into two or more classes on the basis of one set of modes, for example, of materials; then to subdivide each class on the basis of another set of modes, such as shapes; and to continue this process until all the artifacts of the same kind have been separated into a single sub-class (Rouse, 1960, p. 316).

Types imposed on a collection are arbitrary.

Rouse stated that the practical number of modes used for type criteria in taxonomic classification depends on the complexity of the artifact and number of alternatives of the artisan. He specified two kinds of types. Historical types are time-space oriented and descriptive types refer to the physical nature of the artifact (Rouse, 1960, p. 317).

Rouse (1960) defined mode as a standard, concept, or custom which is outlined by use of analytical classification, such as a geometric design style. Types, resulting from taxonomic classification, are a group of modes or

attributes. Conceptual modes and descriptive types would be the specific kinds of modes and types relating to this study; however, modes and types are not formed in this research because no textile collection is analyzed for interpretation. Modes and types are recognized after classification and determination of common or contrasting characteristics.

Desirable Characteristics of a Classification System

From a review of articles on classification of archeological artifacts a list was compiled of characteristics that an adequate classification should have:

1. The classification should be suitable to purposes of more than one study (Gardin, 1958).

2. Personal interpretation must be restricted (Gardin, 1958, p. 338).

3. The system should be convenient and easy to use (Krieger, 1944, p. 247).

4. There should be internal consistency (Dunnell, 1971, p. 60).

5. Decisions in the formation of classes must follow a unified set of rules and the four initial assumptions--field, scale, features, and definitive features--must be relevant, economical, and apply to a stated problem (Dunnell, 1971, p. 60).

6. If choosing between two classification systems, one which has more classes than necessary and one with only

the class required, the second is preferrable (Dunnell, 1971, p. 63).

7. There should be simple major divisions of easily distinguishable forms, each division should be capable of subdivision, and the system should be susceptible to continued subdivision (Krieger, 1944, p. 274).

8. Reference to a key to differentiate opposing features should be limited. The key should be uncomplicated (Krieger, 1944, p. 274).

9. The subtypes should be numerous enough to isolate the most varied details (Gardin, 1958, p. 338). On the other hand, Black and Weer listed the least possible amount of description as beneficial (Black and Weer, 1936, p. 280).

10. The resulting description should give a proper mental picture (Black and Weer, 1936, p. 280).

11. The classification needs to be open to addition (Gardin, 1958, p. 338).

12. Krieger objected to artificial classification that is too difficult to remember and a key must always be used; thus a well planned classification system ordered by related aspects would ease use (Krieger, 1944, p. 247).

13. Whiteford stated that artifact types should come from the artifacts being analyzed. If an arbitrary classification is used, details are lost (Whiteford, 1947, p. 228).

14. An underlying trait should connect the entire classification system (Krieger, 1944, p. 274).

The following list of desirable characteristics is in reference to the terminology used:

1. Terms should be mutually exclusive in definition (Gardin, 1958, p. 338).

2. The terms should be elementary with unique and stable meanings (Gardin, 1958, p. 338).

3. Terminology should be universal or multilingual and defined by the aid of drawings (Gardin, 1958, p. 339).

4. Few terms should be used for description and boundaries should be given. For example, ratios are better than listing numerical values. The classifier should be able to choose between (a) greater than $\frac{1}{2}$, or (b) less than $\frac{1}{2}$ (Gardin, 1958, p. 340).

5. Applied linguistics for basic forms and operations prevent an "alphabetical classification from interrupting evident ornamental families" (Gardin, 1958, p. 342). For example, Gardin used "spi" to represent the shape "  ". The operation of rotation, reflection, or so on is indicated by another letter; thus forming words showing ornamental relationships.

6. In the case of iconography or story telling motifs, a condensed expression is needed for the figurative theme (Gardin, 1958, p. 345).

Krieger is speaking against classification in his article. He lists several disadvantages to a classification system.

1. Division of criteria gives preference to some traits over others. Some traits are mentioned and some omitted in any form of description (Krieger, 1944, p. 276). However, if the limitations of the classification system are known, then it can be used to its best potential without any misleading information. Omission of some traits is acceptable, since not all traits relate to all problems of study.

2. Krieger stated that morphologically based divisions are "fallacious because the frequency with which certain shapes occur constantly shifts in different runs of material" (Krieger, 1944, p. 276). This is an accepted disadvantage of classification, but it has already been mentioned that a flexible system is advantageous. Researchers using classification systems are aware that new information is constantly being discovered.

3. Krieger stated that breaks are artificial (Krieger, 1944, p. 276). This is also a recognized disadvantage, since most traits run on a continuum. Lines gradually change from straight to curved, colors move gradually from yellow through blue through red and back to yellow. For comparison some point has to be chosen on the continuum and it must be artifical.

4. Krieger complained that systems are by nature inflexible and not adaptable to other cultures and studies (Krieger, 1944, p. 277). Brew pointed out that students are not to squeeze their study in an existing system, but adapt

the system to their particular study (Brew, 1946, p. 49).

5. Krieger stated variation can only be accomplished by increasing and decreasing the system (Krieger, 1944, p. 277). Variation can, however, come from equal amounts of addition and subtraction as new information is gained. The size of the system can be controlled, so as not to become overburdened.

6. Krieger asked, "What are the basic features of importance in comparative studies?" He believed the question is unanswerable (Krieger, 1944, p. 277). The features of importance in a comparative study, however, are those set down by a researcher and those vary due to continued search for information.

7. Krieger's last objection in an argument against taxonomic classification stated that the subdivisions under one main heading imply close relation to one another in the genetic sense more than they do with the subdivisions of any other headings (Krieger, 1944, p. 277). The developer of the classification system can control the relationships. Headings and subheadings can have a genetic relationship if that is most valid for the system, but are not necessary. One would not subdivide texture into red, blue or yellow if a genetic relationship was desired, but might if texture was the first dimension of importance and color the preferred secondary dimension.

If a researcher developing a classification system is aware of inherent disadvantages, solutions to the problems

raised by Krieger can be solved or reduced in effect.

Organizational Systems for Textiles, Ornament, and Archeology

No system similar to the classification proposed for this study was found in the literature surveyed. Meyer made a beginning by developing a system for motif or ornament and expressed the need to relate motifs in order to trace evolution of design, interrelations of culture, and to make cross-cultural comparisons (Meyer, 1957). Because no extensive classification system has been developed, comparisons of motif and arrangement have not been possible without duplication of effort. Studies so far have been limited to descriptive grouping. At present, in order to use these studies as a basis for comparative research, each investigator must develop his own classification system based on such descriptions and account for the undefined terms or for similar terms with different implications. Thus, descriptions in texts or catalogues are not easily adaptable to comparative studies. A consistent system is needed.

Textiles and Ornament

Design is considered an important factor in the discussion of ethnic or historical textiles and ornament. The studies surveyed fall into six general applications:

1. General descriptions with no classification of similar motif or pattern (Beer, 1970; Reath, 1937;

Weibel, 1952). Beer catalogued the textiles by means of intended use, using categories such as panel, hanging, quilt, or petticoat (Beer, 1970). Reath used weave categories and Weibel used weave and subject matter as classifying criteria (Reath, 1973).

12. QUILT, center of painted cotton; lined with dark green glazed linen, and with wide border of green silk. Center made of two breadths of cotton, one of 15 inches, one of 19 1/2 inches, seamed; Coromandal coast, first half eighteenth century

Purchased in memory of Julia Hutchins Wolcott
Acc. no. 1968-79-1

Colors: two reds, blue, green, yellow, brown, plum color; black for stem and details.

Design: A repeat pattern, balanced, symmetrical; flower sprays and flowering vines, butterflies, flower, fruit, and other birds. Red and light red predominate, with green for foliage, bird's wings, reddish brown for other birds, and touches of plum color. Much inner detail in flowers. Birds about 3 1/2 inches, flower spray 5 1/2 inches.

The additions of the lining, border of silk, and quilting were made in Europe (Beer, 1970, p. 79).

Example 5. Plate 5
PLAIN CLOTH BROCADED
011.B
Persian, XVIII century

Textile Museum of the District of Columbia
(3.100), Washington

Description: Repeats of a flowering plant on a yellow ground. Blossoms in salmon pink and rose, and in orange pink and white; leaves, light green, outlined and veined in dark blue.
Material: silk
Weave: Warp: yellow -- arranged in pairs
Weft: yellow
Brocading: salmon pink, rose, orange pink, white, light green, dark blue.

The ground of the fabric is in Plain cloth weave, made by a yellow weft crossing regularly under

and over a pair of yellow warps. Weftwise -- that is, horizontal -- ribbing is produced by the heavier weft threads. The design is brocaded in colored silks.

Note: On face: brocading threads float across each detail of motive and are not bound down. On back: brocading threads float across, and in some places, between motives. Fairly heavy texture.
Size in meters: (of piece) length 0.365, width 0.40; (of motive) height 0.049 (Reath, 1937, p. 69).

100. Plain Compound Twill
Lions

East Iran, 8th-9th Century.
Boston, Museum of Fine Arts.

15 3/4 x 22 3/4 in. (41 x 58 cm). No. 47.1457. Provenance: a church at Verdun-sur-le-Doubs. Ex-coll. Claudius Cote; Mulliot, Sens; Maixmarron, Dijon, 1867; Lienard, Verdun, c. 1860. The identical speciman, the Sudarium of Ste. Columba at Sens, has been published by Falke, I, pp. 99-110, fig. 190.

Yellow, white, light - and dark blue silks. Flattened roundels are framed with triangles and a pearl band. Two lions confronted stand above a palmette; triple-rounded motifs indicate hilly soil. The horizontal rows of roundels are separated by slender trees and running dogs and foxes (Weibel, 1952, p. 108).

2. Very detailed description with cataloguing based on subject matter (Kybalova, 1967).

5. Head of Woman, Square insertion. Rib weave; slanting weft, 9 warp and 24 weft thread per cm. Embroidery. Woven from the bottom as a separate entity and sewn into the cloth. Wool and linen; 17.2 x 16.7 cm. Fourth century. Pushkin Museum Moscow; Inventory No. 5151. Purchased by V. S. Golentshchev in Egypt (Kybalova, 1967, p. 56).

3. Historical ornament texts which group motif and some form of repeat (Estrin, 1947; Hornung, 1946; Humbert, 1970; Meyer, 1957).

A. Geometrical Elements
B. Natural Forms
C. Artificial Forms

A. Bands
B. Free ornaments
C. Supports
D. Enclosed Ornaments or Panels
E. Repeating Ornaments (Meyer, 1957).

4. Grouping of general motifs for instructive purposes (Birrell, 1959; Day, 1903; Fletcher, 1937).

5. Sociological classifications with descriptions of color and motif (Harrell, 1967).

6. Classification of motif with numbers of classes limited by a specific culture (Adam, 1969; Langeweis and Wagner, 1964; Nielsen, 1974; Sirelius, 1926; Williams, 1971).

Williams developed the following divisions for description of African ornament:

Symbolic and simple geometric motifs
Repetitive designs and textural patterns
Animals and mythical figures
Human beings
Masks
Artifacts and objects with figural components
Artifacts and complex geometrical motifs (Williams, 1971).

Adams outlined the plan for her study as follows:

> The first task of this study is to establish the function of the decorative textiles by analyzing them in their social setting; the second part will consist of an examination of the structure and content of the design system. On the basis of these analyses, I will attempt to show links between the aesthetic and social order in East Sumba, for decorative textiles, it seems to me, embody in structure and function fundamental conceptions of value held by the East Sumbanese (Adams, 1969, p. iv).

She developed a system to categorize textiles into motifs with a specific animal or plant; however, the classification number of the textiles applied to a museum code rather than the assigned motif category. Since she worked with a small group or finite group of textiles, she was able to be very specific in motif groupings, but her system was limited only to motifs represented. This system would not be applicable to all textiles (Adam, 1969).

Nielsen also used a small collection and classified by motif subject matter, but her classification number indicated the motif depicted. She established the minimum criteria for her classification system as:

1. State the classification clearly
2. Consider the dominant motif
3. Describe rather than interpret
4. Make the classification be comprehensive and expansive
5. Make the classification simple and easy to use
6. Facilitate grouping of samples for easy access
7. Number and catalog samples

She ruled out use of selected divisional categories. Traditional and nontraditional allowed for only two classes. Symbolism and style were too subjective. Intent or source of inspiration is not always evident from the piece. Shape presupposes a knowledge of design and does not allow for sufficient number of categories. Color may not always be distinctive, since classifying only one cultural style or technical level of textiles may show no color differentiation. It is also possible that there may be too many colors to show comparisons. Combination of these categories was

rejected by Nielsen, because one feature then becomes a variance of the other and limits the particular problem to be solved. As discussed in the previous section, this limitation depends on the form of classification system used.

Nielsen ultimately subdivided the Eicher and Nielsen Wax Print Collections by subject matter of the dominant motif; however, for universal application choice of dominant motif may be too subjective to use as a single criterion (Nielsen, 1974).

Langeweis and Wagner used the following system:

I. Reserve Dyeing Technique

II. Weaving Technique

III. Other Ornament Techniques

- A. Human figure
- B. Animal figure
- C. Representations of vegetable objects
- D. Representations of other designs
- E. Purely geometric designs
- F. Other than purely geometric designs
- G. Composite designs
  1. Placed singly on a monochrome background
  2. Metrically repeated; placed in horizontal, vertical, and/or diagonal bands, forming part of the total ornamentation
  3. Metrically or nonmetrically repeated; included (either separately or in

combination with other motifs) in the decorative design of the central section of the ornamentation

4. Metrically or nonmetrically repeated; forming part of the total ornamentation.

Langeweis and Wagner's system used technology or design technique as the highest level of classification. This method differs from the proposed system, but points out that subject matter, field and borders or overall arrangement, and repeat are important. Langeweis and Wagner applied this classification system to a particular culture, instead of being universal in application (Langeweis and Wagner, 1964).

Sirelius used the expression "to classify", but he was actually organizing and describing the ryijy (rya) of Finland. He did, however, use design motif as the divisional categories. He wrote:

> It is obvious that more exact results can be achieved by making the design the basis of comparison. And this same method makes it possible to test one's ideas as to the real derivations of degenerative or conventionalized motives, a possibility often lacking where detached motives or ornamental devices are subjected to comparisons (Sirelius, 1926, preface).

Sirelius's chapter headings were ordered by designs common on the ryijy, such as ordered geometric, free geometric, hearts, trees, linked ovals, or tulips. In the discussion he referred to characteristics such as symmetry, placement in field or border, concentric groupings, regular or irregular groupings, size, direction, rhythm (alternating direction of individual flowers), dominant motif,

auxiliary motif, equal quantities of multiple motifs, density, color, and style. Each of these characteristics is a possible class for classification based on aesthetic analysis.

His summaries were based on traditionalism, development of motif from subordinate to major, development of symmetry, styles and areas, evolution of a design or its degeneration (Sirelius, 1926).

The literature reviewed was grouped into six categories: (1) general description with no classification of motif, (2) very detailed description with cataloging based on subject matter, (3) historical ornament texts with motifs and repeats grouped, (4) instructional books with grouping of motifs, (5) sociological classification, and (6) classification by motif within one culture. The practice of naming motifs by these authors was considered for inclusion of content or subject matter in the proposed system.

Archeological Studies

In the area of archeological classification more complex systems were found. No relationship between the increase of use of aesthetic elements for description and the date of the articles surveyed was found, although early articles did recommend a more thorough design analysis.

Several authors based classification on date, location, process of manufacture, material, or possible use. Only articles using design elements are recorded here.

Sources are grouped into five categories. Only Whiteford advocated any type of classification (a descriptive system) (Whiteford, 1947). The rest of the articles did not give details of classification types. Their value to this study is terminology and methodology.

1. Use of shape for classification (Black and Weer, 1936; Whiteford, 1947)
2. Use of symmetry (Brainerd, 1942)
3. Use of multiple elements for description (Frederick, 1970; Johnson, 1958)
4. Detailed use of multiple elements for description (Shepard, 1956)
5. Experiments in terminology (Gardin, 1958)

Black and Weer developed terminology for shape classification. They admitted certain forms defy description and reduced shape to basic geometric form in order to indicate the larger category. For example, a descriptive term "rectanguloid" is preferred to rectangle. Rectangle has a precise mathematical definition; whereas, rectanguloid implies variation that the mathematical definition does not. The second part of their problem was to describe or classify the deviation from the basic form. The geometric system is a suggestion for a textile motif analysis:

> for the very adequate reason that the terms apply to any and all geometric forms wherever they are found in nature or as the result of special treatment and change by man (Black and Weer, 1926, p. 281).

The basic planar geometric forms are the circle, triangle, and the square; all other forms are modifications of these. Their system of gorget classification was as follows:

I. Geometric forms
    1. Circuloid
    2. Elliptical
    3. Oval or ovate
    4. Rectanguloid
    5. Trianguloid
    6. Compound
    7. Miscellaneous
        A. Bipennate
        B. Lunate
        C. Unusual
        D. Specialized
        E. Asymmetrical

II. Morphological forms (shape known well, needs no description)

III. Cultural forms (form particular to one culture) (Black and Weer, 1936, p. 288)

Whiteford proposed a terminological system or descriptive system by which artifact features could be described:

> With this accomplished it would be possible to test the variations of each element, alone and in combination with others, for significance before the formulation of a classification or designation of type (Whiteford, 1947, p. 228).

A descriptive system is not a classification system. Its purpose is for cataloging and designed with two goals: (1) use of criteria that are objective, understood, and used by personnel untrained in archeology and (2) a complete and accurate description of each artifact so that typing and analysis are possible from the catalogue without necessitation observation of each artifact (Whiteford, 1947, p. 229).

Areas of description included material and process of

manufacture, the basic shape and possible functional class, details of specialization in shape, and size and overall proportion (Whiteford, 1947, p. 230).

Whiteford's study dealt with projectile points so "basic shapes" referred to a class, such as "single tapered" with edges and base described as diagonal and vertical. Specialization in shape referred to variation of basic shapes, such as "shoulders" and "stems". Size was designated as small, medium and large. Proportion measured length to width ratios. Whiteford concluded that no analyst can determine which characteristics will be more significant than others until all artifacts are classified. This presents great difficulty in that all artifacts will never be classified. His method is limited to finite collections (Whiteford, 1947).

Brainerd stated the purpose of his paper as presenting a "generally applicable, objective, terminology for classification of conventional design" (Brainerd, 1942, p. 164). His terminology is based on symmetry of arrangement. Brainerd compared two design groups and noted variety and predominance of symmetrical arrangement. Types of symmetry included bifold rotational, mirror symmetry, offset mirror symmetry, radial symmetry, and serial repetition of asymmetrical elements (Brainerd, 1942).

Friedrich's intent was to determine how pottery painting could serve as an indicator of frequency and intensity of interaction between painters. She developed a system

for segmenting the artifacts surface, analyzing the design configuration or arrangement of elements within the space, and then analyzing the design elements, which she defined as the smallest self-contained unit. The spatial divisions utilized for segmentation were edges and interior spaces. Design configuration determined arrangement, primary and secondary elements, and the function of the design elements. Function of the design elements refers to use of an element, such as line used for cross-hatching or construction of a flower.

The detailed method included determination of the number of lines per inch, relative size of all elements, and mode of conjunction of elements, such as variation in flower centers or the way lines met (Friedrich, 1970).

Johnson compared pottery artifacts of Hohokam and Chalchihuites, two Southwestern United States cultures. She based her comparison on design elements (color, line, form, texture, space) and found 32 shared traits suggesting possible influence. Her list of design elements used for comparison was:

Color
Form
    Shallow bowl
    Elliptical jar
    Pedestal base
    Tripod vessel
    Low angular shoulder
    Basket handle
    Effigy handle
    Bird-effigy vessel
Design layout
    Quartered
    Perpendicular panels

Linework
- "Squiggly"
- Ticking at rim
- Fringe at rim

Elements of design
- Interlocking scroll
- Noninterlocking scroll
- Rectilinear scroll
- Herringbone
- Small elements
- Variations of the bull's-eye
- Rows of dots

Life forms
- Coiled snake
- Outstretched snake
- Bird
- Bird-snake combination
- Toothed animal
- Humped-back quadruped (Johnson, 1958, p. 127)

Shepard's studies were a thorough analysis of pottery based on physical property, composition of material, technique and style. Her discussion of style is most valid to this study, since she indicated that aesthetic aspects have not received a great deal of attention in archeology and called the lack of attention unfortunate, since shape alone cannot be used to adequately prove development or degeneration of a style.

> There is no general inclusive system for the classification of design structure, and for the present it is important that there be direct and independent analysis unrestricted by preconceived ideas of particular systems (Shepard, 1956, p. 266).

The purpose of her study was to:

> establish a general method for the systematic comparison of shape styles. The criteria chosen are all geometric, they proceed from the general to the particular, and the major categories are defined with reference to limits which are easily established (Shepard, 1956, p. 228).

Shepard suggested that connotative analysis be separate

from formal. The latter includes shape, composition, use of elements and motifs, symmetry, relation of figure to ground, and balance of dark and light. Most of these characteristics can be described by inspection and a common basis for judgment can be developed:

> It is logical to commence the study of design with an analysis of the manner in which it was planned, that is, to identify the original outlines and the major divisions of the field. Various well-defined plans or methods of space breaking will be discovered in this way; and often they will furnish a key in the search for derivations and developmental stages in the history of style. Also, relationships between construction and such features as symmetry and balance of light and dark will become evident (Shepard, 1956, p. 264).

Her extensive comments on symmetry were most helpful in this study. Shepard claimed that all that is necessary to classify motif and repeats using symmetry is identification of the fundamental part and the motion used to repeat it. She also claimed that when studying pottery it is important to note changes and their conditions and effects:

> The need is to analyze in detail the particular features that underwent change, considering the nature of change -- how the persistent features compare with the new, if new materials and methods were adopted simultaneously, if technical development was accompanied by stylistic change, what steps were passed through before an innovation became established, and if new features can be attributed to imitation of intrusive pottery, to adoption of foreign techniques or styles, or to a native invention (Shepard, 1956, p. 317).

In a 1958 paper Gardin discussed "economical presentation and dissemination of artifact description" (Gardin, 1958, p. 335) and introduced terminology to classify metal tools, containers, ornament, and iconography. The goal of

Gardin's study was to find the best terminology to analyze data and translate it to punch cards. He suggested two approaches to analyzing a trait in an artifact. The first is to have a punch card for the trait with all objects possessing that trait listed on the card. The second is to have a punch card for the object and list its peculiar characteristics. He concluded that the second option was likely to prevail. The purpose of classification and punch categorizing is to make vast stores of published and unpublished information easily available (Gardin, 1958, p. 338).

Gardin said:

> Important descriptive details are scattered in the text and in the illustrations, so that the student must return again and again to the source once he has located it. This process is repeated endlessly by different archeologists using the same materials; hence, the total duplication of effort is enormous (Gardin, 1958, p. 335).

Gardin's discussion of ornament and iconography is applicable to this study in textiles. Ornament was divided into two parts. First was "signs", such as the spiral and the loop. These retain recognizable appearance through all types of transformations and combinations. The second part is "operations". Gardin identified symmetry, gradation of line, and rotation as examples. Combinations of operations form distinct and familiar ornament as palmettes, meanders, and rosettes or larger decorative patterns by manipulating signs. A small number of signs (20) and operations (15) were found. The six classes of operations

are:

1. Polygonal arrangement
2. Symmetrical arrangement
3. Radial arrangement
4. Linear arrangement
5. Interlocking arrangement
6. Intersecting arrangement

In addition to grouping ornament by sign and operation, Gardin developed a nomenclature for the ornament. The word "spi" indicated the sign spiral. Suffixes represented various operations. This method prevents alphabetical classification from disturbing ornamental families. Gardin stated that any ornament can be named by sign and operation if its outline follows some apparent order. Ornaments are differentiated as primary--one operation; secondary--two consecutive operations, and so on (Gardin, 1958).

In iconography Gardin used rules of grammar to organize ideas shown in a picture. Logic or frequency was considered in the action depicted in the scene. Elements initially considered are subject, object, instrument, location, and qualifiers. Verbs are simplified to positive action or negative action. In answering to the charge of oversimplification, Gardin said:

> When reducing the phenomenological diversity to logical 'intersections' of broad categories, one must be willing to give up certain subtleties of direct perception. Otherwise the analytical system will be even more obscure than the anarchy of immediate observations (Gardin, 1958, p. 349).

The system would never be so specific as to classify "Hercules overpowering the Nemean Lion."

Gardin's classification is limited to the first level

of artistic expression as stated in Panofsky's theory (Panofsky, 1955), which has three levels:

> First comes a factual inventory, inferred from the observations of constant relations between certain forms and the 'natural' objects which they are meant to represent; then follows the 'conventional' meaning of the motifs thus isolated, the allusive quality of the picture which together they compose; and lastly, the 'symbolic' values of such themes, considered in relation to a large cultural context (Gardin, 1958, p. 350).

In a 1967 article, Gardin explained rules necessary for data analysis--rules for orientation, segmentation, and differentiation. Orientation referred to the position which the researcher should take in relation to the object. Segmentation referred to a standard method of dividing the artifact into sections for further description. Differentiation dealt with determination of values which each variable had in the description. It could also be looked at as a further step in segmentation. Variables, such as degree of a curve or density, vary on a continuum. For these criteria, differentiation and quantification must be established. The decision is relative and arbitrary. Visual rather than verbal or numerical keys would be more effective in ornament for rules on orientation, segmentation, and differentiation (Gardin, 1967).

The articles reviewed in this section were grouped in five categories: (1) shape classification, (2) symmetry classification, (3) use of multiple elements for description, (4) detailed use of multiple elements for description, and (5) terminology. All of the authors included much more

detail in their analysis of artifacts than the authors who wrote on historic or ethnic textiles and ornament in the previous section. Their value to the proposed classification system is terminology and methodology. The elements used by these authors were shape, line, color, symmetry or arrangement, value, density, and subject matter or naming of traditional motifs, such as herringbone. Gardin (1958) discussed nomenclature and orientation for viewing a textile.

Miscellaneous Methods for Grouping Designs

Several suggestions can be obtained from authors not discussing a specific system. Some authors list elements and principles that are different from the traditional--space, form, color, line, texture, proportion, scale, emphasis, balance, and rhythm. Two dominant methods of grouping were discussed the authors surveyed:

1. Analysis by structure (Birkhoff, 1933; Christie, 1969; Justema, 1968)
2. Analysis by historical evolution (Goodyear, 1981)

Justema's book is a study of pattern characteristics, analysis of good pattern, a brief history, and lessons in creativity. Repetition is the "essense of pattern", according to Justema. "Repetition makes pattern" and "variation makes pattern interesting." "Together these two properties of design can account for everything that happens in a pattern" (Justema, 1968, p. 25).

Rhythm, symmetry, and balance can be described in terms of repetition and variation. Repetition and variation are the basis of pattern with structure, scale, coverage, emphasis, and counterchange as the properties.

Structure refers to the two categories of repeat recognized by Justema--block and brick. Scale is defined as size in relation to number and complexity of motifs. Coverage is the amount of configuration in a given space. Emphasis determines primary and secondary motifs. Counterchange is formed by reversal of black against white (Justema, 1968).

In discussing style, Justema pointed out that patterns fall on a continuum between naturalistic and geometric. Most patterns do not fit either category precisely. He also stated his conviction that a "sufficiently exhaustive study of world pattern would reveal the possibility of classifying most patterns by the manner in which the surface has been covered." Such a system, he wrote, would be helpful in establishing provenance or place of origin. His theory is "that most periods and/or people have their own sense of spacing and that this can go far towards identification" (Justema, 1958, p. 34).

Birkhoff discussed aesthetic measurement and listed positive and negative elements of order. The positive elements are possible sources of classification. They are vertical symmetry, balance, rotational symmetry, relation to a network of lines, repetition, sequence, similarity,

spiral form, circular form, floral form, contrast, and center of interest. Birkhoff discussed symmetry and motion and illustrated the seven species of one-dimensional or band ornament and the seventeen species of two-dimensional or all-over ornament. He suggests classification of one- and two-dimensional ornament into species of motions:

> Two groups will be said to be of the same species in case they can be defined by geometrically similar ornaments undergoing similar motions, or at any rate by ornaments similar except for a proportional reduction of distance in a single direction (Birkhoff, 1933, p. 54).

He cited an example of a diamond, suggesting that a small diamond is in the same species as a large diamond, but a diamond is not in the same species as a square.

Archibald Christie stated that rhythmic movement is the basic principle to all patterns. Devices or motifs are capable of expansion in vertical, horizontal, or diagonal directions. Believing that craftsmen could not continue to improvise patterns without method, Christie suggested a formal classification of ornament which involves seeing through the design to the basic structure.

Christie stated the aim and procedure of his method as follows. Designs having structural characteristics peculiar to themselves are grouped. One design most clearly showing distinguishing features common to all members of the group is taken as representative or the "type". More comprehensive categories can be developed from the types, so that a framework is formed in which new examples can be placed

(Christie, 1969).

The proposed system will show only relationships, not justify or explain them. Christie stated:

> The occurrence of the same pattern upon an early piece of English pottery and a bowl-shaped capital from an ancient Assyrian palace may mean either that one copies the other, or that both are derived from a common original, or that the design is so obvious that no school or workers could possibly overlook it (Christie, 1969, p. 61).

Christie's classification is based on the following premises:

1. The elaborate elements are not of immediate concern. For example, the central design in a diagonal network can be a cross or a fluer-de-lis, but the important fact is that the structure is a diagonal network. The central motif is secondary.
2. Growth as a pattern can be divided into two types--an isolated unit, such as a dot or mass, and a continuous unit, such as stripes.

Christie identified difficulties in determination of motif and ground. For example, in some cases positive and negative spaces virtually shift. Horizontal and vertical intersecting bands may be dominant at one time and at another time the square they form will seem primary. All parts of the design are significant and a decision, possibly arbitrary, must be made, if using motif as classification. However, no matter which part of a changing visual expression is chosen for motif and which for ground, they are both equally dependent upon a common structure. In a black and

white stripe or chessboard pattern, it can be questioned whether the black is on white, the white is on black or the black and white are covering a ground, but that all three have the same structure is what is important to Christie.

Goodyear segmented motifs into their smallest element. For example, he described a meander as several swastikas together and each swastika as several lines. Line is the basic element. He suggested that a spiral scroll was concentric circles with a tangent line. He asserted that motifs date back to early civilizations, because it is easier to borrow patterns than to invent new ones. Assuming Goodyear's theory is correct, it should then be possible to classify motifs by their basic form, such as lotus, or by their original civilization, such as ancient Egypt.

Goodyear applied his theory to the study and dating of metal artifacts. Simplication and conventionalization of some motifs resulted because of a change in the original media or an increased number in production. For example, intricate tomb painted designs were difficult to reproduce in small hard metal; so the design was simplified. The design would also be simplified for rapid manufacture of amulets (Goodyear, 1891).

In discussing pattern Christie (1969) and Justema (1968) agreed that structure would be the underlying commonality for classification, although their terminology differed. Justema placed more emphasis on the variations in pattern and Christie on the similarities. Birkhoff

(1933) was more specific than Christie on structure, discussing symmetry of a motif and its repeating motion. He showed clearly and diagramatically the species of one- and two-dimensional ornament. Goodyear's (1891) study suggested classification of simplified forms, based on origin. Use of a system such as this would require extensive knowledge in all types of historic ornament.

Descriptive and Comparative Studies

Authors on historical or ethnic textiles commonly trace contact through a particular motif or discuss evolution, development, or dating of styles by comparing motifs. For example, Otto van Falke described the pattern of winged griffons or horses placed in rows. He concluded that Persian silk weavers' designs were taken from earlier oriental tapestry workers, adding:

> A similar continuity of textile patterns is also to be found in Greece, thus establishing an obvious relationship between the loom designs of early antiquity and the first silk patterns of the late antique period (van Falke, 1939, p. 1).

The following studies are not classifications, rather written descriptions. Their purpose in this study is to point out aesthetic elements and principles that authors consider important for increasing clarity of a mental picture or comparison.

Goldman compared griffon styles stating that earlier griffons had stockier proportions and a less sophisticated degree of abstraction. His conclusion required the use of

aesthetic elements, proportion and style. Other elements discussed by Goldman included position, dimensional representation as well as figure's activity, facial expression, decoration,and the nonaesthetic aspect, meaning (Goldman, 1960).

In a second article Goldman used decorative ornament to establish a relationship between East and West. Shape and position, basic geometric shapes of animals, styles, and combinations with other motifs were used to show similarities (Goldman, 1960).

Peter Floud established dates for William Morris patterns by comparing motif arrangement and style. Floud used terms, such as "framework emphasized" or "structure concealed", "squared-up", rows, or diagonal pattern to describe arrangement. Formal, naturalistic, and conventional were terms used to describe styles. Movement and direction were also important to Floud and were expressed by "upward movement", "swaying from side to side", vertical lines, vertical emphasis, and horizontal and vertical grid. Examples of descriptions for symmetry are: "rigid symmetrical formal patterns", "mirrorwise", vertical axis, asymmetry, and "turn over structure". Floud also described the feeling created by Morris patterns, for example, "free flowing meandering naturalistic pattern" (Floud, 1959).

Several authors in descriptive studies list motifs by name. For example, Ure names palmette, key pattern, lotus, hippocamp (Ure, 1953). An alternative method would

be analysis of motifs by basic geometric shape or strictly formal analysis (Arnheim, 1954; Goodyear, 1891).

Panofsky, in his discussion of iconography, designated the naming of a motif (palmette, key pattern, lotus, hippocamp) as pre-iconographical description or pseudo formal analysis. This level is identification of pure forms as human beings, animals, plants, houses, as well as perception of expressive qualities as mournful, home-like, or peaceful. Correctness of identification is not guaranteed, but is based on practical experience and familiarity with objects and events. Degree of correctness is increased by a study of the history of styles and a knowledge of the manner in which objects and events were expressed by forms in the varying historical conditions (Panofsky, 1955).

Adams stated that "identification of the motif as a physical and cultural object is an essential preliminary to interpreting a design system" (Adams, 1969, p. 129).

Ure considered whether or not the object was depicted as a silhouette, outline, or in detail. He described the color, direction, intensity of line or outline, composition, scale, angularity of curves, and feeling. When describing a human form used as a motif, he mentioned activity, physical condition, clothing, hairstyle, and sex. An example of the detail he included is "eyebrow that curves downward toward the nose so that it almost meets the upper lid; nostril is rendered by a single dot" (Ure, 1953, p. 246).

In two articles Brett not only discussed some of the elements and principles of design mentioned previously (style, symmetry, scale, value, feeling), but also named flowers represented by their specific name, forget-me-not, lily of the valley, tulip, rose, cabbage rose, hydrangeas, and poppies. He designated also the floral arrangement, garland, swag, medallion, bouquet, sprig, in a basket, in a vase, or tied with a bow. In discussing one composition he mentioned peacocks flanking the base of the tree of life, thus using the element of position (Brett, 1955; Brett, 1959).

The catalogue descriptions of several authors were analyzed. Each author provided detailed information. Weibel, for example, described the position of head and arms of humans and head and paws of animals. She mentioned scale, shading, mood, arrangement of individual motifs, activity of persons, style, space fillers, costumes, proportion, position (adjacent, touching), basic pattern names (cloud, flame), basic structure (grid, ogibal), and color distribution and gradation (Weibel, 1952).

Beer used arrangement or placement frequently in description. Common expressions included "on either side", "at the base", "at either corner", "to the right", "field and border". She also distinguished between primary and secondary motifs. Beer named the character of the design, such as Japanese and Chinoiserie for cultural examples or rich color and free and sketchy for design character.

Choice was given when a specific motif could not be named, for example, small leaf sprays or curling waves. Even with the great detail that Beer used, it is still necessary to look at the textile to get an accurate impression (Beer, 1970).

Adam, Reath, and Kybalova used the previously mentioned descriptions (symmetry, arrangement or space division, style, scale, proportion, name of motif, name of patterns, color, measurements, number of repeats, primary and secondary motifs, and position) (Adams, 1969; Reath, 1937). In addition, Kybalova mentioned positive and negative space or motifs merging with the background so that humans and animals disappear. Adam stated that an analysis of motifs must not only consider the range of motifs, but also frequency and position in the composition (Kybalova, 1967).

Figure 4 summarizes the elements and principles used by the authors discussed in this section.

The review of literature for the textile motif classification system included four areas: (1) classification theory, (2) desirable characteristics for classification systems, (3) existing information on organizational systems and (4) descriptive design motif studies.

From the section on classification theory it was determined that a paradigmatic system would be appropriate for the proposed classification, thus eliminating taxonomic and grouping systems. The purpose of classification is to organize masses of information for easy referral. If

Author	Elements	Principles	Style	Iconography	Other
Goldman (1960)		Proportion Position	Abstract Dimension	Activity Facial expression Meaning	Decoration
Goldman (1960)	Shape	Position	Geometric		Motif Combination
Floud (1959)		Arrangement Movement Direction Symmetry	Natural Conventional	Feeling	
Ure (1953)	Color Line	Direction Scale	Silhouette Outline Detail	Proper name Feeling Activity	Composition Details on Human forms Clothing Hairstyles Stature Sex
Brett (1950)	Value	Scale Symmetry	Generally used	Feeling Proper names	Motif combination
Goodyear (1891)				Formal analysis	

Figure 4. Use of the elements and principles of design

limitations are understood, classification can be beneficial in research studies requiring mass organization for comparison of items' characteristics.

Desirable characteristics for classification systems and terminology are many. Most important factors are clarity, ease of use, limiting of interpretation by classifier for internal consistency, flexibility, and suitability to selected problems.

In the textile and archeological organizations reviewed, the archeological studies seemed most helpful to this study. Technique used in pottery classification can be translated to textile design. Textile studies used primarily subject matter for grouping, whereas archeological studies used shape, line, color, symmetry, value, density, in addition to subject matter or motif name.

The descriptive and comparative design studies were reviewed in order to see what items were used for basis of comparison. Of the authors reviewed four used iconography, four used style, and four used design principles (balance, rhythm, emphasis, proportion). Elements of line, shape, color and value were used as well as motif combination.

CHAPTER III

METHOD OF PROCEDURE

The purpose of this study was to develop a classification system for two-dimensional patterned textiles based on motifs and their arrangement. Two-dimensional textiles included design techniques, which result in a flat surface, such as printing, dyeing, stenciling, painting, stamping, and some types of weaving. Excluded were embroidery, applique, trapunto, contemporary weaving art--sculpture-like forms, and weaving techniques adding dimension, such as cut or uncut pile.

The classification system was arbitrary, because no system is inherent in textile design. Attributes for analysis were selected on objectivity, ease of subdivision for classification, and ability in conveying a total picture of the textile design. Attributes selected included space, form, line, value, density, direction, position, structure, balance, symmetry, scale, proportion, dominance of motif, subject matter, and style.

Paradigmatic classification was chosen because it is best suited to descriptive studies and studies where importance of attributes have not been established (Dunnell, 1971).

Before beginning the development of this classification system, twelve criteria were established as goals or guidelines for ease of use, consistency, and terminology. The intent of this study was to provide questions and suggestions for organization of data that students analyzing textiles could use. This would eliminate a step in research studies, that is the development of a classification system from descriptive literature or textile samples.

Criteria for Development

The proposed classification system is to be evaluated in terms of its logical consistency and in the choices of field (textiles), scale (two-dimensional textile design), criteria (design elements and principles), and distinguishing criteria (the final elements and principles used in the classification). The scope of the study is limited to the development of a successful plan; no comparative study using the system is involved. Criticism should be based, therefore, on the theory, definitions, and ease of use.

The criteria for the development of the classification system are listed here. Response to their success in application was asked for after the classification system had been applied to two textile designs by two test groups.

1. The system should be easy to use.
2. Terminology should be simple and clearly defined.
3. The placement of a textile into a characteristic feature is to be objective.

4. Attribute subdivisions are to be mutually exclusive.
5. There is to be internal consistency. This means that similar textiles will result in similar classifications.
6. Only repetition necessary for clarity should be included at a different level of hierarchy.
7. The system is to be descriptive, not interpretative.
8. Attributes show no generic relationship to the previous attributes. No attributes are weighted in importance, for example, value is no more important than line character.
9. The classification system is to be comprehensive and open to expansion.
10. The details are to be numerous enough to isolate variations in textile design, but limited so that groups can be formed for comparison.
11. Classes are to be relevant to the proposed problem, which is the aesthetic analysis of textiles.
12. The classification system is to be applicable to more than one aesthetic study.

Selection of the Classification Form

The method of classification selected for this analysis of textile motifs is paradigmatic. In paradigmatic classification attributes are equivalent; thus one criterion is as important as another (Dunnell, 1971, p. 70). In the classification system that follows attributes are not weighted by importance, but are ordered by complexity and grouped by similarity. Features are listed only under attributes when applicable. Attributes are the criteria used to classify each textile design, for example, content, style, line, or symmetry. Features are the specific characteristics each attribute can have. They are subcategories of attributes, for example, features of line direction are vertical, horizontal, diagonal, equal emphasis, or non-directional.

Classification was initially chosen over grouping, because classification is definitive rather than descriptive (Dunnell, 1971, p. 45). In the proposed classification system, attributes for classes are being defined rather than describing an actual textile collection to be put into classes.

A class is defined by boundaries which state criteria necessary and sufficient for membership (Dunnell, 1971, p. 45). By being placed in a class, the characteristics of the object are known within allowed variation.

Relationships between classes are nonequivalent

equivalences in paradigmatic classification, meaning that they are comparable, but there is no ordering of importance. This type of classification is desirable for construction of initial classification systems for objects. There is less potential for ambiguity in application, because it is applicable to more study problems (Dunnell, 1971, p. 73).

Relationships between classes in taxonomic classification are noncomparable and ordered by importance. This type of classification restricts its use to only one problem of study; so there is greater potential for ambiguity in application. Each decision for placement of a feature is a choice between two opposites (Dunnell, 1971). Binary opposition is not suitable to the methodology of this study because of the frequency of multiple alternatives. The investigator desired that no priority be placed on features so that the system has wider application in aesthetic study. A priori decisions increase subjectivity.

In paradigmatic classification:

> Individual class definitions will consist of one feature taken from each dimension, the number of definitive features in each definition being a direct reflection of the number of dimensions used in the classification (Dunnell, 1971, p. 73).

In taxonomic classification individual class definitions are formed by means of inclusion. The main objection to the taxonomic system for the proposed study is that all subfeatures are not listed under headings due to the arrangement by weighting, rather by similarity.

The classification system is arbitrary, because no

system is inherent in textile design. Attributes for analysis were selected on objectivity, ease of subdivision for classification, and the ability to convey a total picture of the textile design.

Selection of Diagnostic Attributes

The classification categories for this study were based on the elements and principles of design, resulting in a formal analysis. In addition some connotative analysis was included, motif subject matter. Manufacture, use, and history or origin of the textiles are to be documented, but not classified. Inclusion of all textiles information in a classification system would be overburdensome for the classifier. Separate systems for nondesign information are not within the scope of this study, but this does not imply that such information is unimportant. According to Brew (1946) and Shepard (1956), using several forms of analysis helps give the most accurate description.

With some variation traditional design texts list the elements of design as line, form, space, texture, and color. Principles include rhythm, emphasis, balance, proportion, and scale. In addition to these, a list of possible criteria suggested in the literature search follows. Terms used for similar characteristics are grouped together:

Line
Form, space, shape
Texture

Color, value, counterchange
Balance, symmetry
Proportion, scale
Emphasis
Rhythm, sequence
Structure, layout, arrangement
Motif placement, position
Direction
Density
Style
Subject matter, activity, facial expression
Dominant motif, auxiliary motif, simple motif, complex motif
Inspiration source
Symbolism, meaning

The diagnostic attributes were selected from this list. Criteria were chosen for their degree of objectivity, ability to be subdivided, and importance in conveying a "total picture" of the design. Some items from the list were selected for use on an information card to accompany each classification outline. Attributes selected include space, form, line, direction, density, position, balance, symmetry, value, scale, proportion, motif, subject matter, style, and structure.

Content of the Classification Outline

1. Line was chosen as an attribute for classification. Line can be analyzed by its direction, its character, and its feeling and function in a textile design. For example, it could be the motif, it could be space filler, or it could outline the motif. Line is subdivided in the classification system into three areas, direction, character, and function. Feeling was omitted due to subjectivity. Line is also used as a subcategory under content of motif.

2. Form, shape, and space can be analyzed by symmetry of the structure, its position in relation to other forms in the design, relative size and complexity, and geometrical "building blocks". In pottery classification shape is analyzed by basic shape and its modification (Black and Weer, 1936). Form is used in the proposed system to show the condition of the textile as either fragment or full piece. Forms and their interrelations are classified by the categories of repeat, nonrepeat, and structure of the total design. Shape is used as motif, which is analyzed on the basis of complexity, symmetry, dominance, size, proportion, position, frequency, style, and subject matter. Space is analyzed by its function and relationship to the motif (density).

3. Texture was not chosen for the classification system, but could be subdivided by its use and character. Although fabrics inherently have some texture, analysis of form for two-dimensional design does not necessitate its description. Small motifs, such as polka dots, give a visual texture, which is important. These small motifs are described in other categories as space fillers or as a small motif.

4. Color can be analyzed by hue, value, saturation, and combinations. The infinite number of colors and colorways is the reason for its elimination from this study. Although color helps to identify motif subject matter or dominance, it can create difficulties in

determining symmetry. Balance of color and balance of form do not always correspond. Further difficulties stem from the fact that contemporary textiles are printed in several colorways; each textile would result in a different classification of form. Some historical textile colors cannot readily be determined. If a closed collection were being analyzed, color may not be a distinguishing criterion. Textiles may all be the same color due to natural dyes available in the area or level of technology. Color systems in existence, such as Prang and Munsell, can be used in addition to the classification system developed in this study, if desirable.

Value is analyzed in the classification system. Black, gray, and white are subdivided by function as line, area, or both.

5. Proportion and scale are included in both the classification system and the information card. On the information card measurements are absolute, but in the classification system, measurements are relational. Length and width of textile, length and width of repeat, and length and width of motif are all analyzed. Scale of the textile and motif can be classified in relation to a human, architecture or interior, and in relation of motif to its surrounding space. The latter was chosen for the development of the classification with designations limited to small, medium, and large. These divisions are arbitrary, since there is no standard to measure scale along a

continuum. Scale is used to analyze the specific motif and also the general textile.

6. Balance and symmetry are often discussed as one phenomenon, but actually have different implications. Balance can be analyzed in relation to color, value, shape, but implies weight. Symmetry is analyzed in relation to shape only and demonstrates structure. It is inclusive, objective, and easily broken into subclasses. Accordance to and deviation from symmetrical structure provide for further analysis:

> The importance of symmetry in design analysis is indicated, not alone by its prevalence, but also by the difference in decorative styles that suggest variable preference for certain classes of symmetry. Even when examples of all classes can be found within styles, relative frequencies often differ enough to set the style apart (Shepard, 1956, p. 271).

In the classification system developed in this study, symmetry is used to analyze structure of the general textile and also the individual motifs. Use of symmetry to analyze repeat was eliminated after the pre-test due to its complexity.

7. Emphasis is usually created by contrast, unusual shape, color, or placement. These aspects of emphasis are used on the information card. Emphasis in its operational aspect is categorized under motif as dominant motif or auxiliary motif.

8. Rhythm is not used for classification in this system, but is described on the information card. Sequence, an aspect of rhythm, is used as a subcategory for structure,

showing type of repetition.

9. Structure (layout, arrangement) is of prime importance in the development of this system. It determines placement of all motifs. Shepard called it the clue to the development of a design and she defined structure as "the choice of space and its subdivisions" (Shepard, 1956, p. 266). Structure is analyzed in Hierarchy III of the classification system in general terms, such as rectangular, rhomboid or interlocking.

Motif placement or position is useful in this classification, because it gives a mental picture of the location and frequency of a motif to someone who has never seen the textile. A grid of ten units per repeat is used to plot centerpoints of motifs.

10. In order to analyze direction, a point of orientation must first be established. According to museum practices, selvages are placed vertically. If the design is pictorial, a top can be determined, but this is subordinate to the selvage direction. If the top of a design is at the selvage, it has a purpose in design or technique and should be recorded. Direction is classified under general character of the textile and again under character of the motif.

11. Density is the amount of configuration in a space. Density is described in terms of motif area and background area and their relationship. Actual instruments to measure density have not been developed, so an estimation is necessary. Justema's theory was that all people have

their own sense of spacing and that density can help in textile identification (Justema, 1968, p. 34).

12. Style is a difficult point for classification due to its great subjectivity. It is complicated by personal and cultural values. Style, however, is a distinguishing factor in design and is included in the classification system. A geometric depiction of a human being differs from a stylized depiction, which differs again from a naturalistic depiction. Change in style is dependent on change in proportion, change in scale, change in basic shape, color, line character, type of repetition, density, and structure. A style consists of similarities in character of the elements of design, their use and combination, as well as expression. Due to style's subjectivity, the most distinct categories were selected as classification categories (geometric, stylized, and naturalistic). Motifs or the entire textile may not fit one classification category precisely, since motif combination might represent style combination. Style changes are on a continuum; so the most appropriate answer may be halfway between two of the three choices.

13. Subject matter (activity, facial expression) as style is culturally based. The question can be raised whether "  " is a bird or a chevron, however, there are many motifs that are readily distinguishable. Identification of the subject matter represents Panofsky's first level of interpretation (pre-iconographical interpretation).

In pre-iconographical theory, a form can be a natural or man-made object. Correctness is not guaranteed, but is based on practical experience with the degree of correctness increasing with study of the history of the particular ornament or culture (Panofsky, 1955, p. 41). The classifier may or may not be familiar with the culture of the textiles he is classifying, but as more information is gained the classification of the particular motif can be changed. Facial expression and activity of the characters is subjective and not included in the classification system.

For pictorial textiles the description is limited to the determination of groups by spacing or interaction of the figures.

14. Dominant and auxiliary motifs are a result of the principle of emphasis discussed above. This is a subjective decision, but Shepard suggested one rule for determining importance. Dominant figures are usually familiar elements, regularly spaced, and symmetric. Auxiliary motifs are adopted to the remaining space. Frequency and size are also used in determination of dominance (Shepard, 1956, p. 266).

Another characteristic of motifs suggested by authors were primary (simple) motifs and secondary (complex) motifs. A complex motif has many parts, each of equal importance to the motif. Shepard's analogy was to compare the parts to letters in a word. All the parts are needed for accurate comprehension. A simple motif has only one element

(Shepard, 1956, p. 267).

15. Inspiration source was not selected as a distinguishing feature due to lack of certainty in the designer's intention.

16. Symbolism was also rejected due to subjectivity and cultural bias.

Justification of the System

Objections to classification systems developed in the past can be applied to this classification system for textile design. Justification for the decisions and use of the classification form follows.

A classification system is not entirely objective. In the proposed classification system decisions must be made as to dominant and auxiliary motif, subject matter, and style. In some cases the decisions are subjective, but in many cases they are not. Although dominant and auxiliary motif is an arbitrary decision inserted for identification of a motif, aids for determining importance are familiarity, spacing, symmetry, size, color, and frequency. The classification system is not for the purpose of classifying all textiles concurrently; just the ones used by a research study. What is important is that rules are laid down by the investigator or group of investigators for their own internal consistency and objectivity.

Subject matter identification reflects familiarity with the culture. This is recognized and recommended. It

was inserted in the study based on Panofsky's theory. He designated subject matter as pre-iconographical, which is identifiable due to practical experience and the degree of correctness increases with further study of the culture (Panofsky, 1955, p. 41).

Style was included based on comments from Berliner (1966) and Rands (1957), that motifs diffuse so readily that style is a better indicator of cultural differences. The style feature was subdivided into three distinct areas for as much clarity as possible. Again a researcher will have to establish base criteria for each style to be internally consistent within his own study. He may find it possible to subdivide style more precisely, including distinctions for nonobjective, abstract, or realistic.

Motif dominance or ground dominance (density) is not always readily distinguishable. Criteria must be set by each researcher, but this feature remains important in the study of design and should be documented. All the divisional features in a system are on a continuum with arbitrary division points. This difficulty is inherent in any classification system. There is a "control" in the proposed classification, in that no matter if ground or motif is dominant, the resulting structure will be the same. Structure is recorded in Hierarchy III of the proposed classification system.

Objections to the system because it is not entirely formal (Gardin, 1967, p. 27). It was stated in the purpose

of the study that the development involved form and content of motifs. Subjectivity in this area has been answered in objection 1, using Panofsky's theory (Panofsky, 1955). If a classifier wishes, he could omit the content sections.

Objection to nonstandardized or nonuniversal language (Gardin, 1967, p. 27). First, there is no standard to follow. In order to develop one, terms were chosen that were simple and as self-explanatory as possible. Second, influence from one's own culture or national language is unavoidable. Gardin's suggestion of a linguistically based code is more confusing than learning new definitions, because there is no connotative meaning in the code. Gardin rejected his idea for a universal language in his second article (Gardin, 1967).

Objection that there are too many features in the system (Whiteford, 1947, p. 229). How does one know what is important until a collection has been classified? In essence, features may be missing, another possible objection. The stated purpose and one of the criteria for the system developed was flexibility and capability of being limited or expanded. It is important to recognize that the study was an attempt to describe each textile design as systematically and as completely as possible. The establishment of three hierarchies allows for a researcher to choose which area, motif or arrangement, is most applicable to his study. It is suggested that the reader

adapt the classification to his study and not the study to the classification.

Objection to the system, since it may be possible to classify a textile design more than one way (Christie, 1969). Changing visual impressions is an inherent characteristic of textile design, due to reversal of positive and negative space. A researcher will have to establish his own consistency and defense for his decisions. This system included these areas of difficulty, so that they would receive attention. By naming motifs, density, and structure a system of checks is included. If naming of motifs is not possible, the system adapted by a researcher should be limited to structure, stating that the textile collection has the characteristic of a reversal of positive and negative space. In all the following examples, no matter which part is selected to represent the motif and which is selected to represent the ground, the structure is still the same (Figure 5).

Objection raised because no conclusions in the development of textile design are given (Gardin, 1967, p. 28). This objection shows that the purpose of the classification is organization, not explanation. The system developed is descriptive, not interpretative. Interpretation requires placement of textiles with certain characteristics into groups, types, modes, or classes for cognitive study.

The attributes selected for use in the paradigmatic classification system were line, space, form, value, density,

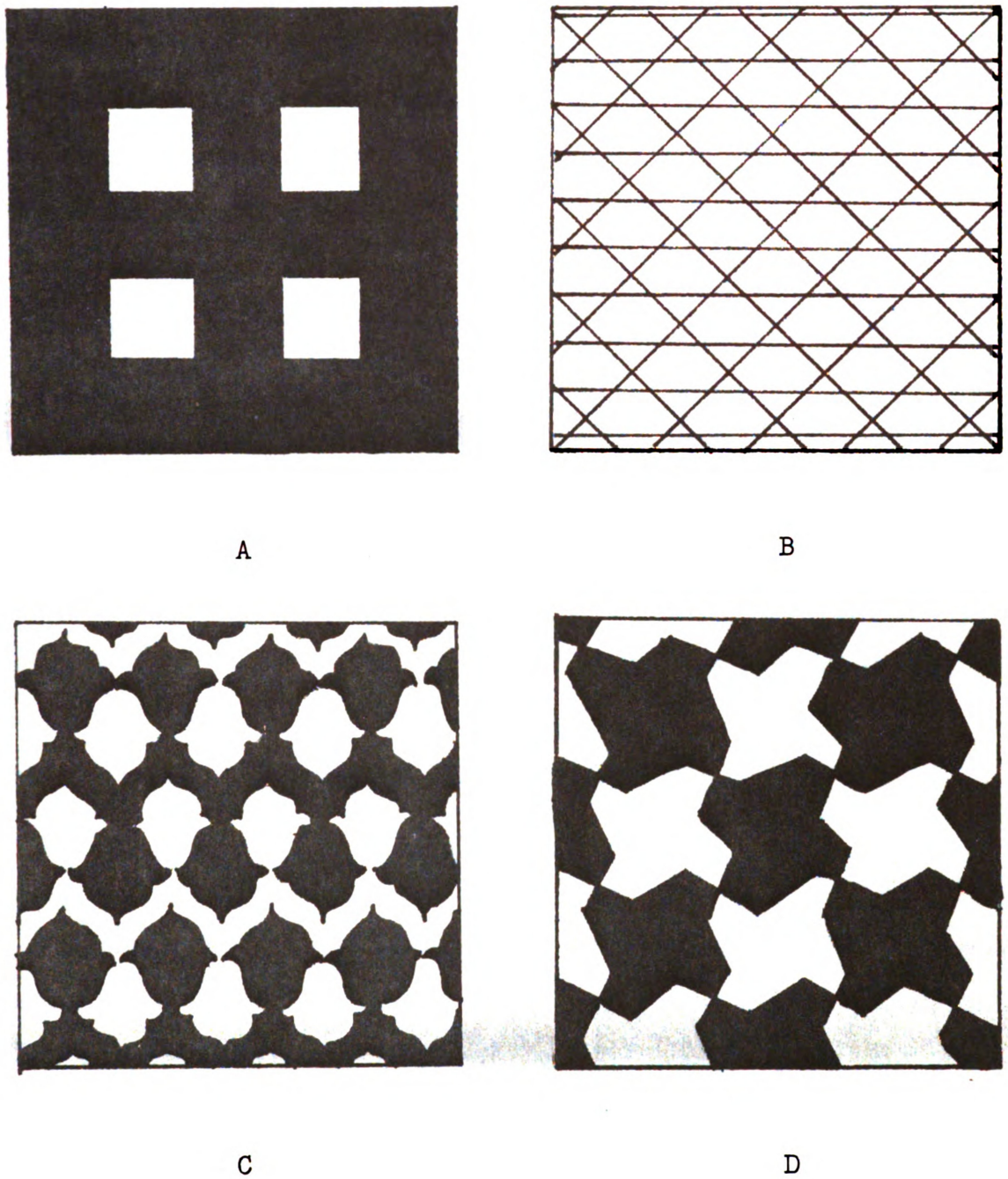


Figure 5. Reversal of positive and negative space
A. Cross bands or white square on dark ground
B. Cross stripes or hexagon stars
C. Interlocked pattern
D. Counterchange
(Christie, 1969, pp. 68-69; 74-75)

direction, position, structure, balance, symmetry, scale, proportion, dominance of motif, subject matter, and style. Criteria that were rejected were texture, color, emphasis, rhythm, inspiration sources, and symbolism. Inclusion of some subjective decisions was justified because of the criterion's role in clarification of a textile design. Terminology was not universal, but terms were chosen that were as simple and self-explanatory as possible. The number of features included in the system were many, but can be limited by a researcher's problem and discretion. Multiple ways of analyzing the same design were encouraged because inherent qualities of design may make classification solely by motif or structure impossible. No conclusions on textile design development were given, because that was not the purpose of classification.

Structure of the Classification System

There are three levels of hierarchy within the proposed system of classification in addition to an information card. The hierarchies are arranged from general to specific.

Hierarchy I (H:1):	General Character of the Textile Design
Hierarchy II (H:2):	Specific Character of the Motifs
Hierarchy III (H:3):	Specific Character of the Arrangement

Three possibilities were considered for the presentation of the system, outline, chart, and diagram.

The chart form would be preferred by the user when

classifying several textiles, since one textile could be listed under the next. However, the person would have to be familiar with the system, because category relationships are not clear on the chart (Figure 6).

The diagram best shows the classification relationships, but in order to classify a second design, the entire system must again be written out. The entire system is not applicable to each textile, so there is a lot of information listed that is not relevant.

The outline form requires the least amount of space and shows the relationships of the classification system adequately. Only the categories relevant to the textile design need to be listed. Notation should take the following outline form:

I. Textile form
  B. Full piece
    1. Repeat
      a. Band or border
        (1) variable
          (b) motif

From this notation one knows that the textile is a full piece; that it is a repeating band or border. The repeat is not a strict repeat, but has some variation in the motif.

In the outline form, if a subcategory is placed <u>next</u> to the major category in the outline, then the choices in the subcategory fit in any major category. In the example on page 73, (1) Asymmetrical, (2) Reflection, (3) Rotational, (4) Radial fit either (A) Simple or (B) Complex.

If the subcategory is placed <u>under</u> the major category,

I. Textile Form	A. Fragment						
Textile #1	(1-a)	(1-b)	(1-c)	(1-d)	(2-b)	(2-d)	(2-e)

Figure 6. Chart form (Baerlocher, 1973)

I. Textile Form
- A. Fragment
  - 1. Repeat
    - a. Band or border
    - b. Border and field
    - c. All-over pattern
    - d. Superimposed design
  - 2. Nonrepeat
    - b. Border and field
    - d. All-over pattern
    - e. Free ornament
- B. Full piece

Figure 7. Outline form

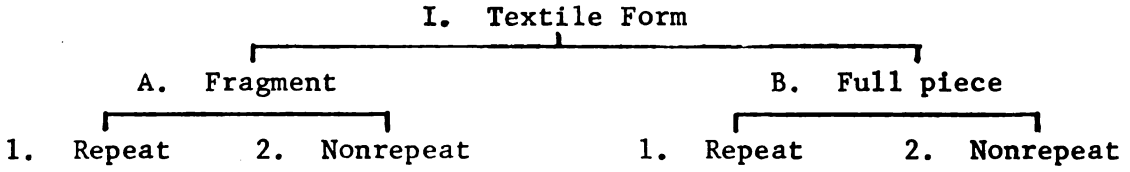


Figure 8. Diagram form (Dunnell, 1971, p. 81)

then these features are the only choices applicable to the major category. In the example below, (a) Longitudinal, (b) Transverse, (c) Oblique relate to (2) Reflection, but not to (1) Asymmetrical, (3) Rotational, and (4) Radial. Likewise, (a) Bifold, (b) Trifold, (c) Quatrefold, (d) Fivefold relate to (3) Rotational and not (1), (2), or (4).

III. Form
- A. Simple
- B. Complex

1. Asymmetrical — (1) Finite
2. Reflection — (2) Infinite
   - a. Longitudinal
   - b. Transverse
   - c. Oblique
3. Rotational
   - a. Bifold
   - b. Trifold
   - c. Quatrefold
   - d. Fivefold
4. Radial
   - a. Two axes
   - b. Three axes
   - c. Four axes
   - d. Infinite number of axes (circle)

The information card contains information as shown in Figure 9.

The outline for the classification system was originally continuous, moving from one section to another and one hierarchy to the next. This became cumbersome to use. Definitions and diagrams were in a separate section, requiring frequent reference and much shuffling of papers. Comprehension was lost because of the mechanics of using the system in that form. The revision, consisting of dividing the outline into each Roman numeral heading (I. Textile form, II. Content) under the respective hierarchy, was made. Now for each heading the following information is given:

Name of Design

Designer

Source (manufacturer)

Date

Country of origin

Present location

Function of piece

Design technique

Fiber of ground (optional)

Weave of ground (optional)

Measurements (cm) length of piece
selvage to selvage of piece
length and width of repeat
length and width of motif(s)

Description: Motif and arrangement (subject matter and repeat)
Emphasis
Rhythm
Line direction

Figure 9. Information card

Instructions
Definitions and Diagrams
Example
Classification Outline

This form will be easier to use for the classifier who wishes to use only particular elements for classification, such as II. Content. All the information the classifier needs is in one location.

Three levels of hierarchy were established for the classification system, dividing information received into general textile design, specific character of motif, and specific character of the arrangement. Each hierarchy has a specific set of attribute subdivisions. Each of these subdivisions has the following sections: Instructions, Definitions and Diagrams, Example, and Classification Outline. An information card is to be completed for each design before proceeding to the classification notation in outline form.

CHAPTER IV

TESTING THE SYSTEM

The classification system developed in this study was pretested by graduate students and faculty in the Department of Human Environment and Design at Michigan State University. Revisions in format and terminology were made before the classification system was tested by a second panel of graduate students in the same department. The final form (Chapter V) contains the revisions made after this test. None of the participants in the pretest panel were in the revised test panel.

The test participant's part in this study involved the analysis of terms and procedures. It is not a system developed for the expert in design, but does presuppose familiarity with design elements and principles. The scope of the study was limited to the development of a successful plan, no comparative study using the system was involved; so criticism should be based on the theory, definitions, and ease of use.

Test Panel Results on the Pretest

A pretest consisting of the following sections was given to ten graduate students and faculty members in the

Department of Human Environment and Design:

Instructions
Definitions and Diagrams
Reference to Symmetry
Example
Textiles to be Classified
Brief Outline of the System
Classification Outline
Evaluation

The participants were asked prior to distribution of the packet if they would be willing to work through the classification system. The participants had various levels of aesthetic or design experience, but all were familiar with the elements and principles of design.

The Instructions section of the test packet contained information on the classification system. It had an introduction to the purpose of the study, listed the 12 criteria for development, outlined the paradigmatic classification system,and discussed the organization of the three hierarchies and use of the outline form. The position of the categories, whether underneath or beside the heading, was explained. If a subcategory is placed next to the major category in the outline, then the choices in the subcategory fit in any major category. If the subcategory is placed under the major category, then those features are the only choices applicable to the major category.

The procedure section is included here.

* * * * * * * * *

Procedure

Please classify the two sketched textiles (Section C - Green) designated on the Green section cover sheet using

the classification outline in Section E - Gold. The orientation has been established for you by labeling of the selvages on the designs. Selvages are placed vertically when viewing a textile design. If a definite "top" can be established in the pattern, it is placed upward only if the selvages remain vertical. A design, such as a tapestry, printed or woven sideways on the fabric is done so for a purpose and this variation should be noted.

Looking at H-1, page 32, note that I. Textile Form is the first attribute in the classification outline. The first decision is determination of fragment or full piece. Assume that both design sketches are full pieces. The second decision is whether the design is a repeat or non-repeat. If the textile is a repeat, choose from a. Band or Border, b. Border and Field, c. All-over Pattern, or d. Superimposed Design. If the design is a nonrepeat, choose from b. Border and Field, d. Superimposed Design, or e. Free Ornament.

Notation should take the following outline form:

I. Textile Form
  A. Full Piece
    1. Repeat
      a. Band or Border
        (1) Variable
          (b) Motif

Answer sheets with attributes listed are provided. It is only necessary to list applicable characteristics. Definitions and diagrams are located in section B (Blue) for reference. Definitions are listed in the order of appearance in the classification outline.

Keep a record of the amount of time it takes to classify each example. Circle items that are not clear on the classification outline and in the definitions and diagrams section. All terms not marked will be assumed as clear. If you get confused, say so, it is just as important as understanding. When you have finished both examples, answer the questions and return the entire pamphlet.

* * * * * * * * * *

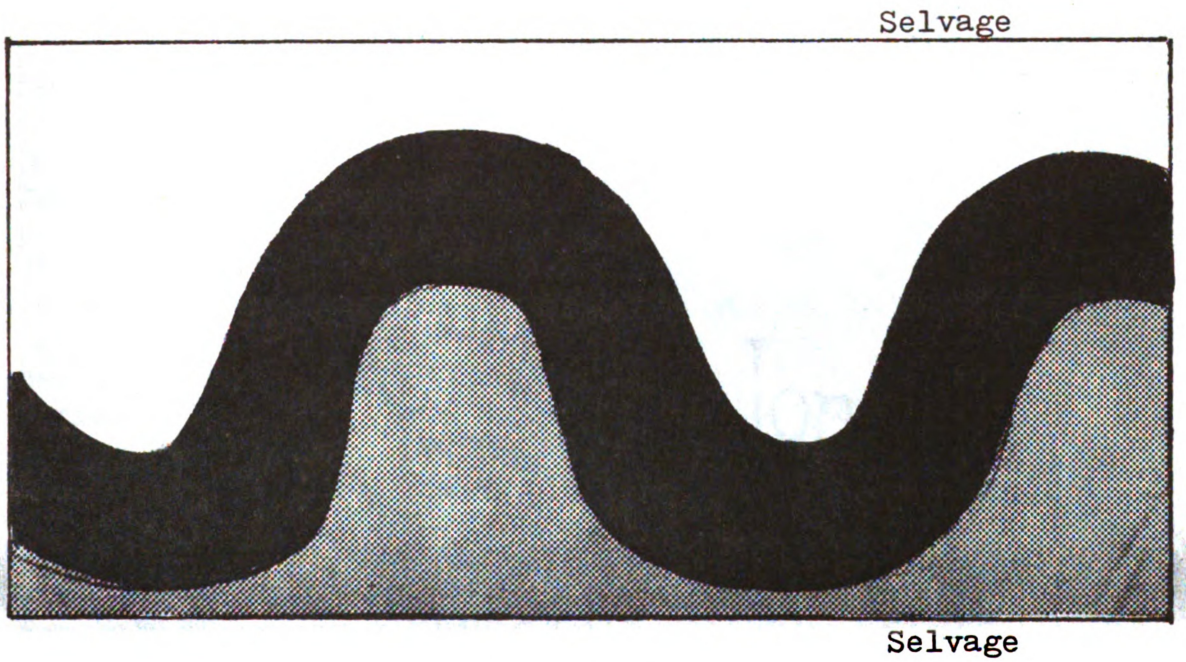
The definitions and diagrams section included definitions and examples for the terminology in the classification system. It was planned as a reference section with terms appearing in the same order as they did in the outline. Reference to Symmetry was a brief statement on some symmetrical principles and was to give insight into the symmetry section in Hierarchy III.

Following the example were the textiles to be classified. The group was divided in half. One-half classified the two textiles on page A and the others classified the two textiles on page B. See Figures 10 and 11.

The pretest outline is included here (pages 82-96) following Figures 10 and 11. The evaluation section includes questions on amount of time required, the 12 criteria, and amount of difficulty. Ten sheets of blank paper were provided for notation.

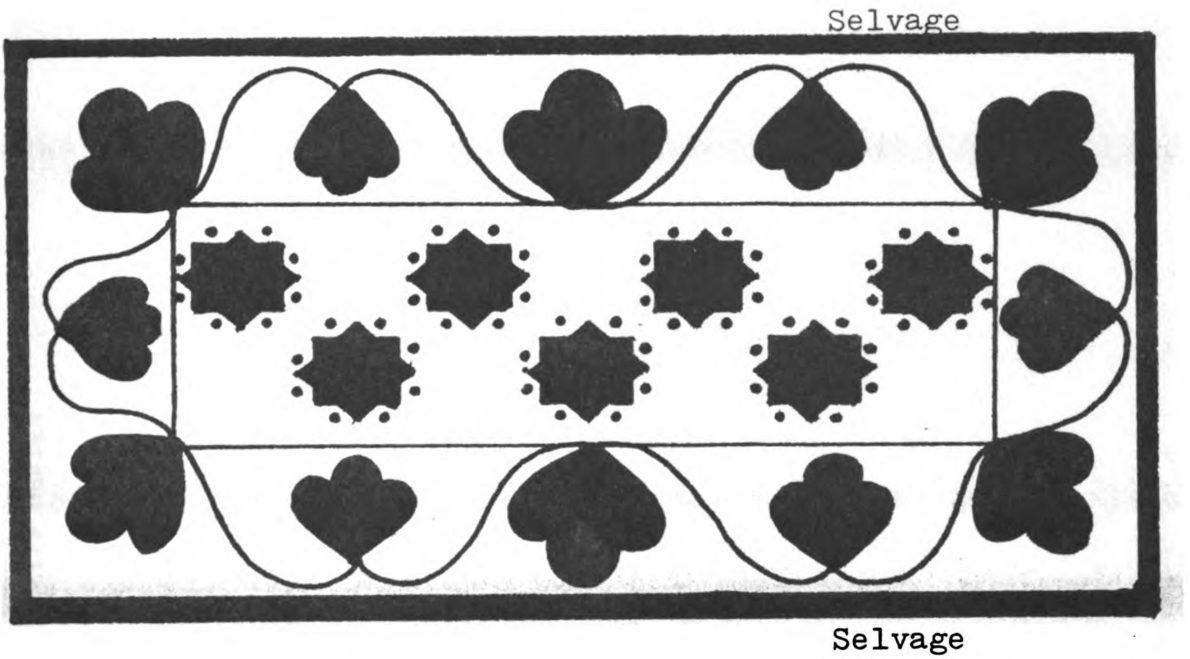
Six of the ten packets were returned within the three day limit. The investigator misjudged the amount of time necessary to work the classification system. Poor timing on test distribution was the reason for the low return.

Textile Design I

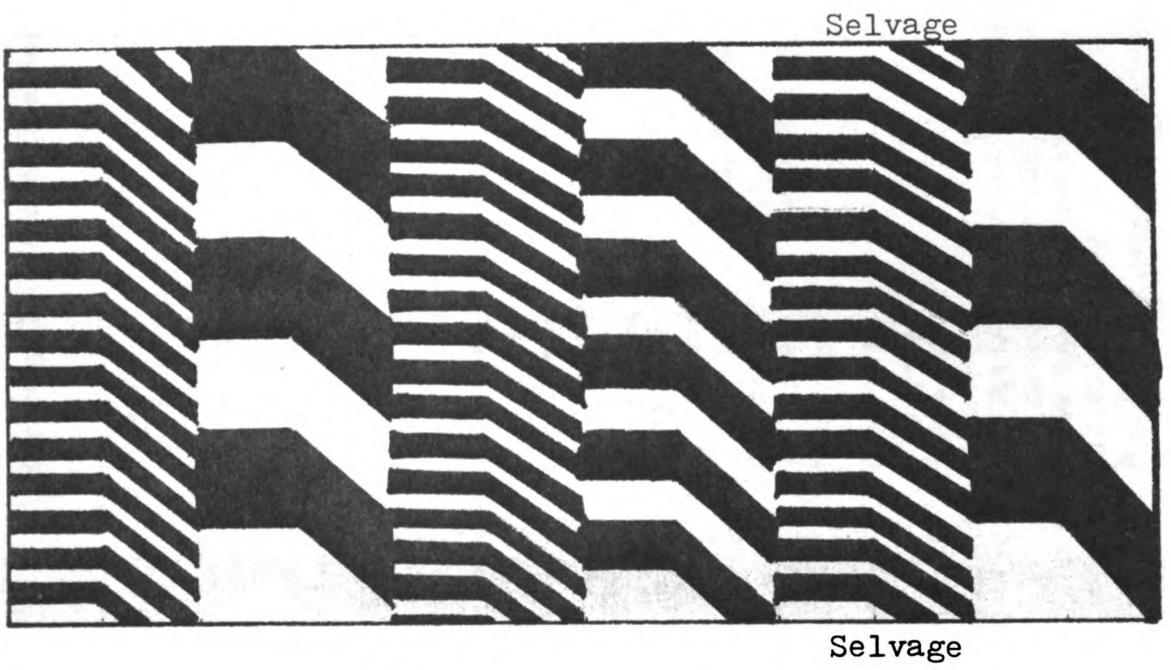


Textile Design II

Figure 10. Test textiles; A - Pretest, B - Revised test



Textile Design I



Textile Design II

Figure 11. Test textiles; B - Pretest, A - Revised test

Hierarchy I: General Character of the Textile Design

I. Textile Form
- A. Fragment
- B. Full Piece
  - 1. Repeat
    - a. Band or border
    - b. Enclosed panel
    - c. All-over pattern
    - d. Superimposed design
      - (1) Variable
        - (a) direction
        - (b) line
        - (c) motif
        - (d) size
      - (2) Nonvariable
  - 2. Nonrepeat
    - b. Enclosed panel
    - d. Superimposed design
    - e. Free ornament

II. Content
- A. Dominant motif
- B. Auxiliary motif
  - a. Calligraphy
  - b. Linear
  - c. Geometric
  - d. Nonobjective
  - e. Animal form
  - f. Human form
  - g. Vegetable form
    - (1) Geometric style
    - (2) Stylized
    - (3) Naturalism
  - h. Artificial form, man-made
  - i. Natural, nonliving
  - j. Pictorial (story telling)
  - k. Scenic
- C. Space
  - 1. Enclosing space
  - 2. Small organized spaces
  - 3. Space reduced to a line
  - 4. Positive and negative space equal
    - a. Motif and ground distinguishable
    - b. Motif and ground not distinguishable
  - 5. Space has small motif filler
    - a. Calligraphy
    - b. Linear

c. Geometric
d. Nonobjective
e. Animal form
f. Human form
g. Vegetable form
h. Artificial, man-made
i. Natural, nonliving

III. Direction
- A. Vertical
- B. Horizontal
- C. Diagonal
- D. Equal emphasis
- E. Nondirectional

IV. Density
- A. Motif dominant
- B. Equal emphasis
- C. Ground dominant
- D. "Reversal effect"

V. Line and Area (Classify for Black, Gray, and White)

A. Black	1. Line	a. Value - dark dominant
B. Gray	2. Area	b. Value - middle dominant
C. White	3. Line and area	c. Value - light dominant

VI. Balance
- A. Asymmetrical
- B. Symmetrical
  - 1. Longitudinal axis
    - a. One axis
    - b. Two axes (parallel)
    - c. Three axes (parallel)
    - d. Four axes (parallel)
  - 2. Transverse axis
  - 3. Radial - about both axes

VII. Scale
- A. Small
- B. Medium
- C. Large

VIII. Proportion

A. Length of repeat to width of repeat
B. Length of repeat to length of textile
C. Width of repeat to width of textile

(Classify for A, B, & C)

1. 3/4 - 1
2. 1/2 - 3/4
3. 1/4 - 1/2
4. ∿ - 1/4
5. 1 - 1
6. 2:1
7. 3:1
8. 4:1

Hierarchy II: Specific Character of Motif

I. Designation of Motif (Classify each motif for all of H-2)
- A. Dominant motif
  - 1. Number 1
  - 2. Number 2
- B. Auxiliary motif
  - 1. Number 1
  - 2. Number 2
  - 3. Number 3
  - n. Number n
- C. Space filler
  - 1. Number 1
  - 2. Number 2
  - 3. Number 3
  - n. Number n

II. Form
- A. Simple
- B. Complex
  - 1. Asymmetrical
  - 2. Reflection
    - a. Longitudinal
    - b. Transverse
    - c. Oblique
      - (1) Finite
      - (2) Infinite
        - (a) Varied to fit space
        - (b) Elaboration
        - (c) Technique and craftsmanship
        - (d) Undetermined

3. Rotation
   a. Bifold
   b. Trifold
   c. Quatrefold
   d. Fivefold
4. Radial
   a. 2 axes
   b. 3 axes
   c. 4 axes
   d. Infinite

III. Position
   A. Continuous motif
   B. Isolated unit

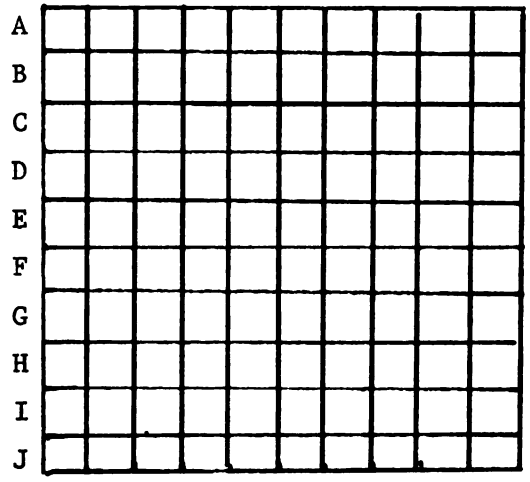
a. Free ornament

b. Band

(Plot location in grid of 10 motifs by listing space number where center point lies)

c. All-over pattern

(1)	(a)
(2)	(b)
(3)	(c)
(4)	(d)
(5)	(e)
(6)	(f)
(7)	(g)
(8)	(h)
(9)	(i)
(10)	(j)



IV. Content

A. Geometric
B. Stylized
C. Naturalistic

1. Outline, open
2. Solid, silhouette
3. Internal detail

a. Calligraphy
Arabic
Greek
Hebrew
Oriental (Chinese, Japanese)
Old German, Old English
Russian
Western Europe

Script
Pictographs
Hieroglyphics

Numerals

b. Linear

Continuous	Curved	Textured
Broken	Straight	Shaded
Interlacing	Combination	Fine
		Heavy
		Paired

c. Geometric

Open	Stripe
Solid	Triangle
	Chevron
	Rectangle
	Square
	Circle
	Oval
	Scallop
	Diamond
	Rhombus
	Cross
	Swastika
	Pentagon
	Star

Hexagon
Octagon
Polygon
Ogee
Fretwork
Shield
Gothic tracery

d. Nonobjective
   Open
   Solid

e. Animal form

Total	Frontal	Grouped	Real	Mammel
Partial	Profile	Paired	Imaginary	Bird
	Dorsal	Single		Fish
				Amphibian
				Insect
				Spider
				Reptile

f. Human form

Total	Front	Group	Male	Infant	Black
Partial	Side	Paired	Female	Child	White
	Back	Single		Teen	Brown
				Adult	Yellow
					Red
				God-goddess	
				Angel	

g. Vegetable form

Top view	Green plant	Single	Real
Side view	Flower	Garland	Imaginary
	Tree	Swag	
	Vine	Medallion	
	Vegetable	Bouquet	
	Fruit	Sprig	
	Underwater (reef)	In a basket	
		In a vase	
		Bow	
		Natural setting	

Classify for each element in motif

h. Artificial forms
   Architecture
   Bridges
   Artifacts, tools, pottery, weapons
   Transportation
i. Natural, nonliving
   Rocks
   Shells
   Minerals, gems
   Logs
   Fire
   Snow, rain
   Sun, moon
j. Pictorial
   (1) Scene no. 1 (a) Group (i) Subject
   (2) Scene no. 2 (b) Independent (ii) Object
   (n) Scene no. n
   (a) Animate
   (b) Inanimate
k. Scenic
   Landscape
   Seascape
   Cityscape

V. Line Character

A. Vertical	1. Shaded	a. Outline
B. Horizontal	2. Textured	b. Space filler
C. Diagonal	3. Fine, delicate	
D. Equal emphasis	4. Heavy	
E. Nondirectional	5. Paired	

VI. Proportion (Classify for A, B, & C)
- A. Length to width
- B. Length of motif to length of repeat
- C. Width of motif to width of repeat

1. 3/4 - 1
2. 1/2 - 3/4
3. 1/4 - 1/2
4. ~ - 1/4
5. 1:1
6. 2:1
7. 3:1
8. 4:1
9. Greater than 10:1

VII. Scale (Motif in relation to space in repeat)
- A. Large
- B. Medium
- C. Small

Hierarchy III: Specific Character of Arrangement

I. Structure
- A. Repeat
  - 1. Band or border
    - a. No base line or structural plan
    - b. Base line
    - c. Structural plan

(1) One element
(2) Multiple element
- (a) Outline
  - (i) Continuous
  - (ii) Not continuous
- (b) Center space
  - (i) One-dimensional (a) Continuous
  - (ii) Two-dimensional (b) Isolated motif - identical
    (c) Isolated motif - variable

  - 2. Border and repeating field
    - a. Field
      - (1) Rectangular, square
        - (a) Block
        - (b) Drop
        - (c) Brick

(i) Alternating
(ii) Opposites
(iii) Turning square
(vi) Counterchange

(2) Diamond, triangle, rhombus (v) Scattered
(3) Hexagon
(4) Scale
(5) Ogee

b. Border
(1) Repeating
(a) No base line or structural plan
(i) One element
(ii) Multiple element
(a) Outline
I. Continuous
II. Not continuous
(b) Center space
I. One-dimensional
A. Continuous
B. Isolated motif-identical
C. Isolated motif-variable
II. Two-dimensional
(b) Base line
(c) Structural plan
(2) Nonrepeating

3. All-over pattern
a. Rectangular, square
(1) Block
(2) Drop
(3) Brick
(a) Alternating
(b) Opposites
(c) Turning square
(d) Counterchange
(e) Scattered
b. Diamond, triangle, rhombus
c. Hexagon
d. Scale
e. Ogee

4. Superimposed design
a. Ground
(1) Repeating
(a) One-dimensional
(i) No base line or structural plan
(a) One element
(b) Multiple elements
I. Outline
A. Continuous
B. Not continuous
(ii) Base line
(iii) Structural plan

II. Center space
A. One-dimensional 1. Continuous
B. Two-dimensional 2. Isolated motif - identical
3. Isolated motif - variable

(b) Two-dimensional
(i) Rectangular, square (I) Alternating
(a) Block (II) Opposites
(b) Drop (III) Turning square
(c) Brick (IV) Counterchange
(ii) Diamond, triangle, rhombus (V) Scattered
(iii) Hexagon
(iv) Scale
(v) Ogee

(2) Nonrepeating
(a) One-dimensional
(i) No base line or structural plan (a) One element
(b) Multiple elements
(ii) Base line I. Outline
(iii) Structural plan A. Continuous
B. Not continuous
II. Center space
A. One-dimensional
B. Two-dimensional

(b) Two-dimensional
(i) Single element
(ii) Multiple elements
(a) Random placement
(b) Structural placement
I. Rectangular, square
II. Diamond, triangle, rhombus
III. Hexagon
IV. Scale

V. Ogee

b. Surface (repeating only - due to original classification)
   (1) One-dimensional
      (a) No base line or structural plan
      (b) Base line
      (c) Structural line
         (i) One element
         (ii) Multiple elements
            (a) Outline
               I. Continuous
               II. Not continuous
            (b) Center space
               I. One-dimensional
               II. Two-dimensional
                  A. Continuous
                  B. Isolated - identical
                  C. Isolated - variable

   (2) Two-dimensional
      (a) Rectangular, square
         (1) Block
         (2) Drop
         (3) Brick
      (b) Diamond, triangle, rhombus
      (c) Hexagon
      (d) Scale
      (e) Ogee
         (i) Alternating
         (ii) Opposites
         (iii) Turning square
         (iv) Counterchange
         (v) Scattered

B. Nonrepeating
   2. Border and nonrepeating field
      a. Border
         (1) Repeating
         (2) Nonrepeating
            (a) No base line or structural plan
            (b) Base line
            (c) Structural plan
               (i) One element
               (ii) Multiple elements
                  (a) Outline
                     I. Continuous
                     II. Not continuous
                  (b) Center space
                     I. One-dimensional
                     II. Two-dimensional
                        A. Continuous
                        B. Isolated motif - identical
                        C. Isolated motif - variable

b. Field
(1) Single element
(2) Multiple elements
(a) Random placement
(i) Rectangular, square
(ii) Diamond, triangle, rhombus
(iii) Hexagon
(iv) Scale
(v) Ogee

4. Superimposed design
a. Ground
(1) Repeating
(a) One-dimensional
(i) No base line or structural plan
(a) One element
(b) Multiple elements
I. Outline
A. Continuous
B. Not continuous
II. Center space
A. One-dimensional
1. Continuous
2. Isolated - identical
3. Isolated - variable
B. Two-dimensional
(ii) Base line
(iii) Structural plan
(b) Two-dimensional
(i) Rectangular, square
(a) Block
(b) Drop
(I) Alternating
(II) Opposites
(III) Turning square
(IV) Counterchange
(V) Scattered
(ii) (c) Brick
(ii) Diamond, triangle, rhombus
(iii) Hexagon
(iv) Scale
(v) Ogee
(2) Nonrepeating
(a) One-dimensional

(i) No base line or structural plan
(ii) Base line
(iii) Structural plan

(a) One element
(b) Multiple elements
I. Outline
A. Continuous
B. Not continuous
II. Center space
A. One-dimensional
B. Two-dimensional

(b) Two-dimensional
(i) Single element
(ii) Multiple elements
(a) Random placement
(b) Structured placement
I. Rectangular, square
II. Diamond, triangle, rhombus
III. Hexagon
IV. Scale
V. Ogee

b. Surface (nonrepeating only - due to original classification)
(1) One-dimensional
(a) No base line or structural plan
(b) Base line
(c) Structural plan

(i) One element
(ii) Multiple elements
(a) Outline
I. Continuous
II. Not continuous
(b) Center space
I. One-dimensional
II. Two-dimensional

(2) Two-dimensional
(a) Single element
(b) Multiple elements
(i) Random placement
(ii) Structural placement
I. Rectangular, square
II. Diamond, triangle, rhombus
III. Hexagon

5. *Free ornament*
    a. Single element
    b. Multiple element
        (1) Random placement
        (2) Structured placement
            (a) Rectangular, square
            (b) Diamond, triangle, rhombus
            (c) Hexagon
            (d) Scale
            (e) Ogee

II. Symmetry
    A. Single complete figure (no repeat - by definition)
        1. Asymmetrical
        2. Reflection
            a. Longitudinal
            b. Transverse
            c. Oblique
        3. Rotational
            a. Bifold
            b. Trifold
            c. Quatrefold
            d. Fivefold
        4. Radial
            a. 2 axes
            b. 3 axes
            c. 4 axes
            d. Infinite

    B. One-dimensional
        1. Finite unit
            a. Serial repetition (translation)
        2. Continuous unit

<u>Instructions for symmetry</u>

For:
1. Band or border use part B
2. Enclosed panel use part B and C
3. All-over pattern use part C
4. Superimposed design A, B, and C as needed
5. Free ornament use part A

3. *Fundamental unit*

a. Translation
b. Longitudinal reflection
c. Transverse reflection
d. Bifold rotation
e. Transverse and longitudinal reflection
f. Slide reflection
g. Alternate rotation and transverse reflection

(1) axes that impinge on on the fundamental unit
(2) Axes that are separate from the fundamental unit
(3) Axes that are impinging then are spaced alternating

(a) Perfect symmetry
(b) Modification due to draftmanship
(c) Elaboration
  (i) Confine to a space
  (ii) Change in motif
  (iii) Change in value
  (iv) Conversion to finite from infinite
  (v) Conversion from finite to infinite
  (vi) Other

C. Two-dimensional
  1. Finite unit
    a. Translation
  2. Fundamental unit
    a. Class I
    b. Class II
    c. Class III
    d. Class IV
    e. Class V
    f. Class VI
    g. Class VII
    h. Class VIII
    i. Class IX
    j. Class X
    k. Class XI
    m. Class XII
    n. Class XIII
    o. Class XIV
    p. Class XV
    q. Class XVI
    r. Class XVII

(1) Axes that impinge on the fundamental unit
(2) Axes that are separate from the fundamental unit
(3) Axes that are impinging and then are separate from the fundamental unit (alternating)

(a) Perfect symmetry
(b) Modification due to draftmanship
(c) Elaboration
  (i) Confine to a space
  (ii) Change in motif
  (iii) Change in value
  (iv) Conversion to finite from infinite
  (v) Conversion from finite to infinite
  (vi) Other

It was the end of spring term and participants were busy with their own exams and grading. The six packets returned, however, did give a clear indication of the problems that needed to be solved.

Suggestions for revisions included the following:

1. Decrease the amount of information in the packet.
2. Clarify sections in the packet and specify what section actually is the classification outline.
3. Order sections in the packet--Instructions, Textiles to be classified, Classification outline, Example, Definitions, and Evaluation.
4. Make instructions clearer and more specific. Instructions needed at section headings on classification outline.
5. Define <u>all</u> terms. Some definitions were not clear. Need more visual examples. Space diagrams for clarity.
6. Have definitions numbered or lettered the same as in the outline and refer reader to definitions using a page number. There was lack of internal consistency.
7. The hierarchies are repetitious causing confusion.
8. The number of pages in the classification outline and the necessary division onto the pages caused confusion.
9. Some areas are subjective.
10. Omit "Brief Outline", p. 29, because it was not

helpful.

11. Symmetry section was the most confusing.

The procedure was confusing to all participants. Not all sections in the classification outline used the same procedural format. For example, in Hierarchy I: I. Textile Form, one subcategory (1) repeat or (2) nonrepeat which bests describes the textile is to be selected. In Hierarchy I (V) Line and Area, (A) Black, (B) Gray, and (C) White are not subcategories to describe the textile, but are characteristics each is assumed to have. Black, White, and Gray are then classified as (1) Area, (2) Line, or (3) Area and Line. The appearance of these two sections is the same in the outline, but the procedure is different, causing confusion.

Two participants stated that the system would be workable with revisions and two suggested that the terms were too difficult for someone without a strong design background.

The evaluation section of the packet asked for the amount of time spent on each design and the evaluation of the 12 criteria used in developing the system. Three questions were asked at the completion of the evaluation form. These were about difficulty, mental image of the textile, and learning experience.

The results on the amount of time were as follows:

	Textile I	Textile II
A.	45 minutes	45 minutes

B.	90 minutes	0
C.	120 minutes	0
D.	90 minutes	60 minutes (not complete)
E.	60 minutes	0
F.	65 minutes (not complete)	45 minutes (not complete)

The results on the 12 criteria were as follows:

1. Terminology should be simple and clearly defined.

No	3
Sometimes	1
Until H-3	1
No answer	1

2. The system is descriptive, not interpretative.

No	3
Yes	2
No answer	1

3. The placement of a textile into a characteristic class is objective.

Yes	2
Not always	2
No answer	1
Not understand question	1

4. Classes are mutually exclusive.

Yes	1
No	1
Sometimes	1
No answer	2
Can't judge	1

5. There is internal consistency.

No	2
Can't judge	1
No answer	2
Not understand question	1

6. Classes are relevant to the proposed problem--aesthetic analysis of textiles.

Yes	3
No	1
No answer	2

7. Repetition of classification at a different level of hierarchy is necessary for clarity.

No	3
No answer	3

8. The system is easy to use.

No	3
No answer	3

9. That subclasses show no generic relation to the previous class, or that dimensions of classification are not weighted in importance.

Yes	2
No answer	2
Not understand question	2

10. That details are numerous enough to isolate variations in textile design, but limited so that groups can be formed for comparison.

Yes	2
No	1
Can't judge	1
No answer	2

11. Comprehensive and open to expansion.

Yes	2
Can't judge	2
No answer	2

12. Applicable to more than one study.

Yes	2
Partially	1
Unsure	1
No answer	2

Did you experience great difficulty?

Yes	6

Do you think you received an accurate picture in your mind of the textile from the system?

Yes	1
Partially	1
No	4

Was it a learning experience for you?

Yes	2
No	2
Unsure	1
No answer	1

It was concluded that more emphasis on meeting the criteria was required.

Consistency of individual classification answers for the first textile on each page was tabulated. The second textile on each page was not tabulated because only three out of six were attempted, one for A and two for B (both incomplete). In the tabulation, only the first two hierarchies were recorded. Hierarchy III was not completed nor understood by most participants.

The entire outline is not listed, but only the answers given followed by the number of responses. Headings that are underlined did not involve a decision on the part of the classifier. Asterisks (*) indicate the investigator's opinion.

Textile A (Figure 10, top)

Hierarchy I

I. Textile form
  B. Full piece (3)*
    1. Repeat (3)*
      c. All-over pattern (3)
        (1) Variable (1)*
        (2) Nonvariable (2)
      d. Superimposed design*

II. Content
  A. Dominant motif
    g. Vegetable form (2)*
      (a) Stylized (3)*
  B. Auxiliary motif

g. Vegetable motif (3)
(2) Stylized (3)
b. Linear
(1) Geometric style*
c. Geometric*

C. Space
1. Enclosing space*
3. Space reduced to a line (1)
5. Space has small motif filler (1)
g. Vegetable form (1)

III. Direction
A. Vertical (1)
C. Diagonal (1) same classifier
E. Nondirectional (2)*

IV. Density
B. Equal emphasis (3)
C. Ground dominant*

V. Line and Area
A. Black
1. Line*
3. Line and area (1)
C. White
2. Area (1)*

VI. Balance
B. Symmetrical (3)
3. Radial (1)
A. Asymmetrical*

VII. Scale
B. Medium (3)*

VIII. Proportion
A. 5 (1)*
B. 6 (1)*
C. 1 (1)
C. 5*

Hierarchy II for Textile A is not recorded here because two of the three classifiers did not distinguish between dominant and auxiliary motif and work H-2 for each motif. The third classifier did, but there is no basis for comparison with the other two answer sheets. It is clear from this that instructions are not well written.

Textile B (Figure 11, top)

Hierarchy I

I. Textile form
  B. Full piece (3)*
    1. Repeat (1)*
      b. Enclosed panel (1)*
        (1) Variable (1)*
    2. Nonrepeat (2)
      b. Enclosed panel (2)
        (2) Nonvariable (1)

II. Content
  A. Dominant motif
    c. Geometric (3)*
  B. Auxiliary motif
    b. Linear (1)
    c. Geometric (1)
    g. Vegetable form (1)*
      (2) Stylized (2)
  C. Space
    1. Enclosing space (3)*

III. Direction
  A. Vertical (1)*
  B. Horizontal (1)
  D. Equal emphasis (1)

IV. Density
  A. Motif dominant (2)
  C. Ground dominant (1)*

V. Line and Area
  A. Black
    3. Line and area (1)*
  C. White
    2. Area (1)*
      a. Value-dark dominant (1)
      c. Value-light dominant*

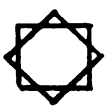
VI. Balance
  A. Asymmetrical (1)
  B. Symmetrical (2)*
    2. Transverse axis (1)
      a. One axis (1)
    3. Radial (1)
    1. Longitudinal axis*
      a. One axis (1)*

VII. Scale
  B. Medium (3)*

VIII. Proportion
A. 6 (2)
A. 7 (1)
A. 5*
B. 5 (2)
B. 8*
C. 5 (3)
C. 6*

Hierarchy II

I. Designation of motif
A. Dominant motif
1. Number 1



Since all classifiers chose different auxiliary motifs, the classification of H-2 would not correspond.

II. Form
A. Simple (2)
B. Complex (1)*
4. Radial (3)*
a. 2 axes (1)
c. 4 axes (2)*
(1) Finite (2)*

III. Position
B. Isolated motif (3)*

IV. Content
A. Geometric (3)*
2. Solid (2)*
c. Geometric (2)*

V. Line character
A. Vertical (1)
D. Equal emphasis (1)*
1. Shaded (1)
b. Space filler (2)

*Line is not used in this motif

VI. Proportion
A. 5 (2)*
A. 9 (1)
B. 5*
C. 5 (2)*

VII. Scale
B. Medium (2)*
C. Small (1)

The results of the classification of textile A and B show differences in interpretation. This is especially true

in the choice of a dominant and auxiliary motif. Different answers are also apparent in symmetry and proportion section. The amount of agreement did not satisfy the investigator, so revisions were made.

Revisions for Test

The revisions made for test II were as follows:

1. There was a change in the order of sections to:

   A. Description and General Instructions
   B. Textiles to be classified
   C. Classification outline
   D. Examples
   E. Definitions and diagrams
   F. Evaluation

2. General instructions were rewritten and introductory information was divided into sections:

   I. Introduction
   II. Type of Classification System
   III. Organization
   IV. Procedure

3. Definitions were clarified and new drawings were added. All terms in the outline were included in the definitions and diagrams section.

4. Internal consistency was checked so that all number and letter headings in the definitions section corresponded with those on the classification outline.

5. Symmetry was omitted due to its complexity.

6. "Brief Outline" was omitted.

7. Two examples were included instead of one. The examples were chosen to relate more closely to the textiles the participants were asked to classify.

8. The classification outline was revised by checking numbering and lettering. Sections were combined as follows: density with line and area, balance with direction, and scale with proportion. Order of these sections was also changed, so that characteristics that were related were grouped together.

9. The proportion section of the classification outline was revised by rewriting and regrouping ratios.

10. Instructions were added to the left hand side of each classification outline page. The specific directions for each section were listed there. The instructions also included the page numbers for the necessary definitions. In H-3 page numbers to find exact classification categories for a particular form of repeat or nonrepeat were listed first. "Stop you have completed the classification" was written after appropriate sections.

11. The evaluation pages were revised by writing out the criteria. This would eliminate reference to the instructions.

After these revisions were made, the test was returned to two pretest participants for their comments. Additional revisions were made as follows:

1. Instructions were further clarified.

2. The order of sections was changed back to its first form:

A. Introduction
B. Definitions and Diagrams
C. Textiles to be Classified

D. Examples
E. Classification Outline
F. Evaluation

3. Answer sheets with large category headings listed were provided instead of blank paper. This would ease tabulation and help the tester follow the classification outline. White answer sheets were for textile #1 and gold answer sheets were for textile #2.

4. Colored title pages were used to designate sections of the test packet. A table of contents was added.

General Instructions (White)
Definitions and Diagrams (Blue)
Textiles to be Classified (Green)
Examples (Pink)
Classification Outline (Gold)
Evaluation (Yellow)

5. A check was made that all classification outline terms were in the definitions section.

6. It was suggested that in the final draft, instructions have category number or letter and name both listed in explanation instead of just one or the other. For example, "(B) Full piece" rather than just (B) or just Full piece.

Pages 108 to 124 show the revised test classification outline. The same textiles were used for classification by the second panel.

Test Panel Results on Revised Classification System

The revised classification outline and information packet was given to 11 members of Human Environment and Design 800D, graduate seminar on World Dress. Before distribution of the test, the study was explained and the group

Hierarchy I: General Character of the Textile Design

General Instructions

I. Definitions on page 7, 8*

Determine if the textile if a full piece or fragment. Determine if the design is a repeat or nonrepeat. If the textile is a repeat, choose from a,b,c, or d. If the textile is a nonrepeat, choose from b,d, or e.

A nonrepeating textile is variable due to changes in line character, motif, size of motif, or direction of motif. A repeating textile can appear as a general repeat and still have variation in line, motif, size and direction. If there is no change at all, select nonvariable. Remember this is a general character and an overall impression.

I. Textile Form
- A. Fragment
- B. Full piece

1. Repeat
   - a. Band or border
   - b. Border and field
   - c. All-over pattern
   - d. Superimposed design
2. Nonrepeat
   - b. Border and field
   - d. Superimposed design
   - e. Free ornament

(1) Variable
- (a) Line
- (b) Motif
- (c) Size
- (d) Direction
- (e) Other _____

*Page numbers refer to definitions as they appeared in revised test form.

II. Definitions on page 8, 9, 10

Choose a dominant motif based on size or frequency. This is an arbitrary decision and need not be in agreement with another classifier, as long as criteria for individual decisions are consistent throughout test. Repeat this section analyzing an auxiliary motif. This is an arbitrary choice.

Classify form and content of space.

II. Content

A. Dominant motif
B. Auxiliary motif

1. Calligraphy
2. Linear
3. Geometric
4. Nonobjective
   a. Geometric style
   b. Stylized
   c. Naturalistic
5. Animal form
6. Human form
7. Vegetable form
8. Artificial form, man-made
9. Natural, nonliving
10. Pictorial (story telling)
11. Scenic

C. Space

1. Enclosing space
2. Small organized spaces
3. Space reduced to a line
4. Positive and negative space equal
   a. Motif and ground are distinguishable
   b. Motif and ground are not distinguishable
5. Space has small motif filler
   a. Calligraphy
   b. Linear
   c. Geometric
   d. Nonobjective
   e. Animal form
   f. Human form
   g. Vegetable form
   h. Artificial form, man-made
   i. Natural, nonliving
   j. Pictorial (story telling)
   k. Scenic

III. Definitions on page 10, 11

Determine character of line used. Determine how line is used.

III. Line Character and Use

A. Shaded
B. Textured
C. Fine, delicate
D. Heavy

1. Dominant design
2. Outline
3. Space filler

E. Paired
F. Line not used

IV. Definitions on page 11, 12, 13

It is important that this is general character of the entire textile and not any one motif, that is being described.

First, determine direction. Next determine type of balance. The categories have subcategories for the number of axes, since more than one can cross a design. See diagrams on page 12, 13.

IV. Balance and Direction

A. Vertical
B. Horizontal
C. Diagonal
D. Equal emphasis, circular
E. Nondirectional

1. Formal
   a. Longitudinal axis
   b. Transverse axis
   c. Rotational
2. Informal
3. Radial

(1) One axis
(2) Two axes
(3) Three axes
(4) Four axes
(5) More than four axes

V. Definitions on page 13, 14

Density refers to the amount of motif in relation to the amount of space. If the motif covers more area, then motif is dominant. If motif and background cover equal area, choose B. If background covers more area, choose C. "Reversal effect" is an optical illusion resulting in indecision as to which is ground and which is motif.

V. Density and Value

A. Motif dominant
B. Equal emphasis
C. Ground dominant
D. "Reversal effect"

1. Value - dark dominant
2. Value - middle dominant
3. Value - light dominant

a. Black
b. Gray
c. White

(1) Area
(2) Line
(3) Area and line

Determine the predominant value--dark, middle or light.

Beginning with a. Black, determine whether black is linear, covers an area, or both. Repeat using gray and repeat again using white.

VI. Definitions on page 15, 16

Determine scale as small, medium or large, then classify proportion for each relationship 1, 2, and 3.

VI. Scale and Proportion
- A. Small
- B. Medium
- C. Large

1. Length of repeat to width of repeat
2. Length of textile to length of repeat
3. Width of textile to width of repeat

a. Infinity to 1:4
b. 1:4 to 1:2
c. 1:2 to 3:4
d. 3:4 to 1:1
e. 1:1 to 2:1 (includes 3:2)
f. 2:1 to 3:1
g. 3:1 to 4:1
h. 4:1 to 10:1
i. 10:1 to 20:1
j. Greater than 20:1

Hierarchy II: Specific Character of Motif

I. Definitions on page 16

Designate each motif in the design as dominant, auxiliary, or space filler. This hierarchy should be repeated for each motif in the textile. In the case of a pictorial design, consider each setting or scene as one motif.

I. Designation of motif
- A. Dominant motif
  1. Number 1
  2. Number 2
- B. Auxiliary motif
  1. Number 1
  2. Number 2
  3. Number 3
  n. Number n

The designation is the identification of the motif. It is suggested that there be only two dominant motifs, however, there may be any number (n) of auxiliary motifs or space fillers. These decisions are arbitrary, but each classifier should be consistent in his decisions.

C. Space filler
1. Number 1
2. Number 3
3. Number 3
n. Number n

II. Definitions on page 17, 18

Determine style. Determine character of presentation. Determine subject matter and note not classify listed information.

II. Content
A. Geometric style
B. Stylized
C. Naturalistic

1. Outline, open
2. Solid, silhouette
3. Internal detail

a. Calligraphy
Arabic
Greek
Hebrew
Oriental
Old German, Old English
Russian
Western Europe

Script
Pictographs
Hieroglyphics

Numerals

Other

b. Linear

Continuous	Curved	Textured
Broken	Straight	Shaded
Interlacing	Combination	Fine
		Heavy
		Paired

c. Geometric

Open	Stripe
Solid	Triangle
	Chevron
	Rectangle
	Square
	Circle
	Oval
	Scallop
	Diamond
	Rhombus
	Cross
	Swastika
	Pentagon
	Star
	Hexagon
	Octogon
	Polygon
	Ogee
	Fretwork
	Shield
	Gothic tracery

d. Nonobjective

Open
Solid

e. Animal form

Total	Frontal	Grouped	Real	Amphibian
Partial	Profile	Paired	Imaginary	Bird
	Dorsal	Single		Fish

Insect
Mammal
Reptile
Spider

f. Human form

Total	Front	Grouped	Male	Real	Infant	Black
Partial	Side	Paired	Female	Imaginary	Child	Brown
	Back	Single			Teen	Red
					Adult	White
					Aged	Yellow

g. Vegetable form

Top view	Plant	Real	Grouped	Garland
Side view	Flower	Imaginary	Paired	Swag
	Tree		Single	Medallion
	Vine			Bouquet
	Vegetable			Sprig
	Fruit			In a basket
	Underwater (reef)			In a vase
				Tied with a bow
				In natural setting

h. Artificial forms
Architecture
Bridges
Artifacts, tools, pottery, weapons
Transportation

i. Natural, nonliving
Rocks
Shells
Minerals, gems
Logs
Fire
Snow, rain
Sun, moon

j. Pictorial
Group
Independents

Note activity of the picture
Hunting
Boating
Weaving
etc.

k. Scenic
Landscape
Seascape
Cityscape

III. Definitions on page 18, 19, 20

Determine whether motif is simple or complex. Determine symmetry. Determine if motif is infinite or finite. Some variation is allowed for in each motif. This variation can be due to trying to fit a motif into a space, elaboration (more simple or more complex), change due to technique or craftsmanship, or the cause of the variation may not be obvious to the reviewer. If the final case is true, classify it as undetermined.

III. Form
A. Simple
B. Complex

1. Asymmetrical
2. Reflection
   a. Longitudinal
   b. Transverse
   c. Oblique
3. Rotational
   a. Bifold
   b. Trifold
   c. Quatrefold
   d. Fivefold
4. Radial
   a. Two axes
   b. Three axes
   c. Four axes
   d. Infinite number of axes (circle)

(1) Finite
(2) Infinite

(a) Space modification
(b) Elaboration
(c) Technique
(d) Undetermined
(e) Nonvariable

IV. Definitions on page 21

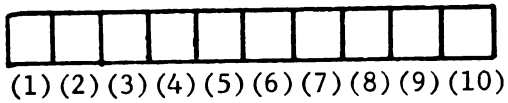
Determine direction of the motif. Determine type of motif (1,2). Determine type of design (H-I Part I). To plot the location of a motif on a band design place a grid of ten units over the band and list the number where the center point of the motif lies. To locate the motif in an all-over pattern place a 100 square grid (10 x 10) over the design and list the numerals of the square where the center point of the motif lies.

IV. Position and Direction

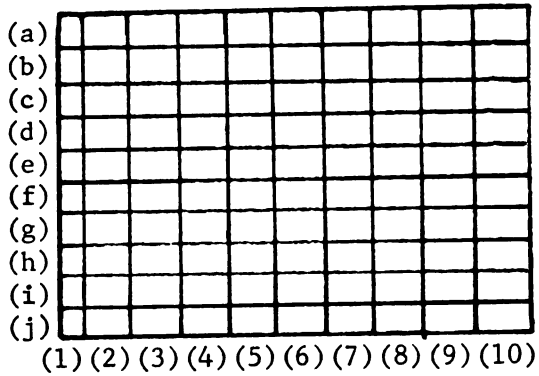
A. Vertical
B. Horizontal
C. Diagonal
D. Equal emphasis
E. Nondirectional

1. Continuous motif
2. Isolated motif

a. Free ornament
b. Band



c. All-over pattern



V. Definitions on page 21

Determine scale, then classify proportion for each relationship-- 1, 2, & 3.

V. Scale and Proportion

A. Small
B. Medium
C. Large

1. Length to width
2. Length of repeat to length of motif
3. Width of repeat to width of motif

a. Infinity to 1:4
b. 1:4 to 1:2
c. 1:2 to 3:4
d. 3:4 to 1:1
e. 1:1 to 2:1
f. 2:1 to 3:1
g. 3:1 to 4:1
h. 4:1 to 10:1
i. 10:1 to 20:1
j. Greater than 20:1

Hierarchy III: Specific Character of Arrangement

I. Definitions on page 22-25

I. Structure
- A. Repeat
  - 1. Band or border p. 39
  - 2. Border and field p. 39,40
  - 3. All-over pattern p. 40
  - 4. Superimposed design p. 40,41,42
- B. Nonrepeat
  - 2. Border and field p. 42
  - 4. Superimposed design p. 43,44
  - 5. Free ornament p. 45

If a design is a repeat, determine type 1, 2, 3, or 4, and turn to that page in the outline. The rest of this section is not relevant to the design except on the pages listed above. If the design is a nonrepeat, determine the type, 2, 4, or 5 and turn to the page where the design structure is classified.

I. Structure
- A. Repeat
  - 1. Band or border
    - a. No base line or structural plan
    - b. Base line
    - c. Structural plan
      - (1) One element
      - (2) Multiple element
        - (a) Outline
          - (i) Continuous
          - (ii) Not continuous
        - (b) Center space
          - (i) One-dimensional
          - (ii) Two-dimensional
            - (a) Continuous
            - (b) Isolated motif - identical
            - (c) Isolated motif - variable

STOP! You have completed the classification.

  - 2. Border and repeating field
    - a. Field
      - (1) Rectangular, square
        - (a) Block
        - (b) Drop
        - (c) Brick
      - (2) Diamond, triangle, rhombus
      - (3) Hexagon
      - (4) Scale
      - (5) Ogee
      - (6) Circular
        - (i) Alternating
        - (ii) Opposites
        - (iii) Turning square
        - (iv) Counterchange
        - (v) Scattered

b. Border

- (1) Repeating
  - (a) No base line or structural plan
    - (i) One element
    - (ii) Multiple elements
      - (a) Outline
        - I. Continuous
        - II. Not continuous
      - (b) Center space
        - I. One-dimensional
        - II. Two-dimensional
          - A. Continuous
          - B. Isolated motif - identical
          - C. Isolated motif - variable
  - (b) Base line
  - (c) Structural plan
- (2) Nonrepeating

STOP! You have completed the classification.

Definitions on page 23-25

3. All-over pattern

- a. Rectangular, square
  - (1) Block
  - (2) Drop
  - (3) Brick
- b. Diamond, triangle, rhombus
- c. Hexagon
- d. Scale
- e. Ogee
- f. Circular

(a) Alternating
(b) Opposing
(c) Turning square
(d) Counterchange
(e) Scattered

STOP! You have completed the classification.

Definitions on page 22-25

Considering the ground, or underneath design, determine if it is repeating or non-repeating. If it is repeating, start opposite this instruction column. If the design is non-repeating, begin on page 18.

Classification of surface design begins on page 42.

4. Superimposed design
   a. Ground
      (1) Repeating
         (a) One-dimensional
            (i) No base line or structural plan
               (a) One element
               (b) Multiple elements
                  I. Outline
                     A. Continuous
                     B. Not continuous
                  II. Center space
                     A. One-dimensional
                     B. Two-dimensional
                        1. Continuous
                        2. Isolated motif - identical
                        3. Isolated motif - variable
            (ii) Base line
            (iii) Structural plan
         (b) Two-dimensional
            (i) Rectangular, square
               (a) Block
               (b) Drop
               (c) Brick
               I. Alternating
               II. Opposites
               III. Turning square
               IV. Counterchange
               V. Scattered
            (ii) Diamond, triangle, rhombus
            (iii) Hexagon
            (iv) Scale
            (v) Ogee
            (vi) Circular

(2) Nonrepeating

(a) One-dimensional

(i) No base line or structural plan

(ii) Base line

(iii) Structural plan

(a) One element

(b) Multiple elements

I. Outline

A. Continuous

B. Not continuous

II. Center space

A. One-dimensional

B. Two-dimensional

(b) Two-dimensional

(i) Single element

(ii) Multiple elements

(a) Random placement

(b) Structural placement

I. Rectangular, square

II. Diamond, triangular, rhombus

III. Hexagon

IV. Scale

V. Ogee

VI. Circular

b. Surface design (repeating only, due to original classification definition)

(1) One-dimensional

(a) No base line or structural plan

(b) Base line

(c) Structural plan

(i) One element

(ii) Multiple elements

(a) Outline

I. Continuous

II. Not continuous

(b) Center space

I. One-dimensional

A. Continuous

B. Isolated motif - identical

II. Two-dimensional

C. Isolated motif - variable

(2) Two-dimensional
- (a) Rectangular, square
  - (i) Block
  - (ii) Drop
  - (iii) Brick
- (b) Diamond, triangle, rhombus
- (c) Hexagon
- (d) Scale
- (e) Ogee
- (f) Circular

(a) Alternating
(b) Opposites
(c) Turning square
(d) Counterchange
(c) Scattered

STOP! You have completed the classification.

B. Nonrepeat
2. Border and nonrepeating field
a. Border

Definitions on page 22-23

(1) Repeating
(2) Nonrepeating

(a) No base line or structural plan
(b) Base line
(c) Structural plan

(i) One element
(ii) Multiple elements
- (a) Outline
  - I. Continuous
  - II. Not continuous
- (b) Center space
  - I. One-dimensional
  - II. Two-dimensional

A. Continuous
B. Isolated motif - identical
C. Isolated motif - variable

b. Field
(1) Single element
(2) Multiple elements
(a) Random placement
(b) Structured placement
(i) Rectangular, square
(ii) Diamond, triangular, rhombus
(iii) Hexagon
(iv) Scale
(v) Ogee
(vi) Circular

STOP! You have completed the classification.

Definitions on page 22-25

For a repeating ground, begin here. For a non-repeating ground, begin on page 44.

4. Superimposed design
a. Ground
(1) Repeating (a) One-dimensional
(i) No base line or structural plan (a) One element
(b) Multiple elements
I. Outline
A. Continuous
B. Not continuous
II. Center space
A. One-dimensional
B. Two-dimensional
(ii) Base line
(iii) Structural plan

1. Continuous
2. Isolated motif - identical
3. Isolated motif - variable

(b) Two-dimensional
  (i) Rectangular, square
    (a) Block
    (b) Drop
    (c) Brick
  (ii) Diamond, triangular, rhombus
  (iii) Hexagon
  (iv) Scale
  (v) Ogee
  (vi) Circular

I. Alternating
II. Opposites
III. Turning square
IV. Counterchange
V. Scattered

(2) Nonrepeating
  (a) One-dimensional
    (i) No base line or structural plan
    (ii) Base line
    (iii) Structural plan

(a) One element
(b) Multiple elements
  I. Outline
    A. Continuous
    B. Not continuous
  II. Center space
    A. One-dimensional
    B. Two-dimensional

  (b) Two-dimensional
    (i) Single element
    (ii) Multiple elements
      (a) Random placement
      (b) Structured placement
        I. Rectangular, square
        II. Diamond, triangular, rhombus
        III. Hexagon
        IV. Scale
        V. Ogee
        VI. Circular

b. *Surface (nonrepeating only - due to original classification definition)*

(1) One-dimensional
- (a) No base line or structural plan
- (b) Base line
- (c) Structural plan

(2) Two-dimensional
- (a) Single element
- (b) Multiple elements
  - (i) Random placement
  - (ii) Structured placement
    - (a) Rectangular, square
    - (b) Diamond, triangular, rhombus
    - (c) Hexagon
    - (d) Scale
    - (e) Ogee
    - (f) Circular

STOP! You have completed the classification.

(1) One-dimensional
- (a) No base line or structural plan
- (b) Base line
- (c) Structural plan
  - (i) One element
  - (ii) Multiple elements
    - (a) Outline
      - I. Continuous
      - II. Not continuous
    - (b) Center space
      - I. One-dimensional
      - II. Two-dimensional

Definitions on page 22-25

5. Free ornament
   - a. Single element
   - b. Multiple elements
     - (1) Random placement
     - (2) Structured placement
       - (a) Rectangular, square
       - (b) Diamond, triangle, rhombus
       - (c) Hexagon
       - (d) Scale
       - (e) Ogee
       - (f) Circular

STOP! You have completed the classification.

and investigator reviewed the first example. Again participant's own class work interfered with the completion of the test and seven of the eleven packets were returned after the 18 day deadline. The instructions limited the participant's time to four hours.

The comments on the evaluation sheet were not as helpful for revising the classification outline as those on the pretest evaluation. No suggestions were given, but the system was criticized for too much information, unclear definitions, poor organization, and too much paper to shuffle, or mechanics. One person did not understand the answer sheet. Two people questioned the value or purpose of the study. One person worked through the mechanics of the test with no errors.

The results on the amount of time for each textile on A pages and B pages were as follows:

Textiles A

Textile 1	Textile 2
A. No answer	A. No answer
B. 40 minutes	B. 35 minutes
C. 100 minutes	C. 0
D. 40 minutes	D. 15 minutes
E. 75 minutes	E. 30 minutes

Textiles B

Textile 1	Textile 2
A. 90 minutes	A. 60 minutes
B. 60 minutes	B. 60 minutes

The answers resulting from the evaluation of the 12 criteria are as follows:

1. The system should be easy to use.

A Textiles		B Textiles	
Yes	1	Yes	1
No	4	No	1

2. Terminology should be simple and clearly defined.

A Textiles		B Textiles	
Yes	1	Yes	1
Sometimes	3	No	1
No answer	1		

3. The placement of a textile into a characteristic class is to be objective.

A Textiles		B Textiles	
Yes	4	Yes	1
Sometimes	1	No	1

4. Attributes subdivisions are to be mutually exclusive.

A Textiles		B Textiles	
Yes	3	Not understand question	2
Sometimes	1		
No answer	1		

5. There is to be internal consistency; that is, similar textiles will result in similar classifications.

A Textiles		B Textiles	
Yes	3	Yes	2
Not sure	1		
No answer	1		

6. Only repetition necessary for clarity should be included at a different level of hierarchy.

A Textiles		B Textiles	
Yes	4	Yes	1
No answer	1	Not understand question	1

7. The system is to be descriptive, not interpretative.

A Textiles		B Textiles	
Yes	3	Yes	1
No	2	Its both	1

8. Attributes show no generic relation to the previous attributes. No attributes are weighted in importance.

A Textiles		B Textiles	
Yes	5	Not understand	2

9. The classification system is to be comprehensive and open to expansion.

A Textiles		B Textiles	
Yes	4	Yes	2
Not sure	1		

10. The details are to be numerous enough to isolate variations, but limited so that groups can be formed for comparison.

A Textiles		B Textiles	
Yes	3	Yes	2
Not understand	2		

11. Classes are to be relevant to the proposed problem, which is the aesthetic analysis of textiles.

A Textiles		B Textiles	
Yes	3	Yes	1
No	1	Not understand	1
No answer	1		

12. The classification system is to be applicable to more than one study.

A Textiles		B Textiles	
Yes	3	Yes	2
No answer	1		
Not understand	1		

Did you experience great difficulty?

A Textiles		B Textiles	
Yes	3	Yes	2
No	2		

Do you think you received an accurate picture in your mind of the textile from the system?

A Textiles		B Textiles	
Yes	2	Some	2
No	3		

Was this a learning experience for you?

A Textiles		B Textiles	
Yes	3	Some	1
No	2	Yes	1

Tabulations for textiles on page A are shown here. Textiles on B were classified by only two of the seven packets returned. In most cases their answers did not agree pointing to lack of internal consistency and misinterpretation of the definitions.

Textile A (Figure 11, top)

Hierarchy I

I. Textile form
  B. Full piece (5)
    1. Repeat (3)
      b. Border and field (3)
    2. Nonrepeat (2)
      b. Border and field (2)
        (1) Variable (3)
        (2) Nonvariable (2)

II. Content
  A. Dominant motif
    3. Geometric (5)
      a. Geometric style (5)
  B. Auxiliary motif
    7. Vegetable form (5)
      b. Stylized (4)
      c. Naturalistic (1)

C. Space
1. Enclosing space (5)
5. Space has motif filler (1)

III. Line Character and Use
C. Fine (1)
D. Heavy (4)
2. Outline (2)
3. Space filler (3)

IV. Balance and Direction
A. Vertical (1)
B. Horizontal (1)
D. Equal-emphasis (2)
E. Nondirection (1)
1. Formal (5)
a. Longitudinal axis (1)
b. Transverse axis (1)
c. Rotational (2)
(1) One axis (2)
(2) two axes (3)

V. Density and Value
A. Motif dominant (2)
B. Equal-emphasis (1)
C. Ground dominant (2)
1. Value - dark dominant (2)
2. Value - middle dominant (2)
3. Value - light dominant (1)
a. Black
(1) Area (1)
(3) Area and line (3)
b. White
(1) Area (4)

VI. Scale and Proportion
A. Small (1)
B. Medium (2)
C. Large (1)

Hierarchy II

Dominant motif #1

II. Content
A. Geometric style (4)
2. Solid (4)
c. Geometric (4)

Auxiliary motif #1

II. Content
B. Stylized (3)
C. Naturalistic (1)
1. Open (1)
2. Solid (3)
g. Vegetable (4)

III. Form
A. Simple (4)
4. Radial (4)
c. 4 axes (3)
(1) Finite (4)
(e) Nonvariable (4)

III. Form
A. Simple (4)
2. Reflection (4)
a. Longitudinal (2)
b. Transverse (2)
(1) Finite (4)
(d) Undetermined (1)
(e) Nonvariable (3)

IV. Position and Direction
A. Vertical (1)
D. Equal emphasis (2)
E. Nondirectional (1)
a. Isolated motif (4)

IV. Position and Direction
A. Vertical (2)
E. Nondirectional (2)
2. Isolated motif (4)

V. Scale and Proportion
B. Medium (3)
C. Large (1)

V. Scale and Proportion
B. Medium (3)
C. Large (1)

Hierarchy III

I. Structure
A. Repeat (3)
2. Border and repeating field (3)
a. Field
(1) Rectangular (1)
(c) Brick (1)
b. Border
(1) Repeating (1)
(2) Nonrepeating (1)
(a) No base line or structural plan (1)
(b) Base line (1)
(i) One element (1)
(ii) Multiple elements (1)
(a) Outline
i. Continuous (1)
(b) Center space
B. Nonrepeat (1)
2. Border and nonrepeating field (1)
a. Border
(1) Repeating (1)
(a) no base line or structural plan (1)

Textile A (Figure 11, bottom)

Hierarchy I

I. Textile form

B. Full piece (4)
1. Repeat (4)
a. Band or border (1)
c. All-over pattern (3)
(1) Variable (4)
(a) Line (2)
(b) Motif (1)
(c) Size (1)

II. Content
A. Dominant motif
2. Linear (4)
a. Geometric style (3)
b. Stylized (1)
B. Auxiliary motif
2. Linear (1)
4. Nonobjective (1)
a. Geometric (1)
C. Space
3. Space reduced to a line (1)
4. Positive and negative space equal (3)
a. Motif and ground are distinguishable (3)

III. Line Character and Use
D. Heavy (4)
1. Dominant design (4)

IV. Balance and Direction
A. Vertical (1)
C. Diagonal (3)
1. Formal (2)
a. Longitudinal axis (1)
2. Informal (2)
(1) One axis (1)
(5) More than 4 axes (1)

V. Density and Value
A. Motif dominant (1)
B. Equal emphasis (3)
1. Value - dark dominant (2)
2. Value - middle dominant (2)
(a) Black
(2) Line (2)
(3) Area and line (1)
(b) White
(1) Area (2)
(3) Area and line (1)

VI. Scale and Proportion
B. Medium (1)
C. Large (1) (one said in between)

Hierarchy II

Dominant motif #1 — No auxiliary motif consistency

II. Content
A. Geometrical style (2)
2. Solid (2)
b. Linear (1)
c. Geometric (1)
d. Nonobjective (1)

III. Form
A. Simple (3)
1. Asymmetrical (3)
(2) Infinite (3)
(d) Undetermined (1)
(e) Nonvariable (2)

IV. Position and Direction
B. Horizontal (1)
C. Diagonal (1)
1. Continuous motif (2)

V. Scale and Proportion
A. Small (1)
B. Medium (2)

Hierarchy III

I. Structure
A. Repeat (3)
1. Band or border (1)
c. Structural plan (1)
(1) One element (1)
3. All-over pattern (2)
b. Diamond, triangular, rhombus (1)
(a) Alternating (1)

These results show that there is greater consistency among answers in Hierarchy I, than in II or III, but much of the discrepancy is due to misunderstanding the mechanics. There was more agreement on the first textile than on the second. Textile two caused difficulty because there is no auxiliary motif. Classifiers did not realize that if the category does not apply it can be omitted, rather than

guessing at answers.

Key to Test Textiles

Textile (Figure 11, top)

Hierarchy I

I. Textile form
B. Full piece
1. Repeat
b. Border and field
(1) Variable
(b) Motif
(d) Direction

II. Content
A. Dominant motif
3. Geometric
a. Geometric style
B. Auxiliary motif
7. Vegetable form
b. Stylized
C. Space
1. Enclosing space

III. Line Character and Use
D. Heavy
3. Space filler

IV. Balance and Direction
A. Vertical
1. Formal
a. Longitudinal axis
(1) One axis

V. Density and Value
C. Ground dominant
3. Value - light dominant
a. Black
(3) Line and area
c. White
(1) Area

VI. Scale and Proportion
B. Medium
1. 1:1 d
2. 4:1 g
3. 2:1 e

Hierarchy II

I. Designation of motif
A. Dominant motif
1. Number 1

II. Content
A. Geometric style
2. Solid, silhouette
c. Geometric
Solid
Star

III. Form
B. Complex
4. Radial
c. 4 axes
(1) Finite
(a) Nonvariable

IV. Position and Direction
D. Equal emphasis
2. Isolated motif
c. All-over pattern
3 7
b a
e d
h g
j

V. Scale and Proportion
B. Medium
1. 1:1 d
2. 1:1 d
3. 1:1 d

I. Designation of motif
B. Auxiliary motif
1. Number 1

II. Content
B. Stylized
2. Solid, silhouette
g. Vegetable form
Side view
Vine
Imaginary
Single

III. Form
A. Simple
2. Reflection
b. Transverse axis
(1) Finite
(b) Elaboration

IV. Position and Direction
B. Horizontal
1. Continuous motif
b. Band
2,4,6,8,10

V. Scale and Proportion
B. Medium
1. 1:1 d
2. 3:1 g
3. 1:1 d

Hierarchy III

I. Structure
A. Repeat
2. Border and Repeating Field
a. Field
(1) Rectangular
(b) Drop
b. Border
(1) Repeating
(b) Base line
(ii) Multiple elements

(a) Outline
(I) Continuous
(b) Center space
(I) One-dimensional
(A) Continuous

Textile (Figure 11, bottom)

Hierarchy I

I. Textile Form
B. Full piece
1. Repeat
a. Band or border
(1) Variable
(c) Size

II. Content
A. Dominant motif
2. Linear
a. Geometric style
B. Auxiliary motif
2. Linear
a. Geometric style
C. Space
4. Positive and negative space are equal
b. Not distinguishable

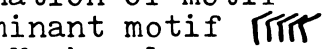
III. Line Character and Use
D. Heavy
1. Dominant design

IV. Balance and Direction
D. Equal emphasis
2. Informal
(4) 4 axes

V. Density and Value
D. "Reversal Effect"
2. Value - middle dominant
a. Black
(3) Area and line
c. White
(3) Area and line

VI. Scale and Proportion
C. Large
1. 1:1 d
2. 7:4 e
3. 1:1 d

Hierarchy II

I. Designation of motif
A. Dominant motif 
1. Number 1

II. Content
A. Geometric style
2. Solid, silhouette
b. Linear
Broken
Straight
Heavy

III. Form
A. Simple
1. Asymmetrical
(2) Infinite
(e) Nonvariable

IV. Position and Direction
A. Vertical
1. Continuous motif
b. Band
1-10

V. Scale and Proportion
A. Small
1. 10:1 i
2. 4:1 h
3. 14:1 i

I. Designation of motif
B. Auxiliary motif 
1. Number 1

II. Content
A. Geometric style
2. Solid, silhouette
b. Linear
Broken
Straight
Heavy

III. Form
A. Simple
1. Asymmetrical
(2) Infinite
(e) Nonvariable

IV. Position and Direction
A. Vertical
1. Continuous motif
b. Band
1-10

V. Scale and Proportion
C. Large
1. 1:1 d
2. 4:1 h
3. 1:1 d

Hierarchy III

I. Structure
A. Repeat
1. Band or border
c. Structural plan
(2) Multiple elements
(b) Center space
(ii) Two-dimensional
(a) Continuous

Textile (Figure 10, top)

I. Textile Form
B. Full piece
1. Repeat
d. Superimposed design
(1) Variable
(b) Motif

II. Content
A. Dominant motif
7. Vegetable form
b. Stylized
B. Auxiliary motif
3. Geometric
a. Geometric style
C. Space
1. Enclosing space

III. Line Character and Use
C. Fine, delicate
1. Dominant design
2. Outline

IV. Balance and Direction
D. Equal emphasis
2. Informal
(2) 2 axes

V. Density and Value
C. Ground dominant
3. Value - light dominant
a. Black
(2) Line
c. White
(1) Area

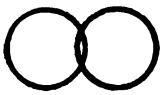
VI. Scale and Proportion
B. Medium
1. 1:1 d
2. 2:1 e
3. 1:1 d

Hierarchy II

I. Designation of motif
A. Dominant motif
1. Number 1

II. Content
B. Stylized
1. Outline, open
g. Vegetable form
Top
Flower
Imaginary
Group

I. Designation of motif
B. Auxiliary motif
1. Number 1



II. Content
A. Geometric style
1. Outline, open
c. Geometric
Open
Circle

III. Form
B. Complex
1. Asymmetrical
(2) Infinite
(b) Elaboration

III. Form
A. Simple
4. Radial
d. Infinite no. of axes
(2) Infinite
(b) Elaboration

IV. Position and Direction
C. Diagonal
2. Isolated motif
c. All-over

1	8
b	b
d	d
f	f
h	h

IV. Position and Direction
D. Equal emphasis
1. Continuous motif
c. All-over
8
c
g

V. Scale and Proportion
A. Small

1.	2:1	e
2.	2:1	e
3.	1:1	d

V. Scale and Proportion
C. Large

1.	1:1	d
2.	1:1	d
3.	1:1	d

Hierarchy III

I. Structure
A. Repeat
4. Superimposed design
a. Ground
(1) Repeating
(b) Two-dimensional
(ii) Circular

b. Surface
(2) Two-dimensional
(b) Diamond
(a) Alternating

Textile (Figure 10, bottom)

Hierarchy I

I. Textile Form
B. Full piece
1. Repeat
a. Band or border
(2) Nonvariable

II. Content
A. Dominant motif
2. Linear
a. Geometrical style
B. Auxiliary motif
4. Nonobjective
a. Geometrical style
C. Space
2. Organized space

III. Line Character and Use
D. Heavy
1. Dominant design

IV. Balance and Direction
A. Vertical
1. Formal
b. Transverse axis
(2) Two axes

V. Density and Value
A. Motif dominant
B. Value - middle dominant
a. Black
(1) Area
b. Gray
(1) Area
c. White
(1) Area

VI. Scale and Proportion
C. Large
1. 1:1 d
2. 2:1 e
3. 1:1 d

Hierarchy II

I. Designation of motif
A. Dominant motif
1. Number 1

I. Designation of motif
B. Auxiliary motif
1. Number 1

II. Content
A. Geometrical style
2. Solid
b. Linear
Continuous
Curved
Heavy

II. Content
A. Geometrical style
2. Solid
4. Nonobjective solid

III. Form
A. Simple
2. Reflection
b. Transverse axis
(2) Infinite
(e) Nonvariable

II. Form
A. Simple
2. Reflection
b. Transverse axes
(2) Infinite
(e) Non-
variable

IV. Position and Direction
A. Vertical
1. Continuous
b. Band
1-10

IV. Position and Direction
A. Vertical
1. Continuous
b. Band
1-10

V. Scale and Proportion
C. Large
1. 3:2 e
2. 1:1 d
3. 1:1 d

V. Scale and Proportion
C. Large
1. 2:1 e
2. 1:1 d
3. 2:1 e

Hierarchy III

I. Structure
A. Repeat
1. Band or border
b. Base line
(1) One element
(a) Continuous

Further Revisions after Revised Test

Revisions were made in the classification outline, definitions, and examples. An entirely new format was adopted, so that the amount of information presented at one time would be reduced. Under each Roman numeral (I) Textile Form are listed: (1) Special Instructions, (2) Definitions and Diagrams, (3) Example, and (4) Classification outline pertaining only to that Roman numeral. General instructions for the entire system precede the new format.

In Hierarchy I, some terms were revised. Balance in (IV) Balance and Direction was changed to Symmetry. In (V) Density and Value, (1) "Motif covers more area" replaced "motif dominant". "Equal emphasis" was replaced by (2) "Motif and ground cover equal areas" and "Ground dominant" was replaced by (3) "Ground covers more area". The word dominant was giving the wrong impression to classifiers.

Some definitions were further clarified and several changes were made on the outline. Color was added as a choice for (i) variable in (I) Textile form. On the (II) Content outline, space filler was changed to a subcategory for all the forms of space, (1) enclosing space, (2) organized space, (3) space reduced to a line, and (4) positive and negative space are equal. In (III) Line Character and Use, medium was added as a choice of line character and in (IV) Summetry and Direction, nondirectional was omitted. Longitudinal axis and transverse axis were added as subcategories to asymmmetrical. In (VI) Scale and

Proportion, ratios were converted to fractions and boundaries were set using signs for greater than (<) and greater than or equal to (≤).

In Hierarchy II, the designation of the motif was changed from a choice of dominant or auxiliary to numbering motifs starting in the upper left hand corner. Frequency of motif appearance was added and dominance and auxiliary were changed to subcategories. Under (II) Content, style was moved to (I) Designation of the motif. Descriptions of the style (1) outline, (2) solid, and (3) internal detail were moved to subcategories under the content headings. Elimination of style from (II) Content allowed for all the specific information under each content heading (a. calligraphy) to be classified using numbers and letters, rather than just being noted. In (III) Form, (i) infinite and (ii) finite were omitted and replaced by (i) continuous and (ii) isolated motif. In (IV) Direction and Position, nondirectional was omitted, and type of repeat does not have to be specified in order to place it on the position grid. The band grid was eliminated since all textiles can be placed on the 10 x 10 grid.

In Hierarchy III, new diagrams were added as well as seven examples. Each type of repeat or nonrepeat is now on a separate page in the classification outline. Linear was added as a type of two-dimensional structure.

The classification system was pretested by graduate students and faculty, revised and tested by a graduate

seminar in the Department of Human Environment and Design at Michigan State University.

The revisions included rearrangement of the test, redefining of terms, grouping of categories and elimination of some subcategories, and additional instructions for clarity. Internal consistency on the outline and in definitions was also improved. Another example and more specific answer sheets were given.

Statements of evaluation on the pretest were more beneficial to its revision than the revised test participants. Further revisions for clarity and ease of use were necessary. This resulted in an entirely new format. The new format subdivides the continuous outline previously used into separate pages and instructions for each Roman numeral heading. Each section contains its own instructions, definitions, examples, and classification outline. Some terminology was changed for clarity with more examples or diagrams added. The final form is shown in Chapter V.

CHAPTER V

CLASSIFICATION SYSTEM

Classification Outline - Table of Contents

Classification Outline

General Instructions

Orientation: Selvages are placed vertically when viewing the textile design. If a definite "top" can be established in the pattern, it is placed upward only if the selvages remain vertical.

Outline Arrangement: If a subcategory is placed next to the major category in the outline, then the choices in the subcategory fit in any major category. In the example, (1) Repeat and (2) Nonrepeat can be placed in either (A) Fragment and (B) Full piece.

I. Textile Form
- A. Fragment
- B. Full piece
  - 1. Repeat
    - a. Band or border
    - b. Border and field
    - c. All-over pattern
    - d. Superimposed design
  - 2. Nonrepeat
    - b. Border and field
    - d. Superimposed design
    - e. Free ornament

If a subcategory is placed under the major category, then those features are the only choices applicable to the major category. In the example, (a) Band or border, (b) Border and field, (c) All-over pattern, and (d) Superimposed design are applicable to (1) Repeat. Features (b) Border and field, (d) Superimposed design, and (e) Free ornament are applicable to (2) Nonrepeat.

Notation: Notation should take the following outline

form:

I. Textile Form
    A. Full piece
        1. Repeat
            (a) Band or border
                (1) Variable
                    (b) Motif

This notation indicates that the textile design is a full piece, that it is a repeating band or border. The design is not a strict repeat, but varies in motif.

It is only necessary to list applicable characteristics.

Hierarchy I (H-1): General Characteristics of the Textile Design

I. Textile Form

** Special Instructions **

Determine if the textile is a (A) Fragment or (B) Full Piece. Determine if the design is a (1) Repeat or (2) Non-repeat. If the textile is a (1) Repeat, choose from (a) Band or border, (b) Border and field, (c) All-over pattern, or (d) Superimposed design. If the textile is a (2) Non-repeat, choose from (b) Border and field, (d) Superimposed design, or (e) Free ornament.

A nonrepeating textile can vary due to changes in line character, subject of motif, size of motif, or direction of motif. A repeating design can appear as a general repeat and still have variation in line, motif, size and direction. If there is no change at all (polka dots) select nonvariable.

Remember this is a general character of the design, an overall impression.

** Definitions and Diagrams **

I. Textile Form

A. Fragment - A portion of a textile, resulting in only part of the design or repeat being observable.

B. Full piece - A textile in which structure and design are complete.

Note: Repeats can be considered infinite, in which case a full piece would be impossible to obtain, therefore, for practical purposes, a full piece is a complete design structure.

---

1. Repeat - Ordered recurrence of a motif or motifs without variation or with change in orientation and shift in position.

2. Nonrepeat - Any design in which ordered recurrence of a motif is not observable.

---

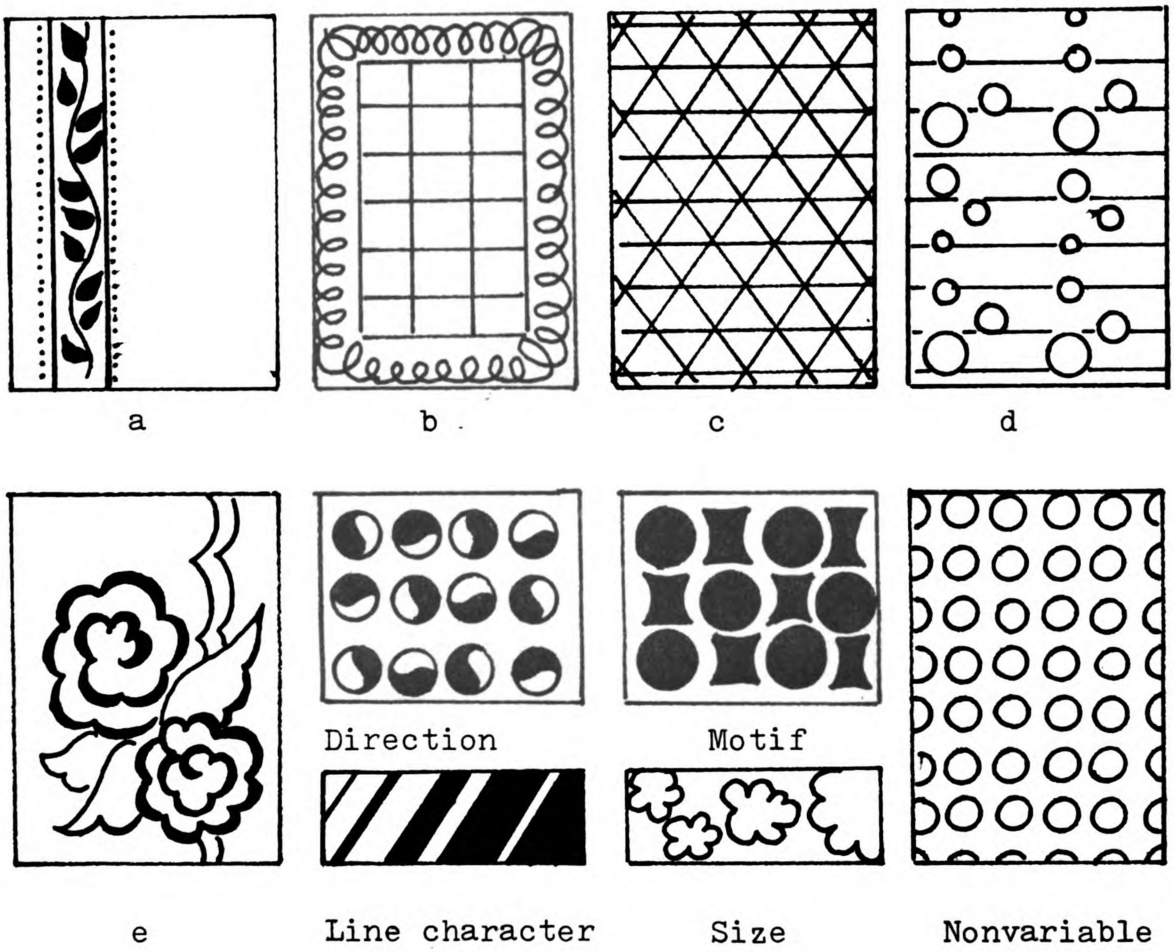
a. Band or border - One or a multiple of motifs moving in one direction along the fabric (example below).

b. Border and field - A central area with a repeating or nonrepeating motif, enclosed by a border. If the central area is repeating, classify design as (1) Repeat. If the central area is nonrepeating, classify the design as (2) Nonrepeat (example below).

c. All-over pattern - One or a multiple of motifs moving in two directions over the fabric (example below).

d. Superimposed design - The placement of one distinct repeating or nonrepeating unit over another repeating or nonrepeating unit. Classify using the top design (example below).

e. Free ornament - A distinct nonrepeating unit, which fills the design space (example below).



Variations

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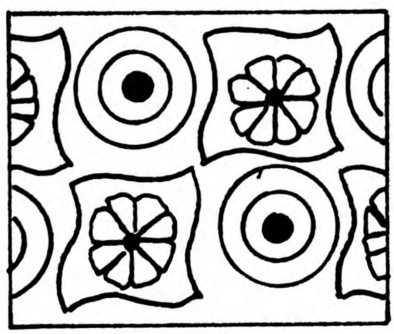
(1) Variable - Some variation in design due to change of direction, motif subject, line character, or size (example above).

(2) Nonvariable - A very strict repeat, no change within the design (example above).



** Example **

I. Textile Form
B. Full piece
1. Repeat
c. All-over pattern
(1) Variable
(b) Motif

Hierarchy I: General Character of the Textile Design

I. Textile form
   - A. Fragment
   - B. Full piece
     - 1. Repeat
       - a. Band or border
       - b. Border and field
       - c. All-over pattern
       - d. Superimposed design
     - 2. Nonrepeat
       - b. Border and field
       - d. Superimposed design
       - e. Free ornament
         - (1) Variable
           - (a) Line character
           - (b) Motif
           - (c) Size
           - (d) Direction
           - (e) Color (hue, value, saturation)
           - (f) Other _____
         - (2) Nonvariable

II. Content

** Special Instructions **

Choose a dominant motif based on size and frequency. Dominant figures are usually familiar elements, regularly spaced, and symmetric. Repeat this section analyzing the auxiliary motif. Auxiliary motifs are adapted to the remaining spaces. These choices are arbitrary, but each classifier's individual decisions should be consistent through the outline and throughout the entire textile collection.

Classify form of the space and space filler.

** Definitions and Diagrams **

II. Content

A. Dominant motif - The most important or most obvious design unit based on size, frequency, position, and symmetry.

B. Auxiliary motif - A design unit of secondary importance.

---

1. Calligraphy - Any recognizable ancient or modern alphabet.

2. Linear - A design formed by the element line, for example, stripe.

3. Geometrical - Shapes with mechanical contours, subject to the rules of mathematics.

4. Nonobjective - A nongeometrical shape with no implication of a natural form.

5. Animal form - Any real or imaginary representation of an animal (nonhuman) or animal part.

6. Human form - Any representation of a human being or part of a human, such as the eye, hand or foot.

7. Vegetable form - Any real or imaginary plant form.

8. Artificial form - Any man-made structure or artifact (buildings).

9. Natural, nonliving - Rocks, minerals, fire, sun, moon, stars.

10. Pictorial - An iconographic or story telling scene.

11. Scenic - A landscape, seascape, or cityscape that is not telling a story.

---

a. Geometric style - An artistic style in which all forms are reduced to geometric shapes.

b. Stylized - Simplification of form and details of naturalistic things.

c. Naturalistic - Direct imitation of natural shapes, close to photographic, but limited by media and technique.

C. Space - The area surrounding design motifs

---

1. Enclosing space - Space entirely surrounding the motif

2. Organized spaces - Motif is larger than the space so that space cannot surround the motif, resulting in the space being reduced to small areas.

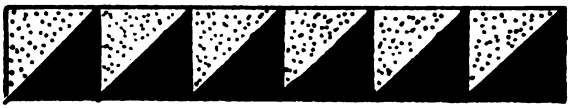
3. Space reduced to a line - Space would have to be obvious somewhere else on the design to show that the motif has enclosed the space until the space is just a line.

4. Positive and negative space are equal - Motif and background space cover equal amounts of area using similar shapes.

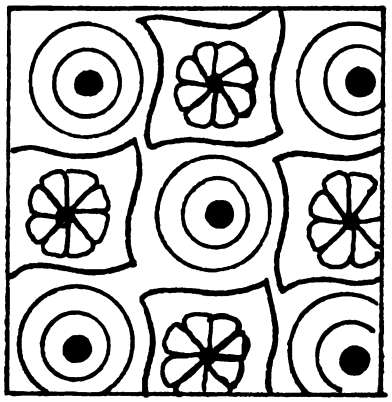
a. Distinguishable

b. Not distinguishable

(1) Space filler - Space surrounding a larger motif is interrupted by smaller motifs



** Example **



II. Content
A. Dominant motif
3. Geometric
a. Geometric style
B. Auxiliary motif
7. Vegetable form
b. Stylized
C. Space
1. Enclosing space
(1) Space filler
(b) Linear

III. Line Character and Use

** Special Instructions **

Determine the character of the line used and then determine how line is used.

** Definitions and Diagrams **

A. Shaded

B. Textured

C. Fine, delicate

Hierarchy I: General Character of the Textile Design

II. Content

A. Dominant motif type
B. Auxiliary motif type
   1. Calligraphy
   2. Linear
   3. Geometric
   4. Nonobjective
   5. Animal form
   6. Human form
   7. Vegetable form
   8. Artificial form, man-made
   9. Natural, nonliving
   10. Pictorial (story telling)
   11. Scenic
      a. Geometric style
      b. Stylized
      c. Naturalistic

C. Space
   1. Enclosing space
   2. Organized spaces
   3. Space reduced to a line
   4. Positive and negative space equal
      a. Motif and ground are distinguishable
      b. Motif and ground are not distinguishable
         (1) Space filler
            (a) Calligraphy
            (b) Linear
            (c) Geometric
            (d) Nonobjective
            (e) Animal form
            (f) Human form
            (g) Vegetable form
            (h) Artificial form
            (i) Natural, nonliving
            (j) Pictorial
            (k) Scenic
         (2) No space filler

D. Medium weight

E. Heavy

F. Paired

G. Line not used - A design in which only solid spaces are present.

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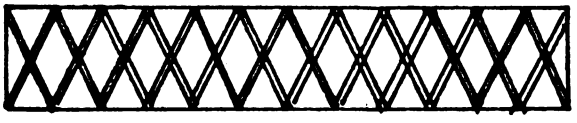
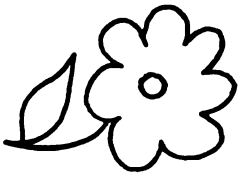
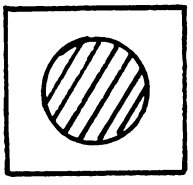
1. Dominant design - A design in which line is the dominant motif and center of interest.

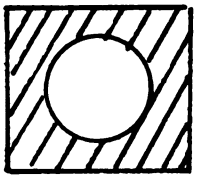


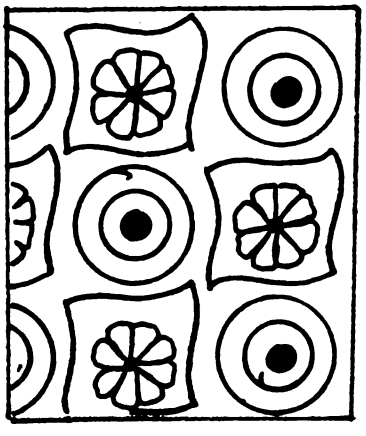
2. Outline



3. Space filler







** Example**

III. Line Character and Use
D. Medium weight
1. Outline
2. Space filler

Hierarchy I: General Character of the Textile Design

III. Line Character and Use
- A. Shaded
- B. Textured
- C. Fine, delicate
- D. Medium weight
- E. Heavy
- F. Paired
- G. Line not used

1. Dominant design
2. Outline
3. Space filler

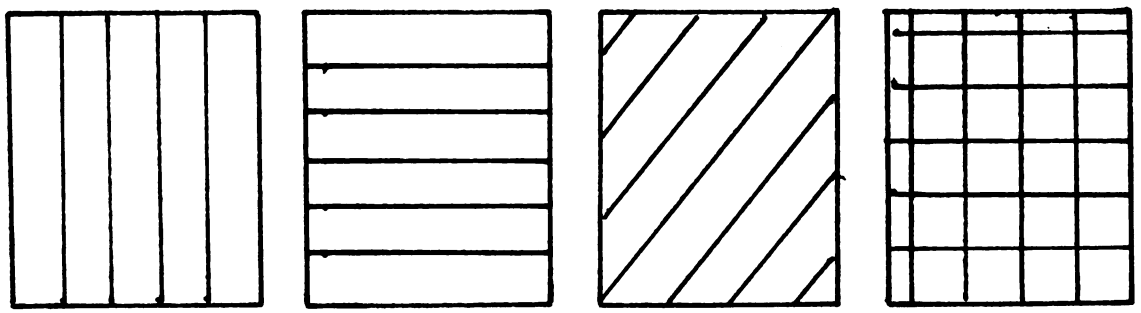
IV. Symmetry and Direction

** Special Instructions **

It is important that this is general character of the entire textile and not any one motif that is being described. First, determine the direction. Next determine type of symmetry. The categories have subcategories for the number of axes, since more than one can cross a design. There are two types of axes, longitudinal and transverse.

** Definitions and Diagrams **

IV. Symmetry and Direction



A. Vertical B. Horizontal C. Diagonal D. Equal emphasis

---

1. Symmetrical - A structure in which one side of axis is a mirror image of the other side or in the case of rotation, one side of the axis (axes) is rotated about the central point.

2. Asymmetrical - The dominant character of the motif is not symmetrical. The motif is balanced on an axis, but it does not have reflection or rotational properties.

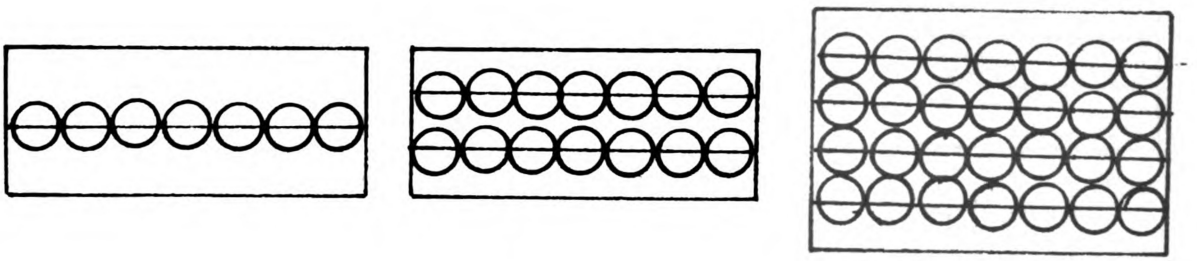
---

a. Longitudinal axis (Lengthwise axis) - An axis parallel to the direction of length in a band motif, or horizontal in an all-over pattern.

b. Transverse axis - An axis perpendicular to the direction of length in a band motif, or vertical in an all-over pattern.

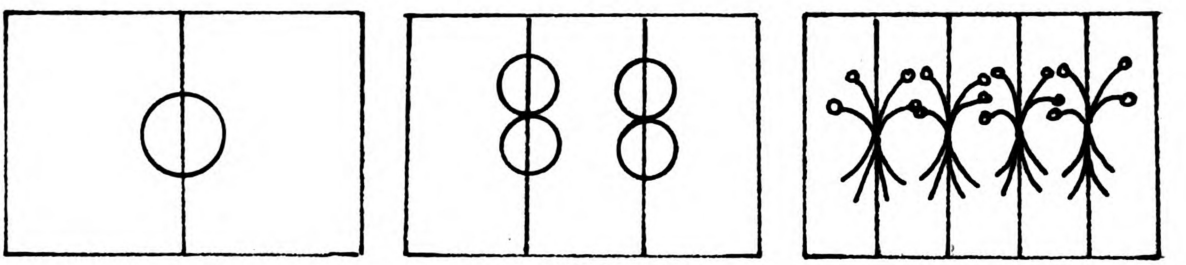
c. Rotational - A repetition of a motif about a point.

Longitudinal Axes (Symmetrical)



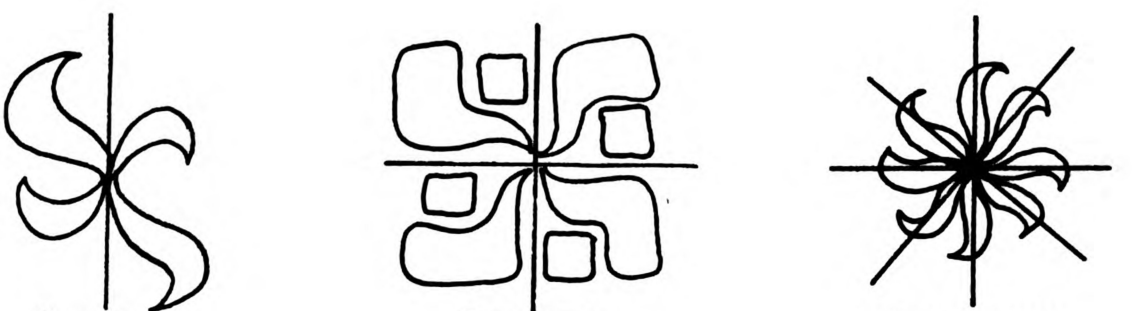
One axis Two axes Four axes

Transverse Axes (Symmetrical)



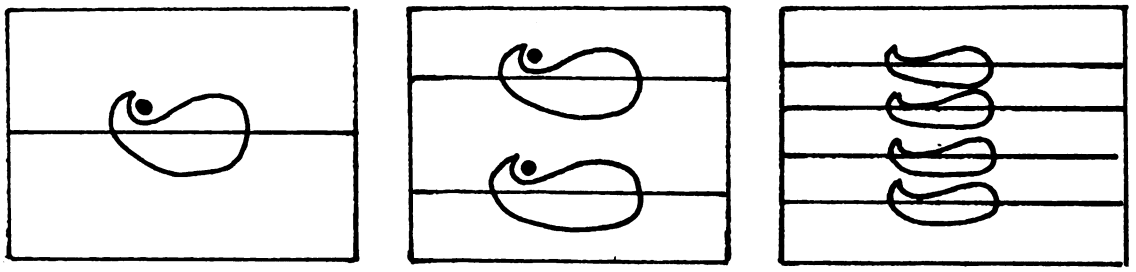
One axis Two axes Four axes

Rotational (Symmetrical)



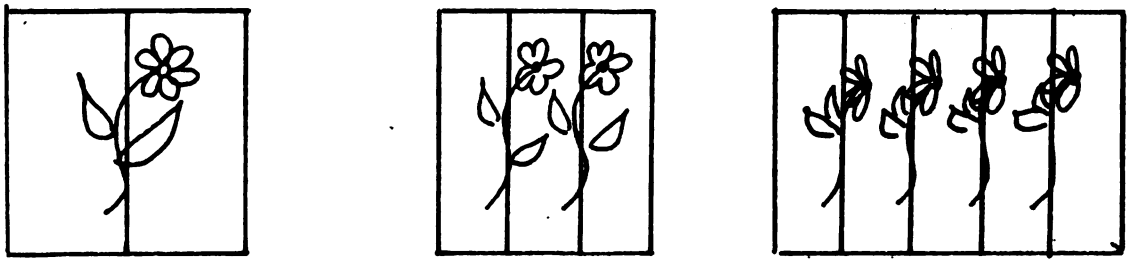
One axis Two axes Four axes

Longitudinal Axes (Asymmetrical)



One axis Two axes Four axes

Transverse Axes (Asymmetrical)



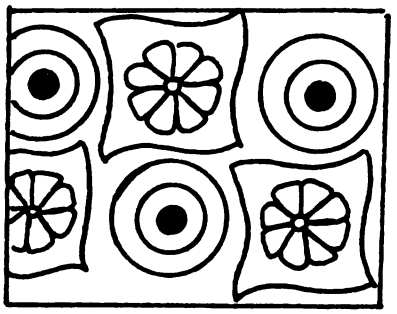
One axis Two axes Four axes

---

3. Radial - A combination of reflection and rotation, in that there is more than one axis of reflection.

Two axes Four axes Infinite number of axes

** Example**



IV. Symmetry and Direction
D. Equal emphasis
1. Symmetrical
c. Rotational
(2) Two axes

Hierarchy I: General Character of the Textile Design

IV. Symmetry and Direction
- A. Vertical
- B. Horizontal
- C. Diagonal
- D. Equal emphasis, circular
  - 1. Symmetrical
    - a. Longitudinal axis
    - b. Transverse axis
    - c. Rotational
      - (1) One axis
      - (2) Two axes
      - (3) Three axes
      - (4) Four axes
      - (5) More than four axes
  - 2. Asymmetrical
    - a. Longitudinal axis
    - b. Transverse axis
  - 3. Radial

V. Density and Value

** Special Instructions **

Density refers to the amount of motif in relation to the amount of space. If the motif covers more area, then motif is dominant and category (A) is appropriate. If motif and background cover equal area, choose (B). If the background covers more area, choose (C). "Reversal effect" is an optical illusion, resulting in indecision as to which is ground and which is motif.

Determine the predominant value, dark, middle, or light.

To determine the use of the values, begin with (a) Black and list whether it is linear, covers area (space or motif), or is both. Repeat again using (b) Gray and repeat using (c) White.

** Definitions and Diagrams **

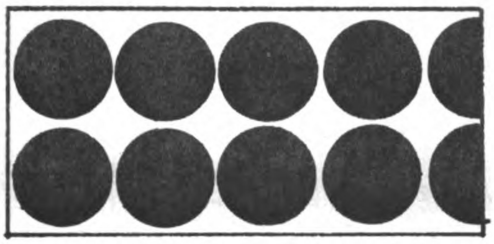
V. Density and Value

A. Motif covers more area - The area covered by the motif is greater than the area covered by background space (example below).

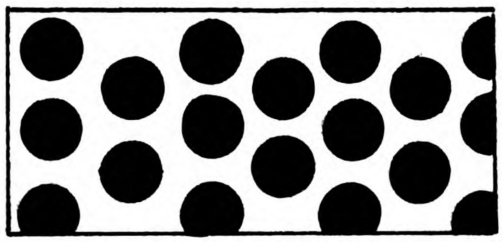
B. Motif and ground cover equal area - The area covered by the motif is equal to the amount of area covered by the background space (example below).

C. Ground covers more area - The area covered by the motif is less than the area covered by the background space (example below).

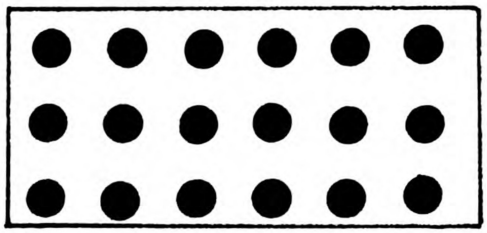
D. "Reversal effect" - Motif and background space cover equal area using the same shape and cannot be distinguished (example below).



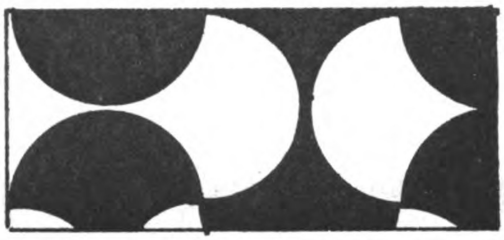
A. Motif covers more area



B. Equal area



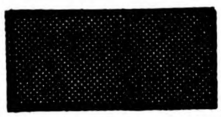
B. Ground covers more area



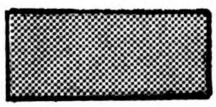
D. "Reversal effect"

---

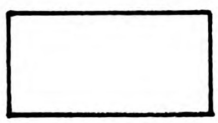
1. Value - dark dominant



2. Value - middle dominant



3. Value - light dominant



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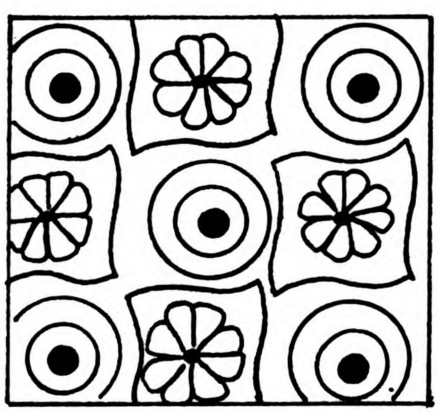
a, b, c, - Black, gray and white refer to actual values used in the textile design. In the following diagram Black is used as:

(1) Area

(2) Line

(3) Line and area

** Example **



V. Density and Value
C. Ground covers more area
3. Value - light
a. Black
(3) Line & area
c. White
(1) Area

Hierarchy I: General Character of the Textile Design

V. Density and Value
- A. Motif covers more area
- B. Motif and ground cover equal area
- C. Ground covers more area
- D. "Reversal effect"

1. Value - dark
2. Value - middle
3. Value - light

a. Black
b. Gray
c. White

(1) Area
(2) Line
(3) Line & area

VI. Scale and Proportion

** Special Instructions **

Determine scale as small, medium, or large. Using measured dimensions, classify proportion for <u>each</u> relationship, 1, 2, and 3.

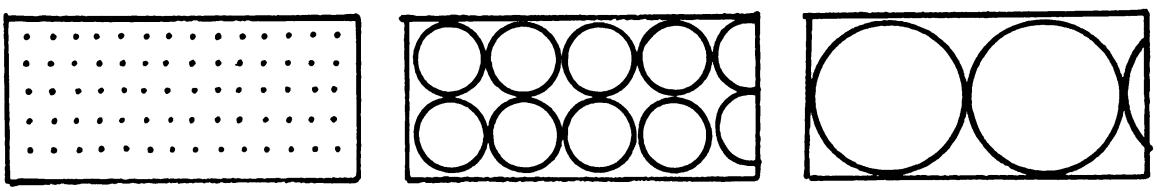
** Definitions and Diagrams **

VI. Scale and Proportion

A. Small - The motif is small in relation to the size of the textile, the repeat, or the background space.

B. Medium - The motif is average in relation to the size of the textile, the repeat, or the background space.

C. Large - The motif is large in relation to the size of the textile, the repeat, or the background space.



Small Medium Large

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1. Length of repeat to width of repeat - Measured relationship of the length of the repeat to the width. The first number represents the length of the repeat, the second number represents the width; thus 2:1 means that the textile is twice as long as it is wide.

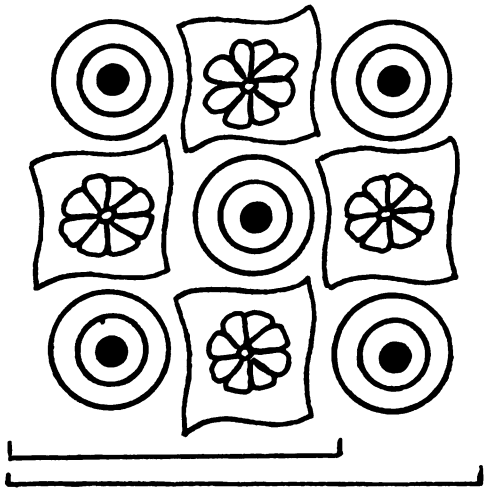
2. Length of the repeat to length of textile - Measured relationship of the length of the repeat to the length of the textile. The first number represents the textile; thus 2:1 means that there are two repeats to one length of fabric.

3. Width of repeat to width of textile - Measured relationship of the width of the repeat to the width of the textile. The first number represents the repeat, the second number represents the textile; thus 2:1 means that there are two repeats on one width of fabric.

---

a. - j. Infinity to $\frac{1}{4}$ means that the ratio falls between the boundaries of infinity and $\frac{1}{4}$. The boundaries are stated for all ratio classifications a through j. Ratios, such as 5:4 or 2:3 fit within boundaries. For example, 5:4 fits in classification category e. (5/4 or $1\frac{1}{4}$), because it (e.) is greater than or equal to 1, but less than 2. 2:3 (2/3) fits in classification category c, because 2/3 is greater than or equal to $\frac{1}{2}$, but less than 3/4. Any ratio greater than 20:1 falls into category j, for example 50:1 or 100:1.

** Example **



VI. Scale and Proportion
B. Medium
1. e. (1:1)
2. e. (3:2)
3. e. (3:2)

Hierarchy I: General Character of the Textile Design

VI. Scale and Proportion

A. Small	1. Length of repeat to width of repeat	a.	Infinity < a < $\frac{1}{4}$
B. Medium	2. Length of repeat to length of textile	b.	$\frac{1}{4} \leq b < \frac{1}{2}$
C. Large	3. Width of repeat to width of textile	c.	$\frac{1}{2} \leq c < 3/4$
		d.	$3/4 \leq d < 1$
		e.	$1 \leq e < 2{:}1$
		f.	$2{:}1 \leq f < 3{:}1$
		g.	$3{:}1 \leq g < 4{:}1$
		h.	$4{:}1 \leq h < 10{:}1$
		i.	$10{:}1 \leq i \leq 20{:}1$
		j.	Greater than 20:1

Hierarchy II (H-2): Specific Character of Motif

I. Designation of the Motif

** Special Instructions **

This hierarchy should be repeated for each different motif in the textile design. Number each motif beginning in the upper left hand corner of the design and moving across the fabric.

1 2 3 4 5

6 7 8 9 10

If the motif is repeated, use the same number each time it appears. Assume "A" is one motif and "B" is another in the following example.

A	B	A		1	2	1
B	A	B	Number as →	2	1	2
A	B	A		1	2	1

After giving each motif its number, record the number of times (frequency) it appears on the textile sample. Designate each motif as dominant or auxiliary, using the same criteria as in Hierarchy I.

Determine the style of the motif, which may differ from the style of the general textile in Hierarchy I.

In the case of a pictorial design, consider each setting or scene as one motif.

** Definitions and Diagrams **

I. Designation of the motif - motif number

1. - 10. Frequency - number of times the motif appears on the textile.

---

a. Dominant motif - The most important or most obvious design unit based on size, frequency, position, and symmetry.

b. Auxiliary motif - A design unit of secondary importance, a space filler.

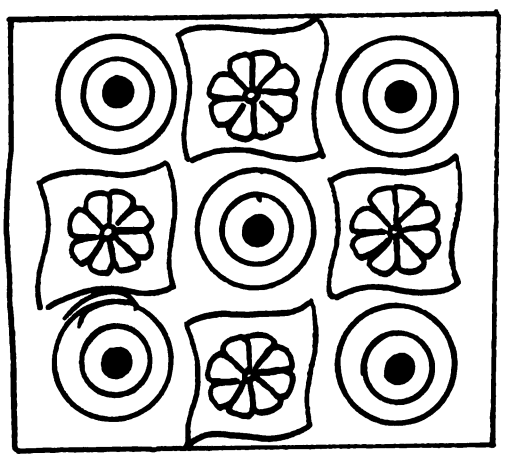
---

(1) Geometric style - An artistic style in which all forms are reduced to geometric style.

(2) Stylized - Simplification of form and details of naturalistic things.

(3) Naturalistic - Direct imitation of natural shapes, close to photographic, but limited by media and technique.

** Example **



I. Designation of the Motif
   A. Motif number 1
      5. (Frequency)
         a. Dominant motif
            (1) Geometric style
   B. Motif number 2
      4. (Frequency)
         a. Dominant motif
            (2) Stylized

II. Content

** Special Instructions **

Determine subject matter of the motif. Each heading has subcategories that specify subject matter and style.

Hierarchy II: Specific Character of Motif

I. Designation of the motif	Frequency		
A. Motif number 1	1	a. Dominant motif	(1) Geometric style
B. Motif number 2	2	b. Auxiliary motif	(2) Stylized
C. Motif number 3	3		(3) Naturalistic
D. Motif number 4	4		
E. Motif number 5	5		
etc.	6		
	7		
	8		
	9		
	10		
	etc.		

** Definitions and Diagrams **

II. Content

A. Calligraphy - Any recognizable ancient or modern alphbet.

a. Print - abcdefghijklmnopgrstuvwxyz

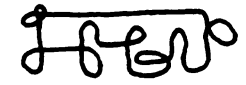
b. Script - abcdefghijklmnopgrstuvwxyz

B. Linear - A design formed by the element line.

1. Continuous

2. Broken

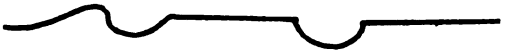
3. Interlacing



a. Curved

b. Straight

c. Combination



(1) - (6) See page 151.

C. Geometric - Shapes with mechanical contours, subject to the rules of mathematics.

1. Open

2. Solid

3. Concentric

D. Nonobjective - A nongeometrical shape with no implications of a natural form.

E. Animal form - Any real or imaginary representation of an animal or animal part.

3. Internal detail

a. Total - entire animal is depicted

b. Partial - Only part of the animal is used as motif, for example, hoof, paw, eye.

F. Human form - Any representation of a human being or part of a human, such as eye, mouth, hand, head.

G. Vegetable form - Any real or imaginary plant form.

a. Top view 

b. Side view 

H. Artificial form - Any man-made structure or artifact.

I. Natural, nonliving - Any natural, but nonliving thing. Items commonly thought of as nonliving - shell.

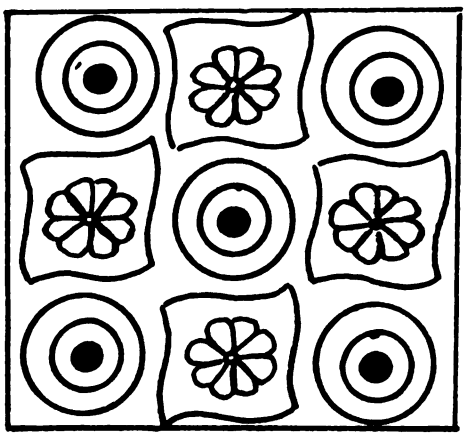
J. Pictorial - A story telling scene.

1. Group - Two or more people in a setting.

2. Independent - One person in a setting.

K. Scenic - A landscape, seascape, or cityscape that is not telling a story.

** Example **



II. Content (Motif no. 1)
C. Geometric
3. Concentric
k. Circle

II. Content (Motif no. 2)
G. Vegetable form
1. Outline
a. Top view
(2) Flower
(a) Real
(i) Single

III. Form

** Special Instructions **

Determine whether the motif is simple or complex. Determine the symmetry. Determine if the motif is continuous or isolated. Some variation is allowed for each motif. This variation can be due to trying to fit a motif into a

Hierarchy II: Specific Character of Motif

II. Content

A. Calligraphy
- 1. Arabic
- 2. Greek
- 3. Hebrew
- 4. Oriental
- 5. Old German, Old English
- 6. Russian
- 7. Western Europe (English, French, German, Spanish)
- 8. Pictographs
- 9. Hieroglyphics
- 10. Numerals
- 11. Other _____

a. Print
b. Script

B. Linear

1. Continuous
2. Broken

a. Curved
b. Straight
c. Combination

(1) Textured
(2) Shaded
(3) Fine
(4) Medium weight
(5) Heavy
(6) Paired

C. Geometric

1. Open
2. Solid
3. Concentric

a. Triangle
b. Chevron
c. Rectangle
d. Square
e. Diamond
f. Rhombus, rhomboid
g. Pentagon
h. Hexagon
i. Octagon
j. Polygon

k. Circle
l. Oval
m. Ogee
n. Scallop
o. Cross
p. Swastika
q. Star
r. Fretwork
s. Shield
t. Gothic Tracery

D. Nonobjective
   1. Open
   2. Solid

E. Animal form
   1. Open, outline
   2. Solid, silhouette
   3. Internal detail
   a. Total
   b. Partial
   (1) Frontal
   (2) Profile
   (3) Dorsal
   (a) Grouped
   (b) Paired
   (c) Single
   (i) Real
   (ii) Imaginary
   (a) Amphibian
   (b) Bird
   (c) Fish
   (d) Insect
   (e) Mammal
   (f) Reptile
   (g) Spider

F. Human form
   1. Open, outline
   2. Solid, silhouette
   3. Internal detail
   a. Total
   b. Partial
   (1) Front
   (2) Side
   (3) Back
   (a) Male
   (b) Female
   (i) Infant
   (ii) Child
   (iii) Teen
   (iv) Adult
   (v) Aged
   (a) Black
   (b) Brown
   (c) Red
   (d) White
   (e) Yellow

G. Vegetable form
   1. Open, outline
   2. Solid, silhouette
   3. Internal detail

   a. Top view
   b. Side view

   (1) Plant
   (2) Flower
   (3) Tree
   (4) Vine
   (5) Vegetable
   (6) Fruit
   (7) Underwater (reef)

   (a) Real
   (b) Imaginary

   (i) Grouped
   (ii) Paired
   (iii) Single

H. Artificial form
   1. Open, outline
   2. Solid, silhouette
   3. Internal detail

   a. Architecture
   b. Bridges
   c. Artifacts, tools, pottery, weapons
   d. Transportation
   e. Other _____

I. Natural, nonliving
   1. Open, outline
   2. Solid, silhouette
   3. Internal detail

   a. Rocks
   b. Shells
   c. Minerals, gems
   d. Logs
   e. Fire
   f. Snow, rain
   g. Sun, moon
   h. Other _____

J. Pictorial
   1. Group
   2. Independent

   (Note activity of the picture, such as hunting, boating, weaving, farming)

K. Scenic
   1. Landscape
   2. Seascape
   3. Cityscape

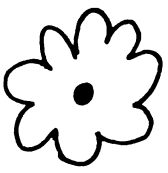
   (Note the location, such as Paris, Hawaii, NYC. Note time of day)

space (A); elaboration (B), which is a change in line, direction, complexity, color, or size; change due to technique or craftsmanship (C); or the cause of the variation may not be obvious, although some variation exists. If the final case is true, classify it as (D).

** Definitions and Diagrams **

A. Simple - The fundamental unit is easily recognizable or the motif is made up of one dominant shape.

B. Complex - Several intricate parts make recognition of the fundamental unit difficult. All the parts are necessary in the unity of motif--like the letters in a word, the individual parts are necessary to the whole.



Simple

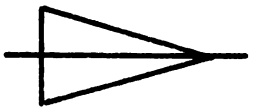
Complex

---

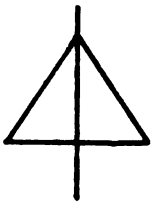
1. Asymmetrical

2. Reflection

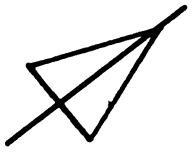
   a. Longitudinal



   b. Transverse



c. Oblique



3. Rotation

a. Bifold

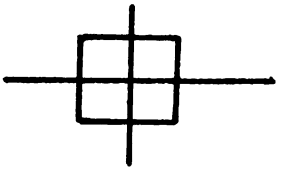
b. Trifold

c. Quatrefold

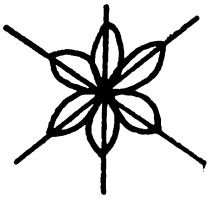
d. Fivefold

4. Radial

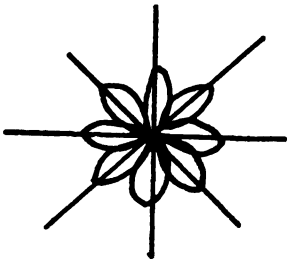
a. Two axes

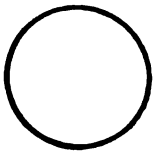


b. Three axes



c. Four axes



d. Infinite number of axes 

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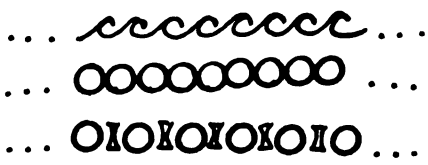
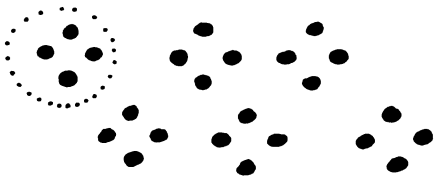
(1) Continuous motif - A motif extending either directly or indirectly in both directions across the field.

3 examples 

(2) Isolated motif - A definite and separate unit, simple or complex, around which boundaries can be drawn.



(a) Space modifications - The design is altered to fit into a predetermined space.

(b) Elaboration - Change in the design due to an increase or decrease in complexity, size, color, direction, or line character.

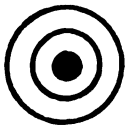
(c) Technique - A change in design due to ability or media of the craftsman.

Freehand sketching of flowers results in variation

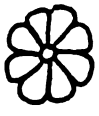
(d) Undetermined - Variation in the design is evident, but the cause or purpose is undetermined.

(e) Nonvariable - There is no variation in the motif from one to the next.

** Example **



III. Form (Motif no. 1)
A. Simple
4. Radial
d. Infinite
(2) Isolated
(e) Non-variable



III. Form (Motif no. 2)
A. Simple
4. Radial
c. 4 axes
(2) Isolated
(e) Non-variable

IV. Direction and Position

** Special Instructions **

Determine the direction of the motif. To determine the coordinates for position, plot the location of the motif on the grid of 10 by 10 units. Place the grid over the design and list the numerals and letters of the square where the center point of the motif lies. The 10 unit measurement is not constant, but varies with the width and length of the designs. All designs are 10 units wide and 10 units long. If the textile is longer than it is wide, the grid will be rectangular in shape.

Hierarchy II: Specific Character of Motif

III. Form

- A. Simple
- B. Complex

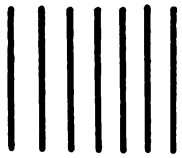
1. Asymmetrical
2. Reflection
   - a. Longitudinal
   - b. Transverse
   - c. Oblique
3. Rotational
   - a. Bifold
   - b. Trifold
   - c. Quatrefold
   - d. Fivefold
4. Radial
   - a. Two axes
   - b. Three axes
   - c. Four axes
   - d. Infinite number of axes (circle)

(1) Continuous motif
(2) Isolated motif

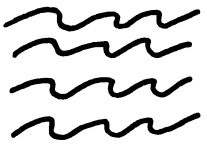
(Variation due to:)
(a) Space modification
(b) Elaboration
(c) Technique
(d) Undetermined
(e) Nonvariable

** Definitions and Diagrams **

IV. Direction and Position

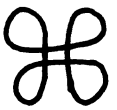


A. Vertical



B. Horizontal

C. Diagonal



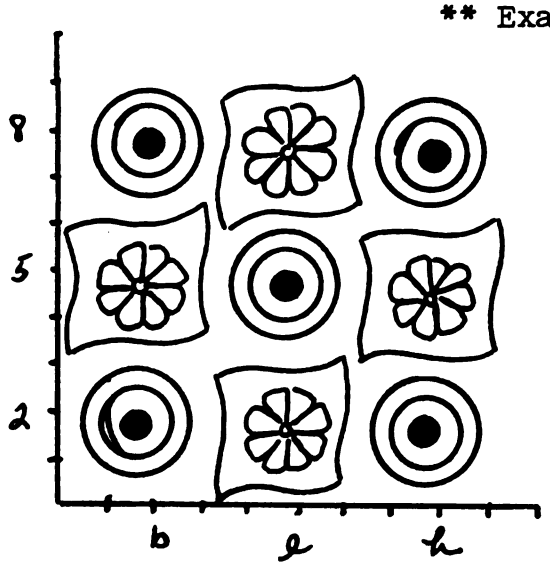
D. Equal emphasis

---

1. - 10. Vertical coordinates (y) on the position grid.

a. - j. Horizontal coordinates (x) on the position grid.

** Example **



IV. Direction and Position
(Motif no. 1)
D. Equal emphasis
2. b, h
5. e
8. b, h

IV. Direction and Position
(Motif no. 2)
D. Equal emphasis
2. e
5. b, h
8. e

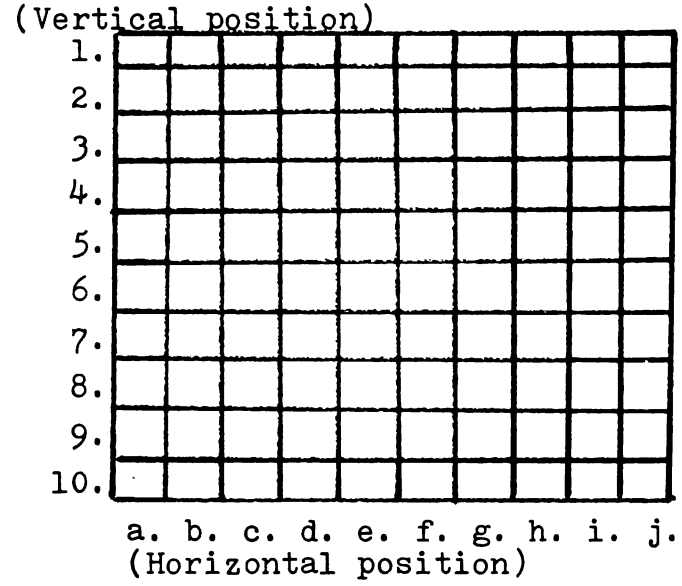
V. Scale and Proportion

** Special Instructions **

Determine scale, then classify proportion for each of the relationships, 1, 2, and 3.

Hierarchy II: Specific Character of Motif

IV. Direction and Position
- A. Vertical
- B. Horizontal
- C. Diagonal
- D. Equal emphasis



** Definitions and Diagrams **

A. Small - The motif is small in relation to the size of the textile, the repeat, or the background space.

B. Medium - The motif is average in relation to the size of the textile, the repeat, or the background space.

C. Large - The motif is large in relation to the size of the textile, the repeat, or the background space.

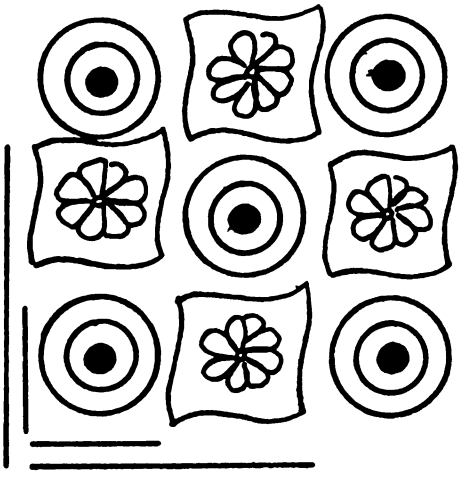
---

1. Length of motif to width of motif - Measured relationship of the length of the motif to the width. The first number represents the length, the second number represents the width; thus 1:2 means that the textile is twice as long as it is wide.

2. Length of motif to length of repeat - Measured relationship of the length of the motif to the length of the repeat. The first number represents the motif, the second represents the repeat; thus 1:2 means that there are two motifs to one repeat.

3. Width of the motif to the width of repeat - Measured relationship of the width of the motif to the width of the repeat. The first number represents the motif, the second represents the repeat; thus 1:2 means that there are two motifs to one repeat.

** Example **



V. Scale and Proportion
(Motif no. 1)
B. Medium
1. e 1:1
2. c 1:2
3. c 1:2

V. Scale and Proportion
(Motif no. 2)
B. Medium
1. e 1:1
2. c 1:2
3. c 1:2

Hierarchy II: Specific Character of Motif

V. Scale and Proportion

- A. Small
- B. Medium
- C. Large

1. Length to width
2. Length of motif to length of repeat
3. Width of motif to width of repeat

a. Infinity $< a < \frac{1}{4}$
b. $\frac{1}{4} \leq b < \frac{1}{2}$
c. $\frac{1}{2} \leq c < 3/4$
d. $3/4 \leq d < 1$
e. $1 \leq e < 2:1$
f. $2:1 \leq f < 3:1$
g. $3:1 \leq g < 4:1$
h. $4:1 \leq h < 10:1$
i. $10:1 \leq i \leq 20:1$
j. Greater than 20:1

Hierarchy III (H-3): Specific Character of Arrangement

I. Structure

** Specific Instructions **

If the design is a repeat, determine the type (1) Band or border, (2) Border and field, (3) All-over pattern, or (4) Superimposed design. This should correspond to the answer in Hierarchy I. Turn to the page in the outline for that particular form of repeat, since the rest of the Hierarchy III is not relevant to the design.

If the design is a nonrepeat, determine the form (2) Border and field, (4) Superimposed design, or (5) Free ornament. Turn to the page in the outline for that particular form of the repeat. When that page is completed, you have completed the classification outline.

Forms of repeats and nonrepeats appear on the following pages:

** Definitions and Diagrams **

For definitions and sketched examples of A. Repeat, B. Nonrepeat, (1) Band or border, (2) Border and field, (3) All-over pattern, (4) Superimposed design, or (4) Free

ornament (see pages 149-150)

No base line or structural plan 

Base line 

Structural plan 

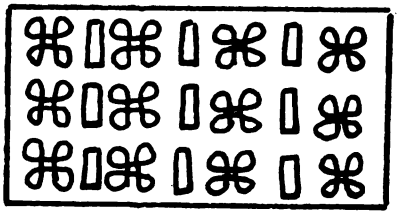
One element

One dimensional design

Two dimensional design

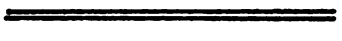
Multiple elements

One dimensional design

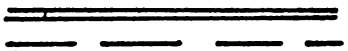


Two dimensional design

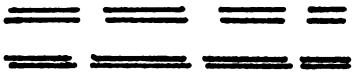
Outline



Continuous

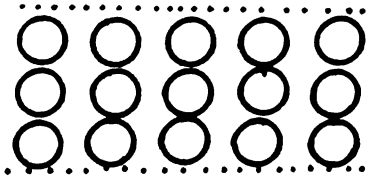


Not continuous



Center space

One dimensional 

Two dimensional 

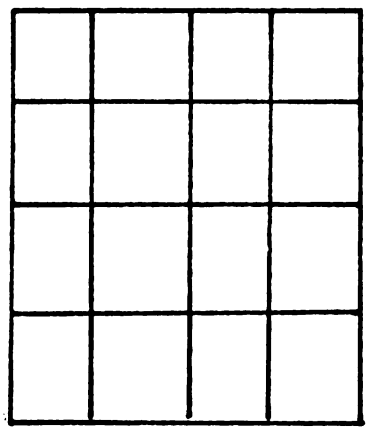
Continuous

Isolated motif - identical

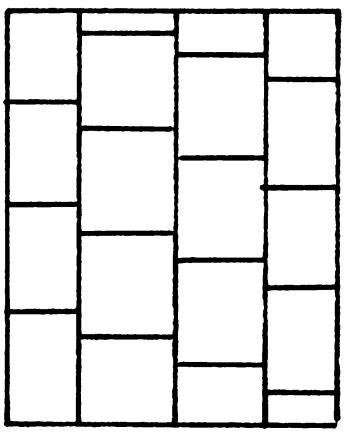
Isolated motif - variable

Structures for All-over patterns, Fields, Superimposed Designs

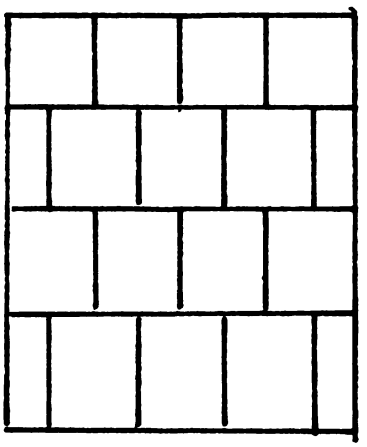
Rectangular, square



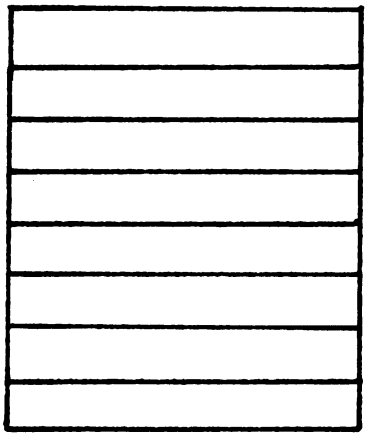
Block



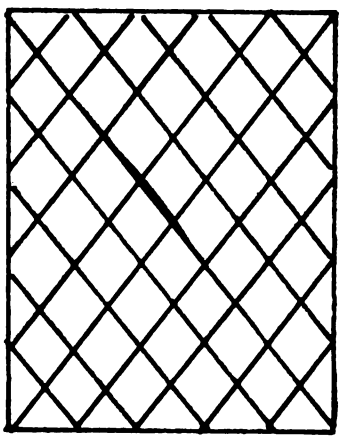
Drop



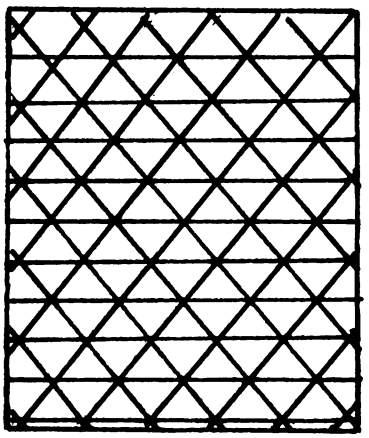
Brick



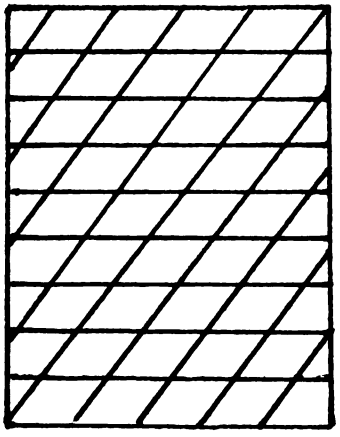
Linear



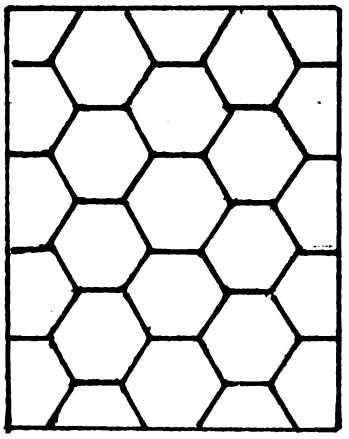
Diamond



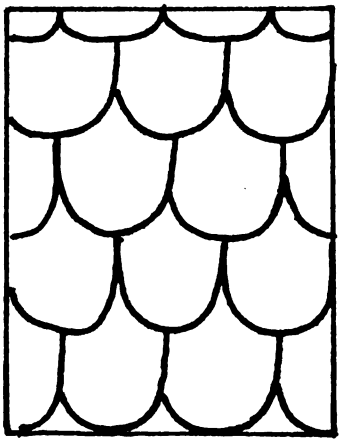
Triangle



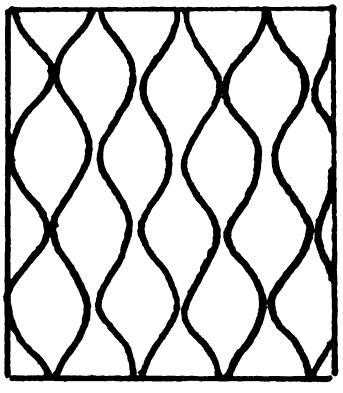
Rhombus



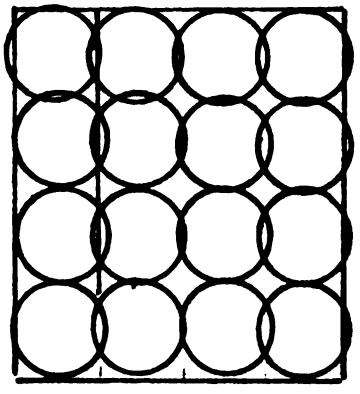
Hexagon



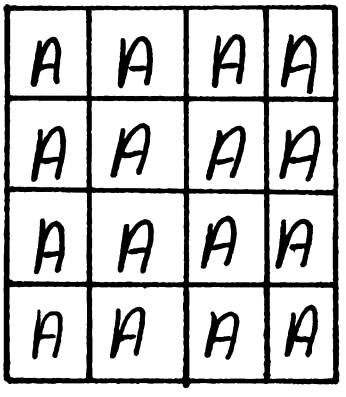
Scale



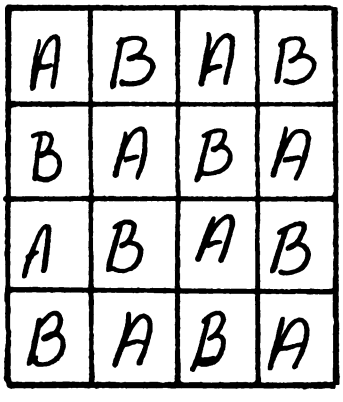
Ogee



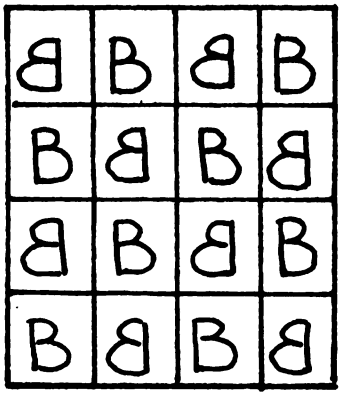
Circular



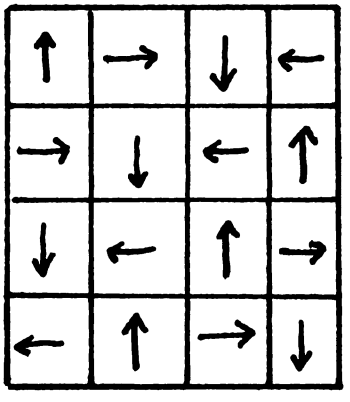
Translation



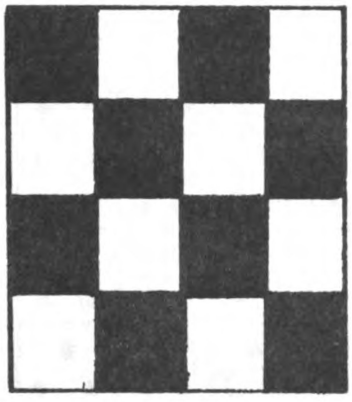
Alternation



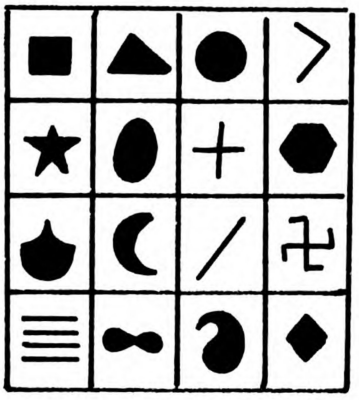
Opposites



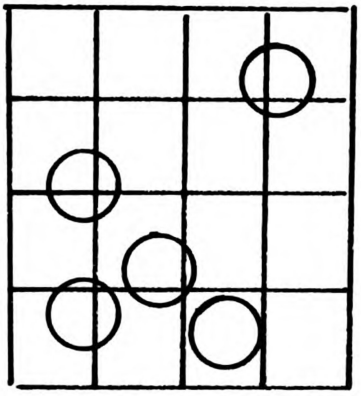
Turning square



Counterchange

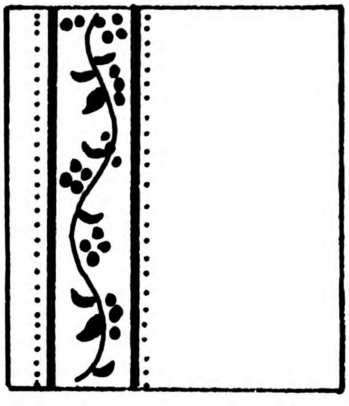


Scattered

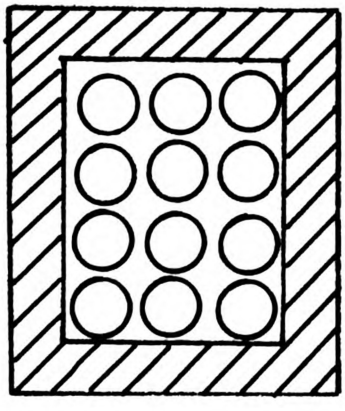


Random

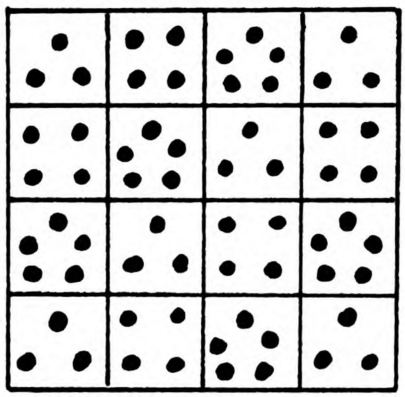
** Example **



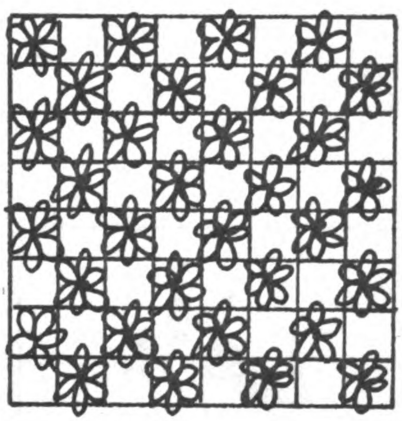
I. Structure
A. Repeat
b. Base line
(2) Multiple elements
(a) Outline
(i) Continuous
(b) Center space
(i) One-dimensional
(a) Continuous



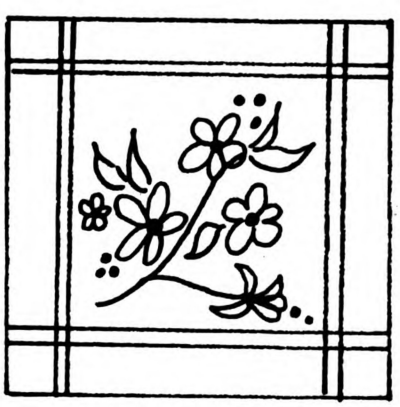
I. Structure
A. Repeat
2. Border and field
a. Field
(1) Rectangular
(a) Block
(i) Translation
b. Border
(1) Repeating
(a) No base line or structural plan
(i) One element



I. Structure
A. Repeat
3. All-over pattern
a. Rectangular
(1) Block
(a) Alternation



I. Structure
A. Repeat
4. Superimposed design
a. Ground
(1) Repeating
(b) Two-dimensional
(i) Rectangular
(a) Block
I. Translation
b. Surface design
(2) Two-dimensional
(a) Rectangle
(ii) Drop
(a) Translation



I. Structure
B. Nonrepeat
2. Border and nonrepeating field
a. Border
(1) Repeating
(b) Base line
(ii) Multiple elements
(a) Outline
I. Continuous
b. Surface
(2) Two-dimensional
(a) Single element

I. Structure
B. Nonrepeat
4. Superimposed design
a. Ground
(1) Repeating
(b) Two-dimensional
(i) Rectangular
(a) Block
I. Translation
b. Surface
(2) Two-dimensional
(a) Single element

I. Structured
B. Nonrepeat
5. Free ornament
a. Single element

Hierarchy III: Specific Character of Arrangement

I. Structure
  A. Repeat
    1. Band or border
      a. No base line or structural plan
      b. Base
      c. Structural plan
        (1) One element
        (2) Multiple elements
          (a) Outline
            (i) Continuous
            (ii) Not continuous
          (b) Center space
            (i) One-dimensional
              (a) Continuous
            (ii) Two-dimensional
              (b) Isolated motif - identical
              (c) Isolated motif - variable

Hierarchy III: Specific Character of Arrangement

I. Structure
  A. Repeat
    2. Border and repeating field
      a. Field
        (1) Rectangular, square
          (a) Block
          (b) Drop
          (c) Brick
        (2) Linear
        (3) Diamond, triangle, rhombus
        (4) Hexagon
        (5) Interlocking (scale)
        (6) Ogee
        (7) Circular

        (i) Translation
        (ii) Alternation
        (iii) Opposites
        (iv) Turning square
        (v) Counterchange
        (vi) Scattered

      b. Border
        (1) Repeating
        (2) Nonrepeating

          (a) No base line or structural plan
          (b) Base line
          (c) Structural plan

            (i) One element
            (ii) Multiple elements
              (a) Outline
                I. Continuous
                II. Not continuous
              (b) Center space
                I. One-dimensional
                II. Two-dimensional
                  A. Continuous
                  B. Isolated motif - identical
                  C. Isolated motif - variable

Hierarchy III: Specific Character of Arrangement

I. Structure
  A. Repeat
    3. All-over pattern
      a. Rectangular, square
        (1) Block
        (2) Drop
        (3) Brick
      b. Linear
      c. Diamond, triangle, rhombus
      d. Hexagon
      e. Interlocking (scale)
      f. Ogee
      g. Circular

(a) Translation
(b) Alternation
(c) Opposites
(d) Turning square
(e) Counterchange
(f) Scattered

Hierarchy III: Specific Character of Arrangement

I. Structure
- A. Repeat
  - 4. Superimposed design
    - a. Ground
      - (1) Repeating
        - (a) One-dimensional
          - (i) No base line or structural plan
          - (ii) Base line
          - (iii) Structural plan
        - (b) Two-dimensional
          - (i) Rectangular, square
            - (a) Block
            - (b) Drop
            - (c) Brick
          - (ii) Linear
          - (iii) Diamond, triangular, rhombus
          - (iv) Hexagon
          - (v) Interlocking (scale)
          - (vi) Ogee
          - (vii) Circular

(a) One element
(b) Multiple elements
- I. Outline
  - A. Continuous
  - B. Not continuous
- II. Center space
  - A. One-dimensional
  - B. Two-dimensional
    - 1. Continuous
    - 2. Isolated motif-identical
    - 3. Isolated motif-variable

- I. Translation
- II. Alternation
- III. Opposites
- IV. Turning square
- V. Counterchange
- VI. Scattered

(2) Nonrepeating
(a) One-dimensional
(i) No base line or structural plan
(a) One element
(b) Multiple elements
I. Outline
A. Continuous
B. Not continuous
II. Center space
A. One-dimensional
B. Two-dimensional
(ii) Base line
(iii) Structural plan
(b) Two-dimensional
(i) Single element
(ii) Multiple element
(a) Random placement
(b) Structural placement
I. Rectangular, square
II. Linear
III. Diamond, triangle, rhombus
IV. Hexagon
V. Interlocking (scale)
VI. Ogee
VII. Circular

b. Surface design (repeating only, due to original classification definition)
(1) One-dimensional
(a) No base line or structural plan
(i) One element
(ii) Multiple elements
(a) Outline
I. Continuous
II. Not continuous
(b) Base line
(c) Structural plan

(b) Center space
I. One-dimensional
II. Two-dimensional
A. Continuous
B. Isolated motif - identical
C. Isolated motif - variable

(2) Two-dimensional
(a) Rectangular, square
(i) Block
(ii) Drop
(iii) Brick
(b) Linear
(c) Diamond, triangle, rhombus
(d) Hexagon
(e) Interlocking (scale)
(f) Ogee
(g) Circular

(a) Translation
(b) Alternation
(c) Opposites
(d) Turning square
(e) Counterchange
(f) Scattered

Hierarchy III: Specific Character of Arrangement

I. Structure
  B. Nonrepeat
    2. Border and nonrepeating field
      a. Border
        (1) Repeating
        (2) Nonrepeating
          (a) No base line or structural plan
          (b) Base line
          (d) Structural plan
            (i) One element
            (ii) Multiple elements
              (a) Outline
                I. Continuous
                II. Not continuous
              (b) Center space
                I. One-dimensional
                II. Two-dimensional
                  A. Continuous
                  B. Isolated motif-identical
                  C. Isolated motif-variable

      b. Field
        (1) Single element
        (2) Multiple elements
          (a) Random placement
          (b) Structured placement
            (i) Rectangular, square
            (ii) Linear
            (iii) Diamond, triangular, rhombus
            (iv) Hexagon
            (v) Interlocking (scale)
            (vi) Ogee
            (vii) Circular

Hierarchy III: Specific Character of Arrangement

I. Structure
- B. Nonrepeat
  - 4. Superimposed design
    - a. Ground
      - (1) Repeating
        - (a) One-dimensional
          - (i) No base line or structural plan
          - (ii) Base line
          - (iii) Structural plan
        - (b) Two-dimensional
          - (i) Rectangle, square
            - (a) Block
            - (b) Drop
            - (c) Brick
          - (ii) Linear
          - (iii) Diamond, triangular, rhombus
          - (iv) Hexagon
          - (v) Interlocking (scale)
          - (vi) Ogee
          - (vii) Circular

(a) One element

(b) Multiple elements
- I. Outline
  - A. Continuous
  - B. Not continuous
- II. Center space
  - A. One-dimensional
  - B. Two-dimensional

1. Continuous
2. Isolated motif - identical
3. Isolated motif - variable

I. Translation
II. Alternation
III. Opposites
IV. Turning square
V. Counterchange
VI. Scattered

(2) Nonrepeating
  (a) One-dimensional
    (i) No base line or structural plan
    (ii) Base line
    (iii) Structural plan
      (a) One element
      (b) Multiple elements
        I. Outline
          A. Continuous
          B. Not continuous
        II. Center space
          A. One-dimensional
          B. Two-dimensional
  (b) Two-dimensional
    (i) Single element
    (ii) Multiple elements
      (a) Random placement
      (b) Structured placement
        I. Rectangular, square
        II. Linear
        III. Diamond, triangular, rhombus
        IV. Hexagon
        V. Interlocking (scale)
        VI. Ogee
        VII. Circular

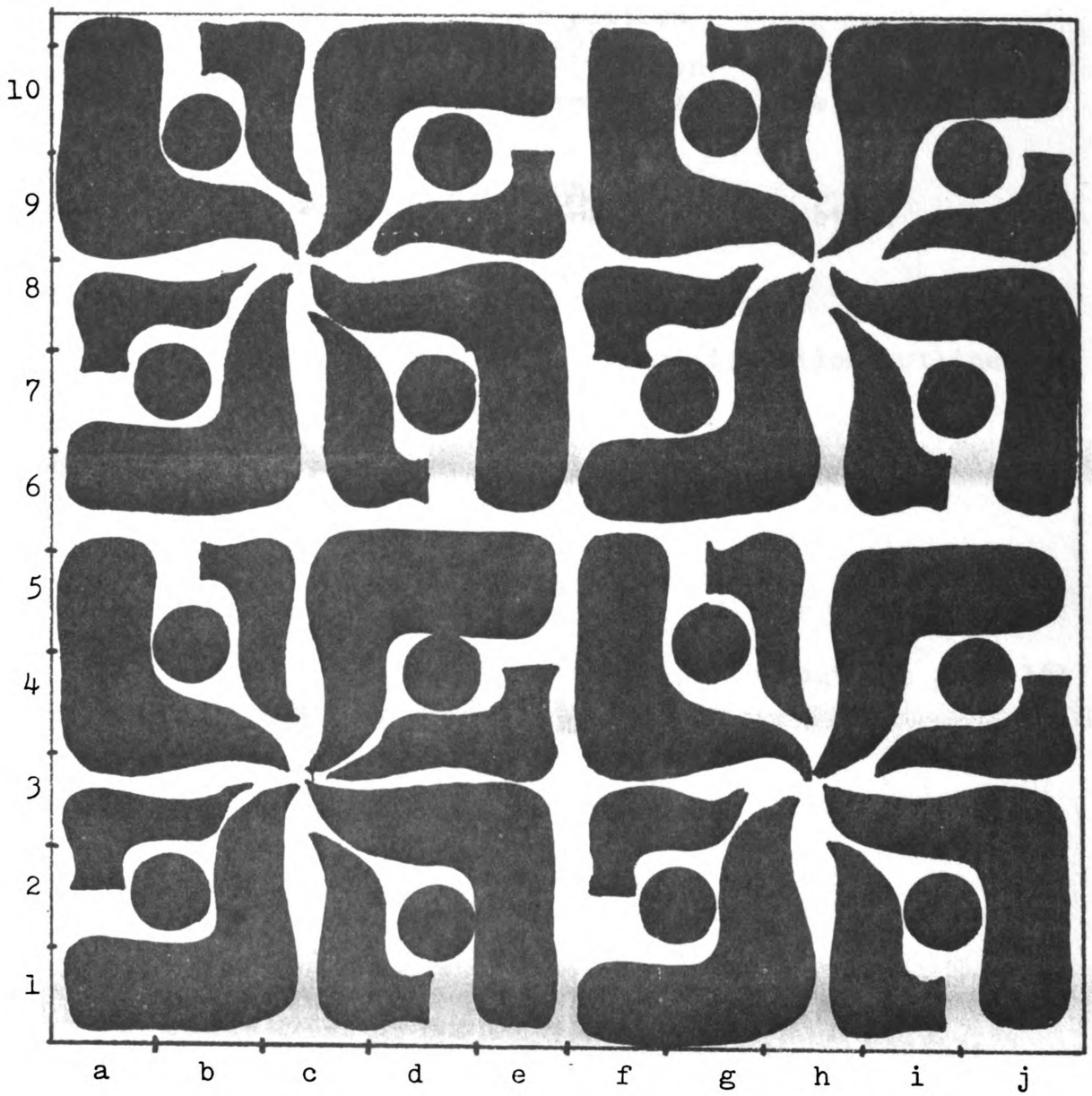
b. Surface (nonrepeating only - due to original classification definition)
  (1) One-dimensional
    (a) No base line or structural plan
    (b) Base line
    (c) Structural plan
      (i) One element
      (ii) Multiple elements
        (a) Outline
          I. Continuous
          II. Not continuous
        (b) Center space
          I. One-dimensional
          II. Two-dimensional

(2) Two-dimensional
    (a) Single element
    (b) Multiple elements
        (i) Random placement
        (ii) Structured placement
            (a) Rectangular, square
            (b) Linear
            (c) Diamond, triangular, rhombus
            (d) Hexagon
            (e) Interlocking (scale)
            (f) Ogee
            (g) Circular

Hierarchy III: Specific Character of Arrangement

I. Structure
  B. Nonrepeat
    5. Free ornament
      a. Single element
      b. Multiple element
        (i) Random placement
        (ii) Structured placement
          (a) Rectangular, square
          (b) Linear
          (c) Diamond, triangular, rhombus
          (d) Hexagon
          (e) Interlocking (scale)
          (f) Ogee
          (g) Circular

Textile Example and Key



Hierarchy I

I. Textile Form (classification outline page 148)
B. Full piece
1. Repeat
c. All-over pattern
(1) Variable
(d) Direction

II. Content (classification outline page 152)
A. Dominant motif
4. Nonobjective
a. Geometrical style
B. Auxiliary motif (no auxiliary motif)
C. Space
1. Enclosing space
(2) No space filler

III. Line Character and Use (classification outline page 154)
G. Line not used

IV. Symmetry and Direction (classification outline page 158)
D. Equal emphasis
1. Symmetrical
a. Rotational
(2) 2 axes

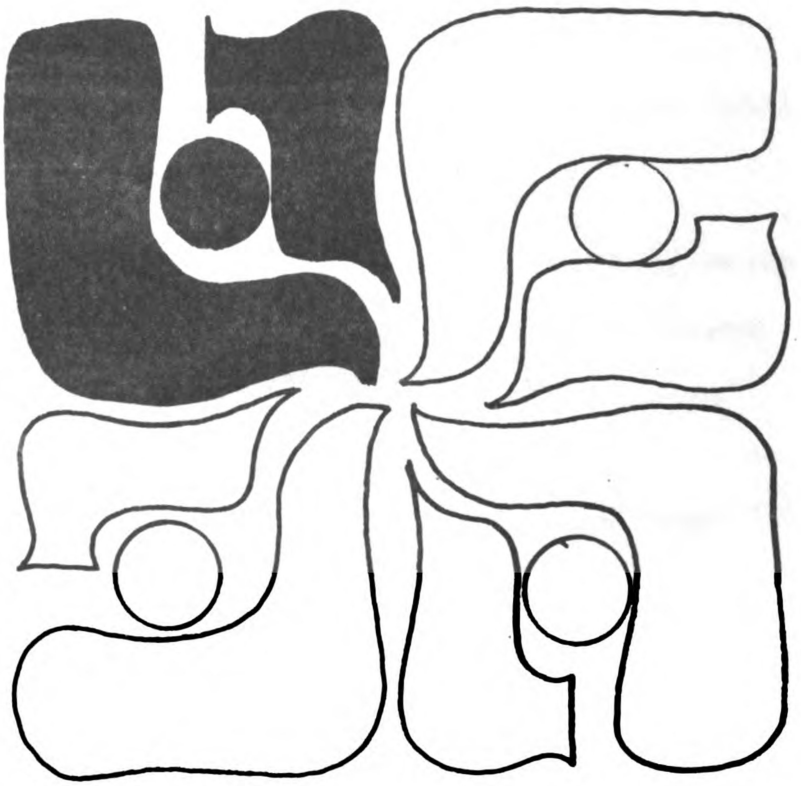
V. Density and Value (classification outline page 161)
A. Motif covers more area
1. Value - dark
a. Black
(1) Area
c. White
(1) Area

VI. Scale and Proportion (classification outline page 164)
A. Medium
1. Length of repeat to width of repeat
e. 1:1
2. Length of repeat to length of textile
c. 1:2
3. Width of repeat to width of textile
c. 1:2

Hierarchy II

I. Designation of the Motif (classification outline page 167)
A. Motif number 1
16. Frequency

a. Dominant motif
(1) Geometrical style



II. Content (classification outline page 170)
D. Nonobjective
2. Solid

III. Form (classification outline page 177)
B. Complex
3. Rotational

c. Quatrefold
(2) Isolated motif
(e) Nonvariable

IV. Direction and Position (classification outline page 179)
D. Equal emphasis
3. c, h
8. c, h

[illegible] tion outline

[illegible] medium
[illegible] Length to width
e. 1:1
[illegible] of repeat
[illegible] width of repeat

Hierarchy VII

[illegible] sification outline page 174)

[illegible] e
[illegible]

CHAPTER VI

SUMMARY AND CONCLUSIONS

Conclusions

The system developed in this study requires further revisions to increase ease of use and understanding of terminology. It requires further testing to assure internal consistency, mutually exclusive categories and application to several studies. The system can be limited to one Hierarchy or one Roman numeral heading or expanded to include details, such as symmetry or color.

Its limitations should be recognized for its successful application. First, it is limited to two-dimensional patterned textiles; second, it is limited to description of the elements and principles of design; third, researchers with a qualified design knowledge will have the greatest success; and fourth, an accurate mental picture results from the classification of the design but only to the classifier. The number/letter designations will not help relate the textile or its aesthetic expression to one whom has not seen the design.

In reviewing the evaluations of the test panel on the 12 developmental criteria, the following conclusions on their success were drawn.

The criteria that were successfully accomplished are the following:

1. Only repetition necessary for clarity should be added at a different level of hierarchy. This is accomplished because repetition is limited to use of the same design element to describe a different aspect of the textile design.

2. The system is descriptive, not interpretative. This criterion was accomplished because all decisions on the feature come from observation of elements inherent in the textile design; no conclusions are drawn on the development or relationship of textile designs.

3. Attributes show no generic relation to the previous attributes. No attributes are weighted in importance. The Hierarchies or any of the headings designated by Roman numerals can be reordered with no change in the result of the classification.

4. The classification system is to be comprehensive and open to expansion. Expansion could include addition of color, symmetry, texture, or more details in any of the subcategories. The classification system can be limited since any Roman numeral heading or Hierarchy could be used by itself, depending on the research project.

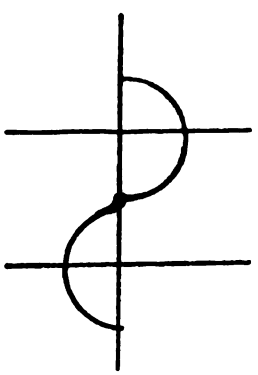
5. The details are to be numerous enough to isolate variations but limited so that groups can be formed for comparisons. Variations are seen by the several choices available under any category and more than one textile can

be described by the same features; for example, several designs fit the classification of repeat, all-over pattern, or variable due to direction.

6. Classes are to be relevant to the proposed problem, which is aesthetic analysis. This criterion is met because all the features are elements and principles of design.

Further analysis is necessary to determine the success of the following developmental criteria:

1. Attributes are mutually exclusive. Misunderstanding of this criterion limits conclusion based on the test, but personal use of the system indicates some terms are still not mutually exclusive. As more textiles are classified more inadequate terms may be found. For example, the line on the test textile could fit in reflection on a transverse



Transverse axis

Transverse axis

Longitudinal axes

axis or 180° rotation on a longitudinal axis, but the best answer is reflection and rotation, two symmetrical operations. No category like this exists in the present system and should be added. Continued revision of the classification terminology is necessary.

2. There is internal consistency. This needs further testing to draw an accurate conclusion, but the "A" textiles in the test showed an increase in agreement on answers in the revised test than on the pretest.

3. The classification system is to be applicable to more than one study. This has not been tested by this study, but the number of attributes indicates multiple uses.

The following criteria were not successfully met:

1. The system should be easy to use. This criteria was not met, according to the evaluation of the test participants. The revisions for the final form altered the format substantially in an effort to increase convenience for the classifier. It will have to be further tested.

2. Terminology should be simple or clearly defined. Words that implied their meanings were chosen as categories, but still confused classifiers. The classification outline was originally developed for researchers with an average knowledge of the elements and principles of design, but it appears that laymen cannot conveniently work the classification system. A working rather than a familiar knowledge of the design elements and principles is necessary.

3. The placement of a textile into a characteristic

class is to be objective. The participants stated that objectivity was high, but difficulty still stems from determination of the dominant or auxiliary motif. This decision was changed in the final form to increase internal consistency among classifiers and objectivity in decision making. Dominance is now a subcategory to placement rather than a designation of motif. Further tests are needed to draw conclusions on the new format.

Recommendations

During the literature survey and development of the classification system, ideas for further research in the following areas emerged and are presented for consideration.

Revisions are necessary in presentation and definition of terminology. Further testing for internal consistency and mutually exclusive categories is recommended. Color and symmetry should be added for a more accurate picture of the textile design.

It is suggested that the system be used in the following ways:

1. The system should be adapted for computer analysis. The present classification is still awkward for comparison studies due to its large number of variables and lack of unique codification.

2. Application of standard terminology for naming motifs and repeats, elements, and principles would increase applicability to cross-cultural studies and would

result in better communication between research groups.

3. Development of a system for other textile forms, unpatterned, for example, is recommended. Extension of the present system to include unpatterned textiles is not recommended, because the number of irrelevant features would make the system burdensome.

4. Textile historians, museum curators, and cataloguers could analyze designs of collections and would have better records of specific designs textiles.

5. The system should be used as a guide in development, not as a standard. The system should be adapted to the particular study, not the study adapted to the existing classification.

Suggested studies applying the classification developed are:

1. The system could be used as a tool in further studies in comparison of textile design for different cultures and different historic periods. This would increase understanding of design development, influence, and inspiration sources. Influence can be positive, negative, indirect, or designs can develop independently.

2. The system could be used as a tool in the study of relationships between design and political, cultural, social, economic, religious, and technical conditions. The study could start from the design analysis instead of from analysis of the environmental conditions.

3. Determination of aesthetic values and preferences

for elements and principles, such as scale, symmetry, and line direction could be done for specific cultures or historic periods.

4. The system could be used as a tool to determine the stage of development of specific textile designs: (1) art by accident, (2) functional considered over taste, (3) beauty enhanced, but not interfering with serviceability, (4) art over function.

5. Continued studies could be made in the area of Adam (1969) and Friedrich (1970) in which design structure is analyzed and compared to social structure.

Directions for Further Use

This classification system is limited to organization of information. It does not draw conclusions on the development of textile designs, nor place designs in classes. Studies requiring analytic (paradigmatic) or taxonomic classification, as defined by Rouse (1960) and Dunnell (1971), resulting in decisions on mode or type, which are necessary for conclusions on development or influence of design cultures, are beyond the scope of this study. These decisions also include determination of monothetic or polythetic classes. Monothetic classes have one common characteristic that all members share and polythetic classes are based on an aggregate of properties; not all characteristics are shared by every member (Sokal, 1966, p. 107). Classes depend on the purpose of the

investigation, for example, a study of style to determine the interaction of two cultures.

If analytic classification is chosen, successive classification features must be determined. This type of study results in procedural or conceptual modes (Rouse, 1960, p. 315). The classification system developed in this study lends itself best to conceptual modes--concepts conformed to by the artisan, such as material, shape or decoration, as opposed to procedural modes.

If types are chosen, resulting from taxonomic classification, decisions as to importance of attributes must be made. The classification system in this study cannot directly lead to this form of analysis. After classification according to the proposed system, the attributes would be recognized and would still have to be ordered and weighted in relation to the problem stated. This system's relevance is limited to determining what are the available and relevant features for taxonomic classification. The information gained from this study would lead to descriptive types, as opposed to historical types (Rouse, 1960, p. 321).

Dunnell suggested two nonclassification methods for forming units called "groups", statistical clustering and numerical taxonomy. These methods and the classification system developed in this study can be used together to gain information related to a particular problem in textile design analysis. Grouping is a descriptive device and units are created from observing the objects available for study.

"Groups are restricted in application to the data from which they are derived" (Dunnell, 1971, p. 103). Groups made by analysis of frequency of occurrence of a characteristic are formed using statistical clustering. The device is oriented to only one problem. Types of groups can vary, phenetic, cladistic, or chronistic (Dunnell, 1971).

In numerical taxonomy a value is assigned to the degree of similarity, resulting in statements, such as A is more similar to B, than B is to C. This similarity must be based on one corresponding character. This device can be oriented to solution of only one problem at a time (Dunnell, 1971).

Dunnell also suggested the use of identification devices. More explanation of an identification device is given here than the above methods, because it does not require knowledge of a cultural mode or type, nor computer or statistical information, as do statistical clustering and numerical taxonomy.

Identification devices are a tie between grouping and classification. They are not the formation of units but the matching of groups with classes. Definition of identification devices is given by Dunnell as:

> any formal structure designated to assign events or objects to previously defined classes (Dunnell, 1971, p. 103).

Use of an identification device involves a key. The key is developed by summarizing classes, which have actual members and excluding classes irrelevant to the assignment

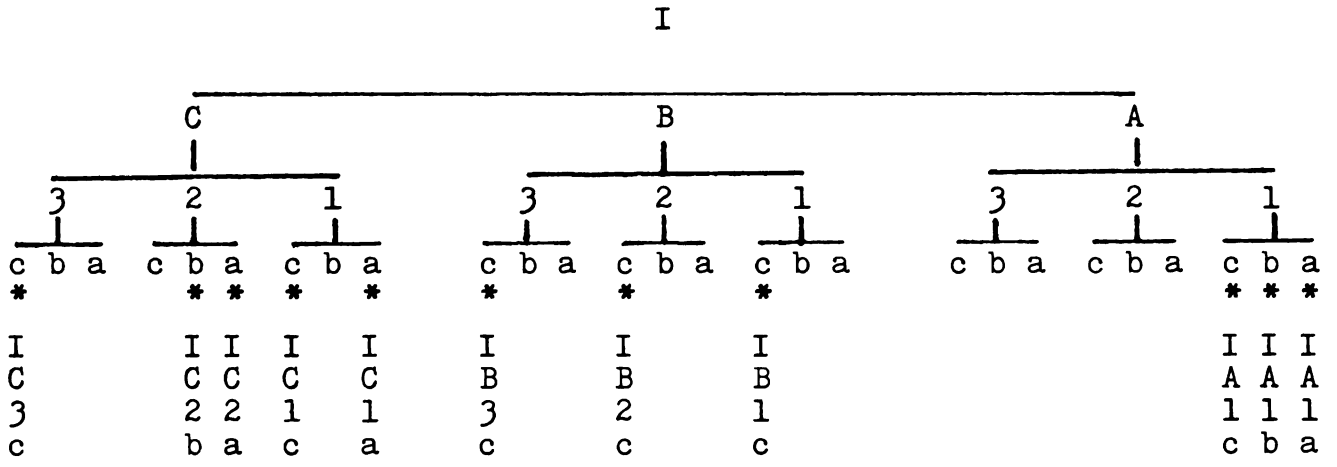
of objects. In essence, it simplifies classification of specific data. Identification devices are based on binary oppositions as illustrated in Figure 12 and Figure 13.

Paired oppositions are mutually exclusive--member or nonmember. The first decision in the example is whether or not the object is A or not A (A). If it is A, then the decision goes to a or not a (a). The number 1 features has been omitted, because all members belong to 1. If the first decision were A, then it must be B or not B (B). In this case B is the same as C in Figure 12. Under section B it is seen that there is no small letter; this is because all objects possess c. Under B it is seen that numbers and letters are necessarily in numerical or alphabetical order. Using this identification device, the same categories result as using the paradigmatic classification in Figure 12, but without the extra 16 classes being listed; thus the identification device can be used for convenience (Dunnell, 1971).

Identification devices are limited to the data and the classification systems they link. More specifically they are limited to the classes that have members. Its utility

> increases with the complexity of a given classification and the number of possible class assignments. It is particularly useful for paradigms which generate a much larger number of classes than actually have denotata (members) (Dunnell, 1971, p. 104).

Identification devices look like classifications, but are not and should not be mistaken for one. Use of an identification device and the system of classification



*Contains members

Figure 12. Paradigmatic classification of three dimensions (Dunnell, 1971, p. 104)

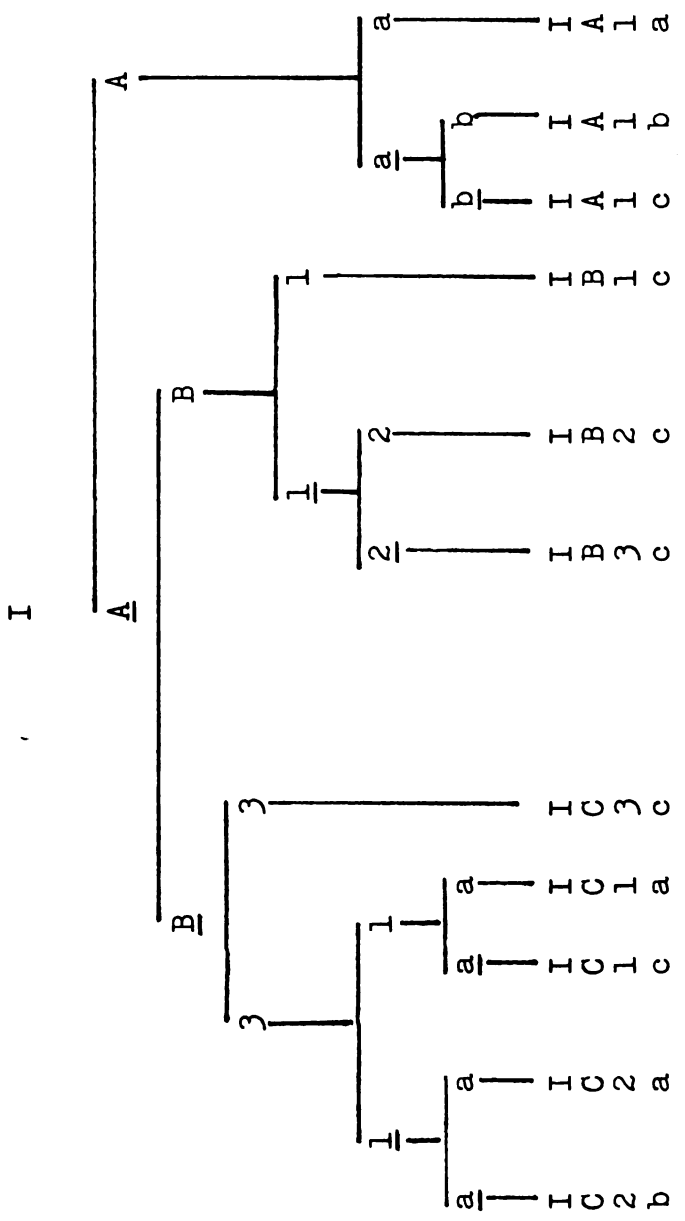


Figure 13. Identification devices (Dunnell, 1971, p. 105)

in this study would greatly increase efficiency in an applied problem.

Summary

This study attempted to develop a system of textile design classification based on the characteristics and arrangement of textile design motifs. The system was proposed as a tool for a researcher studying textile design for description, comparison, or development. It is an organizational instrument, not an evaluative one; so no conclusions can be drawn about the material classified until classes are defined in relation to a specific problem. It is also not a cataloging device.

It was intended that the classification be objective and cross-cultural. Mutually exclusive attributes were to be relevant and clearly defined. Enough attributes were chosen to isolate variables, but not so many that comparative classes would only have one member.

Although the system depends on the researcher's viewpoint in choosing categories (for example, dominant motif) guides are stated to help with consistency. The system is to be internally consistent for each researcher or research group and not necessarily between research groups.

A paradigmatic system of classification was chosen so that features would not be weighted in importance, and so that the classification would be descriptive, not interpretative. If a taxonomic classification system had been

chosen, a priori decisions would be necessary, weighting attributes in importance and the result would be interpretative.

It was further planned that the classification system be flexible, capable of expansion or reduction, so that it is applicable to more than one aesthetic study. The classification system is directed toward the problem of analysis of form and content of motif and structure of repeats. It was concluded that such a system was possible due to comparable systems in pottery classification and analysis of pattern design using the theory of symmetry.

The review of literature concentrated on four areas of study: (1) classification theory, (2) desirable characteristics of a classification system, (3) classification systems in textiles, ornament, and archeology, and (4) descriptive and comparative studies.

From the classification theory it was determined that classification is a tool, not an end. Decisions in the development of classification are arbitrary and the system should be oriented to a specific problem. There are two forms of classification, analytic (paradigmatic) and taxonomic. Choice of the system should reflect the purpose of the study. Grouping and identification devices are methods of placing artifacts in predetermined classes for drawing conclusions. The purpose of classification is simply to organize quantities of material. According to Brew, this current study was justified because new and more

classifications should be made, since no single analysis will show all evidence.

Desirable characteristics of a system can be summarized as simple, objective, and flexible with limitations outlined. Terms should be mutually exclusive, elementary, universal, and relevant to the stated problem. Features should be numerous enough to isolate details, but not overburdensome, and developed from inherent qualities of textile design.

No comparable system was found in textiles, ornament, or archeology. Textile design analyses in existence included: (1) general descriptions, (2) descriptions with subject matter cataloging, (3) ornament texts classifying by motif and form of repeat, (4) classification for instructional purposes, (5) sociological classification, and (6) motif classification in relation to specific cultures.

In archeology classification was based on form, function, material, manufacture, symmetry, configuration and arrangement of design motifs, and function of design motif and styles. Gardin proposed a system of coding.

General statements on possible classification methods included coverage, symmetry, structure, style, origin, as well as the elements and principles of design.

Comparisons were drawn in design studies on the basis of the following criteria: general structure, symmetry, style, proportion and scale, subject matter which included figures, activities, position of figures, facial expression,

motif names, importance, frequency, placement, direction, line character and function, space, color, meaning, and expression of feeling.

From these suggestions of possible classification features, the system was developed, following a paradigmatic structure, and was presented in outline form.

Three hierarchies of descriptions were planned. Hierarchy I: General Character of the Textile Design, includes features of form, repeat, nonrepeat, content, style, line direction and character, density, values, symmetry, scale and proportion. Hierarchy II: Specific Character of Motif, includes designation of motif by location, dominant or auxiliary motif, frequency, style, form, symmetry, position, content, line character, proportion and scale. Hierarchy III: Specific Character of Arrangement, included structure, repeat and nonrepeat.

An information card contains data on name of design, designer, date, country, manufacturer, fabric, fiber, technique, present location, function, measurements, and description.

Textiles from historic source books, Marimekko designs, and the investigator's original designs were used for development, explanation and testing of the system. The system was presented to a panel of ten people for a pretest. The participants were chosen from the Human Environment and Design faculty and graduate students who had a working design knowledge. After revisions the test was

given to eleven members of a graduate seminar. Each was asked to classify two textiles and evaluate the classification system based on the twelve developmental criteria. The great deal of information necessary to work the system and the mechanics of using several sections at once were the greatest disadvantages, making the classification difficult to use. Revisions were made to concentrate information in one area. Six of the twelve criteria were satisfied, three required further testing and three were not met.

Comparison of textiles that have been classified would involve grouping devices, statistical clustering and numerical taxonomy. Textiles can be classified with the aid of a key or identification device. Use of these aids to draw conclusions on textile history and development is recommended. Use of taxonomic classification in addition to the paradigmatic classification system developed in this study is also recommended in problems requiring creation of types.

Classification systems have limitations, when these are recognized and attributes ordered to the researcher's problem, the classification form of organization can be a time saving tool in a research program.

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