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PAINTING AND LANGUAGE: A PICTORIAL SYNTAX OF SHAPES

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Abstract—*In previous articles, the author proposed that paintings can have syntactic rules. In this article he develops his proposal further and shows that shapes act as syntactic elements in the languages of painting styles. He meets Nelson Goodman's objections to his proposal by showing that shapes meet the criterion of syntactic discreteness proposed by the latter to separate linguistic from other symbolic systems.*

His approach is to specify style as the domain of a language of painting, to show that style is syntactical and to argue that shapes are the primitive syntactic elements of style. His essay relates current research on the development of syntax for picture-reading machines to the question of syntax for paintings.

Analysis is a way of learning what works of art are in their actual presented being, by learning the aesthetic elements and relations which go to make up that being.
D. W. Prall [1]

I. PAINTING AND LANGUAGE

The principal difficulty plaguing all efforts to speak of painting as language is to make clear what it would be for painting to be a language [2]. Of those philosophers who take up the general question of language and art, some, such as Dewey and Ducasse, speak mainly of 'the expressive language of art' [3]. Gombrich's treatment of painting as language in *Art and Illusion* gives a helpful analysis of semantic or representational aspects of a 'language of painting' [4]. Neither of these approaches clarifies adequately what it would be for painting to be a language. The expressive hypothesis takes account of a single aspect of painting or language and explanations of semantic or representational aspects of painting or language are incomplete when considered apart from syntax. Gombrich's use of the terms 'vocabulary' and 'schemata' to characterize language-like features of painting is ambiguous as to the precise nature of language-like features of paintings because he does not clearly differentiate between representational-semantic and syntactic features of paintings [5]. Even Mothersill's critical discussion of Gombrich's thesis on art and language omits consideration of syntax [6].

Philosophers Dufrenne, Goodman and Langer are skeptical about treating painting as language on the grounds that either paintings lack syntactic elements and rules (Dufrenne [7] and Langer [7]), or that paintings are ordered differently from language units or that paintings and languages belong to different kinds of sign or symbol systems (Goodman [7] and Langer [7]).

In two previous articles, I have proposed that paintings can have syntactic rules and have responded to objections raised by Langer and others [8]. In the present essay, I wish to develop my proposal further and to show that *shapes act as syntactic elements in the languages of painting styles.* It will be necessary to meet Goodman's objections by showing that shapes meet the criterion of syntactic discreteness proposed by Goodman [7] to separate linguistic from other symbolic systems. My essay also relates current research on the development of syntax for picture-reading machines to the question of syntax for paintings. Investigation along these lines will seek to clarify the question of 'what it would be for painting to be a language'.

Before turning to these main tasks, it is necessary to outline some general assumptions and forestall some criticisms. The main assumptions are simply stated here, since I have treated them in greater detail in the previous articles. The assumptions are: (1) Painting *is* language-like because it shares with written languages the notion of syntax. This assumption is supported by my previous papers on the subject and receives further development in the present study. (2) Although painting may involve syntax, it is *not* a subspecies of written language because it operates in a different medium that shares some but not all characteristics and functions of verbal languages and because painting may actually precede language as a means of visual sign communication. (3) Painting *is* a subspecies of picture language and is properly considered a 'pictorial language of art' in more than a loosely metaphorical sense.

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The impetus for this approach to the 'language of painting' derives primarily from two sources: Prall's theoretical approach to aesthetic analysis and Morris's semiotic hypothesis of signs. Prall advocates analyzing the formal structures (elements, relations, and patterns) of art works by arguing convincingly that analysis is the 'only sure approach to full grasp' of what is not immediately apparent [9]. Morris argues that paintings have syntax and provides concepts for analyzing structure in painting, but he does not develop the notion of syntax for paintings [10].

The study of art, which involves analysis of paintings into elements and relations, is often confused with 'direct experiences' of paintings and some commentators see paintings simply as objects designed to make an impact, pleasing or displeasing, on man's senses [11]. But a painting is much more than an 'object of beauty' or perceptual stimulant. A painting is also a complex picture symbol that can be used to communicate ideas, feelings, representations of surfaces and other kinds of information [12]. Those who fear that the syntactic analysis of paintings will in some way violate artistic mysteries or destroy artistic pleasures may take comfort in the fact that Prall, who was as much concerned with and attuned to the integrity of aesthetic experiences as anyone, expressed full confidence in the method of structural analysis of art works as an essential means for grasping the aesthetic experiences offered by a particular work.

Apropos of the main concerns of this paper, the principal objections to a syntax for painting can be met by resolving three fundamental issues. First, it is necessary to specify the domain of a language of painting, and the most appropriate domain is that of a *style* of painting. A style is the analogue of a language. It consists of a set of properties, including kinds of shapes and the rules for their arrangement, together with other non-syntactic attributes, such as representational semantic aspects interpreted as subject matter, technique, and the personal embellishments contributed by an artist's adaptations of all of these.

Second, one must show in what way the domain (style) is syntactical [13]. Very briefly, compositional rules of style that describe or prescribe arrangements of shapes and of other pictorial elements are the syntactic rules. They are formulated from observations and inferences based on actual painting compositional practice. Unlike linguistic syntactic rules, those of painting styles are not articulated in the units of their own system but in a second (verbal) language. However, the rules *are* exemplified in the paintings of the style in a manner analogous to the way that sentences exemplify the rules of linguistic syntax. Knowing the syntactic elements and rules, one can analyze a painting's style and give instructions to anyone wanting to paint 'in the manner of' the particular style. Such knowledge enables art historians and others to identify and classify paintings and is a principal factor in their interpretation.

Third, one must identify the primitive elements of the language (style). My argument will be that shapes are the primitive syntactic elements of style.

So far, only paintings have been discussed, but it is worth noting that the argument is not restricted to paintings. Clowes, Stanton and Narahesimhan, who are developing models of picture syntax for picture-reading machines, provide additional support [14]. They are designing systems to describe and predict how a machine or a person will react to any line picture that follows some general rules. Present investigations of picture syntax operate with simpler pictures than are paintings. But the models of Clowes and others appear to offer improved means for identifying and classifying shapes and syntactic rules of style based on analyzing painting structures. The work of Clowes and his colleagues promises to produce a general theory of picture syntax that is applicable to paintings. At the level of particular styles, this work may well provide a basis for formulating particular stylistic grammars.

Now I shall try to show that shapes in paintings can act as syntactic elements.

II. SHAPES AS SYNTACTIC ELEMENTS

A shape, in the broadest sense, is any bounded area on a canvas. The moment an artist starts dividing the area of a canvas, he paints shapes in this broad sense. In a slightly more restricted sense a shape is an area of the picture plane that is defined by linear boundaries, by differences in color, value, texture, or by some combination of these [15]. My use of 'shape' differs from that of writers who understand shape as a visual aspect (property) of an image, functioning on the same level of organization as 'color', 'line' or 'value'. A shape is a higher order (more complex) pictorial element composed of one or more of the elements of color, line, etc. Shapes are the primitive elements of a style of painting. 'Stylistic primitives' (shapes) are based on regions of perceptibly constant attributes or properties such as a given color density at specified locations on a painting's surface. Shapes in a style are described in different ways. Sometimes they are distinguished by such terms as 'plane' and 'volume'. A plane-shape is 2-dimensional in character; whereas a volume-shape presents the illusion of the third dimension. Otherwise, shapes are distinguished in terms of their distinctive pictorial properties.

Since shapes actually function at both syntactic and semantic levels in paintings, there is a problem in keeping the two separate. Briefly, the distinction that I wish to maintain is that on the level of syntactic analysis shapes are the primitive elements out of which the more complex units (paintings) are constructed. Alternatively, from the semantic point of view, one reads the shapes in some styles as representations of objects, persons, events, ideas or states of feeling. But as syntactic elements, shapes do not yet have such semantic import.

A. Reasons for Using Shapes

The choice of shapes as opposed to lines or color patches is the result of several abortive attempts to isolate sufficiently discrete and appropriate units of the pictorial elements to analyze as syntactic elements in painting styles. Shapes, in most instances and to a greater degree than other pictorial elements, lend themselves to apprehension as perceptually discrete elements of a painting. The other pictorial elements, whose variations enable us to distinguish shapes, are attributes of shapes. Colors and lines, as such, which are not seen as parts of paintings in their own right, need not be the primitives when shapes are more useful, even though the color and line elements are smaller.

This is not to say that colors and lines outside the domain of shapes admit of no differentiation, since below the level of shapes there are lines and colors that one can differentiate and classify to some extent. One may distinguish lines according to direction (horizontal, vertical, straight, angular, curved or jagged), width and length. Denman Ross analyzes lines into these categories in an attempt to articulate a system of formal elements for paintings in general [16]. Hillaire Hiller points to a variety of color classification systems and seeks to develop one more, from an artist's point of view [17]. Hiller's own system provides for a rough means of establishing classes of color patches.

These general line and color groupings enhance the descriptions of shapes acting as syntactic elements. But their classification is not sufficiently developed for use as syntactic elements of style. By analogy, one does not accept '/', '–', and '/' as 'wellformed' primitives, but one does accept the letter 'A' that these markings comprise. Accordingly, one accepts shapes in styles of paintings as primitive syntactic elements, but not lines and colors as such.

There is additional support for shapes as primitive elements in the fact that some painters tend to think in terms of plane and volume shapes when composing or analyzing their paintings. This observation is the result of my conversations with a number of artists, who find shapes to be the appropriate primitives for making and analyzing paintings.

B. Problems Resulting from the Discussion of Shapes as Syntactic Elements

1. Perceiving shapes as formal elements

Understanding syntactic elements of styles of painting requires that one learn to see the shapes as formal elements. In the absence of any official lexicon of shapes for different styles, one must rely upon observation and analysis of the works of a style to determine its primitives. The problem of seeing the shapes as abstract, formal elements (planes, volumes, etc.) is primarily a difficulty in the familiar 'naturalistic' styles where a viewer is inclined immediately to give semantic interpretation to the familiar shapes. This does *not* mean that the notion of syntactic elements has no application to these paintings. Rather, in familiar styles, it is necessary to learn to see the semantic (e.g. human figure shapes) alternately as formal elements in the composition of the paintings.

Attending to formal elements in paintings suggests nothing foreign to their study. The approach is based upon the manner in which many, if not all, painters proceed in the making and subsequent analysis of their works. It is 'a way of seeing' that any viewer can learn, that is, one who is willing to take the necessary steps to 'turn off' recognizable human shapes (semantic interpretations) and see them in their formal role as a plane, volume, etc. in the composition. This way of seeing, as others have noted, depends on 'an ability to concentrate on the compositional features of the work rather than on its representational theme' [18]. Accomplishing this technique, one can engage in a syntactic analysis of styles of paintings that will result in perceiving shapes as formal elements.

Some 20th-century 'abstract styles' compel viewers to perceive shapes in other than familiar representational ways. Thus, an analysis of the shapes is directed to their formal characteristics. These abstract styles differ from familiar realist or naturalist styles in this respect. The reason for their differences is not necessarily that shapes in abstract styles have no semantic content, but, rather, that a viewer's *unfamiliarity* with the shapes makes it easier for him to see them as syntactic elements.

2. Describing shapes

But even if one learns to *see* the shapes in paintings as formal elements, there is still a problem in describing them as formal elements, except in very general terms. In the absence of a pictorial method for designating their individual or collective features, intended semantic interpretations of shapes are used to designate verbally the shapes, particularly in representational styles. Thus, a second main difficulty that hinders the analysis of shapes as syntactic elements is the problem of classifying shapes through other than their semantic associations. This difficulty contributes to the skepticism of those who hold, mistakenly, that styles of paintings have no syntactic elements. I will return later to this problem.

3. Ambiguity of shapes

Alternative or ambiguous shape groupings of 'the same' picture surface present additional perplexities. Although ambiguity is sometimes thought of as a problem of semantics or interpretation, the prior syntactic identification of shape elements is no less beset with ambiguity. Shifting or multiple groupings of shape elements in 'the same area' result from a change of perceptual orientation. An inscription with multiple groupings that are sanctioned by a style of painting may have, so to speak, multiple 'identities' in the system, depending on

the user's orientation at a particular time. This difficulty is not insurmountable. Where legitimate alternate groupings occur, one simply admits the alternative ways of grouping the elements for purposes of identifying the respective shapes [19]. Ambiguity or possible multiple groupings of pictorial properties into shapes is not a problem that is unique to the analysis of paintings. This type of ambiguity extends beyond the syntactic considerations of painting style and into the origins and usage of sign systems. Thus, the fact of alternative or ambiguous groupings of shape elements is not a reason to deny syntax to paintings.

C. Identity of Shapes as Syntactic Elements

As the previous definition of shape indicates, the *identity* of abstract shapes acting as syntactic elements is in terms of bounded areas of the picture plane differentiated by color, line and other pictorial properties. Strictly speaking, the abstract shapes of styles thus far have resisted systematic classification in the manner of alphabetical primitive elements of languages. For the reason cited in the previous sections and because of a difference in the way that shape elements in paintings are constituted, we do not have categories of shapes for each style as sharply differentiated as are, e.g., 'A' marks (individual inscriptions) and 'A' character classes in a language with an alphabet. However, painters do use 'stock shapes' in the basic stages of composition, both for compositional reasons and for analyzing subject matter as Morelli and Gombrich have shown [20]. The stock shapes vary, depending on the style, and can be compared by analogy to marks and character classes in linguistics.

1. Quine on identity

Some of the difficulties noted for describing the identities of shapes in paintings derive from a more general philosophical perplexity concerning the identity of elements in any sign system. Quine distinguishes two different kinds of 'identity association'. In a large uniform expanse, colored red, any part of the expanse is red and the whole is red [21]. In a large expanse shaped as a square, the parts of the expanse may be triangles, rectangles, trapezoids, etc. [22]. Although each red part is part of a whole, it is not a part of the whole in the same way that a triangle is part of the square. One might say that the red impressions are all of the same density as 'the concrete whole of red', whereas the triangles, rectangles and trapezoids have separate identities, because they belong individually to distinct classes of geometric shapes, with each class comprising a universal. Quine's remarks help to explain the complexities of analyzing shape identities. In any style where color and linear-geometric properties combine to form shapes, there are not only different properties (color, line, geometric form, etc.), but also different principles of identity according to which the properties that comprise the shapes of a painting style can be perceived.

2. Goodman on identity

Quine's remarks on identity anticipate Goodman's discussion of pictorial syntax and lay the ground for two alternative ways of approaching shape identity in paintings. Goodman argues that paintings are densely ordered symbol schemes for which there can be no syntax, because paintings lack the properties of disjointness and differentiation [23]. A corolary effect of this distinction, to which I shall return later, is that 'disjointness' and 'differentiation' separate language systems from representational schemes such as paintings.

Syntactically disjoint marks or inscriptions can belong to no more than one character class in their 'language' and a syntactically differentiated language must make it possible to determine to which character class a mark belongs, according to Goodman [24]. Using 'pictorial respects' as character classes, Goodman asserts the following: 'No matter how delicate our discriminations may be, the classification provides for each picture many characters such that we cannot possibly determine that the picture belongs to at most a given one of them' [25]. If Goodman is right, it is not possible to determine for any painting or shape that it belongs to one, but not another, pictorial character class. And this is what it would mean for a painting or shape to fall short of the proposed syntactic requirements.

In practice it *is* possible to determine for both whole paintings and shapes to which character classes they belong within a style and to express their identity relative to the appropriate character classes.

Taking whole pictures for the syntactic elements, as Goodman does, one sees that a single painting (or a set of graphics) represents a distinct character class, whose members belong uniquely to their respective character class. Character classes provide two ways to explain the identity of pictures. The first identifies the picture with a single character class that is formed by the picture's colors, lines, scale, shapes, etc. acting jointly. At this level, ordinary visual inspection tells viewers that one painting is disjoint from every other and that the members of a set of multiple graphics belong to the same character class. Waiving the possibility of forgery, there is no doubt concerning the identity of Picasso's 'Guernica', or of the prints in Andy Warhol's set of silk screen 'Marilyns'. The second approach is to catalog individually the picture's multiple pictorial properties relative to a style. Specialists exemplify this procedure in their work of identifying and classifying art works for scholarly purposes.

Applied to the identity of shapes, Goodman's remarks on pictorial syntax suggest two possibilities. The first is that a shape's *multiple constitutive properties*, each representing color, line, scale, etc., form a single character, consisting of the shape's

aggregate pictorial qualities. The second is that the identity of a shape consists of its *character memberships in multiple characters*, one each for color, line, etc.

Goodman sees rightly that pictorial elements, whether whole pictures or shapes, have a plurality of properties. But he errs in failing to see how these properties can be the basis for understanding the identity of syntactic elements in paintings. Quine's remarks (above) help to explain how the multiple properties provide the two approaches to shape identity. Shapes exhibit multiple properties because they are composed of properties that go together according to different formal relations. Corresponding to the second approach to shape identity, the identity of a red triangle can be analyzed into multiple character memberships, one each for red, triangle, etc. But nothing in Quine's remarks prevents treating the properties 'red' and 'triangle' jointly as an aggregate character, corresponding to a first approach to shape identity. The first approach describes the *analytic* identity of a shape, according to a division of its properties; the second describes a shape's *synergistic* identity through the joint action of its properties.

How does this discussion of shape identity relate to styles of painting? As the previous remarks indicate, Goodman holds that all paintings are densely ordered symbol schemes whose elements lack syntactic disjointness and differentiation. If shapes in all styles were completely dense and lacking in differentiation, both accounts of shape identity would face serious difficulty in attempting to determine the relevant character memberships for shapes. Contrary to Goodman's view, styles of painting vary considerably in the degree to which their shapes are syntactically disjoint and differentiated. All shapes have at least some degree of articulateness. In principle, and with sufficient patience, it is possible to provide descriptions of shapes according to colors, lines, scale, texture, etc. The shapes in Jackson Pollock's nonfigurative paintings appear to be more densely ordered than most and the synergistic-aggregate approach to shape identity seems more appropriate for describing them, because they are not sharply differentiated. At the opposite end of the density scale, the shapes of Lohse, who paints in a modified constructivist style, and the shapes of syntactic relief painters Glattfelder, Morandini and Staudt are disjoint and differentiated [26]. Lohse's paintings are composed with standard rectilinear shapes of controlled pictorial attributes of color, line and size. Only a limited number of sizes, colors, types of line are used. The shapes satisfy the requirements for disjoint elements: They do not overlap; each is differentiated as one of a finite number of predetermined colors, lines and sizes appearing at a limited number of places on the picture plane. Using complex structures that can be measured with instruments, Glattfelder employs a basic module consisting of a pyramid of four equilateral triangles. The color, distribution, and arrangement of shapes is according to symmetrical or permutational laws. Morandini and Staudt use related computer-analyzable shapes that also appear to meet Goodman's requirements of disjoint syntactic elements. For all of these examples either approach to the description of shape identities is applicable.

Hence Goodman's point that one cannot give a classification of a picture or a shape that determines its membership in a single class is shown both to be incorrect and superfluous. It is incorrect by the example of whole paintings that constitute single character classes and superfluous by two alternative notions that account for the identity of syntactic elements through analytic or synergistic shape identities. Accordingly, one of his chief reasons for claiming that painting and language belong to different kinds of symbol systems is diminished.

III. SHAPES AND THEIR LINGUISTIC COUNTERPARTS

Both pictorial styles and languages operate in terms of systems of relatively discrete formal primitive elements that are the basic compositional-constructive elements in the respective systems. Compared to shapes as the primitives in pictorial styles are the phonemes, morphemes and spoken words of oral language and the letters and printed words of written language. Most languages appear to utilize more formally, demarcated elements, e.g., alphabets, than are presently available concerning the shapes in a pictorial style. However, the account of shape identity in terms of membership in a single character (comprised of a shape's relevant multiple constitutive properties) approximates the way in which linguistic elements are identified. Phonemes, morphemes or written inscriptions are distinguished by a set of relevant properties as provided by a native speaker or from analysis of the properties of sample utterances.

Parallel problems exist in painting and language with respect to disjoint elements. The parallel is especially notable in a comparison of phoneme (sound) differentiations in a language with shape differentiation in a pictorial style. Just as phonemes are formed by distinctive sound attributes, so shapes are formed with respect to distinctive pictorial attributes. Similarly, phonemes with their corresponding written letter inscriptions become constitutive elements in larger units (sentences, etc.). By analogy, the shapes of a pictorial style are constitutive of larger units in a painting or of whole paintings. Linguistic studies present as the theoretical criterion for 'phonemic distinctness', the notion that each phoneme must be distinct from every other in at least one respect. Practically, a test for this is 'distinctive and slightly variable articulation' and 'psychological aloofness', as judged by a native user of the language [27]. This method is scarcely more precise than methods that are used to differentiate shapes.

Structuralist linguists proceed on the assumption that phonemes are discrete units of language, in

accordance with Goodman's thesis that a language must have disjoint syntactic units. Recent studies by transformational grammar theorists and others challenge these assumptions by pointing to evidence that shows that many phonemic elements are non-discrete or only relatively so [28]. For example, intonations used in pronouncing phonemes are regularly varied to accommodate an indefinite number of states of mind. Corresponding to this semantic fact must be syntactic or structural counterparts that, if allowable, preclude the acceptance of a rigorous enforcement of the criterion of syntactic disjointness. Since phonemes apparently depart in degree from the theoretical requirements of syntactic disjointness and are still accepted as the basic structural units of spoken language, one cannot very well rule out shapes as syntactic elements for pictorial styles on the grounds that they fail to conform to strict expectations of syntactic disjointness. Nor can one exclude styles from the class of language-like systems because their syntactic units are not always disjoint elements. I have, therefore, introduced Goodman's criterion into the discussion *not* to set a norm for all syntactic units of all languages, but only to 'meet the argument'. In theory and in practice shapes in some styles do meet the criterion of syntactic disjointness. But if it turns out that shapes in other styles happen to be less discrete or more open in their sets of defining properties, they are still no worse off as syntactic elements than phonemic counterparts.

Thus far my discussion of shapes as syntactic elements has largely been confined to a single model based on the idea of shapes as marks in character classes, along the lines suggested by Goodman. The search for syntactically disjoint shapes and their exact descriptions (according to discrete marks and character classes) represents the present state of thinking on the problem. But this approach by no means sets limits for or precludes the development of alternatives. As it is used by Goodman, the mark-character approach to pictorial syntax tends to treat paintings as single atomic entities. My approach has been to break down a painting into shapes according to its internal structure, while attempting to treat the problem of syntactic elements within the limits set by the mark-character model. The result is a method that favors structures with often used syntactic elements. Admittedly, it works more satisfactorily for symbol systems with familiar geometric shapes, or alphabetic primitives, although it also is applicable to others.

There is clearly a need to continue the investigation for more flexible models. The new models must be more adaptable for analyzing the complex structures of paintings, as well as for the picture language of machines. They should be cognizant of the peculiarities of picture shapes, such as overlapping and interconnections of shapes in some styles of painting. Very probably, improved models for the study of picture syntax can emerge from suggestions like those of Narasimhan who advocates abandonment of the character class model in favor of freer uses of articulated generative and interpretive descriptions [14].

IV. PRESENT STATE AND FUTURE APPLICATION OF SHAPE ANALYSIS

Although shape differentiation and classification for paintings has not yet advanced to the level of well-established sets of procedures, it is feasible that this can be done. On the informal level, shape analysis is done by painters, critics and art historians in their work and by other viewers who wish to enrich their understanding of paintings. Morelli, whose critical art historical work depends on careful attention to repeated features and variations in shapes of the different styles, utilizes shape analysis to determine and characterize stylistic similarities and differences [29]. His techniques of shape analysis are adaptable to the study of shapes in a variety of styles, but they represent only one of many possible approaches.

Loran's study of Cezanne's approach to composition is another [30]. Using tracings, diagrams and photographs, Loran provides 'shape mappings' of Cezanne's works. Applied to Cezanne's 'Still Life With Apples', the method first reveals the broad shape outlines of the painting through tracing dominant lines [31]. These larger contour shape areas disclose the basic syntactic plane-space divisions of the picture. Smaller shapes within the larger areas are shown in more detailed diagrams. The smaller shapes are described as circles (representing apples), ellipses (representing plate and pitcher) and various triangular and rectangular shapes (representing drapery folds, table cloth and wall areas that vary in size and pictorial attributes) [32]. The shape areas so identified can then be described in detail by articulating their distinctive line and color attributes, thus providing the desired description of shape identity [33].

Developments in the studies of picture languages for developing picture-reading computers by Clowes [14] and others that I mentioned earlier suggest the possibility of more scientific analysis of shapes. Formalized ways of analyzing images through the use of electronic scanning devices and of photographic means can be explored for their application to shape analysis in paintings. Together with these technical means, the descriptive methods and vocabulary used in a picture language for machines provide a promising base for the analysis of shapes in paintings.

The resulting advancements in shape description will contribute to improved means for describing shapes in paintings and, on the larger scale of whole paintings, will aid in the complete mapping of pictorial surfaces into significant shapes and their structural relations. Beyond this is the still larger task: to compare dominant shape character classes of the range of works in a style with a view to developing stylistic grammars for the 'languages of style'.

V. CONCLUSION

The linguistic-syntactic approach to paintings will not be attractive to everyone any more than is the scientific study of languages by linguists and philosophers of language. Nonetheless, it is one important way to expand the knowledge and understanding of the art of painting and its influence. As paintings incorporate features of the 'electronic-computer age', a conceptual approach becomes increasingly relevant to their understanding. A study of language-like features of paintings seeks to make the unintelligible in all styles intelligible. No one knows just how far off the present state of knowledge may be from a full understanding of the complex natures of both the arts and languages. And, surely, the limited analysis offered here does not begin to settle the many issues raised by the discussion of painting and language, let alone the larger questions of art and language. But the issues raised and the arguments advanced are so fundamental that they can hardly be ignored. I have shown that 'what it means for painting to be a language' can be stated in characteristic visual terms, using 'style' and 'shape'. A style is a language of painting and its syntactic elements are the dominant kinds of shapes used in the style. If the present state of pictorial syntax is relatively undeveloped, the research on picture-machine syntax, together with fuller awareness of art historical practices, provide the grounds for its development. The philosophical objections to a syntax for paintings must be re-examined in the light of the arguments presented here. Philosophers' (Goodman, etc.) insights into the philosophy of symbols help us to formulate the description of shapes as syntactic elements. But their negative arguments (theoretical grounds, etc.) are insufficient to discourage the search for an appropriate notion of syntax for paintings.

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5. Syntax provides a description of elements and the rules for their combination in units of a symbol system. Semantics refers to the relations between units of the sign system and the domain of things that the signs may represent. Syntax and semantics are two of three categories—pragmatics, the study of origins, uses and effects of signs is the third—proposed by C. W. Morris, Foundations of the Theory of Signs in *International Encyclopedia of Unified Science*, Vol. I (Chicago: Univ. of Chicago Press, 1938).
6. Ref. 2, pp. 567–572. The omission precludes the possibility suggested by Morris of a 'language of art' that has syntactic or formal characteristics but with no semantic ones. According to Morris a sign system (language, system of painting, etc.) must have syntax but need not have semantic relations to things outside the system (cf. Ref. 5, p. 85).
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10. C. W. Morris, Esthetics and the Theory of Signs, *J. of Unified Science* **8,** 131 (1939).
11. I do not wish to propose a necessary dichotomy between the 'theory' and the 'experiencing', only the possibility of different ends for each. Theory seeks to explain through analysis the how's and why's of picture structures; aesthetic experience seeks interpretations and enjoyment and the first clarifies and enriches the second.
12. Mothersill's assertion (Ref. 2, p. 572) that paintings convey no information—or only information concerning how things look—strikes me as too narrow a view. Information concerning an artist's attitude toward a subject, emotions, relationships of size, distance and location, as in perspective representations that are presented in pictures, are not merely a reflection of the way things look. But even if pictures convey no more, this would be considerable since other 'languages' are less effective in showing 'how things look'.
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24. Ref. 7, Goodman, pp. 136, 153.
25. Ref. 7, Goodman, p. 227.
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32. Short of simply diagramming without comment or using an arbitrary formal set of letter or number designations, I know of no way to indicate these shapes without referring to them through names derived from their semantic associations. However, when the shapes are being noted as syntactic elements, I refer to their compositional rather than representational function in paintings.
33. It may be objected that some painting styles do not use shapes. After reviewing some of these alleged exceptions (Ad Reinhardt, Jackson Pollock, Mark Tobey and A. Zorino), I conclude that in fact most of their works can be analyzed into shapes as I have used the term here. Works in which element groupings appear to shift due to the interaction between the elements because of the visual process involved are not as receptive to shape analysis. However, even such paintings, for example, one by Vasarely, is perceived as an arrangement of shapes.