

1980

# A developmental approach to spatial rendition

Leslie Sojka  
*Yale University*

Follow this and additional works at: <http://elischolar.library.yale.edu/ymtdl>

---

## Recommended Citation

Sojka, Leslie, "A developmental approach to spatial rendition" (1980). *Yale Medicine Thesis Digital Library*. 3184.  
<http://elischolar.library.yale.edu/ymtdl/3184>

This Open Access Thesis is brought to you for free and open access by the School of Medicine at EliScholar – A Digital Platform for Scholarly Publishing at Yale. It has been accepted for inclusion in Yale Medicine Thesis Digital Library by an authorized administrator of EliScholar – A Digital Platform for Scholarly Publishing at Yale. For more information, please contact [elischolar@yale.edu](mailto:elischolar@yale.edu).

T113  
Y12  
4016

YALE MEDICAL LIBRARY



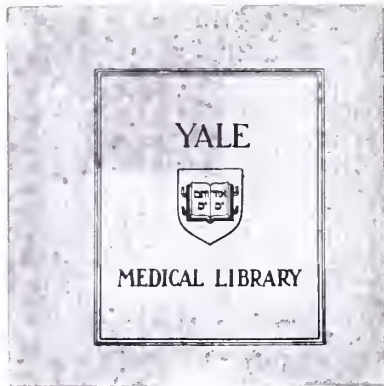
3 9002 08627 8661


# A DEVELOPMENTAL APPROACH TO SPATIAL RENDITION



LESLIE SOJKA

1980





Digitized by the Internet Archive  
in 2017 with funding from  
The National Endowment for the Humanities and the Arcadia Fund







A Developmental Approach to Spatial Rendition

Leslie Sojka

A Thesis Submitted to the Yale University School of  
Medicine in Partial Fulfillment of the Requirement for  
the degree of Doctor of Medicine - 1980.





I wish to thank Professor Sidney Blatt, without whose advice and encouragement this paper would not have been possible.



The author wishes to establish, at the outset, that he is by no means an expert in either developmental psychology or the discipline of art history.

Piaget's schema of cognitive development have been well outlined by Howard Gardener.<sup>1</sup> These divide the child's cognitive development into essentially three stages: sensory, concrete, and formal, based on the operational capacity of the child. The child develops through successive stages in a fixed sequence without either bypassing or regressing; his capacity to solve problems at each stage is the result of the interplay between his internal 'program' and his actions on his environment; however, only certain actions (or 'experiments') are possible at each stage.

One of the central statements of Piaget's theory is that at each stage, the child sees reality in a certain way. That is, there is no a priori 'truth' of which the child glimpses more and more pieces, but rather his notion of reality changes fundamentally as he passes through successive stages of cognitive development, assimilating what he sees into his existing schema at each stage while simultaneously accommodating those schema to meet the demands of his experiences in a way that is governed both by the stimuli he encounters and by the increasingly complex cognitive schema that he develops. "It is only by being acted upon in a mental operation that perceptual data become objects of knowledge. Actions transform reality rather than simply discovering its existence."<sup>2</sup>

Gablik adds further, "Different developmental levels correspond to different ways of seeing and thinking about the world, and each level, or stage, in cognitive development is characterized by a number of related skills and capacities to manipulate, describe, and make inferences about the world."<sup>3</sup> Pre-programmed, sequential cognitive development governs understanding of the universe: this is the essence of genetic epistemology.

Of course, it remains to be proven whether this inborn



developmental scheme (which is actualized by performing actions on the environment and assessing them, the nature of the actions being determined by the child's developmental stage as opposed to random chance) is applicable to the realm of culture and society. More specifically for this paper, it remains to be seen whether such a scheme is applicable to the history of art, and to treatment of space in particular.

A somewhat closer look at Piaget's analysis of the child's conception of space is now in order. Piaget divides the growth of the child's spatial awareness into three successive states: topological, projective, and geometric. The last of these is what we normally think of as 'seeing' but Piaget's experiments indicate that rather than there being a straightforward, 'intuitive' way of seeing, young children in fact see differently. "...topological space is purely internal to the particular figure whose intrinsic properties it expresses... it has none of the features possessed by a space capable of embracing all possible figures...able to co-ordinate all figures within a whole, organized in terms of a common spatial structure throughout."<sup>4</sup> However, topological space does eventually lead to continuity, although it is arrived at fairly late. Continuity is initially applied only to objects; it is not applied to empty space until reference frames are established.

Projective space introduces the concept of viewpoint, conserving angles and relative positions in relation to that viewpoint. Euclidean, or coordinate space, introduces the conservation of distances and dimensions.

Piaget believes that sensori-motor activity initially produces spatial relationships which are eventually indicated by sensory signifiers. Thus, "...spatial concepts are internalized actions and not merely mental images of external things or events...To arrange objects mentally is not merely to imagine a series of things already set in order, nor even to imagine arranging them. It means arranging the series, just as positively and actively as if the action were physical



but performing the action internally on symbolic objects."<sup>5</sup>

Piaget believes, then, that there is no such phenomenon as a simple, unchanging image. "...from the initial appearance of thought right up to its ultimate, purely abstract form, the functional connections between the image (as 'signifier') and the relationships which it 'signifies' (the internalized actions) undergo continuous transformation."<sup>6</sup>

Images originate at the sensori-motor level as a delayed imitation of the object that has been internalized. The image is not a tool for understanding the object, but a byproduct of that understanding. Thus, "...though the image plays an essential part as a symbol it is not the image which constitutes the conceptual relationships...It is thus completely wrong to attempt to reduce spatial intuition to a system of images, since the things 'intuited' are, in the last analysis, actions which the image can symbolize but never replace."<sup>7</sup>

This symbolic image "plays an increasingly subordinate role as the active component of thought becomes better organized..."<sup>8</sup>

The idea that images exist solely as a byproduct rather than possessing uses and meanings of their own is one that many artists would find hard to accept. Part of this difficulty, however, doubtless stems from the fact that in his analysis Piaget is dealing with a relatively restricted notion of images.

Suzi Gablik has applied Piaget's idea of genetic epistemology to the development of spatial rendition in works of art. Her idea is that art has developed successive representations of space that correspond to Piaget's stages, and she divides art history into three 'megaperiods.'

The first of these corresponds with the topological stage of spatial conception in the child. More generally, it coincides with the pre-operational stage, and she associates this with ancient and medieval art. The picture field lacks depth, and does not conserve size and distance.

The second period corresponds with the projective/Euclidean stages of Piaget's schema of the child's conception of space. In larger terms, it relates to the 'concrete operational'





stage in Piaget's schema of cognitive structure, and Gablik associates the attainment of this stage with the Renaissance. Representation now arranges all figures in a coordinate space.

The third period corresponds with formal operations. In its purest form, it does away with space altogether, and substitutes logical, abstract operations in place of figurative art. This corresponds with modern, twentieth century abstract art. According to Gablik, such abstract, increasingly complex manipulations represent the ultimate stage of development.<sup>9</sup>

Furthermore, a key feature of this development is the increasing separation between inner and outer world, between subject and object, also referred to as 'decentration.'<sup>10</sup>

Gablik seeks to apply to the history of artistic development "...Piaget's concept of cognitive development as a hierarchical organization of abilities which achieves higher and more complex levels of functioning over time."<sup>11</sup>

"The emergence of more complex perceptual and logical schemata lead to mental organizations increasingly dominated by scientific, rationalistic, and conceptual modes of thinking, in contrast to the more mystic mentalities of earlier periods."<sup>12</sup>

Gablik's thesis concerning the applicability of Piaget's developmental schema to the history of culture in general and art in particular (I will concern myself only with the latter) must meet two broad criteria. First, does it contradict data that we have or can obtain and second, what is its utility: does it explain more than current theories of art history, and/or is it more parsimonious than current theories? In short, does it seem valid and is it superior?

Validity Gablik's theory makes certain explicit assumptions, one of which is sequence. Mysticism is succeeded by rationalism, topological/primitive art is succeeded by Renaissance/Euclidean art which is in turn followed by abstract art in which space is once more dissolved. Of course, since each stage depends upon the interplay of external and internal factors, developmental failure can occur: "...the peculiarities of a certain cultural milieu might prevent a particular stage from appearing."<sup>13</sup> In this case, development



simply halts. In Piaget's model, recidivism does not occur. Similarly, it is impossible to skip a stage; organization is cumulative, and what sometimes appears to be an abrupt Gestalt switch is simply the final leap, long-prepared, from one stage to the next.

One of the central events in Gablik's chronology is obviously the Renaissance development of a unified perspective which treats all parts of the picture field in a logical and coherent way. Erwin Panofsky defines perspective as "...not merely a foreshortening of single objects,...but the entire picture...is transformed into a window as it were, through which we look into the space beyond...a 'picture plane,' on which is projected the whole of that space seen beyond it and containing within itself all separate objects."<sup>14</sup>

The ancient Greeks, Gablik suggests, experienced just such a failure to develop in the realm of perspective. Yet there is evidence to suggest that certain Greek artists came very close to fulfilling Panofsky's criteria. "The painters' interest was already transferred to visible objects, but by organising the presentation of these objects into a single scene - a portion of the natural world set in space as if looked at through a window, as observed, indeed, on the stage of a theater - fifth century B.C. Athens introduced the spectator."<sup>15</sup> The problem, of course, is that none of these paintings, done chiefly for the theater, survives. Vitruvius refers to it, but appears to define spherical perspective - which the Greeks favored because they realized that only by curving a line appropriately could the human eye see it as straight (the curved stylobates of the Parthenon are an excellent example of this.)

However, even stronger evidence exists.

H.G. Beyen discovered that some mural paintings in Pompeii, Rome, and Boscoreale showed a construction with a point that functionally corresponded with the vanishing point of central perspective...The lower parts of these paintings do not, however, show the same regard for central convergence and are more haphazard in their perspective treatment...this may be because the artists



who drew these pictures were not original masters, but copied more or less accurately pictures they had seen on the stage. As on the raised platform the lower part of such a construction was missing, they therefore had to fill in this deficiency from their own resources and made use of the more common parallel perspective. <sup>16</sup>

Thus, a perspective system which quite possibly incorporated the construction of a vanishing point was established by the Greeks. The real issue is, why didn't this 'more advanced' method of representation catch on? Why was it instead succeeded by an art form which rejected spatial depth? G. R. Levy writes, "The revolt of Byzantium against Hellenistic naturalism from which all spiritual conviction had long departed, involved a rejection also of spatial relations."<sup>17</sup> Why did spatial representation, according to one way of looking at it, achieve a high-water mark from which it receded for nearly two millennia? To explain this by stating as Gagliardi does that the cultural inadequacies of the age prevented maturation to the next stage implies a straightforward maturational arrest, which is not what took place. In the simplest view, the Greek window regressed to the Byzantine flat plane before becoming the window anew in the Renaissance.<sup>18</sup>

Levy's comment about the Byzantine reaction against Hellenistic naturalism raises the question of socio-cultural (as opposed to developmental) determinants of art, a difficult question which will be examined subsequently. Meanwhile, a few more historical objections to sequence come to mind.

When Ghiberti was working on the bronze door-panels for the Gates of Paradise in the Baptistery in Florence in the 1430's, he was clearly introduced to Alberti's treatise on perspective, Della pittura, the first definitive exposition of what we now commonly think of as perspective. Brunelleschi, Masaccio, and others had already been executing works based on similar principles. Ghiberti clearly absorbed what he read; in one of his panels, Isaac, he elaborates a 'correct' space, with only moderate deviations. Yet subsequently he reverted to a more 'topological' approach where it served his artistic purpose: "...he slipped out of Alberti's perspective



system as suddenly as he had slipped into it."<sup>19</sup> Of course, it could be argued (as Krautheimer indeed suggests) that Ghiberti's understanding of the theory was incomplete and insufficient - and that rather than 'integrating' it into his schema, he merely carried it out by rote and then discarded it. Yet this is to miss the point, for Ghiberti clearly understood the key notion of orthogonals converging to a vanishing point in the Isaac (as well as the subsequent panel, Joseph), but in later panels (i.e., David and Joshua) he chose to forbear from the perspective approach in favor of a more topological method.

J.M. Turner (1775-1851) painted impressionist works of pure color and atmosphere many years before Impressionism, and art history is filled with examples of anticipation. Nor was the domination of perspective following the Renaissance as straightforward as we imagine. Arnold Hauser points out how, in a Mannerist work like Pontormo's Joseph in Egypt, space "...ceases to form a coherent system and becomes a mere sum total of spatial coefficients."<sup>20</sup>

W.M. Ivins, Jr., in contrasting Viator's and Alberti's methods of perspective, examines Albrecht Durer's work, and concludes that Durer misunderstood and confused the two systems in such a way as to produce the interiors characteristic of his work, as well as accounting for the errors in Durer's own treatise on perspective. What is intriguing is the fact that Durer is so evidently dealing with perspective on the level of an abstract, formal operation - a particular method for manipulating objects in space, which he has gotten rather muddled.<sup>21</sup>

Furthermore, is it justifiable to label Euclidean perspective the 'correct' one which earlier ages strove to attain but which only the Renaissance was mature enough to embrace and perfect? Panofsky has suggested that Greek spherical perspective was more 'natural,' physiologically speaking, given the nature of the retina, than was straight-line (or artificial) perspective. Straight-line perspective, he points out, offered a practically useful method for constructing





the flat surface of a picture, "since it is well known that the surface of a sphere cannot be unrolled on a plane."<sup>22</sup>

As far as decentration is concerned, Panofsky's view of the Renaissance is provocative. He feels that the emergence of Euclidean, vanishing-point perspective both increased and decreased the separation between subject and object. "...the history of perspective may be understood with equal right as a triumph of the feeling for reality, making for distance and objectivity, and as a triumph of the human struggle for power, denying distance..."<sup>23</sup>

One final point, which pertains only to Gablik's particular developmental model, is that her vision of the future of art admits only increasingly complex abstraction. "Propelled by a tireless survey of possibilities, the contemporary artist rotates each syntactic permutation before the mind with the great calm of computation."<sup>24</sup> In such a future, freed from mimetic slavery, a return to figurative art is interdicted. While it is, perhaps, too early to decide whether this will indeed prove the case, it is clear that representational art has neither vanished nor degenerated exclusively into the province of the purveyors of mass culture. There are signs that representational art may be renewing itself, perhaps incorporating the ideas of abstract art in the process.

Utility What does the developmental approach of Gablik and others add to art history? To begin with, this theory asserts that rather than seeing 'truth' and stylizing it in accordance with local (temporal as well as geographical) convention, what the artist sees is in fact determined by internal processes (operations) that govern perception. An elementary but important example of this is that the child paints what he sees in accordance with his stage of development, regardless of whether or not the model is before him. To put it aphoristically, eyesight is not insight; perception is a relative thing, influenced by the individual's cognitive stage and milieu.<sup>25</sup>



Secondly, the theory claims "...that developmental principles which are characteristic of growth in the child are common to the history of art..." and are characteristic of cultural development as a whole.<sup>26</sup> There is little doubt that knowledge and cultural history are cumulative in the long run, and that ideas from earlier periods are integrated into subsequent developments. However, the key point of genetic epistemology is that it emphasizes an internally programmed plan of development which is directed and which at any time permits certain possibilities and prohibits others.

Clearly, this scheme of art history differs enormously from Gombrich's notion of a progressive match between artistic representation and its real-life counterpart ('making and matching') which cannot readily explain the rise of modern art with its abstract, non-mimetic quality. It also differs from Wölfflin's theory of art as a self-contained entity which oscillates between freer and more disciplined expressions of form.<sup>27,28</sup> It shares with Riegl's theory the supposition of an underlying driving force in art, but rather than invoking a general 'kunstwollen,' the Piagetian approach views this force as preordained cognitive development. Above all, however, it differs from John Ruskin's formulation that seeing differs from knowing, and that only with the Impressionists did artists learn to forget what they knew and instead paint solely what they saw.<sup>29</sup>

The theory Gablik advances is a replacement for Riegl's will to form, based on seeing. It is a blueprint of visual - cognitive development; artists see differently over time. This is the explanation for changes of style and for the discovery of new styles, questions that every theory of art history must try to explain. How different from Gombrich's notion of experiments artists make, testing the results against 'reality.' Both the advantage and disadvantage of the developmental viewpoint lie in its simplicity. Progressive stylistic and representational changes are now explained on the



basis of development, but when scrutiny becomes more detailed, as with the cases cited earlier, the developmental model is no longer as helpful.

The only acceptable alternative is, alas, extremely cumbersome. It entails an examination of the cultural 'paradigm' at each stage in art history. Even this is not altogether adequate, however, and inevitably artists and artistic creations will crop up which seem out of step with their time. Such a method must take into account the cumulative aspect of culture and that, as the developmentalists have so astutely pointed out, prior history is not merely recorded, it is continuously re-integrated into the discoveries and attitudes of the present, thereby molding its outlook.

This cultural historical approach is precisely what Gablik alludes to when she invokes the spirit of an age. "A paradigm is a unifying ground of presuppositions that influences and makes possible certain ideas and practices and provides model problems and solutions to the scientific community...In any epoch, man sees the world in terms of a particular paradigm, which serves as an unconscious conceptual framework by which many different facets of the universe can be and are meaningfully related to each other."<sup>30</sup>

The advantage of a developmental approach is that it pigeonholes the paradigm into a convenient developmental stage. Yet we have seen that one example which Gablik adduces, the development of perspective, is not so readily categorizable as might first appear, and so it is only by stepping back and taking a broader view that the directionality is revealed. The practical utility of a developmental theory for the art historian is not overwhelming.

Gablik argues that every alternative theory bogs down in the sticky area of explaining stylistic development, either by claiming a sudden Gestalt switch to a new style, or deferring to a mysterious driving force, or else arguing that art continuously tests new ideas against some sturdy 'reality.' The alternative of socio-cultural forces outside of art influencing its direction in very complex ways without energizing



an underlying developmental program is one that she brushes aside. In this connection, she underestimates the importance of Gombrich's point that previous paintings exert an enormous influence on the styles and techniques of subsequent works.

What is involved is a fine distinction. To discriminate between a developmental theory which features growth, increasing complexity and organization, and re-integration at every stage on the one hand, versus a more clumsy socio-politico-cultural-philosophical approach, also cumulative and also evincing continuous re-integration, on the other, may seem like long-winded hairsplitting. In the simplest sense, it boils down to a more internal deterministic outlook versus a more external/deterministic one. Where the developmentalists have made their great contributions are, first, in laying to rest the notion that 'eyesight is insight,' and second, in stressing the evolutionary, re-integrative nature of culture.

Thus, the developmental schema is handier while the historical one is more accurate, provided it incorporates the above-mentioned ideas of the developmentalists. It might be helpful at this juncture to re-examine the history of spatial rendition from the viewpoint of a cultural historian such as Arnold Hauser, whose judgements are scarcely infallible but who exemplifies an historian seeking to unravel the 'paradigm' of successive ages and demonstrate its effect on art.

His approach appears dogmatic at times; he presupposes the relation between art and culture to be an entirely one-way street: "A change of style can be conditioned only from outside - it does not become due for purely internal reasons."<sup>31</sup> He also underrates the importance of re-integrating previous art into subsequent creations, the internalized forces of which Gombrich and Gablik are more keenly aware. He also overvalues economic forces, but not as severely as the title of his work might suggest.

In 5th century B.C. Athens, whose notions of perspective have earlier been discussed, Hauser begins by distinguishing between the abstract tendencies of conservatism and the naturalistic propensity of progressive politics.<sup>32</sup> Although the





sway of the latter increases, the former never ceases to play an important part, thus producing the blend of classical art. "As the fifth century draws to a close, the naturalistic, individualistic, and emotional elements in its art grow...In literature the epoch of biography begins, in visual art the era of portraiture. The style of tragedy approaches that of everyday conversation...In visual art volume and perspective are emphasized and there is a preference for three-quarter views, foreshortenings, and intersections...The corresponding change in philosophy is the Sophistic movement, rooted in the same urban conditions of life which gave rise to naturalism in art...The new bourgeois values...are founded upon knowledge, logical thinking, trained intellect, and facility of speech."<sup>33</sup>

"...the Sophists became aware that every truth, every norm, and every standard has a perspective element and alters as the viewpoint alters...the very last traces of frontality now disappear."<sup>34</sup>

What is intriguing about Hauser's approach is that he allows history to repeat itself, albeit with variations. "The painting of realistic, world-affirming cultures places the figures, to start with, in a coherent spatial context, then gradually makes them the substratum of the space, and, finally, dissolves them in space entirely. That is the path leading through the art of the fourth century B.C. to Hellenism, and from the Baroque to naturalism and impressionism."<sup>35</sup> Here Hauser, like Wölfflin, points out the recurrence of a certain pattern, but he does not become obsessed with it as an historical archetype.

Nonetheless, Hauser's root belief here (and elsewhere) is that certain sets of socio-cultural conditions are prone to generate characteristic forms of spatial representation. Analogous forms may resurface at a later date if similiar generative conditions recur. This (somewhat simplistic) notion is directly opposed to Gablik's statement that within a developmental system, "...changes are not cyclical - they are cumulative and irreversible."<sup>36</sup>

In discussing the change in spatial rendition that took



place during the Renaissance, Hauser emphasizes its evolutionary character: "...although late medieval art still forms its illusion of space somewhat inaccurately and inconsistently, compared with the Renaissance grasp of perspective, the new feeling for reality which inspires the middle class is already manifest in this new method of representation."<sup>37</sup>

Hauser claims the artist of the late Middle Ages was the first to represent "...space in our sense [sic] an achievement beyond the powers of classical antiquity and the early Middle Ages..."<sup>38</sup> In contrast to Gablik, he accepts quite a wide 'spread' for the Renaissance.

While Hauser's approach does shed light on Wölfflin's statement that not everything is possible in every era, the key problem with his reading is that it ultimately appears insufficient. No amount of historical knowledge mustered seems adequate to the task. As Gablik puts it, "The historian, using purely historical means, will never discover the proper nature of the historical."<sup>39</sup> Gablik's theory soothes such disquiet by supplying the process of development as the missing ingredient.

Yet Gablik, moreso than Hauser, runs afoul of Wölfflin's criticism: "...the so-called 'kultur-historisch' introductions in textbooks contain a good deal that is ridiculous, summarising long periods of time under concepts of a very general kind which in turn are made to account for the conditions of public and private, intellectual and spiritual life. They present us with a pale image of the whole, and leave us at a loss to find the threads which are supposed to join these general facts to the style in question."<sup>40</sup>

A broader analysis of the developmental model would determine whether the evolution of Euclidean space during the Renaissance parallels the progression of other aspects of art to a concrete operational stage, or more broadly still, whether all aspects of a society's culture must make the transition more or less simultaneously. One could then



speculate that the failure of early Greek perspective to widely revolutionize spatial representation is simply a case where certain aspects of the culture were too far in advance of the rest.

Thus, the criticism of Cablik's theory - that it is too broad to furnish an adequate tool for the art historian - applies to the more complex approach of Hauser as well. His sententious characterization of the Renaissance as "...the particular form in which the Italian national spirit emancipates itself from universal European culture," points out the direction that analysis must take but raises more questions than it answers.<sup>41</sup> In order to explain, in addition to describe, the art historians of the future will face the difficult task of amassing an even more detailed knowledge of cultural history than they have hitherto acquired.



NOTES

1. Howard Gardener, The Quest for Mind (NY: Vintage Books)
2. Suzi Gablik, Progress in Art (London: Thames and Hudson, 1976) p. 27.
3. Ibid., p. 12.
4. Jean Piaget and Bärbel Inhelder, The Child's Conception of Space (London: Routledge and Kegan Paul, 1956) p. 153.
5. Ibid., p. 454.
6. Ibid., p. 455.
7. Ibid., p. 455.
8. Ibid., p. 456.
9. Gablik, op. cit., pp. 42-43.
10. Ibid., p. 40.
11. Ibid., p. 32.
12. Ibid., p. 12.
13. Ibid., p. 44.
14. Erwin Panofsky, "Perspective as Symbolic Form," unofficial translation from Vortrage der Bibliothek Warburg 1924-1925 (New York: Columbia University) p. 1.
15. G.R. Levy, "The Greek Discovery of Perspective: Its Influence on Renaissance and Modern Art" Journal of the Royal Institute of British Architects Jan. 1943 p. 52.
16. B.A.R. Carter, "Perspective" Oxford Companion to Art ed. Harold Osborne, pp. 840-861 (London: Oxford University Press, 1970) p. 855.
17. G.R. Levy, op. cit., pp. 53-54.
18. Panofsky, op. cit. pp. 9-11.
19. Richard Krautheimer, Lorenzo Ghiberti (Princeton: Princeton University Press, 1970) p. 253.
20. Arnold Hauser, The Social History of Art (New York: Vintage Books) Vol. II p. 135.
21. William M. Ivins, Jr. On the Rationalization of Sight (New York: Da Capo Press, 1973)
22. Panofsky, op. cit., p. 4.
23. Ibid., p. 16.
24. Gablik, op. cit., p. 90.
25. Ibid., p. 30.
26. Ibid., p. 33.
27. Hauser, op. cit., Vol. II, p. 175.





28. Heinrich Wölfflin, Renaissance and Baroque (Ithaca, N.Y.: Cornell University Press, 1968) First German edition 1888. The first section deals with the five pairs of qualities Wölfflin chooses to distinguish between Renaissance and Baroque styles.
29. E.H. Gombrich, Art and Illusion (New York: Pantheon Books, 1960) pp. 296-297.
30. Gablik, op. cit., p. 158.
31. Hauser, op. cit., Vol. II p. 179.
32. Ibid., Vol. I p. 84.
33. Ibid., Vol. I p. 91.
34. Ibid., Vol. I p. 93.
35. Ibid., Vol. II p. 135.
36. Gablik, op. cit., p. 148.
37. Hauser, op. cit., Vol. I p. 265.
38. Ibid., Vol. I p. 265.
39. Gablik, op. cit., p. 150.
40. Wölfflin, op. cit., p. 76.
41. Hauser, op. cit., Vol. II p. 9.



Continuing with a spatial approach to art, it will now be useful to discuss some actual works, and I will now discuss three works of Dutch 17th century art, specifically paintings by Rembrandt dating from his early, middle, and late periods.\* For the sake of convenience, it may prove helpful to divide spatial construction into two broad categories; linear and non-linear (or painterly) based on technique. Obviously, the approach of perspective is primarily based on line: parallels converge as they recede, more distant objects are proportionally smaller, and objects seen obliquely are foreshortened.

In the non-linear, or painterly, category are the basic notions of light, color, and tone. For example, an Egyptian tomb painting seems flat in comparison with Velasquez' portrait of Juan de Pareja owing to the later artist's use of light, color, and tone. While such techniques appear indispensable in representing objects, they are also vital in creating space. However, they are far more difficult to quantify than are foreshortening and perspective. Both categories will be evaluated in the discussion that follows with regard to evolution and development.

In contrast to Flanders in the south, Holland in the 17th century was the epitome of bourgeois culture. This appeared as much in art as in commerce. "The new middle class naturalism is a style which attempts not only to make spiritual things visible, but all visible things a spiritual experience."<sup>1</sup> But naturalism, however spiritualized, was not the only artistic current of the time. "The unpretentious naturalistic and the classical-humanistic taste are in a state of tension throughout the golden age of Dutch painting."<sup>2</sup> We will now turn to some works that well illustrate the development of spatial rendition in Rembrandt's art.

Rembrandt Harmenszoon van Rijn (1606-1669)

In a recently discovered (1976) early work, The Baptism of the Eunuch (painted in 1628), Rembrandt uses a number of techniques to arrange the space and depict it convincingly. To begin with, he has set the composition on a rising ground, which slopes upwards and toward the left. This serves much



the same purpose as locating the vanishing point somewhat to the left - the eye is drawn along the diagonal from right to left.

By placing the horses and carriage in the middle ground, the artist has essentially walled off the composition, exactly as though he were working with an interior scene. Although the landscape peers through on either side, by treating the sky as an inactive monochrome, something that never occurs in Rembrandt's mature landscapes, he has focused attention back onto the scene of the baptism.

Next, Rembrandt has grouped the figures into several broad diagonals. These diagonals, it is important to point out, are not the perfectly straight lines of Renaissance architecture, but they are just as important in tying together the composition. The first diagonal, in the foreground, consists of (from left to right) the dog, the eunuch's right knee and body, followed by the squatting Moorish servant. Behind these figures runs a second diagonal, parallel to the first, formed by the apostle Philip, the standing man with the bible, and from thence in a gently descending curve (parallelling the first diagonal again) the two horses' heads.

It is interesting to note that the opened bible, which receives a strong light accent, actually lies between these two diagonals and serves to anchor the composition by tying them together.

Perpendicular to these diagonals exists another set of lines. The first of these arises simply from the figure of the eunuch with the apostle behind him; the second diagonal is formed by the squatting servant, bible, bible-bearer, and the two men on the carriage behind him. This line then curves up to the tree in the upper left-hand corner, which anchors the diagonal. A final diagonal, diverging slightly from the two first mentioned, is formed simply by the line of horses, riders, and chariot, ending in the almost silhouetted form of the carriage.

These intersecting diagonals strongly suggest a three



point perspective, and the diamond-shaped tetrad of figures in the foreground enhances this. By using this arrangement, Rembrandt has given his composition a considerable sense of tension and energy, held in check by the anchoring diagonals.

None of the figures are portrayed frontally; they are all oblique to one side or another, and besides heightening the diagonal tension, their foreshortened pose increases the sense of depth. The outstretched arm of the apostle and the large bible similarly map out and amplify the local sense of space. In these early works, Rembrandt is not yet striving for the quiet monumentality that he turns to in the years following *The Night Watch* (painted in 1642), when he becomes more interested in frontality.

Turning to non-linear techniques, especially light and tone, *The Baptism* is again revealed as an early work. The light source is on the right and in front of the figures, enhancing the effect of the diagonal construction from right foreground into left background. The brightest color is reserved for the figure of the eunuch, but the tone and color of the apostle's head are equally emphatic, setting it off from the surrounding penumbra. Like the diagonal construction, gestures and facial expressions of the other figures, this serves to focus the spectator's attention on the event taking place.

However, the light and shadow of the various figures are not entirely consistent. The Moorish figures have the left sides of their faces in almost total darkness while Philip and the three background figures are less strongly shadowed. Furthermore, the chiaroscuro, while dramatic, is still somewhat clumsy and heavy-handed, and Rembrandt makes far less use of half tones in this early work than he will subsequently. The darkened boundaries of the figures and the darkness to the left all serve to increase the sense of space as well as heighten the dramatic effect. Without it, the figures would appear uncomfortably compressed.





We come next to a work of Rembrandt's middle years, The Night Watch (painted in 1642), which is considered by many to mark the end of Rembrandt's first period. Rembrandt's construction of space has grown far more complex, for whereas in the earlier work, each plane was clearly and simply defined, The Night Watch, at first glance, appears to present a bewildering array of planes and figures. Yet this is precisely what Rembrandt was attempting to do: portray a large group of people in an interesting and dramatic way. The sense of movement present in the earlier work is here raised to its highest pitch. On closer inspection, however, every figure can be shown to have a clear, exact position within a highly articulated space. Thus movement, though tinged with a semblance of chaos, is underlain by order.

How does Rembrandt succeed in conveying so much fuller a sense of space in this work than in The Baptism of 1628? To begin with, he once again employs a firm diagonal construction, but subtler and more intricate. Obvious elements are the flag (ensign) and the long pikes which connect the work horizontally. One gradually becomes aware that scarcely a single work is presented frontally. Instead, they are sharply foreshortened - thus, the foreshortened treatment of figures that exists in The Baptism is here employed for objects, in a more vigorous manner. The ensign, the red militiaman's musket and Banning Cocq's (foreground, in black with red sash) cane are all foreshortened, marking out space and also forming parallel diagonals. Lieutenant van Ruytenburch (foreground, in yellow) is holding a foreshortened spontoon in his left hand which is echoed by the shouldered musket to the right borne by Sergeant Kemp (arm outstretched).

Again, Ruytenburch's spontoon is linked to the musket above and behind it, which is on a contrasting diagonal, as is the long pike above that. As in the earlier work, the host of carefully placed diagonals not only defines space, it unites the far-flung elements of a large composition, anchoring the sides to the center and knitting the whole



together.

Gestures have also been carefully arranged by the artist. The lieutenant's right arm, resting on his hip, suggests the space behind his captain. The outstretched arm of the sergeant on the right ties this side to the group in the middle, while the outstretched arms of Banning Cocq, the militiaman in red, the ensign-bearer, and the musket-laden soldier directly behind the lieutenant all add both to the drama and the sensation of space. The soldier behind and to the left of the captain juts out his shadowed leg forward and diagonally as he discharges his musket, with similiar effect. Even the dog and running child enhance the foreground space.

Rembrandt has also made use of the floor and the placing of feet to convey location - in this respect, the later work actually follows Alberti's guidelines a little more closely than does the earlier one. The floor plan gives us some sense of orthogonals converging, as does the entablature in the upper portion of the painting.

Because so many of the figures partially eclipse other figures, it was crucial that Rembrandt establish a clear succession of planes if he wished to represent the scene realistically. In fact, Rembrandt has created a number of planes: 1) Cocq's outstretched hand and the tip of the lieutenant's spontoon; 2) Cocq and the lieutenant; 3) The soldier discharging a musket behind Cocq, the red militiaman and running boy on the left, the drummer on the right; 4) The sergeant on the left, the young girl, the soldiers behind the lieutenant and the sergeant on the right. Two more planes (at least) exist behind these figures.

From an essentially linear viewpoint, then, this painting is considerably more complex than the earlier work (and more successful as well). Now its painterly aspects must be examined.

Immediately, Rembrandt's growth as a colorist proclaims itself. While the dominant color scheme is brown and grey, somewhat darker than in *The Baptism*, he now uses color to enhance the depth and energy of the work. The red swath of



cloth girdling the captain swirls round behind him, enhancing our feel for the space about his figure. It also offsets the plain black and white of his garb. The lieutenant's pale yellow and white clothing emphasizes the plane of the two figures, as does Cocq's white ruffled collar, heightening our sense that they are walking towards us. The red of Cocq's sash links him to the red militiaman on the left.

Most striking of all, perhaps, is the coloring of the young girl, who bears a certain resemblance to Saskia, Rembrandt's first wife (who died the same year *The Night Watch* was painted). Her pale yellow on the left balances the lieutenant in the center and the drum on the right. It also anchors the plane she is in, and adds enormously to the spectator's awareness of depth.

The light source, unseen, is in the upper lefthand corner, and it is just as important as color in conveying space and movement. By letting the light fall obliquely, Rembrandt enhances the diagonal effect. Furthermore, the lighted portions seem to move out from the shadowed parts, and Rembrandt has left much of the background in darkness. Thus, though the background is formed by the exposed (though unlit) interior of a building, it is as though the spectator were looking into a great depth, far more so than in the strip of landscape in *The Baptism*.

The lighting emphasizes the fact that the soldiers are stepping out from the building into daylight (the name *Nightwatch* was a misnomer that came into being later when the painting was darkened by layers of aging varnish). Also, the subtle use of chiaroscuro everywhere enhances the three-dimensionality of the figures and adds to our feeling of depth between and behind the figures. A number of figures are 'open,' that is, their boundaries cannot exactly be discerned because their contours have been left unclear. This painterly style, which Rembrandt in *The Baptism* used in a rather coarse way, has now been refined to the point of unobtrusiveness.



The three lit faces to the left of the ensign, even though they are in the background, show clearly how the artist has enhanced the sense of space by judiciously chosen light accents. By varying the line of accents and the heights of the faces, Rembrandt has avoided the monotony that often afflicted earlier 'schutterstukken' (the Dutch genre of military group portraits). The undulating line of faces suggests movement without detracting from the unity of the composition.

Rembrandt has here learned to use tone in a far more delicate and varied fashion; the facial half tones that scarcely existed in the early work now emphasize the shape and texture of each face. Similarly, one has only to look at Ruytenburch's sleeve to note the way Rembrandt has given it form and volume through the use of half tones. Yet though Rembrandt employs a far wider range of tone than in the early work, his facial modelling, what one might call his rendering of 'close space,' has still not yet reached its full maturity.

Finally, there is a psychological dimension to the work that was not present in *The Baptism*. The captain and the lieutenant appear to be walking out from the picture toward the spectator, and Cocq's outstretched hand seems almost to protrude from the canvas. Thus, the picture involves the spectator in a new way, and Rembrandt has employed a psychological method to enhance the feel of space. This picture admirably embodies as well Panofsky's definition of perspective as a 'window' (see first part of this essay, p. 5).

Thus *The Night Watch* is a far more illusionistic work than *The Baptism of the Eunuch*. It therefore fulfills Gombrich's criterion of mimetic development. It also demonstrates the Baroque dynamic between motion and stability, the latter emphasized by the strong verticals and horizontals and by the restraint embodied in the figures of the captain and his lieutenant. Despite its kinetic quality, this work is far more monumental than the early work. Indeed, many of the figures are portrayed frontally, something the earlier work eschewed.





In both linear and painterly techniques, *The Night Watch* offers a far more articulated space than did the earlier work. This much one might expect of an artist as he matures; it will now be necessary to turn to yet a later painting by the same artist, so that we may have a true overview of his development.

Passing over a score of masterpieces, we come to *The Sampling-Officials of the Cloth-Maker's Guild at Amsterdam*, painted in 1662 and also known as *The Syndics of the Cloth Guild*. The commissioning of this group portrait demonstrates that Rembrandt was far from having fallen into disrepute following *The Night Watch*. Like Da Vinci's *Last Supper* (painted 1495-1497), Rembrandt portrays a group of figures seated at a table. But the sharp diagonals and outstretched arms which are poised like a storm around a calm center in Da Vinci's work have far more in common with *The Night Watch* than with Rembrandt's later composition.

Rembrandt's rendering of space here is even more illusionistic than in *The Night Watch*. The vanishing point is set level with the middle of the table cloth, so that the spectator feels himself looking up at the painting, but this is undercut by the orthogonals of the wainscoting, which lead to a vanishing point higher up, at the level of the heads of the officials. One effect is to enhance the sense of space even though the interior is walled off. Da Vinci's room is high and long, 'correct' from a perspective approach, but unsuitable for a Dutch interior. Rembrandt's space is utterly different, and one thing that he has done is to compress the space without losing any sense of spaciousness.

Rembrandt uses foreshortening far more sparingly in this later work. The oblong table, the chair on the left, and the wainscoting suffice. Even more than in *The Nightwatch*, the artist has represented figures frontally, and though several bodies are turned obliquely they are almost all facing the onlooker directly. No longer does Rembrandt employ a complex of diagonals to emphasize and unite the space. Instead, it



is tied together primarily with horizontals and verticals. These are fewer in number, and have changed from straight lines (e.g., pikes and muskets) into interrupted ones. Thus the wainscoting is indented, the verticals are interrupted instead of continuous, the front edge of the table bends to recede, and the line of heads undulates. As in *The Night Watch*, by varying the level of the heads the artist has avoided dullness without introducing disunity.

Rembrandt has increased the 'window' effect that Panofsky describes even further. The semi-erect posture of the figure second from the left combined with the fact that all eyes appear focused on the spectator, suggests psychologically that the spectator has walked into the room. The psychological mood is reminiscent of one of Vermeer's paintings, *Young Girl at a Window Reading a Letter* (painted 1659) in Dresden, in which the drawn-back curtain suggests to the spectator that he is looking in on the girl unawares.

Psychologically, *The Syndics* shows a marked advance over *The Night Watch*, for in the earlier work it is Cocq's gesture that suggests he is emerging from the canvas, whereas in *The Syndics* it is the attitude of the figures that bids us enter, far more compellingly.

In *The Night Watch*, the near-explosion of action fills up the space with figures and events; Rembrandt delineates the space in part by infusing it with enormous energy. In the later work, Rembrandt has eliminated every trace of the tumult that spills out of earlier work. He was able to do this without making the space oppressive because the subject of interest has now become the people themselves, not the activity which occupies them.

This brings us to the painterly aspects of the work, which are outstanding. Rembrandt now has light under absolute control, and he uses it to accent the faces, hands, book, and parts of the walls and tablecloth so as to fill out the room completely. He employs a seemingly endless range of half tones, and each face is delicately modelled so as to seem far more solid than any in *The Night Watch*.



Similarly, their clothing is painted in almost imperceptibly gradated half tones that create bulk and form. The brush-work on the wainscotting behind suggests a tactile dimension. The foremost corner of the tablecloth, dark red, seems almost to leap out of the painting, and the red foreground and reddish-brown background harmonise perfectly.

Finally, the chiaroscuro effect, which was already well-developed in *The Night Watch*, has now reached its zenith. Form merges into form, boundaries are dissolved by the dark velvety tone, and yet this sharpens our own sense of their volume. Rembrandt obtained much the same effect in his etchings by the use of the drypoint needle. Figures are created by suggestion rather than by draughtmanship. Indeed, this leads directly into such a work as Vermeer's *Lady Seated at a Virginal* (painted 1674-5) in the London National Gallery, in which the sitter's hands are left almost clawlike because they were shadowed, so that the spectator's imagination supplies what is missing.

The final effect of Rembrandt's chiaroscuro is to create a deeper, more mysterious space. It also weds the space to the half tones of the face, giving the work an overall unity that cannot be expressed in words.

In summary, I have examined certain aspects of a developmental approach to art history, modelled on Piaget's concepts of developmental psychology. My conclusion in the previous section was that the developmental model, while useful in obtaining an overview of the flow of art history, was less helpful in assessing changes in spatial rendition within specific periods or within the work of particular artists.

While examining three works by Rembrandt, I discovered that there was in fact a definite development in the way he represented space, and that this progression involved: 1) increasing subtlety; 2) increasing complexity via a shift from linear to painterly methods; 3) a marked development in psychological techniques of representing space.

In this last sense, Rembrandt shows an increase in his



understanding of the relation between subject and object, illustrating the way in which increased objectivity (the greater psychological insight on the part of the painter) can result in a greater subjective response in the viewer: his keener awareness of the space in the painting and his own 'participation' in it.

To conclude, I would say that the developmental model appears more accurate than I expected, and the next step would be to analyze the interrelationship between, on the one hand, Rembrandt's life and the culture of his age, and on the other the particular form of development his art evinces.

It is interesting to note that Rembrandt's development as an artist continued well into his middle years, suggesting that on an individual level development is not completed by the late teens. This also suggests that any developmental model should probably be open-ended rather than simply consisting of three levels. In that case, the twentieth century may not hold the last word in art, after all.





## NOTES

1. Arnold Hauser, op. cit., Vol. II p. 213.
2. Ibid., Vol. II p. 215.

\* I have chosen three group compositions which I believe are typical of Rembrandt's oeuvre in the periods referred to. Nevertheless, I realize that this is the sort of editorial decision which can never be entirely free from bias, and must therefore necessarily be open to criticism from various quarters.



## BIBLIOGRAPHY

- Otto Benesch, Rembrandt: Biographical and Critical Study (Lausanne: Editions d'Art Skira, 1957)
- J. Bolten and H. Bolten-Rempt, The Hidden Rembrandt (Chicago: Rand McNally, 1977)
- B.A.B. Carter, "Perspective" Oxford Companion to Art ed. Harold Osborne, pp. 840-861 (London: Oxford University Press, 1970)
- Kenneth Clark, Rembrandt and the Italian Renaissance (New York: New York University Press, 1966)
- Suzi Gablik, Progress in Art (London: Thames and Hudson, 1976)
- Howard Gardener, The Quest for Mind (New York: Vintage Books, 1972)
- E.H. Gombrich, Art and Illusion (New York: Pantheon Books, 1960)
- Lawrence Gowing, Vermeer (New York: Harper and Row, 1970)
- Bob Haak, Rembrandt: His Life, His Work, His Time trans. Elizabeth Willems-Treeman (New York: Harry N. Abrams, Inc.)
- Arnold Hauser, The Social History of Art (New York: Vintage Books)
- William M. Ivins, Jr., On the Rationalization of Sight (New York: Da Capo Press, 1973)
- Richard Krautheimer, Lorenzo Ghiberti (Princeton: Princeton University Press, 1970)
- G.R. Levy, "The Greek Discovery of Perspective: Its Influence on Renaissance and Modern Art" Journal of the Royal Institute of British Architects Jan 1943
- Erwin Panofsky, "Perspective as Symbolic Form" unofficial translation from Vortrage der Bibliothek Warburg 1924-1925 (New York: Columbia University Library)
- Jean Piaget and Bärbel Inhelder, The Child's Conception of Space (London: Routledge and Kegan Paul, 1956)
- Jakob Rosenberg, Rembrandt: Life and Work (London: Phaidon Press Limited, 1964)
- P.T.A. Swillens, Johannes Vermeer Painter of Delft trans. C.M. Breuning-Williamson (Utrecht: Spectrum Publishers, 1950)
- Heinrich Wölfflin, Renaissance and Baroque (Ithaca, N.Y.: Cornell University Press, 1968) First German edition 1888
- Willem Hijmans, Luitsen Kuiper, Anne Marie Veis Heijn, Rembrandt's Nightwatch: The History of a Painting (Alphen aan den Rijn, Netherlands: A.W. Sijthoff, 1978)













storation





assembly rooms of the various institutions. The board immortalized by Rembrandt had the task of inspecting the quality of cloth produced in Amsterdam. Its headquarters were in a large complex of buildings on the Groenburgwal devoted to the textile industry.

Like the other types of group portraits, the corporation pieces confronted the painter with the problem of animating a static composition. The board members were usually portrayed sitting around a table. To enliven them, the artist sometimes had them hold, or placed on the















YALE MEDICAL LIBRARY

Manuscript Theses

Unpublished theses submitted for the Master's and Doctor's degrees and deposited in the Yale Medical Library are to be used only with due regard to the rights of the authors. Bibliographical references may be noted, but passages must not be copied without permission of the authors, and without proper credit being given in subsequent written or published work.

This thesis by \_\_\_\_\_ has been used by the following persons, whose signatures attest their acceptance of the above restrictions.

---

NAME AND ADDRESS

DATE

