AN INVESTIGATION OF LINE AND PLANE RELATIONSHIPS
IN TWO CONCEPTS OF PAINTING

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The problem of this investigation is the combining of the spatial concepts of Paul Cézanne and the Analytical Cubists in a single painting. A series of paintings were undertaken to examine (explore) this spatial combination. Of the paintings completed, eight are illustrated and described in detail. In this study, the method whereby these spatial concepts were activated rests upon the assumptions: (1) the basic structural elements of the paintings are line and plane; (2) the structural elements are expressed visibly by modifying the canvases with color, value, and texture.

Cézanne's paintings retain illusory depth by careful use of color, value and overlapping planes. The forms of the subject are flattened. However, by re-enforcing edges of planes with line, this flattened effect suggests, visually, that space and form (amy) interchange. The Cubists carried this visual phenomenon to an extreme, but logical conclusion. They used line as an axis along which small planes or facets of the subject and the space around it are aligned (juxtaposing). So thoroughly are space and form thus integrated that the Cubists sacrificed traditional illusory depth in their paintings.
Three approaches were used to combine Cézanne's flattened three-dimensionality with the Cubists integration of space and form. First, line was emphasized over plane as the primary structural element. This produced, in part, the desired spatial effect similar to Cézanne's flatness. The approach also resulted in a visual reproduction of the Cubistic faceting.

Second, line was omitted and the painting was structured wholly with plane. This approach proved to be the most successful method of retaining illusory depth while justifying space and form.

Third, a balanced emphasis of line and plane approach was tried. The results of this method varied greatly in success. It was found that the similarity of the planes of the subject to the flat canvas was so great that structural line was suppressed or visually rejected as a structural member in a painting. Only in the final painting of the investigation did this approach prove successful.

The conclusions of this study are that the spatial concepts of Cézanne and the Cubists can be combined in a single painting. The varying degrees of success indicate a definite need for further experimentation.
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CHAPTER I

INTRODUCTION AND EXPLANATION

By the end of the fifteenth century the problems of perspective and spatial depth in painting had largely been solved by Western European artists. These two aspects in painting had been well known to the ancient Greeks and Romans, but during the Medieval Period they were, for the most part, lost to Western Art. The re-established primacy of these two aspects continued to be refined, developed, and expanded during the next three centuries.

One significant development occurred during the "Age of Reason." Man, the rational being, could not always depend on nature to appear as man knew it to be. Therefore, the painter was encouraged to depict all that he observed in nature as he rationally knew it to be—not as it appeared.

Adherence to what Helen Gardner calls this "Rational Order" progressively reduced painting to logical portrayals, dependent upon specific, academic principles of illusion and light.

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3 Ibid., p. 438.
Academic painting was challenged in the nineteenth century by a group of painters who were to become known as "Impressionists." These men held that mere illusion of depth created through mathematical perspective and contrived lighting no longer sufficiently expressed all of the spatial qualities in painting. Contrary to the academic rational view, they insisted that nature could, and should be, represented as it appeared to the eye of the artist. The primary vehicle of their theories was the careful observation and reproduction in color of nature immersed in atmosphere and affected by light. Light was to them a profound articulator of space and form in its own right.

The intricate use of brilliant colors produced paintings that gave a shimmering, ephemeral glimpse of the world, and reduced the function of the canvas plane to that of backdrop. Since light rarely penetrates much of the more substantial portions of nature, the paintings increasingly were concerned with a rather superficial view of what does exist in nature. This continued infatuation with light and atmospheric depth prompted Paul Cézanne, an Impressionist adherent, to depart from their methods. He re-established the solidity of form and asserted space as an equal visual, or plastic, entity in painting.

If the Impressionists signified a definitive break with academic painting, then Cézanne produced a radical departure.
A remarkable example of these two approaches may be seen by comparing two paintings, one by Cézanne and the other by the Impressionist, Renoir, of the Mont Ste. Victoire viewed from the same location. Renoir's dreamy, diffused depth is achieved by simulating with color the light-refracting qualities of the atmosphere; hence, the mountain and even the middle ground join in fading into the horizon. Cézanne's work achieves in contrast a sturdy, structural unity using overlapping planes and re-enforcing edge lines. His massing of space and form reflect the flatness of the canvas plane, re-aligning the subject matter with the two-dimensional canvas. Indeed, as Erle Loran says, "... Cézanne's space may be taken as the modern rebirth of the classical ideal of pictoral space, which is three-dimensionality conceived in relation to the two-dimensionality of the picture plane." 

Cézanne's paintings may have expressed "classical pictoral space," but his approach to painting was so alien to this interpretation that classical analysis of his work becomes awkward. For the purpose of this investigation, instead, assume the basic structural elements of a painting to be line and plane.

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4 Erle Loran, Cézanne's Composition (Los Angeles, 1944) p. 100.
5 Ibid., p. 32.
Line, structurally, is meant as any mark used to define shape or to represent a contour of a plane; hence, making up a formal design of a painting. This definition includes its existence in the edges of planes. In the latter case, however, line has no distinct, separate, visible qualities to distinguish it from the plane it defines. Line now is implied rather than directly stated. The structural function remains, but it is subordinated in visual fact, to the mass of the plane it defines. In a more limited sense, line may exhibit basic structural characteristics when its presence in a painting is largely independent of the purpose of defining any specific plane. Usually it forms, instead, an axis along which the edges of any number of planes might be aligned.

Plane is used in this study as an equal structural element to line in envisioning the spatial arrangement of a painting.

These basic elements are given visible concreteness, or pictorial plasticity, by modifying them with color, value, texture and line (the latter having the dual function of structural component and a modifying role in relation to plane). The canvas plane is a spatial entity having two axial characteristics - height and breadth. If altered or modified in any manner, it acquires an indicated third axis of depth.
and volume (usually illusory). Upon or within (illusion) the canvas plane there visually exists an infinite number of potential, subsequent planes that may become concrete, plastic expressions of shape when the canvas is modified. The extent and manner of modification of shape produces the visually filled volume of form. Usually shape may represent either negative (void) or positive (filled) space, while form indicates only positive space. To simplify analysis, assume that negative space is "space" and positive space is "form". The main shapes also contain even smaller potential planes whose arrangement and modification can produce visual depressions or protrusions of space and form.

Cézanne's concern for the importance of these smaller planes, or "modulations", can be seen by the care in which he built them up with layers of color. Individually, they appear as facets of the larger shapes.

Cézanne used line often as a modifier to re-enforce the shape of major planes, and to flatten their overall form. Line began to gain an axial, structural significance only in his later paintings, particularly a group painted of a quarry called Bibemus. Line, in these paintings, is again used as a re-enforcement of the plane edges. Yet, Cézanne has so boldly stated line that it tends to dominate the planes it modifies. In some areas it provides an independent axis along which a number of the planes are aligned.

7 Loran, pp. 60, 62, 70, 114.
The approach to painting structure through line and plane increasingly suggests, in Cézanne's mature work, the interchangeability of the visual nature of space and form. The substance of form might assume the attributes of space and vice versa. These spatial effects of Cézanne's were not lost on a group of artists known as "Cubists."

The Cubists, during their analytical period, sought to pursue the spatial organization developed by Cézanne to a more advanced level. Their efforts, however, sharply departed from Cézanne's technique. First, the Cubists relied primarily upon value for plastic effect rather than upon the brilliant, Impressionist pallette of Cézanne. Second, line was used as a structural element axially to a degree that Cézanne never approached. Line was the space and form disruptor along which the increasingly smaller planes or facets might be aligned. A sculptural view of the subject matter was adopted, not for the purpose of illusory, three-dimensional representation, but to provide additional aspects of the subject that could be arranged in linear fashion on the canvas plane. A spatial paradox was produced in which space and form often reverse roles or become indistinguishable altogether. Carefully using value changes, the Cubists retained the volume of space and form only in detail. The overall patterning effect of the canvas surface, however, increased the dominance of the canvas plane, resulting in what are, to a great extent, two-dimensional paintings.
The Analytical Cubists' efforts were logical extensions of Cézanne's deliberately ordered pictorial space. Yet where Cézanne created substantial masses of space and form without rejecting the existence of illusory depth, the Cubists, by juxtaposing various aspects of the subject in linear fashion, severely limited the substance of form, and to a great extent, the existence of depth. The results of these two approaches are quite different, but the affinity of their spatial methodology appears clear.

The developmental junction of Cézanne and the Cubists, I believe, provides opportunities for the investigation of spatial concepts that may include both approaches in a single painting. A number of experiments which were influenced by these painters convinced me that such a development was possible. The experiments further prompted the following intentions:

1. The spatial structure in the paintings of this investigation would be produced by the elements of line and plane. The above elements would be modified and visually expressed with color, value, texture and line (when the latter is not used structurally as previously mentioned).

2. The paintings would be conceived so that space and form are re-arranged or juxtaposed along
linear axes (after the fashion of the Cubists) without losing Cezanne's substantiality of space, form, or overall illusory depth.

3. A visual undulation of the canvas surface should be possible when a combination of the above concepts of Cezanne and the Cubists are used. The results should provide a working concept in painting, indicating what emphasis should be made (if any) in favor of line or plane.

A series of paintings was then undertaken as a practical investigation. Upon completion, each painting was subjected to analysis using the above intentions as a means of critique.
CHAPTER II

ANALYSES OF SELECTED PAINTINGS

The period of painting covered by this investigation falls generally within the year of 1970. The very earliest experimental efforts have been omitted because they reflect diverse points of view held at that time. Further, to avoid the possibility of repetitious and unnecessarily lengthy discussion, the number of paintings has been limited to those that have direct, significant bearing upon the problem. All of the paintings completed for this study were done in the medium of acrylic polymer on canvas. The analyses begin with the painting that first exhibits a cohesive direction toward the concepts previously mentioned, and are listed in the order of their completion.

Canyonesque I

The purpose of Canyonesque I (Plate I) was to establish a simple composition of receding and protruding planes. The blue and black modifiers began to assume the properties of space, while the siennas and ochres suggested the rudiments of form. Since the darker spaces and would-be forms in the center of the canvas were somewhat scattered, I perceived that the disruption of space and form might be enhanced by the direct addition of line. This produced the
desired disruptive results, but added nothing to the depth of the work which retained only two spatial positions—the canvas surface and the visual plane immediately behind.

Plate 1—Canyonesque I (24" x 36")

By adding yellow and red areas, I had hoped to create forms of visual protrusion, and an intermediate plane to the canvas. This attempt was only partially successful. What was more important was the visual bridge that the red areas created between form and space. This activity becomes especially effective in the upper central portion of the painting. The yellow addition produced protruding visual forms but did little to integrate space and form.
An interpretation of Cézanne's substantial form exists in the lower left quadrant of the painting. The disruptive, linear, Cubist influence is reflected in the upper central portion. These two concepts, along with the rest of the painting, do not wed themselves well as a whole, yet none appear out of place on the same canvas.

Cranes

Cranes (Plate 2) is an example of first using directly applied line. Planes were added to provide re-enforcement of the forms thus derived. So prominent is line in this case that the lighter, brighter colors recede, giving the linear structures a protruding appearance. Where line performs as an edge re-enforcer, the cranes assume the characteristics of both form and space.
The major planes of the painting act mainly as backdrop, and only begin to participate in a form-to-space activity in the lower central portion of the painting.

The two spatial concepts exist in incomplete union, but where they do act together, their qualities work well in relation to the canvas plane.

Canyonesque II

In contrast to the previous painting, Canyonesque II (Plate 3) was structured primarily by planes to determine if the effects of the two concepts could be demonstrated without the direct application of line. As work progressed, however, overlapping planes of varying transparency tended to give a strong visual indication of line.
While not structurally disruptive in character, line is essential in a subordinate role, by holding space and form together in relation to the canvas plane.

The movement of space into form can be clearly seen in the black area of the upper left quadrant. Here, the central black void or space assumes the character of form as it moves toward the upper left corner. This and other minor areas are reminiscent of Cezanne's and the Cubists' spatial qualities. The total painting, however, produces a spatial feeling that is rather independent of those two.

City at Sunset

A balanced emphasis of line and plane was the approach used in City at Sunset (Plate 4). The darker areas and the linear shapes were established prior to the application of color.
When the various spaces and forms were completed, line had lost most of its structural value. It continued to act as a strong re-enforcing modifier, particularly in the upper left and lower right quadrants. Space and form remain flexible, successfully creating visual undulation of the canvas surface for the first time in the investigation.

Canyonesque III

A second attempt (Canyonesque III, Plate 5) was made to establish a balanced plane and line approach. The planes were established, and to a certain extent refined, before introducing directly applied line. The results were unfortunate.
The linear forms neither re-enforced nor disrupted the established planes, and, in fact, did not relate to the planes at all. The lines did relate negatively to the canvas plane alone, giving it the visual appearance of being ruptured or ripped (photograph of this stage is not available). To rectify this situation, all of the painting, with the exception of the top portion of the upper right quadrant, was obliterated. The forms and spaces were established in a manner similar to Canyonesque II, Plate 3. The relationship of the parts to the canvas plane were thus re-established; but the major planes exhibit little tendency to express illusory depth and the painting remains spatially weak.

Basaltic Erosion

The difficulties of relating line and plane experienced in the previous painting forced me to question the balanced approach. Basaltic Erosion (Plate 6), then, is a return to the "plane" structure. The illusory depth achieved is far more successful than in any previous painting. The lighter reddish-brown areas of the center overlap the back planes which in turn produce the effect of forms silhouetted against the atmospheric blue backdrop. Illusory depth is then countered where the blue areas are adjacent and contiguous to the lighter red-brown colors.
Plate 6--Basaltic Erosion (48"x60")

The concept of visual form to space and back again is carried out in a very extensive scale in this painting. As a result the visual undulation is so thorough, that even the canvas edges are in active participation.

Archaeological Puzzle

Archaeological Puzzle was begun about the same time as Canyonesque II (seen in Plate 3). Due to the size and proportions (four feet by eight feet) of Archaeological Puzzle, I did not feel sufficiently experienced in spatial organization.
to continue at that time, beyond blocking in the major shapes. When I returned to this painting (see Plate 7), I found that its initial arrangement would not lend itself well to the application of line. It was completed in a similar manner to that of the preceding painting.

Plate 7--Archaeological Puzzle (48"x96")

Perhaps the most important aspect of this painting is its effect on my concept of linear structure. In later paintings that were proving unsuccessful in their linear considerations, I referred to Archaeological Puzzle as a problem-solving device. Linear construction of the paintings in Plates one and two was a result mainly of intuitive process, applied as the situation seemed to warrant. The conscious application of line thereafter resulted in either a suppression of line as a structural member or a failure to
relate line to a painting at all. Initially in Cranes (Plate 2), line was to be the dominant structural member. It then occurred to me that if the affinity of the two-dimensional nature of planes to the canvas is so great, and if they are considered first, or in balance with line as structural members, then planes will dominate the painting and suppress or exclude line as a structural element. Therefore, if line is to act in a major structural role, it must be given first consideration in planning and allowed to dominate the plane considerations. The degree of dominance depends upon the size of the canvas, its proportions, and probably the nature of the subject matter.

Marienberg Festung

The procedures suggested in the preceding discussion were tested in Marienberg Festung (Plate 8). To a certain extent, I relied on the Cubist method of viewing the subject matter (a large, fortified castle in Germany) sculpturally in order to relate various linear axes. As planes of color were added, it became apparent that the linear considerations were not sufficiently emphasized to assert line as a dominant structural force. Yet line is not greatly suppressed or totally rejected by the planes.
At first glance, the massive treatment of the major planes in this painting strongly reflect Cezanne's influence upon the solidity of form and retention of illusory depth. The arrangement of the forms in relation to space, however, are based upon the Cubist method of juxtaposing. The patterning effect of the Cubists' paintings is not strongly evident because their linearly arranged facets of space and form have been greatly reduced in favor of larger, more substantial planes.
CHAPTER III

CONCLUSIONS

The process of developing a painting approach using the spatial concepts of Cézanne and the Analytical Cubists in a single painting is continuing. This investigation is sufficiently advanced, however, to make some concluding remarks on the intentions as stated in Chapter I, and upon the direction of my efforts in general.

1. The spatial structure in the paintings of this investigation would be produced by the elements of line and plane. The above elements would be modified and visually expressed with color, value, texture and line (when the latter is not used structurally as previously mentioned).

The paintings reproduced in Plates 3, 6 and 7, indicate perhaps most clearly that the spatial structure of a painting may not only be defined in terms of plane, but that this approach provides a useful working tool in planning the organization of a painting.

Line, in this investigation, fulfilled the general definition given it in Chapter I. However, it only partially achieved the bold, Cubist structure that I had anticipated. Plates 1, 2 and 8 exhibit varying successful linear relationships.
The difficulty in integrating line and plane in a painting lies with the similar flat characteristics of the subsequent planes and the two-dimensional canvas surface. The procedures discussed in Archaeological Puzzle (Plate 7), and tested in Marienberg Festung (Plate 8) appear to promise a better approach to this problem.

With the exception of line; the elements of color, value and texture, were used throughout the investigation as the modifiers that express visually the nature of the basic structural organizations. The somewhat narrow approach to these modifiers created no significant problems during the course of the paintings.

2. The painting would be conceived so that space and form are re-arranged or juxtaposed along linear axes (after the fashion of the Cubists) without losing Cézanne's substantiality of space, form, or overall illusory depth.

Linear organization is most clearly depicted in Plates 2, 4, and 8. The general direction in applying line and arranging planes along linear axes is most successfully indicated in the painting Marienberg Festung (Plate 8). All of the paintings of this study contain some degree of space and form juxtaposing. However, this visual rendering is best exhibited in Plates 3, 4, 6, 7 and 8. With the exception of Canyonesque III (Plate 5) all of the paintings express definite illusory depth. I can only conclude that this intention is substantially correct although the painting results vary.
3. A visual undulation of the canvas surface should be possible when a combination of the above concepts of Cézanne and the Cubists are used. The results should provide a working concept in painting, indicating what emphasis should be made (if any) in favor of line or plane.

A series of paintings were then undertaken as a practical investigation. Upon completion, each painting was subjected to analysis using the above intentions as a means of critique. The visual undulation of the canvas plane is best demonstrated in City at Sunset (Plate 4). Spatial depth, however, is limited due to the restricted number of colors and values used. Undulation is also exhibited when the canvas edge is actively involved as part of the composition (see Basaltic Erosion, Plate 6). Specific conceptual formulae for painting usually stifles spontaneity and limits an artist's range in painting. However, in combining Cézanne's and the Cubists' approach in one painting, a general working conceptual hypothesis can be made. Line, therefore, in all circumstances, must be emphasized over plane if it is to be expressed as a definite structural component of a painting. The amount of this emphasis appears to be related to the proportion and size of the canvas. Hence, the smaller and the more equal sided canvases require less emphasis of line.
The majority of the paintings completed for this investigation often bear little resemblance to the works of either Cézanne or the Analytical Cubists. This was expected, for had my efforts copied the works of these masters, the entire undertaking would have resulted in a patchwork of styles. Rather, I have sought to use Cézanne's and the Cubists' remarkable spatial findings as a strong foundation upon which to extend and develop an individual approach to qualities of space and form on a two-dimensional surface.

Had all of the points of the intentions been completely affirmed by this investigation, the direction of my painting in this vein would have undoubtedly reached a conceptual dead end. Much experimentation remains to be done in integrating the concepts of Cézanne and the Cubists. On the other hand, nothing produced by my efforts invalidates the idea that these two spatial concepts, as expressed with line and plane, can be used in a single painting. Finally, the difficulties that arose during the course of my investigations indicate a healthy trend toward developing a singular painting style.
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