

THE NATIONAL COLLEGE OF ART AND DESIGN

MOVEMENT ON THE FLAT PLANE FROM FIXED PERSPECTIVE
TO MOTION IN TIME AND SPACE

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Introduction

My intention is to discuss the proposition that our perception of movement and spatial relationships on the flat plane is dependent on man's self-awareness in any given place and time. Our optical experience is not evolved independently from social development. New ways of seeing continually emerge as the result of improved and refined sensory perception, which again are continually altered as a consequence of the changes in our societies. In order to understand the art of one period, we must not consider it in isolation, but in the context of the history of art as a whole, as a moment in historical development. We must also make allowances for individual genius, for not all art is formed as a direct progression, one trend falling neatly into another. Sometimes there are devastating blows, which put the visual world on its edge.

We refer to these blows as moments of revolution, where a culmination of facts based on sociobiological, scientific and artistic factors merge together to bring about a fundamental change in man's concept of reality. One such revolution began at the beginning of the fifteenth century with the birth of the Renaissance. Another at the beginning of the twentieth century, with the birth of modern art. Such times in the history of art are vital and fascinating, but also frightening, because they usually stand for great changes, and if there is one thing the human race has in common, it is its adverseness to sudden change. However what is fascinating about these two revolutionary periods

is their understanding of movement as a fundamental concept of life.

Art history shows that new conventions of conveying motion and spatial relationships have occurred in the repertoire of artistic language, coinciding with revolutionary changes, and the subsequent development of ideals put forward in those times. Essentially, a process of revising old established truths into new and more meaningful ones. For the purpose of pin-pointing historically the areas I will be discussing, I have listed below a general account of the conventions of rendering motion as they have occurred in history.

Conventions of depicting Motion and Spatial Articulation
in Painting

- (1) Rhythms in rock painting, e.g. spatial symmetries in Islamic decorations, based on Pythagoras' theories, also African, Scandinavian and Southern Europe cave paintings eg. Trois Freres cave, "Sorcerer" with the animal mask and Buffaloes.
- (2) Layers above each other, in primitive art, e.g. hieroglyphics of Egyptian times.
- (3) Layers beside each other, in Biblical manuscripts.
- (4) Size contrasts, e.g. Medieval Art, e.g. Magdalen Master, Tuscan School, Madonna enthroned between Saints, Peter and Leonard 1270.
- (5) Parallel perspective, on pre-Renaissance painting, e.g. Leonardo's Last Supper.

- (6) Vanishing point perspective in Renaissance Art, e.g. The Adoration of the Magi, Leonardo, 1481.
- (7) Spiralling and other types of motion in the Baroque, e.g. Rubens, Martyrdom of St. Livinus.
- (8) Air perspective in Poussin painting, e.g. The Body of Phocin being carried from Athens.
- (9) Mirroring and Reflections, e.g. in Manet's paintings.
- (10) Distortion in Expressionism, e.g. Van Gogh's Starry Night, 1889, and El Greco's The Agony in the Garden, 1590.
- (11) Receding and advancing colours in Cezanne's landscapes, Mont Saint Victoire, for example.
- (12) Penetration of planes, interchange, juxtaposition of positive and negative contrasts, pluralism, superimpositions and collage in Cubism, e.g. Picasso's Les Demoiselles d'Avignon and Duchamps' The King and Queen surrounded by Swift Nudes, 1912.
- (13) Divisionism in Impressionism and Seurat's paintings, e.g. Le Croty Looking Upstream , and also Monet's Poplars at Giverny Sunrise , about 1885.
- (14) Explosion and stroboscopic views in Futurism, e.g. Balla's Dynamic Depths 1912, and Boccioni's Burst of Laughter , 1911.
- (15) Diagrammatic documentations, sequential imagery, holography, laser light, neon, computers and other optical effects, e.g. in Bridget Reiley's Fall .

This somewhat incomplete list gives some idea of the spatial devices and conventions employed to render motion on the two-dimensional plane. However I will not be dealing with each one separately or otherwise. My intention is to look at some of the conventions used in Renaissance painting, and to show within the limitations of that convention how artists managed to convey a sense of movement on the flat surface of their canvas.

Since no new convention can be evaluated successfully without reference to the old, the Renaissance is a good place to start for two reasons: (i) because of the revolutionary change that was taking place showing a revival and re-birth of the old classical interest in movement as was portrayed, for example, in Greek sculpture; (ii) the Renaissance also announces the birth of time, where Greeks looked for what was unchanging and static, following the belief that motion was ordered and must run smoothly in circles, in unified rhythms, they believed the perfect form of motion was a circle. But as we know now, movements are not uniform, they change direction and speed at every instant, and as Professor Bronowski said "they (movements) cannot be analysed until a mathematics is invented in which time is a variable."¹ The Renaissance painters although they lacked the technical equipment to stop the picture frame instant by instant, had the intelligence to innovate. We shall see further on how they managed to incorporate a time factor in their work, and how also they conveyed objects in space with a sense of their movement.

The second part of the thesis will deal with the conventions of depicting motion as they apply to specific artists of the twentieth century. In recognising the difference between the types of movement conveyed in Renaissance art and that of the twentieth century, we shall see that a new viewpoint in the visual arts is a natural consequence of this age of speed, which has to consider the moving eye. We no longer see things from a fixed point; we see while moving, travelling at varying speeds.

Simultaneity is a condition in which various elements which constitute dynamism are present. In a fast-moving world such as ours, simultaneity is the lyrical manifestation of modern ways of looking at life, based on speed and contemporaneity in knowledge and communications. Many aspects of our modern society have contributed to this change in viewing; for example, locomotive power has provided modern man with a greater understanding and opportunity to see more than his Renaissance predecessor. An experiment made in 1973 by an eminent French poster designer, Jean Carlu, will show to an extent how art reflects the society in which it is made. How also as a result of speed, our perception is indirectly altered to accommodate this new reality.

The experiment was simple but effective. He mounted two posters on two conveyor belts which moved at different speeds. One poster, made by Toulouse-Lautrec in 1900, was moved at six to seven miles per hour (approximately the speed of a horse and buggy); the other poster was more contemporary in design, and was moved at fifty miles per hour (the speed of a car). Both posters could be read

easily. Then Carlu accelerated the speed of the Toulouse-Lautrec poster up to fifty miles, and at this speed, the poster could be seen only as a blur.²

The implications of this experiment show two things:

(i) that there is a recognisable difference between the visual experience of a person walking, compared to that of a driver. The driver, metaphorically speaking, is in the position artists occupy in society (modern), in that travelling at various speeds, e.g. boat, car, bicycle, aeroplane, etc. provides a different outlook on our optical perception; (ii) because of these new technological advances, artists of this age can bring together distant and unrelated landmarks into spatial relationships. Therefore the viewing point of Renaissance art differs considerably from that of modern times.

Modern physics has shown that space and time are indissolubly linked. We find a parallel in the arts, at the beginning of the twentieth century, where a new space-consciousness emerged, which was in opposition to the long-standing tradition of Renaissance art, which rendered objects in an illusionistic space. The movement they depicted within the confines of their convention was not unlike the image of a snapshot (technically crude, but nonetheless the intention was there) which records the instant, and holds it suspended forever.

With Cezanne, a revolutionary change took place. This desire to show the object more truthfully to the spectator led him to portray in his work a simultaneous view; that

is, seeing many positions at once. From there, Cubism flourished, taking Cezanne as their mentor, and developed a more accurate rendition of objects in space, on the flat plane, incorporating the three-dimensions of space with the fourth dimension of time. The fusion of both caused a change in the fine arts, not only painting, but sculpture as well.

The Cubists, not having the mysticism of the Primitives, nor the inclination to advance further with Renaissance ideals as a motive for painting, took from their own age, a kind of mysticism of logic, science and reason.

A more creative use of Cubist ideals can be found in Paul Klee's work. Klee also in his own logical way, attempted a further synthesis of thought, of mind in unison with the universe, and tried to capture on his canvas, a psychological perception of matter in a continuous flux of time, depicting the invisible in the visible, giving always priority to the spiritual content of life.

For the Futurists, the realisation that the mode of perception of modern life had been as drastically altered as life itself, was a significant aspect. They concentrated their efforts on depicting the dynamic force of objects, not the objects themselves, nor their movements. In effect they were attempting to talk the mind's language, meaning the mind's capacity for association and sequential observation, to produce a new aesthetic.

It is important to note at this stage, that the type of movement portrayed on the two-dimensional plane, pertains

more to our psychological perception. In reality, nothing moves on a two-dimensional surface, that is part and parcel of that surface, except of course in the cases where motors are used to move separate parts of the plane. In painting (pure), it is the compositional arrangement of lines and colours, interacting and relating to each other, that creates the sense of movement. The arrangement being based on the artist's understanding and personal bias towards what he chooses to depict and how.

Having introduced the various areas that I will be discussing, I will now begin, taking Renaissance painting as my starting point, to discuss in that revolutionary context, how artists tried to emulate and find expression for the concept of movement in their painting.

¹ J. Bronowski, The Ascent of Man, pp. 155-187.
"They cannot be analysed until a mathematics is invented in which time is a variable." *ibid.* on mathematics, p. 174.
"Mathematics brings us face to face with something which is hard to remember and that is that we live in a special kind of space, three-dimensional-flat, and the properties of that space are unbreakable" e.g. the natural patterns of crystals, their regularities of shape, reflect in society the nature of the space we live in. In particular in Arabic and Islamic art before Christianity, mathematics were used to establish criteria and general laws by which natural phenomena can be categorised and described. "The laws of nature had always been made up of numbers since Pythagoras said that was the language of nature."

From mathematics and geometry came perspective. Vanishing point was a special type of optical illusion (effect). However Renaissance artists nearly always took care to minimise the ambiguities by inserting known objects of known sizes in their spatial compositions.

Ivor B. Hart, The World of Leonardo da Vinci, p. 244. On the topic of optics, of perception versus projection, ref. Edgerton Jr. Brunelleschi experiment, also Bronowski. Hart quotes Leonardo: "It is impossible that the eye should itself project by visual virtue, since as soon as it opened the front door which would give rise to the emanation, it would have to go forth to the object, and this it could not do in that time." Leonardo accepted the current view of his times that seeing was a matter of perception and not of projection, that all bodies had certain qualities whereby they were able to transmit their form and peculiarities to the sense organs. He also appreciated the advantage of using the eyes simultaneously to produce stereoscopic vision. "Things seen with two eyes will appear rounder than those seen with one eye.", p. 245.

² Moholy L. Naggy, Vision in Motion, Paul Theobald and Company, 1969, p. 245. The experiment in 1973 of poster speeds showing acceleration to high speeds distorts our perception of objects. A common aesthetic device for Futuristic painting. Also finds a parallel in camera capacities to distort visuals at high speeds.

Chapter I

Renaissance

With the dawning of the Renaissance, a revolutionary change began to occur in mass conception of the world. The upward movement which reached a climax in the late middle ages, went into reverse; man turned back to earth.

The introductory statement has nothing to do with space travel in the modern sense. Rather it summarises the state of religious belief prevalent in medieval times, which began a decline in the mentality of Renaissance artists.

The medieval artists meant their pictures to be a symbol of a truth deeper than the eye can see. They painted pictures which did not tell us anything about reality of historical importance, nor of historical event. The reality they depicted was something to be believed, and not something to be seen. This iconistic trend stood for something supernatural, something beyond ordinary human experience. God, and the belief in the majestic, formed the basis of their paintings, to the extent that some of their paintings were believed to be endowed with holy powers.

The medieval artist made no attempt at perspective. They had no reason to because they believed that in recording things as they are, and not as they looked, was the ultimate expression. A God's eye view, in that God could be everywhere at one time. This is what they painted, for example, some of the frescoes painted in the thirteenth

century in Florence, show the lack of perspective. Instead the devices they used were planes on top of each other and bizarre size contrasts, smaller sizes, as they recede hinting at depth; only their positions seem to defy this logic. The greater and more important aspects of the composition tended to be larger in size. Their colours also were generally brighter, rich in contrasts, bolder and more ornate, because they were not looking at or copying a realistic view, they could afford to go to extremes, giving way to their imagination, rather than known fact. They gave meaning to the world by fitting each individual part of the universe into a systematic harmony. A world based on contradictions, which were unified by the assumption that the universe was in its totality a divinely ordained system of parallels in contrast. Heaven balanced hell just as all virtue balanced its corresponding vice.

With the Renaissance, painting began to have greater pictorial realism; artists began to depict the event, to evoke the instant in the real world. Arnould Hauser writes on early Renaissance: "The seat of God was the centre round which the heavenly spheres revolved. The earth was the centre round which, as it were, revolved the whole universe of nature, just as the celestial bodies revolved round the fixed star. Thus man could observe nature around him on every side and be enhanced both by what he observed and by his own ability to observe. He had no reason to consider that he was essentially part of nature. Man was the eye, the eye of the viewing point of Renaissance perspective. The human greatness of this eye lay in its ability to reflect and contain, like a

mirror, what was."³

The Renaissance artist, no longer content with the pictorial symbolism of flat spatial devices, who wanted to paint the world as it was, had to invent a means to express three dimensionality. It is obvious that objects drawn and painted to express a third dimension to look solid could not compete successfully with the constant denial of a surface's two-dimensionality. To cross over this barrier, they developed a convention to elucidate the general three-dimensionality of objects in space.

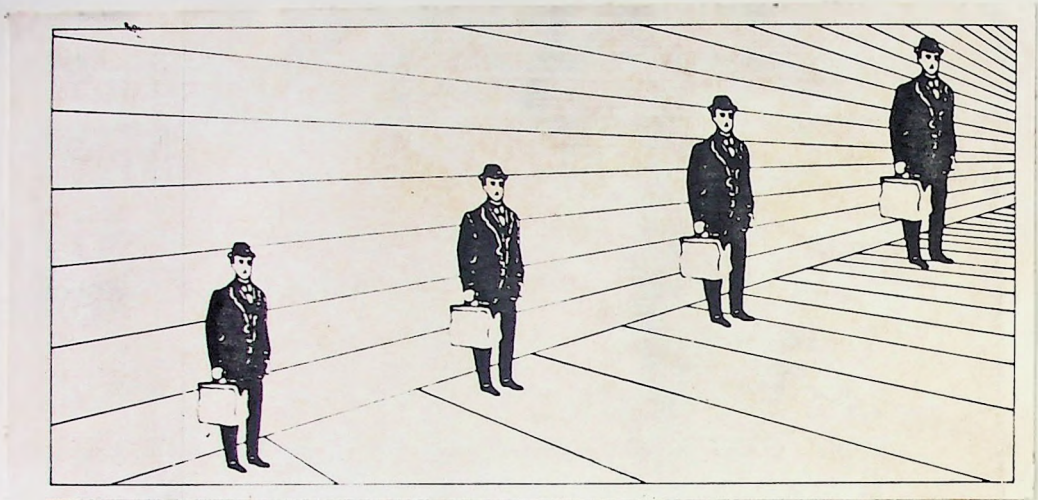
Strictly speaking, it is not space that is perceived, but the spatial characteristics of material objects, their position, size, shapes, and so on. We conceive, however, that the things we look at do exist in some sort of objective space. We measure things in terms of depth, width and distance. We judge the distance of an object, from a relative size, the shadows cast by it, its position in front of and behind other objects, together with its relative distinctness of detail, i.e. the further away objects appear, the greater the loss of detail.

Vanishing point perspective was developed in order to express on the two-dimensional plane, three dimensional objects in space, "and the phenomena are clearly demonstrated by nature herself, for in churches we see the heads of men, two men walking about, moving at more or less the same height, while the feet of those in front further away, may correspond to the knee-level of those in front." (Alberti)⁴

The Development of Vanishing Point Perspective

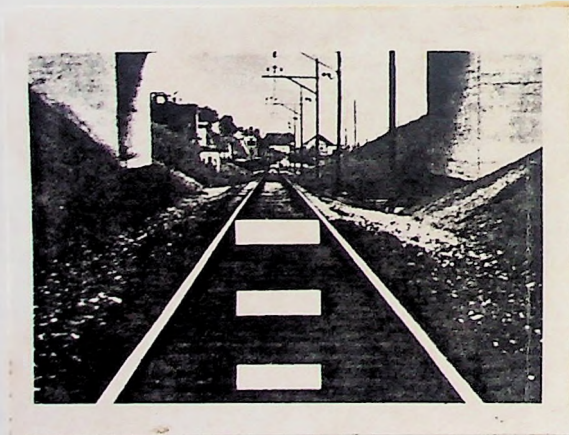
The geometric laws embodied in science and optics were revised by a Florentine artist in 1425, Fillippo Brunelleschi, who conducted an out-of-doors mirror demonstration, which resulted in what we now term the definition of the vanishing point perspective. This refers to the illusion in ordinary vision that the parallel edges of objects stretching away from the eyes (in the manner that Alberti spoke of) seem to be converging at an infinite point on the horizon. Using a modern reference, this phenomena can be seen in the converging lines of a railway track, illustrated p(15a). Brunelleschi was the first to grasp the geometrical and optical principles by which this appears to happen. Nobody before him seems to have satisfactorily elucidated this phenomena in ordinary sight much less show how to capture it in painting.

As with all new discoveries, it takes some time before they catch on, and it wasn't until some ten years later, in 1435-36, that another artist, namely Alberti, made common knowledge of the principle of vanishing point perspective, which he wrote about in his treatises. He divided this into three books, the first to do with geometry and optics, including directions (or linear perspective construction); the second, on history painting; and the third on moral and intellectual preparations for the painter. In a time of great cultural explosion and a thirst for knowledge, it is likely that artists were familiar with Alberti's teaching and many of his companions in this field of science.



Perspective, Illusion.

We are so accustomed to making correct estimates of size in pictures in which the space is drawn in perspective that we are almost compelled to scale up the four figures of a business-man shown above against a perspective grid, although they are all the same size. The one 'farthest' away on the right looks to be about twice as tall as his colleague on the extreme left.



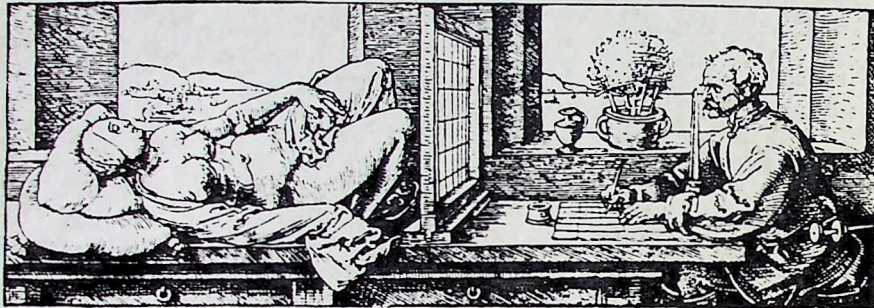
CONVERGING LINES OF A RAILWAY TRACKS.

Showing vanishing point perspective, to the point of infinity.

In early Renaissance, it was customary to use a sight and a grid, an aid to hold the instant of vision. Durer, a German artist who travelled to Italy in 1506 to learn perspective, has recorded this device, see illustration p.(I6a). The device is based on an astrological aid, as in the sight, and the squared paper is based on mathematics. The fusion of both enabled artists to record accurately what the eye perceives. It was a simple matter of transferring the information, much in the same way as a camera, only a manual rather than a mechanical device. Durer himself said, "set a frame with a network of threads between your eyes and the model you are drawing, and draw the same squares on the paper. Place a spot on the net to serve as a focal point."⁵

Space and Motion in Renaissance Painting

The Renaissance stands for imitation and realism. They not only constructed geometric structures to copy nature as they saw it, they accumulated secret methods of applying paint to achieve the radiance of colour observed in nature. The basic approach of the painters was built upon the observation that surfaces of objects reflected and absorbed certain parts of the spectrum. As well, a three-dimensional object if normally lit discloses a plastic shape through its lighter and darker shadings, i.e. shadows cast according to the angle of light on the surface. In a civilisation which concentrated its efforts on recording rather than expressing, the painter had only to observe these shadings and copy them. Through such methods as underpainting, transparent varnishings, juxtaposition of complimentaries and coloured spots, to mention but a few, they managed to organise



D'U'RER, ALBRECHT.

Albrecht travelled to Italy in 1506, to learn 'the secret art of perspective'. It was customary to use a sight and a grid, to hold the instant of vision.

Durer, records this device, see illustration above.

and acquire the realistic effect.

One of the basic problems for Renaissance artists was the proper insertion of figures in space. Their aims extended further. It was not enough to make figures and objects life-like, they wanted to create also a sense of their movement in space. The conventions, both of parallel and vanishing point, enabled them to situate the objects in space that looked real. Having acquired this basic need, they went further to depict movement, using a means of narrative and gestures in their spatial compositions.

An example of the conventions of perspective can be seen in one of Leonardo da Vinci's compositions. The perspective study of the Adoration, a commissioned painting, painted in 1481, for the main altar of the church of San Ponto Scopeto, just outside Florence. It is one of Leonardo's many unfinished paintings, which is also one of the figurative components of his apprenticeship with Verrochio, and is part of the expressive tendency of that phase of fifteenth century Florentine painting, which combined expressions and emotions with movement. Leonardo himself said "The figure will not in itself be praiseworthy if it does not express, as fully as possible, the passion of its spirit with action."⁶

This new motive of artist content, 'movement', was to concern a generation of painters around the middle of the sixteenth century, but while it represented for most Renaissance artists only a further development in art's expressive capacities, for Leonardo it was an essential element in his scheme of things, not only for painting, but many other activities dealing with science and technology,

e.g. his studies of bird flights. For Leonardo, movement was the fundamental of life, and more, it was also an instrument for the expression of emotions. This in effect makes psychological and pictorial speculation coincide.

In Leonardo's Adoration, 1478-79, the depiction of movement is centred round the group of the mother and child placed right in the centre of the painting. The characters in the immediate foreground, to the left, move and gyrate and create tensions in the space they occupy. The painting is unusual in that it is a crowd scene. It is unusual for another reason, and that is it combines the element of mysticism of an iconistic age with that of nature, as depicted by the very human expressions on the faces of the crowd. Up close, these expressions are tremendously revealing; some appear to be in agony, some in awe, their arms gesticulating, reaching out, as if they had been stilled in some majestic moment. The background shows a scene of ruin, and a battle taking place; horses appear to move in a dynamic fury, all as though in a ghost-like setting. Our eyes are directed in and out, exploring all the nooks and crannies, some built up with fine detail, other areas have a fine coating of colour, devoid of any descriptive form.

Another example of movement can be found in Leonardo's study of The Last Supper. He began this painting in 1495, on the wall of a refectory in the monastery of Santa Maria delle Graie in Milan. The scene is enacted against a background of classical perspective with a central focal point. The scale of the figures is placed within a



LEONARDO DA VINCI. 1481.
The Adoration of the Magi.

structure adapted to human measure, complying with the Renaissance convention, which saw as one of its problems, the proper insertion of figures in naturalistic space. All the figures are carefully arranged so as to balance each other, each is placed in such a way that it occupies a definite portion of space, which as you may observe, hardly varies from figure to figure except in the central proportion, where the figure of Christ is set apart. The effect of this is to concentrate the greatest intensity on the central point where the dramatic moment is focussed and held forever. Every element, just as in his painting of the Adoration is studied individually, but each takes on its full meaning only through integration with the rest of the picture.

Here again the emphasis is put on the event. Alberti in his treatises, felt strongly that painting should serve the cause of rhetorical history. Out of this conviction, he developed his theory that painting should not merely be pleasing, but more importantly should be instructive and edifying to the mind. Only great events, as in the lives of classical heroes, should be depicted by painters since they provided at that time, the best models for conveying the virtues of honour, nobility and selfless service to one's family and state. In a properly instructive painting, he suggests, "There is a manifest mathematical rationale. The number of painted figures are to be restricted and shown only in decorous, carefully prescribed attitudes, arranged in a geometrically ordered pictorial space, almost as on a stage. This arrangement must pay careful attention to proportions, evincing measured relationships, between

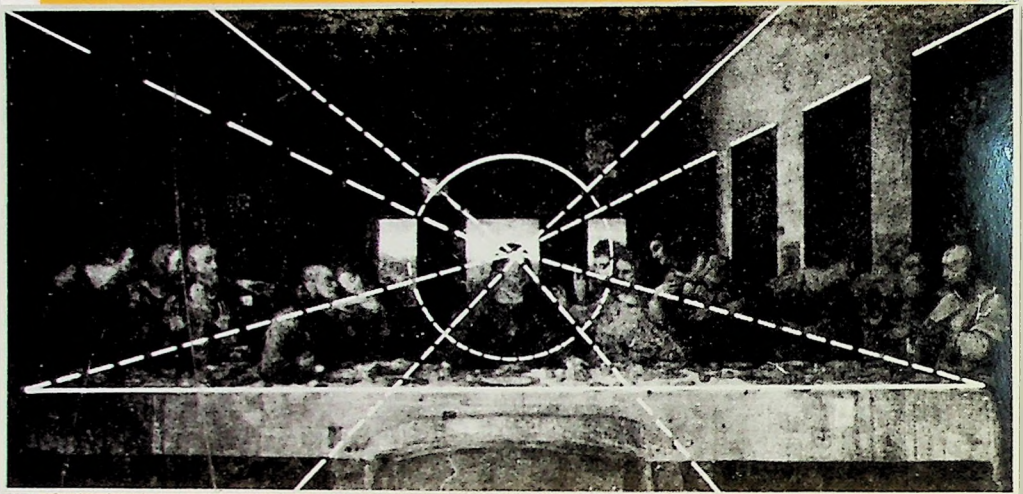


LEONARDO DA VINCI. 1495-97-98.
LAST SUPPER. Tempera on oil and Tempera.

large and small, near and far, objects. The elements are to be in harmony, even as real things are in harmony, in this world with the divine master plan."⁷

The Last Supper is a painting of substantial size, but one of the many fascinations about it is the underlying order and the clarity of expression, or rather the accuracy of purpose. One could spend a lot of time analysing the different properties of this composition, but I think John Canaday in his book What is Art has put forward a very simple and concise explanation, as far as structure is concerned. He talks about the invisible perspective structure, which he claims affects our psychological perception. In some ways his explanation helps to clarify and enhance the underlying order of the composition. He begins ... "These perspective lines are a concealed compositional device", he illustrates this, see illustration page 20a, "these lines converge at the head of Christ, or, if you prefer, they radiate from his head like rays of light. These lines are united by an arc, formed by the upper moulding of a pedimented window above Christ's head. This arc, the only curved line in the painted architecture, is a segment of an invisible circle with its centre on the point where the perspective lines converge. There are no other relationships. Two of the lines, those that follow the moulding along the ceiling, pass through the ends of the arc, while the edge of the circle below the arc just touches the level of the horizontal line of the table on the side where Christ sits. When we say that this invisible circle, with its centre at the head of Christ is like a halo, we do not mean to suggest that Leonardo had any such symbolism

I don't think
this is correct
There is a
Golden Section
ratio applied
to the composition
- ask me to
show you
some drawings



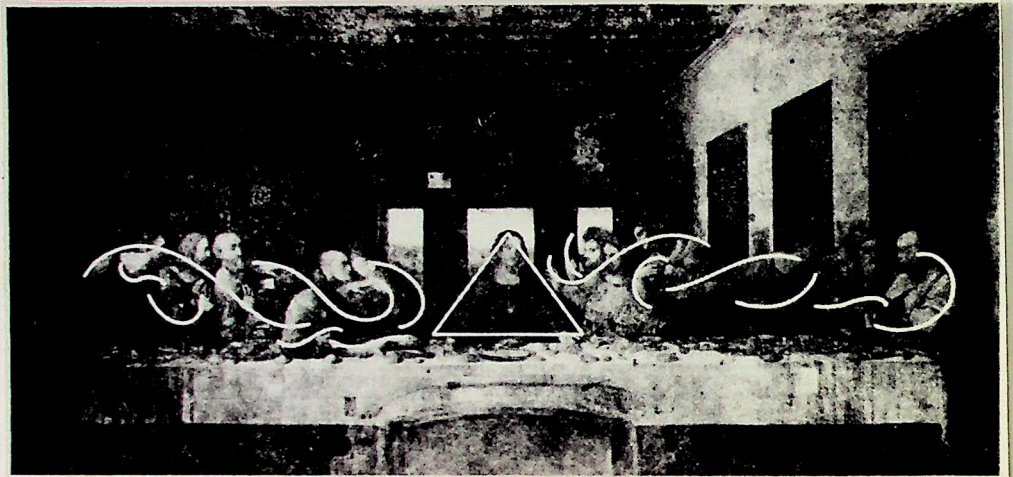
LEONARDO DA VINCI. LAST SUPPER.

Diagrammatic scheme of the Last Supper as recorded by John Canaday, in his book, 'What is Art'. This diagramme shows the perspective structure of the painting, the underlying invisible structure.

in mind. He has rather pointedly omitted the halos customary in the painting of The Last Supper, thus emphasising the human drama, rather than the divine mastery of his subject. But the fact that this circular form, the only one in the picture does surround the figure of Christ, tends to set him apart much as a halo would have done He meant these lines to function structurally and psychologically as part of the total effect of the painting."⁸

Canaday also illustrates the movement patterns (based on narrative gestures) inherent in the painting. The illustration, p.^{21a}, shows these diagrammatic impositions. With the help of these illustrations, we can see how movement running through the disciples, along their arms and folds of drapery, growing more agitated as it approaches the centre, where it is stopped temporarily, and is turned back by an uplifted arm on the right, and on the left by the figure of John the Baptist. "All this is part of a scheme to build the picture in a current of excitement that moves towards Christ in the centre, where it reaches its greatest intensity and breaks against the serenity of the central figure, like waves against a rock."⁹ (John Canaday).

So far we have looked at two paintings, Leonardo's Last Supper and the Adoration. Both paintings have a similar structure based on the geometric laws of perspective. In the Adoration, the vanishing point is off-set to the right, and in the Last Supper, it is centred. In comparing the two, we notice that the Adoration is much more active, and more complex as far as movement is concerned. The fact that

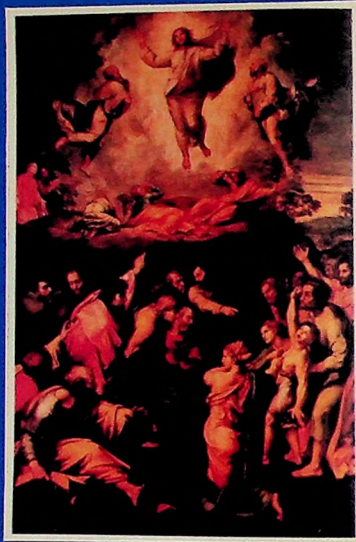


LEONARDO DA VINCI. LAST SUPPER.

Diagrammatic scheme of the Last Supper, showing the gestural movements, along the arms of the disciples, movement recorded on the left and the right. Again by John Canaday.

it is unfinished contributes to its complexity. Our eyes are conducted from area to area to seek out the underlying meaning jumping from one corner to another, in an attempt to piece together the information and to comprehend the full story. In comparison to the Last Supper, which we have understood to be a more ordered painting from every aspect, the Adoration lacks the same completed order.

As a further contrast, I have chosen Raphael's Transfiguration, 1517, which shows a much more dramatic movement. As viewers, we are told to move in a dozen directions at once. No sooner do we begin to follow one of the many routes along a pointed arm, than we are interrupted and directed somewhere else. The whole painting, except for the top portion and the patch of landscape to the right, is a turmoil of activity. Each movement seems to contradict the other; figures point one way and look another. The scene itself is taken from Mathew 17, based on the story of healing a possessed boy, who on the left is forced by the disciples to witness the vision above. Here again, the conflict between the divine and the natural, as in Leonardo's painting of the Adoration, seems to be the main theme. In both cases, the artist involved used all his skill and technique to put across the tension and conflict of human nature, with the divine wrath of the heavenly bodies. Even in this age of science and reason, the mystical religious subject continued to make up the bulk of commissions. There is however the one identifiable difference; that is, human nature began to feature as well, e.g. realistic human expressions, figures arranged in space.



RAPHAEL. 1517.
Transfiguration, Panel painting.

Whereas the medieval world, rich in violent, chaotic, complicated and colourful contradiction, created a world for God, the Renaissance artist discovered a new harmony with man as its centre. As Arnould puts it ... "Thus man could observe nature around him on every side and be enhanced both by what he observed and by his ability to observe."¹⁰

To summarise, the Renaissance was, as the term implies, a re-birth of something vital that had been lost. It was a dynamic era in European history, an era of great change in man's outlook on life, on Nature and all its problems, on everything fundamental. The Renaissance was much more than a recovery of lost wisdom and lost ways of looking and thinking about the world. If it was to survive at all and make progress, new discoveries had to be made to keep in touch with the changing concepts of the time. The legacy of wealth concerning both science and art that came out of this era, would be too vast to deal with in this thesis alone. In fact some of the theories put forward are so far reaching, even today much of technology owes allegiance to the pioneers of that age.

This of course is not to deny that there is a fundamental difference between Renaissance painting and the painting of the twentieth century. We can attribute this change to many influences, the basic one being the natural evolution of mankind. As to art, perhaps it is, as Bertholt Brecht wrote: "It is equally clear that we cannot return to things of the past, but must advance onward towards true innovations, what immense innovations are being wrought

all round us now."¹¹ When we consider, we continually experience the immediate present going by (the time that is always now, for just then was now). This is the time of our most immediate contact with the world, very short, continually changing, fading away, forever being replaced by a new now. "How can artists portray it all with the old means of art?"¹² asks Brecht. The answer is quite simple. New means are always needed to express new realities.

Some mention should have been made of mathematical structures as used in the Renaissance and the philosophical belief which were in the background.

³ Ernst Fisher, The Necessity of Art, Pelican Books. Quotes Arnould Hauser, pp. 148-151. "The seat of God was the centre round which the heavenly spheres revolved. Bertholt Brecht wrote, pp. 113-114. "It is equally clear that we cannot return to things of the past.

⁴ Edgerton Jr. Sy, The Renaissance Rediscovery of Linear Perspective, pp. 3-43, quotes from Alberti's Treatise: "This line is for me a limit or boundary which no quantity exceeds that is not higher than the eye of the spectator. As it passes through the centric point, this line may be called the centric line (modern term - horizon). This is why men depicted standing in the parallel furthest away are a great deal smaller than those in the near ones." (To illustrate this I have inserted a modern diagram taken from Edi Lanner's book Illusions. A phenomenon which is clearly demonstrated by nature herself, "for in churches we see the heads of men, two men walking about, moving at more or less the same height, while the feet of those further away may correspond to the knee-level of those in front."

⁵ J. Bronowski, The Ascent of Man, p. 181. Durer illustration and quote. Our eyes are basically a means of detecting and organising information about changes in light. On this Bronowski writes in relation to Greek philosophy (Hero, Ptolemy) who felt that men saw by means of rays of light issuing from the eyes and reflecting from the object seen. About AD 1000, Alhazen held the correct view that light issued from the sun, or from some other luminous source, and was reflected from the object seen into the eyes. Seeing was therefore a matter of perceiving and not projection.

6

Bruno Santi, Leonardo, Constable, London, pp. 15-16.
"The figure will not in itself be praiseworthy if it does not express, as fully as possible, the passion of its spirit with action."

7

Edgerton Jr. Sy. The Renaissance Rediscovery of Linear Perspective, pp. 3-41. "The elements are to be in harmony, even as real things are in harmony in this world with the divine master plan."

8

John Canaday, What is Art, an Introduction to Painting, Sculpture and Architecture, Hutchinson, chapter on composition and structure, pp. 167-169. Last Supper, quotes pp. 172-175 "The beauty of the last supper is that it is original without being eccentric, highly calculated without being complicated. In it, pictorial structure and intellectual conceptions are consummately unified."

9

John Canaday, What is Art, an Introduction to Painting, Sculpture and Architecture, Hutchinson, chapter on composition and structure, pp. 172-175.

10

Ernst Fisher, The Necessity of Art, Pelican Books, quotes Arnould Hauser, pp. 148-151.

11

Ernst Fisher, The Necessity of Art, Pelican Books, quotes Bertholt Brecht, pp. 113-114.

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Ernst Fisher, The Necessity of Art, Pelican Books, quotes Bertholt Brecht, pp. 113-114.

Chapter II

Movement on the Flat Plane in Twentieth Century

Painting, beginning with Cezanne

Impressionism - Post Imps - was really beginning the change.

Beginning with Cezanne, a revolutionary change took place in twentieth century painting. A new space-consciousness, based on simultaneous organisation, emerged which was in opposition to the Renaissance tradition of perspective construction and localised colour rendition of objects in space. Cezanne attempted to show objects from different views in his early still-life compositions. The Cubists also showed different views in a constantly changing field of mutual relationships; objects could be seen in motion, revolving before the eyes of the spectator, and not fixed within a structural convention.

In a climate where modern physics had destroyed the old notion put forward by the Greeks, which lasted until the beginning of the nineteenth century, that an atom was an indivisible unit, modern physics broke the structure of the atom, showing that it was made up of constituent parts, showing also the underlying structure of nature. It was this break in the intellect of modern times that captured the imagination of artists, which began also an art of abstraction, a revelation of the underlying structures and harmony of nature, instead of the facade. "Modern art begins at the same time as modern physics because it begins in the same ideas."¹ (Professor Bronowski).

Cezanne once declared that by moving his head slightly to the left and right, while standing on the same spot, he could paint a great deal of different paintings. That is, his method of painting was from a fixed position, without the movement of the eyes, called monocular vision. Later towards the end of his life, he gave up the rigid classical viewpoint and tried to embrace the object with both eyes. An example of this may be found in his still-life paintings where minor inconsistencies occur. This willingness to go against tradition, to bring the object more truthfully to the spectator, led him to choose the most revealing viewpoint in the same painting, from above the side and frontally. The result was a composite view, that is two positions seen simultaneously. A distortion if judged within the tradition of the vanishing point perspective, but in reality it signifies an important change, a change which anticipates a move from the static to the dynamic.

These minor inconsistencies perhaps can be explained, not as a definite assault on the traditional perspective, but more likely as a reflection of his proximity to his subject. In that his every move would have modified the relationships within, and as he concentrated on the jar top, to the left of the basket, in his painting Still-Life with Basket, he may well have leaned forward thus altering his view of its perspective. The jar is presented as though we were standing over it, looking into it from above, which contradicts the frontality of the rest of the painting. However these small inconsistencies never bothered him too much since he was looking essentially for a harmony of coloured relationships and not an exact copy.

Have it on
noted the
similarity between
Cezanne's jar
and say the
way a fountain
or vase was
shown in Roman
painting?



PAUL CEZANNE.
Still-Life with Basket.

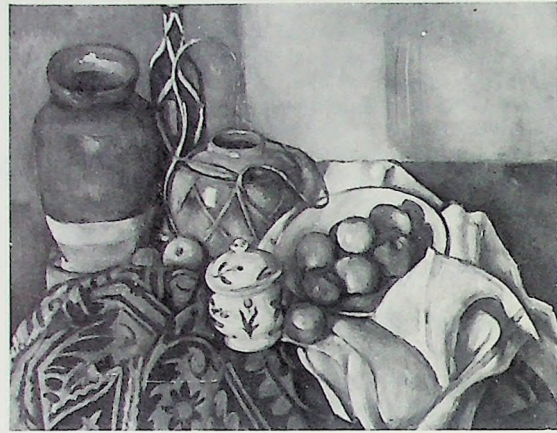
When his contemporaries pointed out these faults to him, he replied "I'm a primitive, I've got a lazy eye."²

In the earlier stages of his life, he worked within the Chardin tradition which presented objects frontally and generally separate from each other in static monumental groupings. If we take, for example, Still-Life with Plate and Fruit Bowl, 1880, and compare it with another still-life of a later period, Still-Life with Pots and Fruit, 1890-4, we can see a considerable change has taken place. Cezanne begins to abandon the frontality of his earlier compositions in favour of elaborate counterpoints between shapes and textures, colour and patterns. Every element in the latter painting is drawn together in a network of contrasting shapes, whereas in the former painting the elements are arranged separately in much the same manner as Chardin's Still-Life with a White Mug. However Cezanne does manage to unify the composition somewhat, his use of painterly marks which show little difference between the texture of the fruit and bowl. Given in this early painting his willingness to subordinate literal description of objects is evident, e.g. in his use of light and shade patterns of the napkin (still-life of 1880), where the light dissolves into the stem of the fruit bowl and the napkin, also in his use of brush strokes extending from one object to another, from fruit to patterned wallpaper.

Another important factor concerning his still-life paintings, is the quality of light modulations over the surface. In both his still-life paintings, 1880 and 1890-4, the objects are highlighted, emphasising their three-dimensionality.



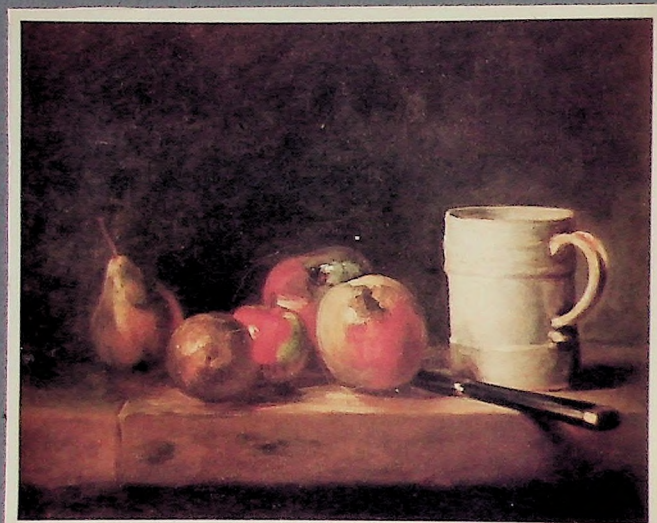
CEZANNE. 1880.
Still-Life with fruit and fruit bowl.



CEZANNE. 1890-4.
Still-Life with pots and fruit.

Light in these compositions is expressed in the more classical tradition of tonal modelling. Chardin's Still-Life with a White Mug is an ideal example of how light was used. Its main function was to increase our awareness of spatial depth and solidity of forms. Later on we will find in Cezanne's landscapes, forms are reduced to flat shapes and his depiction of light changes consequently.

By landscape we have come to mean an extraordinary imitation of reality, such as we are given by traditional landscape painters, e.g. a tree like a tree, and grass drawn in such a way that we can clearly distinguish one blade from another. Carefully represented landscape in the Renaissance tradition showed us things for what they were, proclaiming that their visibility belonged to them, in other words, according to that tradition to make a likeness was to reconstitute a truth. Truth for Cezanne came to mean something other than imitating what he saw before him. He wanted to paint an equivalent of nature, and this equivalent had to convey a rationalised human insight into the reality he saw. He wanted to paint the structure of reality as understood by human rationality and yet to paint only what the eyes see. The task sounds insurmountable, however in trying to realise his goal, he managed to revolutionise our whole way of looking at nature, and paved the way for many future artists. On this, Merleau Ponty, a French philosopher writes: "He did not want to separate the stable things which we see, and the shifting way in which they appear. He wanted to depict matter as it takes on form, the birth of order through spontaneous organisation.



JEAN BAPTISTE-SIMEON CHARDIN.
Still-Life with a White Mug, date uncertain.

He makes a distinction, not between the senses and the understanding, but rather between the spontaneous organisation of things we perceive and the human organisation of ideas and sciences. We see things, we agree about them, we are anchored in them, and it is with Nature as our base that we construct our sciences. Cezanne wanted to paint this primordial world; he wished, as he said himself, "to paint, to confront the sciences with nature from which they come."³

Order in Nature, a base for painting

Modern physics has proved also that nature is not chaotic. The notion of discovering an underlying order in matter is man's basic concept of discovering order in nature. Even in our social structure we find a similar sense of order. As individuals we are part of families, our families are joined in communities, our communities are joined in nations, our nations are joined in cosmopolitan relationships. It is this sense of hierarchy, of a pyramid in which layer is imposed upon layer, that runs through all the ways we look at nature. Our sciences reflect this order where small parts belong to larger parts, and these larger parts belong to still greater parts. It goes on and on ad infinitum.

Our faculty of vision comes under the same jurisdiction. In order to assimilate a multi-directional vision, we consciously and unconsciously scan, even then to find meaning; we categorise and order the different stimuli into more accessible and coherent groups. Because our

world is so vast and intricate, and complex beyond comprehension, we couldn't possibly look upon everything we perceive with new eyes; we selectively attend to certain phenomena and our memory recall provides us with the necessary faculty to make associations and judgments.

The 'Gestalt', a German school of philosophy, has established that in the act of seeing, we organise; they have suggested several ways by which we tend to organise matter together. For example:

- (i) Similar objects tend to be grouped together.
- (ii) Through proximity, e.g. when stimuli are close together, they tend to be grouped together.
- (iii) Common movement favours grouping, e.g. stimuli which change together in the same direction tend to be arranged together.
- (iv) Through contrast, stimuli which are different from their surroundings are organised together and⁴ seen as a configuration.

Cubism and Cezanne

Cezanne intuitively understood the underlying order inherent in nature. This change in the approach to the visual world of simultaneous organisation finds a parallel in the thoughts of Henri Bergson (1859-1941) who stressed the role of duration in experience, i.e. with the passage of time an observer accumulates in his memory a store of perceptual information about a given object in the external world, and this accumulated experience becomes the basic for

the observer's conceptual knowledge of that object. This process is analagous to the methods of Cezanne and the Cubists.

Cezanne's later paintings, particularly his landscapes, for the most part are based on simultaneous organisation. He indicated this earlier on in his still-lives, by presenting us with a composite view, suggesting that we perceive simultaneously, seeing, feeling, and thinking in relationships and not as a series of isolated phenomena. Our faculty of sense perception is such that it instantaneously integrates and transmutes single elements into a coherent whole. This is what Cezanne was striving for. It was therefore necessary to come up with a new means to communicate this. Abstraction was an ideal means, a process of taking the visual world apart, just as science was busily taking the world to pieces, Cezanne was constructing his compositions layer upon layer, each individual brush mark being vital to the whole composition.

Cezanne's elements, trees, rocks, plant life, etc. are through a process of abstraction, reduced from actual forms, to effective forms; i.e. he suggests forms instead of trying to convey the contents and feelings to the viewer by fully describing them. The organising of line shapes together, i.e. the leaves of trees in Undergrowth, also the bushes at the bottom of the composition. There is virtually no detail, save for the colours distinguishing leaves from branches. The same method of construction extends to Mont Saint Victoire, where we see colour planes beside each other describing generally, rather than



PAUL CEZANNE. 1904-6.
Mont Sainte-Victoire, Museum of art Philadelphia.

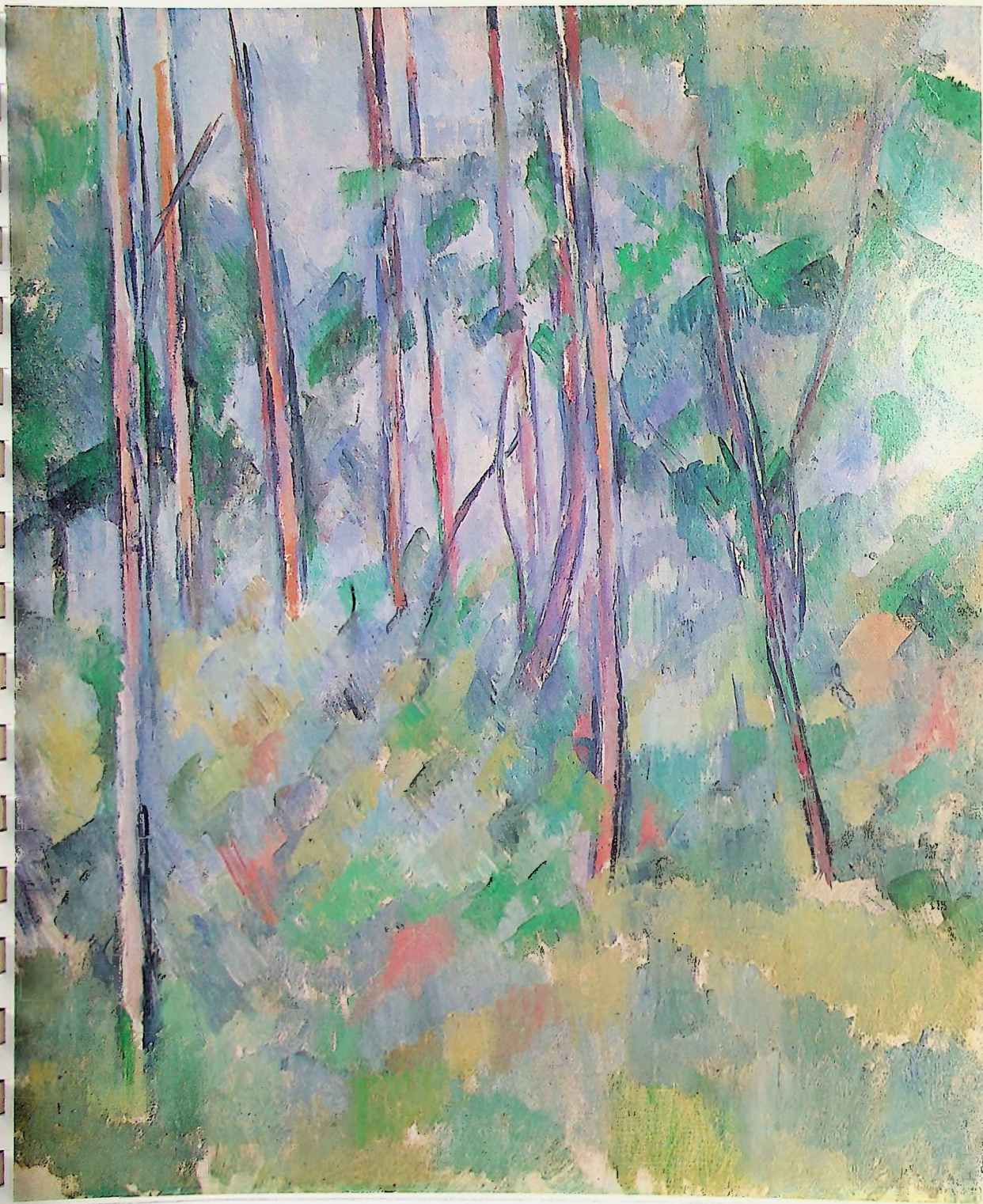
in a specific way. His colour forms can be described as geometrically based, on cones, cylinders and cubes, at the same time free. They have no symbolic value and hardly any other connotations other than the fact that they are used in an attempt to express the underlying harmony and order of nature on the flat plane.

In his compositions Mont Saint Victoire and Undergrowth, we can see immediately how through the power of the sensation of colour, altered in significance from local colour to an abstract rendering. Depth in these paintings is not created by the arrangement of objects one after another toward a vanishing point, in the sense of Renaissance perspective, but on the contrary, by the reciprocity value of colour of receding and advancing forces creating a tension. Nor is the spatial depth created by tonal gradation, another doctrine of the classical convention. Hans Haffman in his book Search for the Real suggests that depth in the pictorial plastic sense is determined "by the creation of forces in the sense of push and pull ... push and pull are expanding and contracting forces which are activated by carriers in visual motion. Planes are the most important carriers, lines and points less so ... push answers with pull, and pull answers with push." He explains this psychological phenomena with the use of a balloon..."The inside pressure of a balloon", he said "is in balance in every direction. By pressing one side of a balloon, you will disturb this balance, and as a consequence. the other end will swallow up the amount of pressure applied ... when a force is created somewhere in the picture that

is intended to be a stimulus in the sense of pull, the picture plane answers automatically with a force in the sense of push and vice versa."⁵

Cezanne in this respect can be said to have understood colour as a force of push and pull. In his paintings he created an enormous sense of volume, breathing, pulsating, expanding and contracting. His compositions for the most part are built up with the use of contrasts, of complimentary contrasts, e.g. in Undergrowth, the complementaries of blue and orange create the tension and also the balance. His pictures generally appear as two-dimensional because of the use of flat planes, but they really can be seen best in their three-dimensional quality created by the receding and advancing values of colours, indicating near and far. An experiment made in the University of Wisconsin gives an explanation of how colour is able to change size or show receding and advancing values producing stereometric and space values. Black, white, yellow, green and blue cubes of the same size were put alongside one another. The white cube appeared to be the largest, the black the smallest; yellow was larger than green and blue was smaller than green.⁶ The same phenomenon can be formulated in other words. The white cube seemingly the largest, would appear to be nearest the spectator, the black, the smallest, would appear to be furthest away, which again is another expression for receding and advancing values of colour found in warm and cold hues.

This kind of interaction of contrasts, of colour forces in the sense of push and pull creating tensions, is analagous



PAUL CEZANNE. 1897.

Undergrowth.

to the methods of Cezanne and Cubist painting, and indeed Klee and the Futurists' paintings, which I will discuss later on.

To appreciate Cubist painting, we have to abandon the habit of looking at every object or figure as though it were complete in itself; its completeness making it separate, just as we have already seen in Leonardo's paintings where forms are definitely outlined and colours are auxiliary to the definition of those forms - tonal modelling reveals their separateness. In Cezanne and Cubist painting, the main concern is with the interaction of objects, of uniting the positive and negative spaces to reveal a unified whole. Formerly a painting took possession of space, now it reigns in time.

Tonal modelling and the defined perspective space in the heyday of Renaissance art produced a very different sensory effect than the art of the twentieth century. Malevich explains the difference in his Essays on Art, Vol. 2, An Analysis of New and Imitative Art (Paul Cezanne). He compares the sensation obtained from an imitative landscape to that of the sensation obtained from a Cezanne. He begins ... "This is a known fact and it is interesting how, with the help of a picture I can transfer myself from one existence, for example, being in a museum, into living nature, and sometimes to the very place where the artist lived, experiencing events together with him." He goes on to explain ... "Thus every imitative picture possesses this magical ability to transfer us from one moment in time into another, and inasmuch as I experience it, it becomes

real for me. In Cezanne's landscapes we find very few illusionary elements, this means that Cezanne's landscapes are concerned least of all with introducing us to the experience of reality. It leaves us in our own existence without transferring my 'I' to another moment in time, making it experience the reality of the picture of the given moment. Thus in the new art, we find that the artist is completely opposed to imitative art, in that the new art, for the most part, insists on the experience of the real content of any given sensation, a reality that will always remain real for the spectator."⁷

The break away from the imitative art of the Renaissance found significant appraisal among the young and inspired French artists of the Impressionist movement, who were busily abstracting the element of light and reproducing it on their canvasses as patches of colour, creating sensations of shimmer and atmospherics, also hazy and reflective effects. The forms once depicted in the traditional style lost their solidity and became like the constituent parts of an atom in science, separate particles on the surface of an impressionist painting.

Cezanne also had an interest in light, even early on in his career. In 1870 he wrote in a letter to Pissarro, "The sunlight here is so intense that it seems to me that objects are silhouetted, not only in black and white, but also in blue, red, brown and violet. I may be mistaken, but this seems to me to be the opposite to modelling."⁸ The Mediterranean sunlight was so intense, the direct impact of light on his sense of perception brought home to him the

impossibility of imitating nature directly, and forced him to think of coloured paint as an independent means of conveying light. One of his greatest discoveries, he said, was that the sensation of light cannot be reproduced, it must be represented by something else, by colour. His paintings show the effect of this discovery in two ways, for instance:

- (i) In the shifting colour modulations which he used to suggest relationships of small scale forms and textures, e.g. Mont Saint Victoire, and
- (ii) In his use of dominant colour patch, of colour contrasts like the orange and blue in Undergrowth.

By giving his colour compositions small exaggerated colour accents, using complimentaries, Cezanne set up focal points where other colour schemes could revolve. He wrote describing this method to Bernard in 1904: "The effect creates the picture, it unifies it and concentrates it. One must base it on the existence of a dominant colour patch," to which he later adds: "To read nature is to see it, as if through a veil, in terms of the interpretation in patches of colour which follow each other according to the law of harmony ... Modelling results when they are harmoniously juxtaposed and complete, the picture develops modelling of its own accord."⁹ His compositions, Undergrowth and Mont Saint Victoire bear witness to this. Cezanne's colours affect us by their direct sensory impact; colours interact and play off each other suggesting spatial depth.

not a clean definition

The space in Cezanne's and Cubist painting can be defined as such. Cezanne's space is built up of planes of colour which have a reciprocity value which affects our psychological sense of perception. In comparison to Cubist painting, Cezanne's accumulated experience of vision remains separate in the sense that his abstractions, his colour planes are singular patches which do not overlap in the same way as Braque's do, e.g. still-life The Pedestal Table. Braque's elements are superimposed interwoven and adjoining planes. Space in Braque's painting does exist in that the form can be inferred to be behind another. Cezanne's space, which was the result of a cumulative psychological process closely tied to visual experience, remains open to spontaneity. John Berger describes it in this way: "If you imagine taking up a position in the space of one of his pictures, the painting offers you the organizational guidelines of what you would see as you looked backwards or sideways to where you presume you are still standing. You look up at Mont Saint Victoire, but within the terms of painting, within its own elements you are aware of the opportunity and the probable configuration presented by what you would see looking down from the mountain."¹⁰

After 1911, the Cubists no longer worked directly from the model in nature. With collage it became possible for them to indicate all the spatial, colouristic and textural qualities of objects. Collage was the art of conception, and in representing conceptualised reality, the painter can give the effect of three dimensions. For example, Braque's introduction of undistorted real objects, in which he used



GEORGES BRAQUE.
The Pedestal Table (Le Gueridon).

real details of images, i.e. wood, violins, tickets and pieces of newspapers etc.; these stimuli construct in our minds a memory of three dimensional objects. This meant that the notion of three dimensional objects could be depicted on the flat surface as a plastic reality and not an illusion. In his notes Braque wrote in 1917: "The collage, the imitation wood, and other elements of the same nature, which I have used in certain drawings, also make their effect through the simplicity of fact, and it is this that has led people to confuse them with trompe-l'oeil of which they are precisely the opposite. They too are simple facts, but created by the mind and such that they are one of the justifications of a new figuration in space."¹¹

Sometimes Cubism differs from the art of imitation in another way because they laboured to elicit new plastic signs from forms, old ideals had situated the artists to remain motionless in front of their objects, at a fixed distance from them, and to catch on their canvasses no more than a retinal photograph, so to speak. Of course they could pick and choose the angle they wanted to paint, but in the final analysis what they reproduced was an instant in time. Cubism, on the other hand, allowed artists to give under the control of intelligence, a concrete representation of it (object) made up of successive aspects, which were juxtaposed and superimposed to create a sense of simultaneity, and in revealing the underlying structures and not the facade, they evoked a sense of movement.

Picasso's Guernica, a monument to human horror and torment, is an entity in itself. It is a powerful symbol of agony

of the heroic Spanish loyalists. In this painting, the composite juxtaposition of black and white, of light and dark, renders the inside and outside of the room simultaneously. It expresses not only the space-time visualisation of the successive changes of physical motion, but also the psychological space-time, the horror in the doomed creatures.

Les Demoiselles, another of Picasso's compositions, provides the same sensation, with one minor difference. It is not depicting horror of the same intensity as Guernica, but it does capture the same space-time element. The shapes are abstracted and angular based on geometric design, which Cezanne had previously reintroduced as a valid formal structural device. The movement is vigorous and bold, with the lack of a definite background. Where forms of the female nude interact with the dividing spaces, a sense of unity on the flat plane is created. The stimulus for such distorted facial features comes as a direct result of Picasso's interest in African art. The painting itself is the living testimony of Picasso's desire to find new and more fundamental means of expression. It was not, however, newness for newness' sake. Rather, it was an intellectual exercise in abstraction, an effort to evolve and apply new theories for the sake of increasing the scope and intensity of the art of painting. The space-time devices can be seen in the abstract and distorted views of the facial features, e.g. noses and eyes are painted in profile, which can also be seen frontally, simultaneously, i.e. in the squat figure to the right of the painting.



PABLO PICASSO. 1973.

Guernica, Oil on canvas, 11 feet 5 $\frac{1}{2}$ inches
by 25 feet 5 $\frac{3}{4}$ inches. Estate of the artist.



PABLO PICASSO. 1907.
Les demoiselles d'Avignon. New York.

Movement, a Sense of Rhythm, Paul Klee

Another?

A more creative approach to the Cubist ideals can be found in the art of Paul Klee. His preoccupation with rhythm as a primary force is evident throughout his work.

Rhythm is one of the basic principles underlying all the arts. Preoccupation with rhythm characterises all the arts of our time, for rhythm, or ordered living movement, is one of the primary forces of nature and the universe. In nature, the perpetual regular movement of the earth in the solar system is rhythmic. Man's growth from childhood to manhood, similar to the movement of dawn to night, the movement of water, the effect the moon has on the sea, creating tides, or the torrential pull and force of a waterfall, as the gravitational force of the earth bears downward. All these obey the rhythmic laws of motion. It is, as Paul Klee put it, "One of our primeval heritages."¹²

This primeval sense of ordered movement, or rhythm, is one of the qualities in nature which has influenced man to interpret movement through the medium of paint. For example, Klee's compositions, Intensification of Colour from the Static to the Dynamic, 1923, Ancient Sound, 1925, and Rhythms, 1930, all respond to the notion of structural order found in nature.

There are two experiences on which our visual world is based: (i) that gravity is vertical, i.e. an upward and downward motion. "In the world of physical reality, every ascent must be followed by a descent at the moment which the gravitational pull of the earth overcomes the ascending

energy" and (ii) the horizon stands at rightangles to it. It is this conjunction where lines cross over, that fixes the rightangle, the horizon. "Man is precariously balanced on two unstable legs, uses optical illusions as a safety device, horizon as concrete fact, and horizon as an imaginary safety belt that has to be believed in," Paul Klee.¹³ Klee's Ancient Sound, his composition of Rhythms also, can belikened to this basic structure. They are mathematically based on exact numerical divisions of a horizontal and vertical nature. Klee records the primitive structural rhythm based on a repetition of the same unit from left to right, and top to bottom in his Pedagogical Sketch Book, 1925.

Intensification of Colour from the Static to the Dynamic is laid out in a chequerboard format, rich in quality, ranging from density of colour to brightness. The configuration of the reciprocal value, as the title suggest, ranges from the static to the dynamic. This painting looks like an exercise in colour, which it is, but more than that, Klee has imposed his own sense of colour logic, being musically minded, he naturally wanted to express the inner feelings which music inspired in him. The painting suggests more than areas of colour interacting with each other, there is a timelessness about it, a feeling of sound echoing in rhythms, soaring to great heights, as perhaps is indicated by the white areas against the red, where the intensity is greatest. In contrast to this, there are tonal greys, a derivative of a mixture of the primaries red and green, blue and orange, which suggest a more tranquil

type of sound. Rhythms, as expressed in this painting, are in the form of different areas of colour playing off each other, following linear, both vertical and horizontal, structures, culminating in and leading the eye to the centre of interest, then flows on controlling all detail until it finally comes to rest within the frame.

Ancient Sound is a similar painting, possessing more or less the same qualities. Klee, on modern art, writes: "Certain proportions of lines, the combination of certain tones from the scale of tone values, certain harmonies of colour, carry with them at the time quite distinctive and outstanding modes of expression. The linear proportions can, for example, refer to angles: movements which are angular and zigzag, as opposed to smooth and horizontal,"¹⁴ for example, Rotations 1924, a pen and ink composition, indicating movement in a rotary fashion. In fact, the more we look, the more we find movement is everywhere implied by direction signs, of shapes that could nearly be arrows? or fir trees? or is it the sun radiating?

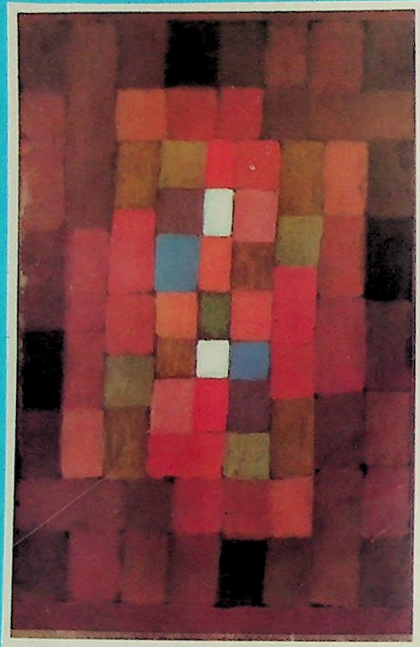
"Contrasting modes of expression in the region of tone value are given by the wide use of all tones from black to white, implying full-bodied strength, e.g. Rhythms, 1930. However, this painting has another characteristic based on tonal values. There is an interaction between black and white as we have already mentioned, there is also the use of the upper light half and lower dark half of the tonal scale, also medium shades round the greys.

These areas of colour on the two-dimensional plane function as flat shapes, patterns in rhythmic order. However, if

we concentrate our vision on the intense black, the lighter tones take on a three-dimensional structure, like building blocks; the brown border heightens this illusion.

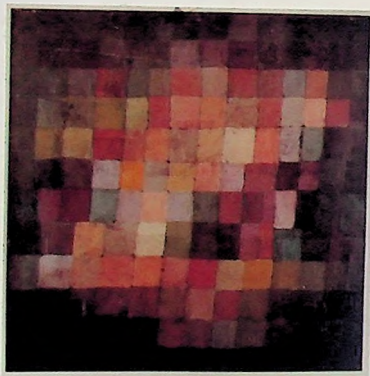
Expansion and contraction in a simultaneous existence is a characteristic of space. A sensation of movement and counter-movement is simultaneously created in these three compositions, 1925, 1923 and 1930, by the position of colours in their relation to the outline of their borders, and also each other. Movement and counter movement result in tensions (small and great). Tensions are the expression of forces and forces, the expression of actions.

Klee, a painter dedicated to the idea that a picture is a reality in its own right, gives the abstract structures of his paintings concrete significance. Although sometimes it is hard to detect the original concept behind the painting, whether it belongs to his philosophic nature, or based in the external world of known fact. In the colour compositions mentioned above, it is hard to assess the content and therefore the meaning, because there is no descriptive and tangible object or particle to recognise. These paintings are pure abstractions based on the natural rhythms of sounds and colours as they take form in a purely visual language. Klee's basic concept was genetic, seeing growth in everything, he showed the creative forces of being - nature as a creative force, not as something created. Klee wrote in 1900: "Some will not recognise the truthfulness of my mirror. Let them remember that I am not here to reflect the surface (this can be done by photographic plate) but must penetrate inside."¹⁵

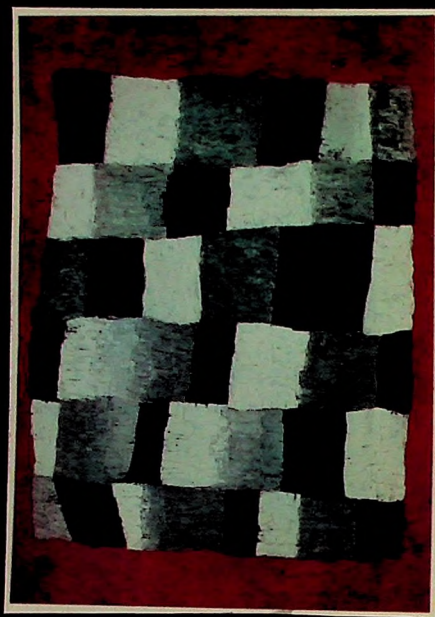


PAUL KLEE. 1923.

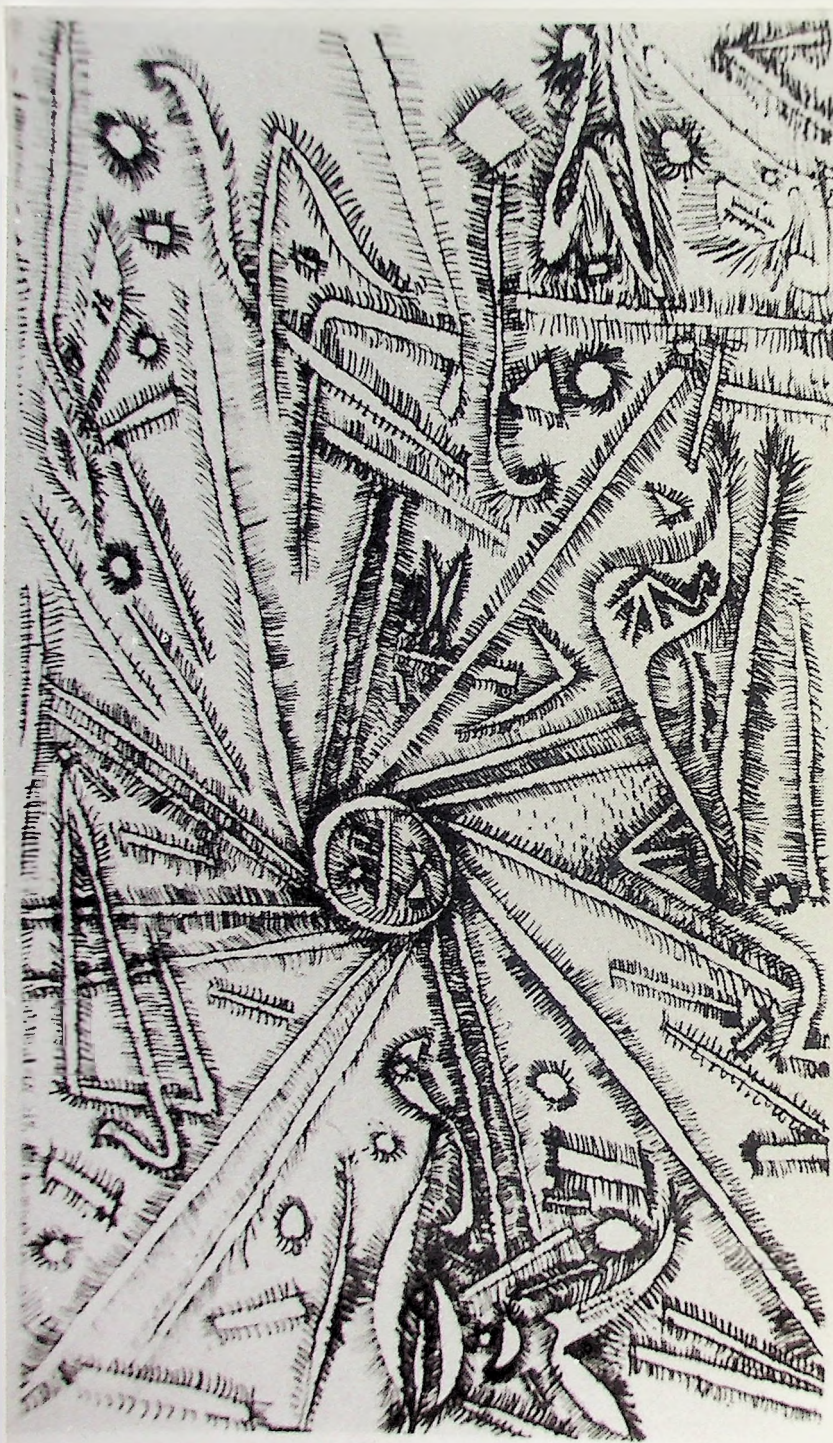
Intensification of colour from the static to the
Dynamic.



KLEE, PAUL. 1925.
Ancient Sound.



KLEE PAUL. 1930.
Rhythms.



PAUL KLEE. 1924.
Rotation. A pen and ink drawing on paper.

Another of Klee's pictures, which shows movement, is his Little Jester in a Trance, 1927-9. Klee himself described it as an example of superimposed instant views of movement to his students in the Bauhaus. The free play of the running continuous line can be likened to a seismograph. Just as the hand is guided by intuition and the unconscious, so too is "the eye guided by the lines cut out for it in the work" Klee.¹⁶ The twisting and turning of the advancing line describes overlapping planes, the process contains a time-space movement within itself. The transparency of forms, planes indicated to be behind one another, shows a simultaneous event which Klee calls 'polyphony'. The concept is borrowed from harmony and musically speaking means simultaneous playing of several independent themes.

Klee's Little Jester in a Trance cannot be explained simply by analysing its structure, but where can we begin when the little jester is neither part of this world nor our imagination. The image can only take on meaning through our response to it, which depends upon complex associations that we bring to it from deep within ourselves. Little Jester in a Trance has only the most tenuous relationship with the world we see, and as a result, depends upon the most inward kind of associations we can summon up.

*Maybe Kandinsky's ideas
should be mentioned*



244. Klee: *Little Jester in a Trance*. 1929

PAUL KLEE. 1929.

Little jester in a trance, Simultaneous juxtaposition
and instant views of movement.

Speed, a New Beauty, a Sensation

We spoke earlier of the plastic reality of an object in relation to Cezanne and Cubist painting. How in Cezanne's art, the plastic reality of objects and scenes revealed themselves in the form of silhouettes, as a result of light distortions which replaced tonal modelling for modelling with pure colour, which re-established a surface's two-dimensionality. We have seen also in Picasso's paintings, where the elements of three-dimensional objects were reduced by a process of abstraction to flat shapes, based on geometric design. Braque's introduction of undistorted, real detail, as in his collage pieces, shows also a further plasticity of objects. Now in relation to Futurist painting, we will take a look at how Umberto Boccioni defines the plastic reality of objects, and how his definition applies to his work.

"Absolute motion is a dynamic law inherent in an object. The plastic construction of the object must here concern itself, whether it be at rest or in movement. I have made this distinction between rest and movement so that I may make myself clear, although in fact there is no such thing as rest, only motion, which characterises the body in question. It is the plastic power which the object contains within itself, closely bound up with its own characteristics, colour, consistency, form (flat, concave, convex, cubic, spiral, elliptical, spherical etc.)" He goes on to say "The plastic power with which an object is endowed is its force, that is, its primordial psychology. This power, this primordial psychology, enables us to create in our

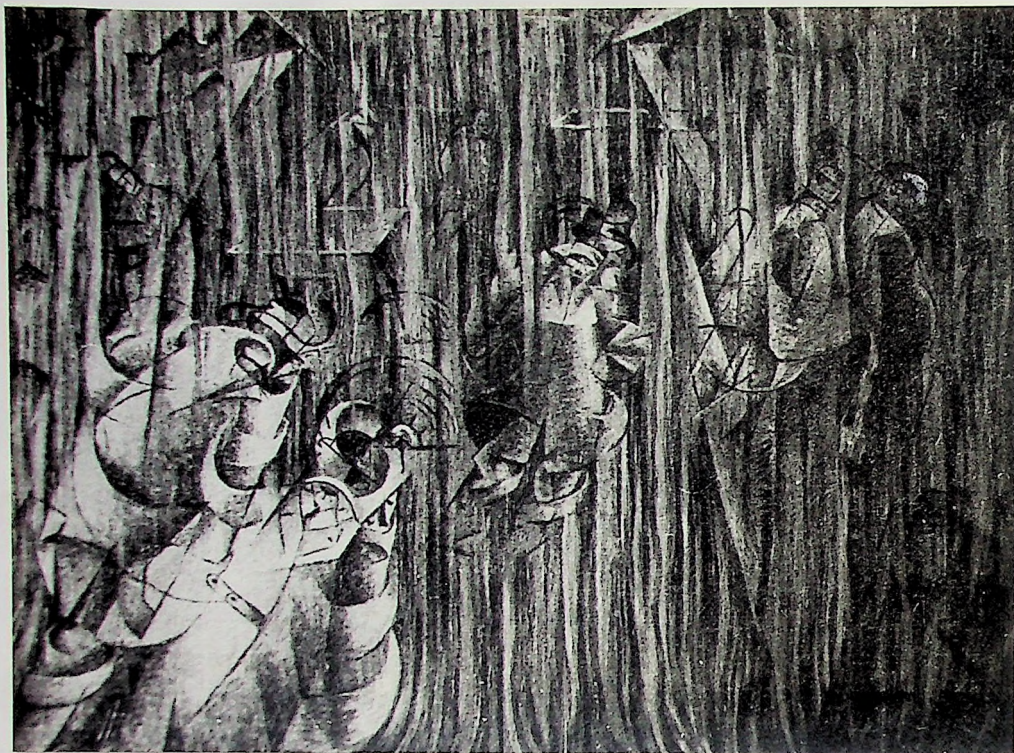
paintings new subjects which do not aim at narrative, or episodic representation, instead it coordinates different plastic values of reality, a coordination which is purely architectural, freed of all literary and sentimental influence."¹⁷

Boccioni's States of Mind, 1911, Those who Go and Those who Stay are an ambitious attempt to move away from the descriptive reality and to capture the essence of emotion by forcing colours and forms together. For the Futurists, colour and form are equal energetic elements. They derived this theory from observing the effects of speed on objects. They singled out the element of speed as their symbol of newness and revolutionary change, which corresponds to the changes in man's sociobiological condition. Speed, a new entity, provides a new beauty, a new viewpoint is the consequence of this age of speed. If we recap on the experiment made by Jean Carlu which showed that an object's descriptive form when accelerated to high speeds is distorted, because of speed, the object's form and colour are fused together making it impossible to distinguish one from the other.

In Boccioni's composition Those who Go, 1911. neither colour nor form play a role of academic representation, but merely convey the dynamic of its content as sensed by the artist. In this instance, the form for expressing such content has nothing in common with reality. Boccioni was not trying to recapture the reality of speed, but rather to evoke the sensation. In their technical manifestos of 1910, they declared "Our growing need for truth is no



UMBERTO BOCCIONI. 1911.
States of Minds, Those Who Go, A sensation.

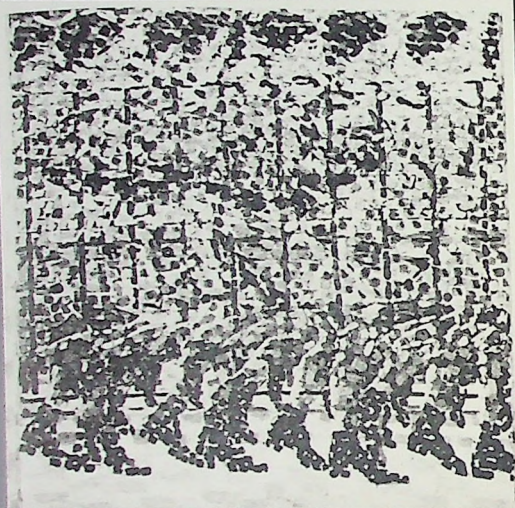


UMBERTO BOCCIONI. 1911.
States of mind, Those Who Stay. A sensation.

longer satisfied with form and colour as they have been understood hitherto. The gestures which we would reproduce on canvas shall no longer be a fixed 'moment' in universal dynamism. It shall simply be the 'dynamic sensation'".¹⁸

Universal dynamism was the principle that drew together all objects in time and space. As Bergson wrote in 1913 "Does not the fiction of an isolated object in time and space imply an absurdity, since this object borrows its physical properties from the relation which it maintains with all the others, and owes each of its determinations, and consequently its very existence, to the place which it occupies in the universe as a whole." It followed for Bergson "that any divisions of matter into independent bodies with determined outlines is artificial."¹⁹ Such thoughts were to concern each of the Futurists in different ways.

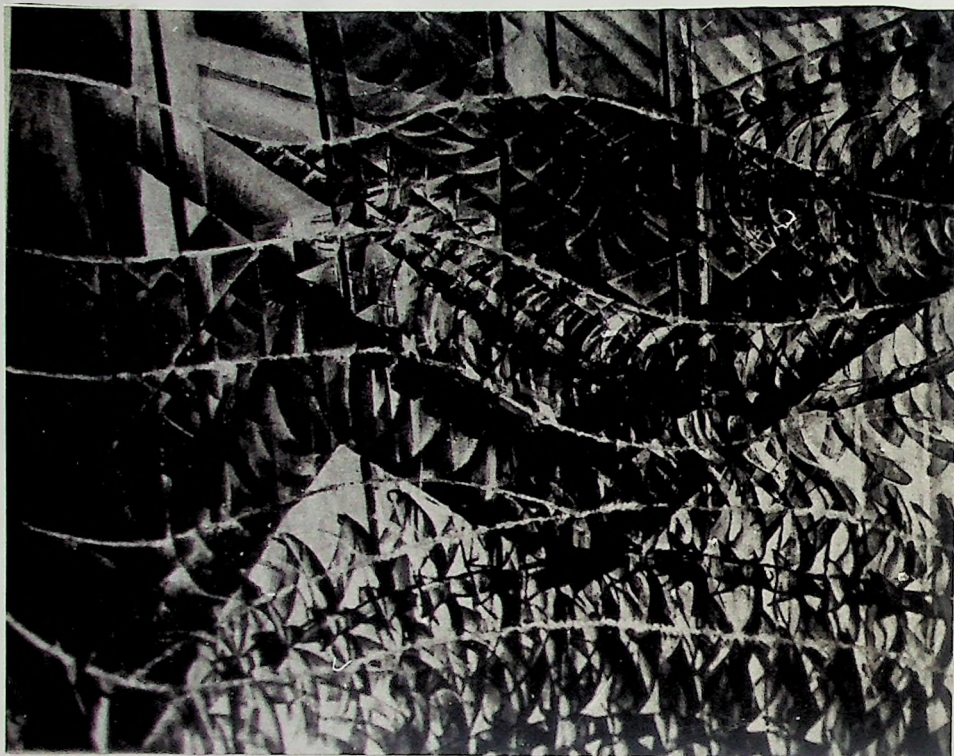
Each painter took from the endless source of dynamic material, the aspect that most concerned him. The Futurist movement in general took as their symbols of a modern age, the railway engine, motor, aeroplane, armoured train, bullet, gun, cannon. These were all symbols of dynamic sensation. The Futurists proclaimed as a basis for the new dynamic sensation only that which contains the maximum of dynamic movement; objects of static content do not enter the sphere of their perception. Among the variety of dynamic sensations, for Balla, it was above all the simple optical phenomena, the effect of fractured and dissipated light. For example, his composition Girl Running on a Balcony, 1912, Balla's patches of broken colour are similar to the pointillist and



GIACOMO BALLA. 1912.
Girl running on a Balcony.

divisionist techniques put forward by the Impressionists and Seurat at the beginning of the century. ... "Since to our perception, movement changes the shape of an object quite as much as does light."²⁰ They looked upon their objects, in fact, whether a static bottle or a racing horse, as embodying two kinds of motion: (i) that which tends to move in on itself, suggesting in its centripetal force the internal mass of an object, and (ii) that which moves outward into space mingling its rhythms with those of other objects and eventually merging with space itself. Balla's Girl Running on a Balcony, 1912, complies with this mingling of rhythms, the fusion of form with space. Its structural format is also similar to Marey's chromophotograph 1884. We can see in the illustration where the similarities lie. In 1913 Balla developed a more fluid expression for his passion for light, e.g. his composition Flight of Swifts, 1913. The paths of their movement are depicted in complex overlapping rhythms, which fill the whole canvas. Again the literal description similar to Boccioni's States of Mind 1911 is subordinate to the rendering of pure sensation. There is also no attempt at perspective. Perspective was considered by Renaissance artists to be a scientific measurement of what is seen. This conception, being purely external and panoramic in nature, runs counter to pure sensation, which obeys entirely contrary laws.

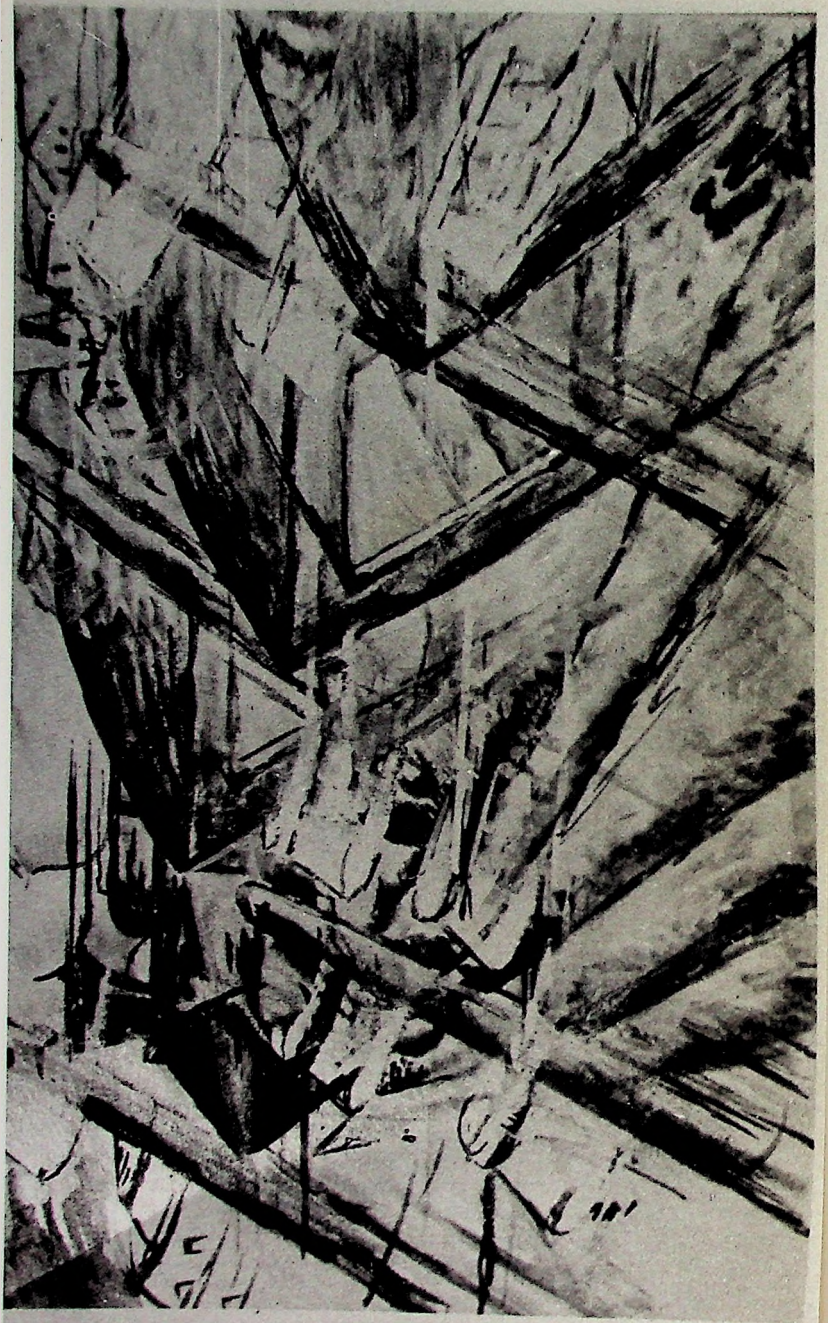
Sensations are evoked through the mind's capacity for association and sequential observation. In their technical manifesto they said their goal in organising a painting was "to put the spectator in the centre of their picture". What



GIACOMO BALLA. 1913.
Flight of the swifts,

they were hoping for was by making the spectator participate in the complex activity suggested by the forms, colours and fragments of light, objects etc., they were allowing the painting to take effective possession of his mind. "We do not want to observe, dissect and translate objective analysis as a basis for painting, we identify ourselves with the thing, which is profoundly different."²¹ The difference being that pure sensation, which the Futurists sought to convey on their canvasses, is something felt, and not something that has a physical reality. Painting came to mean the depiction of speed itself, the inherent sensation, which some objects possess. In other words, dynamism is the additional element that transforms the perception of one state of phenomena into another, just as we have seen in Paul Klee's art, for example, his use of mathematics to structure musical chords, to give expression to something that is essentially audible into something visible. This applies to his composition Ancient Sound in particular.

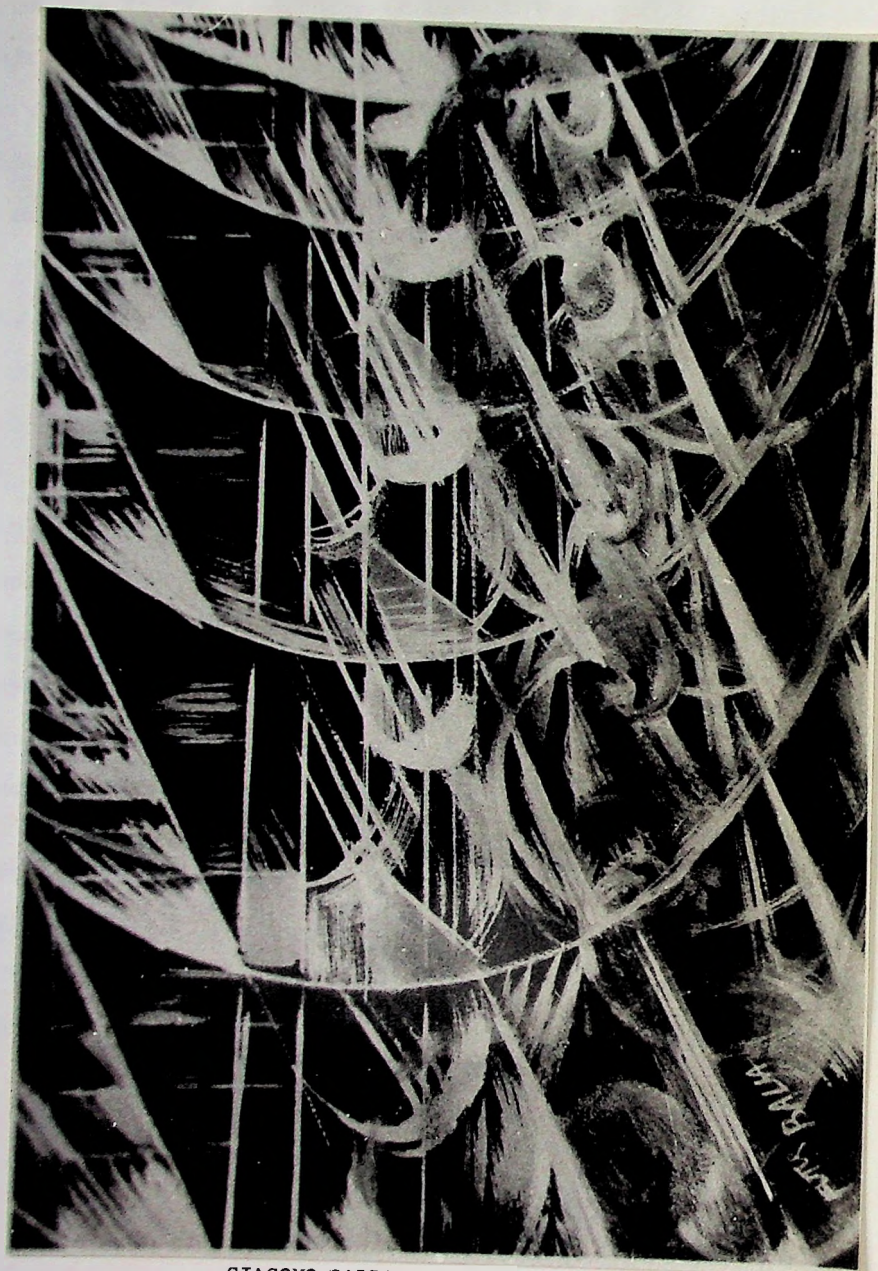
Around 1910, the Futurists had begun to emphasise movements, saying "the world's splendor has been enriched by a new beauty, the beauty of speed."²² Boccioni's Train in Motion, 1911, shows an analysis of speed, the effect of the train and its speed is communicated together, rather than as a static representation of isolated forms. The painting implies dynamic force, and although there is no literal description of a train, we assume, because of the title and the superimpositions, also the overall quickness of gestural marks, that the painting suggests that something is in motion, "Indeed all things move, all things run, all things are rapidly changing"²³ was the Futurist motto.



UMBERTO BOCCIONI, 1911.
Train in Motion.

Balla's Abstract Speed, 1913, is also a move away from pure descriptive form. For that reason his painting is on the same lines as Boccioni's Train in Motion, 1911, which fuse colour and forms together, thus robbing all literal descriptiveness, leaving us with an indication of speed, and because of our mind's capacity to make associations, we readily identify with the suggested motion. In both these paintings, Boccioni and Balla have found visual symbol values for space-time experience. Such a symbol is the spiral. It revolves from the outside to the inside with constant ascent. Inside and outside are simultaneously seen. "An architectural construction is spiral form" they wrote in their manifesto of 1913, "creates for the observer a continuity which allows him to understand, through the force-forms, which is derived from real form, a new form defining objects and their driving force."²⁴

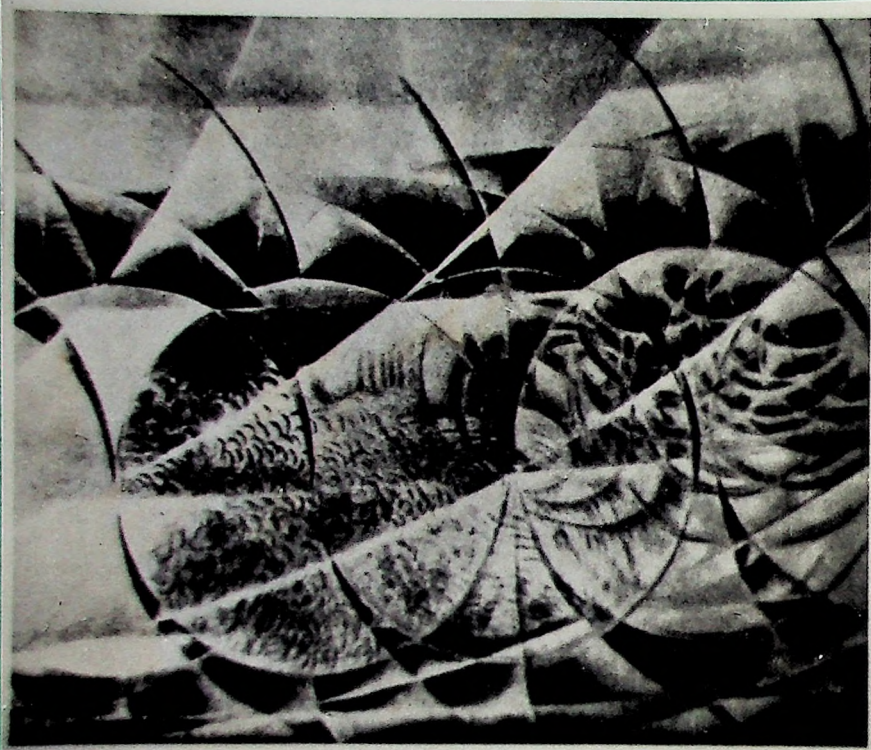
Rather than rebelling against the Impressionists, the Futurists looked upon them, rather than Cezanne, as the founder of modern art. They agreed with them that no object, moving or still can be seen in isolation, but absorbs its surroundings just as it contributes to them. "Hence for us, the object has no form in itself, the only definable thing is the line which reveals the relationship between the object's weight (quantity) and its expression (quantity)"²⁵ In Abstract Speed, 1913, and Train in Motion, 1911, these force lines are characteristic elements of the trains and, I suspect, the cars' design. In other words, the lines echo the extensive form, the only realistic tie to the object in question. The rest we have to fill in with our imagination.



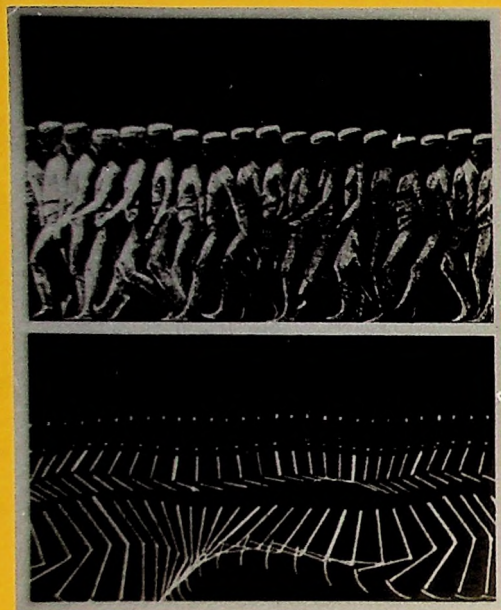
GIACOMO BALLA, 1913.
Abstract speed.

Much of the intrigue and splendor of Futurists' art is contained in their documented manifestos. They saw the media of literature as a vital tool in communicating their ideals. They voiced their opinions arrogantly and as loud as they possibly could, for they had generations of old, traditional art to destroy. "Living art" they proclaimed in the early days of their movement, "draws its life from the surrounding environment. Our forebears drew their artistic inspiration from a religious atmosphere which fed their souls; in the same way, we must breathe in the tangible miracles of contemporary life - the iron network of speedy communications which envelops the earth, the transatlantic liners, the dreadnoughts, those marvellous flights which furrow the skies, the profound courage of our submarine navigators and the spasmodic struggle to conquer the unknown."²⁶

"It should never be forgotten", they proclaimed with eager austerity, "that we are passing through a stage in a long progress towards interpenetration, simultaneity and fusion, on which humanity has been engaged for thousands of years."²⁷



GIACOMO BALLA.
Densities of the atmosphere, 1913.



MAREY. 1880s
Chronophotographs of walking and running man.

Foot Notes. Chapter II

1. Bronowski, Professor J. The Ascent of Man
British Broadcasting Corporation. p.332
2. Royal Academy of Art Catalogue. Post-Impressionism Cross
Currents in European painting 1970-80 in association
with Weidenfeld and Nicholson London
Cezanne recorded conversations: p.53-58
3. Berger Joh. Selected Essays and Articles, the look of things.
Merleu Ponty on Cezanne. p.195.
published essays entitled Le Doute de Cezanne - Sense and
Nonsense. Trans, Hubert L. Dreyfus, Northwestern
University Press 1984.
4. McKeachie, Doyle, Moffet. Psychology 3rd Edition
Mass. pub. Addison-Wesley company 1976. 'Gestalt School
of Philosophy' - p. Ch. Vision Motivation.
5. Hoffman Hans. Search for the Real In the Visual Arts.
p. 40-48.
"The artists technological problem is how to transform
the material with which he works back into the sphere of
the spirit. "p.40. On space he writes: "Expansion and
contraction in a simultaneous existence is a character-
istic of space". p.42.
"Pictorial space exists two-dimensionally when the two
dimensionality of a picture is destroyed, it falls into
parts, - it creates the effect of naturalistic space. p.43.

On colour he writes: the creative possibilities of colour
are not limited to plastic expression. Although the
composition and function of colour are two of the most
important factors in determining the qualitative content of
a painting. The reciprocal relation of colour to colour
produces a phenomenon of a more mysterious order. This
new phenomenon is psychological. p.45.
6. McKeachie, Doyle, Moffet. Psychology 3rd Ed.
Mass. Addison-Wesley Co., 1976.
Records the experiment in Wisconsin : on reciprocity
value of colour. Ch. colour, Psychological Vision.
7. Malevich, KS. Essays on Art Vol. 11. 1915-1933
Ch. on Analysis of new and Imitative Art. (Paul Cezanne).
p. 19-29 also ch.X. An attempt to determine the
relation between colour and form in painting. p.124-153.
8. Royal Academy of Art Catalogue Post-Impressionism Cross
Currents in European painting 1970-80, in association
with Weidenfeld & Nicholson London. p.53-58.

"Past art for Cezanne, was not a historical straight
jacket. Throughout his career he studied and copied
from works of art in the Louvre, and used these
experiences as a means of revitalizing his own
perception of form and colour. "In the early stages
he was impressed by an exhibition of Chardins still-lives
shown in the Louvre in 1809, in the La Caze bequest.
Ref. to p. 29 text.

9. Royal Academy of Art Catalogue. Post-Impressionism Cross Currents in European Painting 1940-80 in association with Weidenfeld & Nicholson London. Recorded conversation p. 53-58. He wrote to Bernard 1905, "the Coloured Sensations which creates the light produce abstractions which do not allow me to cover my canvas, nor to pursue the delination of objects where their points of contact are fina and delicate, hence my image or picture is incomplete." Letter of 23 Oct. 1905
10. Benger John, Selected Essays and Articles Ch. The Sight of Man. Penguin Books. Description of Space - p.196.
11. Fry, Edward F. Cubism Thames & Hudson George Braque, Thoughts on painting 1917. Note 16,17. p.147-148.
12. Paul Klee. On Modern Art. p.49
"presumptuous is the artist who does not follow his road through to the end. But chosen are those artists who penetrate to the region of that secret place where primeval power nurtures all evolution".
13. Paul Klee. Pedagogical Sketch Book, 1925
"Overcomes the ascending energy of the rudder, the physical curve thus ends as a perpendicular line. (the oretically in the center of the earth. p.56.
14. Klee Paul, On Modern Art. p.39
Pytagoras found a basic relation between musical harmony and mathamatics. p.155 of Bronowski. The Ascent of Man, applies to Klee's, Ancient Sound, construction of patterns, single unit. Mathematics is in many ways the most elaborated and sophisticated of all the sciences. "A ladder for mystical as well as rational thought in the intellectual ascent of man", p.115 (Bronowski).
15. Klee Felix. The Diaries of Paul Klee 1898-1918
Diary iii, p.36, 1900-1901, - 136
16. Klee Paul. Pedagogical Sketch Book, 1925. p.33
17. Umbro Apollonio. Futurist Manifestos. Thames & Hudson 1973
Absolute motion and relative motion = Dynamism 1914 p.50-154
18. Umbro Apollonio. Futurish Manifestos, 1973. Thames & Hudson. Technical manifesto on painting 1910. p.27. "On account of the persistency of an image upon the retina, moving objects constantly multiply themselves. Their form changes line rapid vibrations in their mad career". p.28.
19. Umbro Appollonio. Futurist Manifestos. Thames & Hudson 1973
Umberto Boccioni the plastic foundation of Futurist Sculpture and painting 1913. See also article on Bergson, p.89. published in Lacenba (Florence) 15 March 1913

20. Umbro Appollonio. Futurist Manifestos. Thames & Hudson 1973
Article on painting 1912 manifesto. p.90.
21. Umbro Appollonio. Futurist Manifestos. Thames & Hudson 1973.
The plastic foundation of Futurish Sculpture and painting
1913. p.90.
22. Umbro Appollonio. Futurist Manifestos 1973. Thames & Hudson
The exhibition to the public 1912, p.45-50.
23. Umbro Appollonio. Futurist Manifestos 1973. Thames & Hudson.
The manifestos of futurist painting 1910 signed by
Umberto Boccioni, Carlo Carra, Luigi Rossolo, Giacomo
Balla, Gino Severini, p.27.
24. Umbro Appollonio. Futurist Manifestos 1973. Thames & Hudson.
Futurist manifesto of plastic dynamism 1913, p.94.
25. Umbro Appollonio. Futurist Manifestos 1973. Thames & Hudson.
Manifesto of plastic dynamism 1913. p.90. Also in the
manifesto of the plastic foundations of Futurist
Sculpture and painting 1913. "This measuring of objects
and the atmospheric forms which they create and in which
the are contained forms the quantitave value of an object.
If we then go deeper into our percept we
and translate the other value, that is the qualitative
value, we shall discover the motion, the impulse of the
object.
26. Umbro Appollonio. Futurist Manifestos 1973. Thames & Hudson.
Futurist manifesto of painters 1910. p.25
27. Umbro Apollonio. Futurist Manifestos 1973. Thames & Hudson
Manifesto of plastic Dynamism 1913. p.90.

-PAUL KLEE. 1925.-
notes from the
Pedagogical Sketch-
book. _____

l. ①

①

An active line on a walk, moving freely, without goal. A walk for a walk's sake. The mobility agent is a point, shifting its position forward (Fig. 1):



Fig. 1

The same line, accompanied by complementary forms (Figs. 2 and 3):

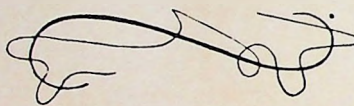


Fig. 2

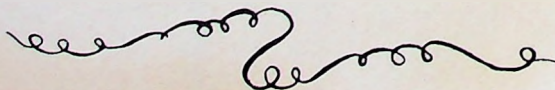


Fig. 3

l. ①

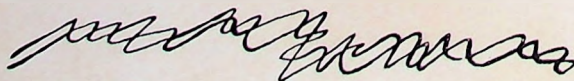
The same line, circumscribing itself (Fig. 4):

Fig 4



Two secondary lines, moving around an imaginary main line (Fig. 5):

Fig 5





Symbols of form in motion.

33 The spinning top.

A scale, deprived of its material support, and reduced to one point of contact, will topple and fall, even if its weight has been carefully distributed (Fig. 60):

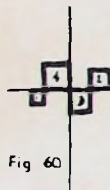


Fig. 60

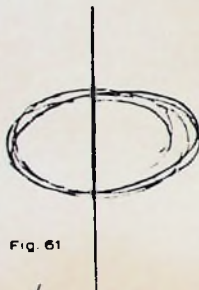
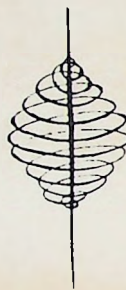


Fig. 61



Horizontal gyration will save this toy from falling.

This is the principle of the spinning top. (Fig. 61.)

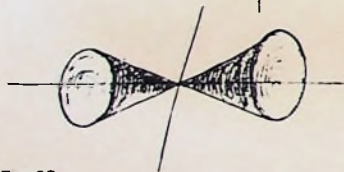


Fig. 62

A double top will even dance on a taut string without falling (Fig. 62).

PAUL KLEE. 1925.

Symbols of form in motion. Energy and substance, that which moves and that which is moved, were of equal importance as symbols of creation. He loved the natural event, therefore he knew its meaning in the universal scheme.



6 Structure.

(Divisional Articulation.)

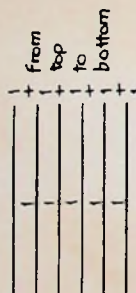
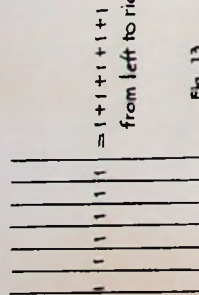


Fig. 13

Fig. 13: The most primitive structural rhythm based on a repetition of the same unit from left to right, or top to bottom.

Fig. 14: Very primitive structural rhythm in double motion top to bottom and left to right.

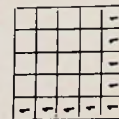
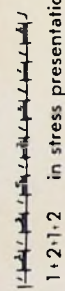
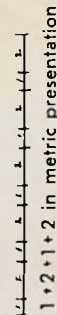


Fig. 14

Fig. 15: This rhythm is more complex. Its theme is: one plus two (1 + 2).



If 1 + 2 + 1 + 2 are replaced by (1 + 2) + (1 + 2) it equals 3 + 3 + 3 + 3 which amounts to another repetition of the basic theme.



6 Quantitative Structure, moving to two dimensions. (The Chessboard)

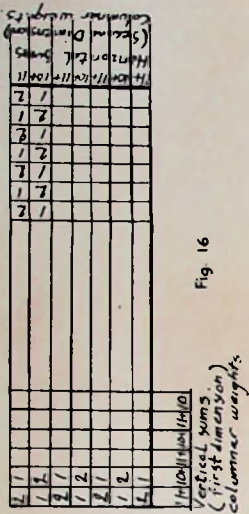


Fig. 16

Horizontal and vertical sums (Fig. 16):

$$11 + 10 + 11 + 10 + 11 + 10 = (11 + 10) + (11 + 10) + (11 + 10) = 21 + 21 + 21 = 1 + 1 + 1$$

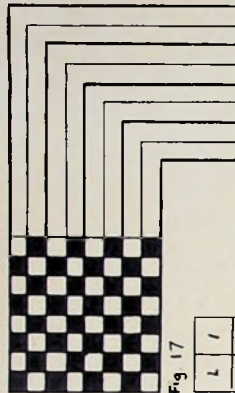


Fig. 17

Fig. 17a

Fig. 17: If one considers section 17a as a unit with 6 values, one arrives at the following numerical presentation of Fig. 17:

$$\begin{aligned} 6 + 6 + 6 + 6 + 6 + 6 &= 1 + 1 + 1 + 1 + 1 + 1 \\ + + + + + &= 1 + 1 + 1 + 1 + 1 + 1 \\ 6 + 6 + 6 + 6 + 6 + 6 &= 1 + 1 + 1 + 1 + 1 + 1 \\ + + + + + &= 1 + 1 + 1 + 1 + 1 + 1 \\ 6 + 6 + 6 + 6 + 6 + 6 &= 1 + 1 + 1 + 1 + 1 + 1 \\ + + + + + &= 1 + 1 + 1 + 1 + 1 + 1 \\ 6 + 6 + 6 + 6 + 6 + 6 &= 1 + 1 + 1 + 1 + 1 + 1 \end{aligned}$$

purely repetitive and therefore structural.

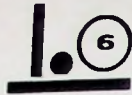


Fig. 18: Both dimensions combined, seen diagonally.

Fig. 18:

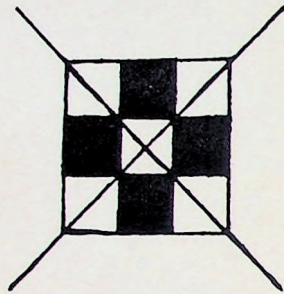
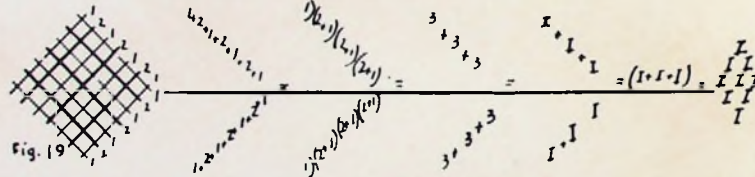


Fig. 19: Linear variation.



Since these figure arrangements rest on the principle of repetition, any number of parts can be added or taken away without changing their rhythmic character.

Fig. 20: $\frac{1}{2}$ as divisional rhythm $\frac{1}{4}$ as divisional rhythm $\frac{1}{8}$ as divisional rhythm $\frac{1}{16}$ as divisional rhythm $\frac{1}{32}$ as divisional rhythm $\frac{1}{64}$ as divisional rhythm $\frac{1}{128}$ as divisional rhythm $\frac{1}{256}$ as divisional rhythm $\frac{1}{512}$ as divisional rhythm $\frac{1}{1024}$ as divisional rhythm $\frac{1}{2048}$ as divisional rhythm $\frac{1}{4096}$ as divisional rhythm $\frac{1}{8192}$ as divisional rhythm $\frac{1}{16384}$ as divisional rhythm $\frac{1}{32768}$ as divisional rhythm $\frac{1}{65536}$ as divisional rhythm $\frac{1}{131072}$ as divisional rhythm $\frac{1}{262144}$ as divisional rhythm $\frac{1}{524288}$ as divisional rhythm $\frac{1}{1048576}$ as divisional rhythm $\frac{1}{2097152}$ as divisional rhythm $\frac{1}{4194304}$ as divisional rhythm $\frac{1}{8388608}$ as divisional rhythm $\frac{1}{16777216}$ as divisional rhythm $\frac{1}{33554432}$ as divisional rhythm $\frac{1}{67108864}$ as 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Summary and Conclusion:

Without tradition, art is a flock of sheep without a shepherd, without innovations, it is a corpse."¹

Sir Winston Churchill

(Times, May 11, 1953)

So far we have looked at some of the stages of space interpretation and means of rendering motion on the two-dimensional plane. Beginning with the renaissance provided is with a base to work from. A moment on the historical scale of events from which to evaluate the subsequent changes in artistic development. We saw in renaissance art a move away from the mystical concept of the world, which was prevalent in medieval times. Man's search for truth and knowledge and a growing self-awareness in a climate of great revolutionary change led him to explore mathematics to establish criteria and general laws by which natural phenomena can be categorized and described. The discovery of the vanishing point perspective rooted in geometric optical science provided the renaissance artist with a magical device by which they could capture on their canvas, an instant in time, this to them was reality.

Reality for Cezanne and the cubists came to mean something more than capturing a like-image, more than an instant in time, for in reality an object's many sides can be seen. However in order to express this phenomena on the flat surface of their canvas, they had to change their approach to the visual world, they had to abandon the age old habit of looking at objects as though complete in themselves, their completeness making them separate, isolating them from their surroundings.

Beginning with impressionism, Cezanne and the cubists, forms

were reduced to essentials. This move away from imitative representation was inspired by a number of different but related factors, for example (i) the philosophic concept put forward by Henri Bergson that, "with the passage of time an observer accumulates in his memory a store of perceptual information about a given object in the external world, and this accumulated experience becomes the basis for the observers conceptual knowledge of that object".² and (ii) the development in science and physics, eg the splitting of the atom, and the uncovering of the underlying structure of nature as a consequence, provided twentieth century artists with the necessary impetus to move towards abstraction. The introduction of a rough sort of axonometric projection and other ambiguous forms of spatial representation opened up possibilities of internal conflict in a picture. The forms once depicted in the traditional style of enclosed space lost their solidity and became like the constituent parts of an atom in science, separate particles of colour on the surface of an impressionist painting. The abstraction of colour as a new pictorial element inspired Cezanne to renew form and design to match the new colour of impressionism. From there cubism flourished which revolutionised the whole visual world.

As a means of mans identification with his fellow-men, nature and the world, as his means of feeling and living together with everything that is and will be, art is bound to grow as man grows in stature. Art is bound also to change just as man himself changes with time. The process of identification, originally covered only a small range of natural phenomena, but in a changing world such as ours is, new forms have developed out of the demands of speed.

The first motor cars were developed in the wake of horse-drawn carriages, but the new engine was stronger and more powerful than the old mode of transport. Technology became the instigator of a new kind of beauty. This beauty was speed, and as a result a new view-point in the visual world, was made available to mankind. The world was no longer static, a slow moving easy going paradise, in which time could slip by unnoticed and we as humans could contemplate our own actions. Nature's natural landscape became the stage for fast moving objects, mechanical cars, motorised stairways, all of which shuffle us around from one place to another and at the same time providing us with a different optical experience.

For the futurists the realization that the mode of perception of modern life, as the result of speed, was as drastically altered as life itself was a significant aspect. Caught under the spell of modernity they concentrated their efforts on trying to grasp the fleeting sensation of speed itself. Spell bound by the new age they declared in their manifestos of 1914, "the utter antithesis between modern and the old is determined by all those things that formerly did not exist. Our lives have been enriched by elements the possibility of whose existence the ancients did not even suspect. Men have identified material contingencies and revealed spiritual attitudes whose repercussions one felt in a thousand ways. Principal among these is the formation of a new ideal of beauty that is still obscure and embryonic, but whose fascination is already felt even by the masses".³

Today civilization has begun a change greater than any of those

of the past. Changes in our societies are taking place with tremendous rapidity on the historical scale. More than any other time in the past we are faced with the crucial paradox of knowledge. With every new year we devise more precise instruments with which to observe nature with greater accuracy and fineness. Microscopes and telescopes reveal the micro and macromos. The space we live in has grown as a result of our growing self-awareness from an earth bound existence to universal dimensions, with space travel on our door step. Every facet of our lives is in a state of acceleration. Cinema and television have accustomed modern man to the unlimited possibilities of movement in pictures. Three dimensional photography is on the treshold. Hilography, lazer and neon light still very much in their experimental stages and rapidly breaking ground as a viable mode of artistic expression for time and space values. The means of rendering motion on the two dimensional plane has also changed considerably since artists essentially interact with and are influenced by the changing societies they live in. It is only natural that they should develop new means of expressing new realities. In another higher sense too, the development of art seems of extreme importance. Art embodies the noble, the creative, without a material goal, the purely spiritual in man. And as Nimo Calos so aptly puts it, "never was the strengthening of these qualities more sorely needed than in our time when fighting instincts inherited from our forbears, juggle with atomic bombs.

¹ Times - May 11 1953. Sir Winston Churchill.

² Fry Edward F. Cubism Thames and Hudson.
p.38 ch. cubism as a stylistic and historical phenomenon.

³ Umbro Apollonio, ed. Futurish Manifestos 1973
Thames and Hudson. Manifest of futurist architecture 1914.
Antonio Sant Elia.

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GLOSSARY

- Abstract Art** Generic, non-specific terms covering art that in various degrees departs drastically from the natural appearance of things.
- Abstract Expressionism** Movement in modern art, especially painting, in which forms and colours alone are the emotive forces without reference to nature.
- Collage** French for 'paste-up' work of art made up wholly or in large part from bits of paper, cloth, or other material pasted onto a flat surface. The three-dimensional equivalent is assemblage.
- Complementary Colours** In physics, any two colours of the spectrum that combined produce white light. In painting however, the complimentary colours red/green, yellow/purple, blue/orange, when mixed together produce brown/greys. When juxtaposed in the right intensities, complimentary colours are mutually intensifying. The principle is important to Impressionism and Pointillism, also with Cezanne.
- Futurism** Modern art movement originated by an aggressively self-publicising group of Italian artists and literati, just before World War I, which advocated the destruction of traditional art and the creation of new forms expressing the speed, energy and violence of modern times. The automobile, railroad and airplane were among its symbols.
- Optical Art** A classification of abstract painting utilising geometrical patterns, the creation of illusions of formal displacement or motion, often in black and white, as well as chromatic juxtapositions that set up illusionary colour changes and pulsating vibrations.
- Perspective** The art of picturing things or scenes on a two-dimensional surface in ways that represent them in three dimensions as they appear to the eye. Perspective is of two kinds, linear and aerial.
- (i) linear perspective, lines that are parallel in nature converge as they recede into the distance and objects of the same size in nature become smaller in proportion to their distance from the eye.

(ii) Aerial perspective takes into account the softening effect of distance, the diffusion or loss of detail, diminished value contrasts, and the bluish colour of distant scenes, all the result of atmosphere intervening between the eye and the thing or scene viewed.

Primitive Artist

Self-taught artist who has not mastered such standard means of representation as perspective, foreshortening, and the like, but who, as a result, may develop an express individual style, applies to Cezanne, Cubists, Futurists and Klee.

Space-time

Concept in modern physics by which space and time are indissolubly united, the three dimensions of space being joined by the fourth of time. In art the concept is basic to Cubism, in which different aspects of the same object are represented simultaneously.

Symbol

Something that stands for something else, especially a physical object that stands for an abstraction.

Symbolism

A movement in reaction against realism.

Underpainting

Preliminary stage of a painting, in which the forms are defined, usually in monochrome, for subsequent development in greater coloured detail.