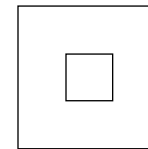


DYNAMICS



HSU WEI, "BAMBOO" FROM "TWELVE FLOWERS AND POEMS," INK ON PAPER, 59.5 X 32.4 CM. (23 1/8 X 12 13/16"), COURTESY OF THE FREER GALLERY OF ART.

"The springing flexibility of bamboo allows it to survive, even in the winds of change." / Ching  
"Bamboo without mind, yet sends thoughts soaring among clouds." Wu Chen (1280-1354)



**Prelude** -- *ludere* to play *prae* before -- to play beforehand. n. 1. a thing serving as the introduction to a principal event, action, performance, etc; preliminary part; preface; opening. 2. in music, a) an introductory section or movement of a suite, fugue, etc. b) since the 19th century, any short romantic composition. v.t. 1. to serve as or be a prelude. 2. to introduce by or as by a prelude. v.i. 1. to serve as or be a prelude. 2. to play or provide a prelude.

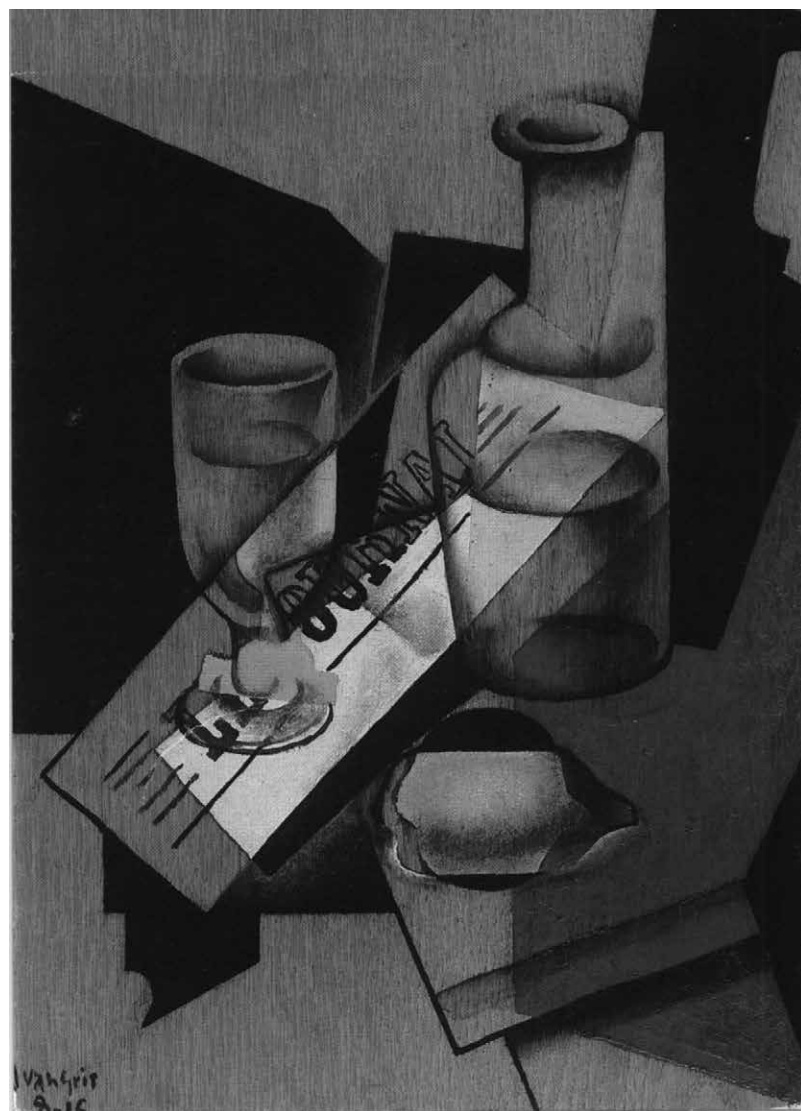
**Interlude** -- to play *inter*, or between times or at intervals; a game between two periods of business, hence something light introduced to relieve heaviness, as in a medieval morality or mystery. [from Origins] (*ludus*- - a game; cf. O. Irish *loid*, a song. Old Celtic *leut*-, to be joyous.)

**Syncopation** comes from the Greek *sym* - together + *koptein* - cut. Webster: in music, a) to begin a tone on an unaccented beat and continue it through the next accented beat, or to begin a tone on the last half of a beat and continue it through the first half of the following beat. b) to use such shifted accents in a musical composition. *syncopation* - in which accented beats are played against the unaccented beats of an underlying rhythm.

**Jazz** -- a kind of music, originally improvised but now also arranged, characterized by syncopation, rubato, heavily accented 4/4 time, dissonances, melodic variations and unusual tonal effects on the saxophone, clarinet, trumpet, trombone, etc.

## PRELUDE

*PURIST PAINTING*  
plane volume plane



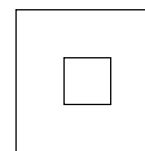
*I work with the elements of the intellect, with the imagination. I try to make concrete that which is abstract. I proceed from the general to the particular, by which I mean that I start with an abstraction in order to arrive at a true fact. Mine is an art of synthesis, of deduction, as Raynal has said. I want to endow the elements I use with a new quality; starting from general types want to construct particular individuals.*

*I consider that the architectural element in painting is mathematics, the abstract side; I want to humanize it. Cézanne turns a bottle into a cylinder, but I begin with a cylinder and create an individual of a special type: I make a bottle-- a particular bottle- out of a cylinder. Cézanne tends toward architecture, I tend away from it. That is why I compose with abstractions (colours) and make my adjustments when these colours have assumed the form of objects. For example, I make a composition with a white and a black and make adjustments when the white has become a paper and the black a shadow; what I mean is that I adjust the white so that it becomes a paper and the black so that it becomes a shadow.*

*This painting is to the other what poetry is to prose.*

*Though in my system I may depart greatly from any idealistic or naturalistic art, in practice I cannot break away from the Louvre. Mine is the method of all times, the method used by the old masters: there are technical means and they remain constant.*

Juan Gris Personal Statement 1921  
in *L'Esprit Nouveau* No. 5



"Gravity and inertia are being overcome."  
El Lissitzky (1926)

"One needs three jaws in order to conduct oneself  
and to 'eat' in space." Eduardo Chillida



The metaphorical model of Cubism is the **diagram**: the diagram being a visible, symbolic representation of invisible processes, forces, structures. A diagram will not eschew certain aspects of appearances: but these too will be treated symbolically as signs, not as imitations or recreations. The model of the diagram differs from that of the mirror [the metaphorical model of the Renaissance], in that it suggests a concern with what is not self-evident... The system of organization which the Cubists used leads us back to Cézanne, their other precursor. Cézanne raised and allowed the question of there being simultaneous viewpoints, and thereby destroyed forever the possibility of a static view of nature. (Constable's view, for all its bustling clouds, was nevertheless static.) The Cubists went further. They found means for making forms of all objects similar. They achieved this by reducing all forms to a combination of cubes, cylinders, and-- later-- facets and planes with sharply defined edges. The purpose of this simplification was to be able to construct the most complex view of reality ever attempted in the visual arts. The simplification was very far from being for simplification's sake. If everything was rendered in the same terms (whether a hand, a violin, or a window) it became possible to paint the interactions between them; their elements became interchangeable. Furthermore, the space in which they all existed could also be rendered in the same terms-- but in obverse. (Where the surface of an object was concave, the surface of the space was convex.)

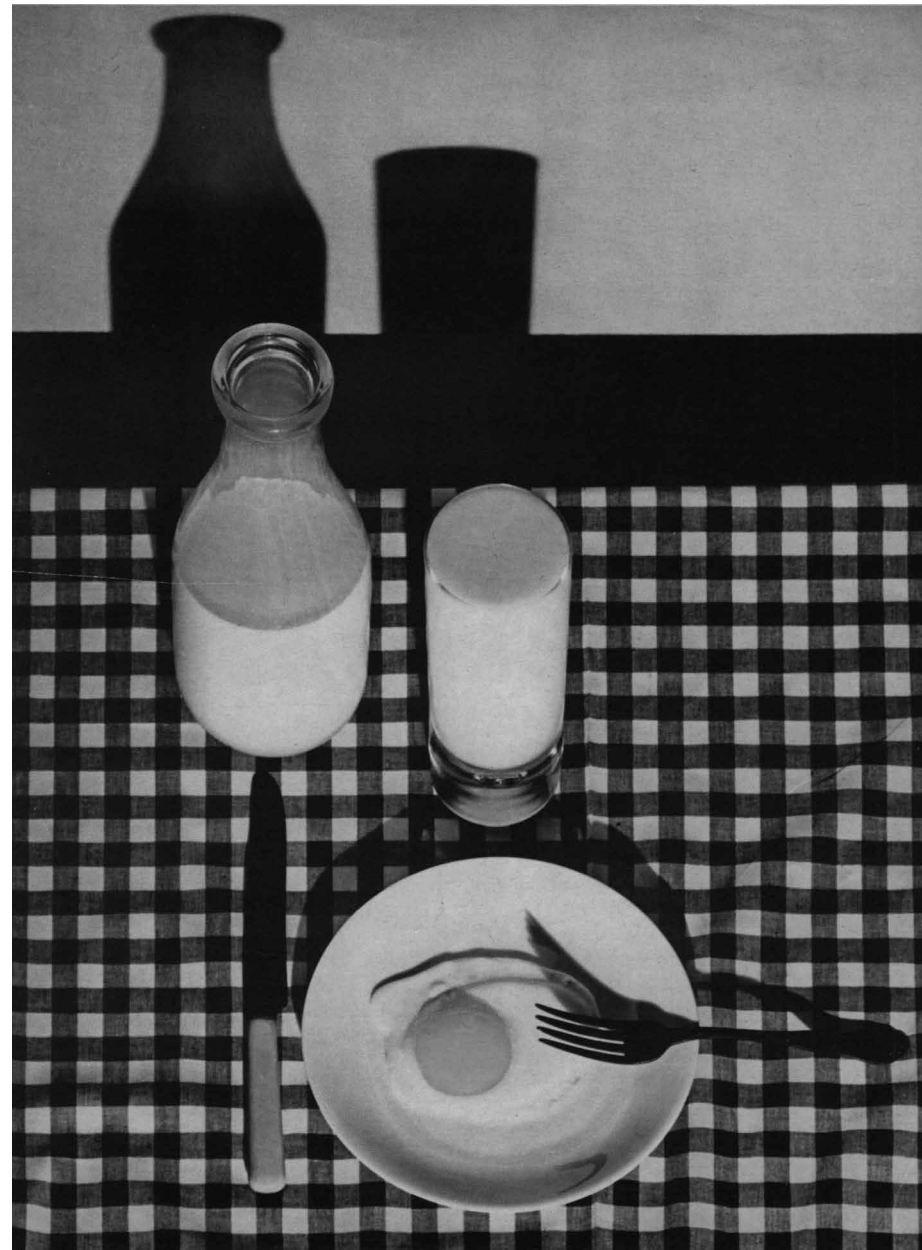
The Cubists created a system by which they could reveal visually the interlocking of phenomena. And thus they created the possibility of art revealing process instead of static states of being. Cubism is an art entirely concerned with interaction: the interaction between different aspects; the interactions between structure and movement; the interactions between solids and the space around them; the interactions between unambiguous signs made on the surface of the picture and the changing reality which they stand in for. It is an art of dynamic liberation from all static categories. All is possible [wrote André Salmon, a Cubist poet], everything is realizable everywhere and with everything....

The Renaissance artist imitated nature....

The Cubist realized that his awareness of nature was part of nature.

Cubism broke the illusionist three-dimensional space which had existed in painting since the Renaissance. It did not destroy it. Nor did it muffle it—as Gauguin and the Pont-Aven school had done. It broke its continuity. There is space in a Cubist painting in that one form can be inferred to be behind another. But the relation between any two forms does not, as it does in illusionist space, establish the rule for all the spacial relationships between all the forms portrayed in the picture. This is possible without a nightmarish deformation of space, because the two-dimensional surface of the picture is always there as arbiter and resolver of different claims. The picture surface acts in a Cubist painting as the constant which allows us to appreciate the variables. Before and after every sortie of our imagination into the problematic spaces and through the interconnections of a Cubist painting, we find our gaze resettled on the picture surface, aware once more of two-dimensional shapes on a two-dimensional board or canvas.... This makes it impossible to confront the objects or forms in a Cubist work. Not only because of the multiplicity of viewpoints—so that, say, a view of a table from below is combined with a view of the table from above and from the side— but also because the forms portrayed never present themselves as a totality. The totality is the surface of the picture, which is now the origin and sum of all that one sees. The viewing point of Renaissance perspective, fixed and outside the picture, but to which everything within the picture was drawn, has become a field of vision which is the picture itself.

John Berger— *The Moment of Cubism*

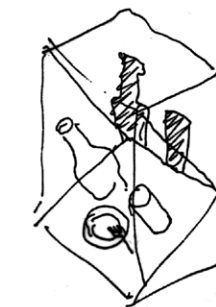
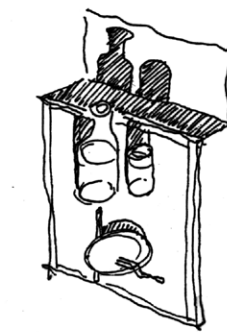
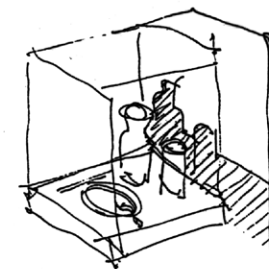


**BEING**

*"O wad som pow'r the giftie gie us/to see ourselves as ithers see us..."*  
Robert Burns, *to a Louse*

**Seeing and Knowing**

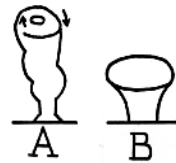
What is true? Look at the photograph on the left. What is strange about it is that we see what we know to be true, a rare visual experience indeed. The tablecloth looks to be made of right angle squares, the plate, bottle and glass are circles, and the shadows on the wall are exact profiles of the liquid containers. We usually see ovals and trapezoids instead of the circles and squares we *know* through the touch of our hands because the focussing plane of our eye or camera is rarely directly frontal and parallel to the shapes. We have learned to see lines which are actually parallel in space as visually converging towards an implied depth in a picture plane, and we call this perspective. This photograph of a breakfast table reveals the disparity between what our eye as still camera registers and what our brain as data processor and stereometric integrator learns. Seeing depends on an awareness of the conditions of looking, and involves noting relationships in space, in the visual field, and in the interaction between these. The Renaissance rediscovery of "true" perspective showed a "photographic reality" of the world, but at a cost. To "work", a perspective view demands observation from a single station point. Any change in position generates a different visual geometry. Thus we can only know what faces us in such an image. Is a cow etched on the back of the milk bottle? Is the tabletop horizontal, or is it vertical with only images of the crockery pasted to it, like a billboard? Such ambiguity, only partly overcome by the parallax of binocular vision, is inherent in the two-dimensional picture plane our eyes register and the three-dimensional world our bodies inhabit.



We experience phenomena in many dimensions. TV weather reports depict a complex spacetime reality. Animated satellite photos, national pressure/temperature maps, local radar scans, and 5-day forecasts all add up to a multi-format *model* of the weather environment around us. Does a fish see the sea? To truly see *our* spacial reality, to see *through* the world, we need vision, the simultaneous integration in the "mind's eye" of all relevant views, instructions, and diagrams. Before the event, we call it imagination. An architect imagines a house: will it be warm in winter and cool in summer, will the back be akin to the front, will the stair create a good hall upstairs and down? With such comprehensive "x-ray vision" it is not a difficult trick to design upside down-- a skill many architects develop from countless desk crits with students and clients.

Before photography, the primary function of painting was *mimesis*, the imitation of nature. Since Impressionism, painters have sought a role for painting no longer needed just to copy scenes. Paul Cézanne realized that a perspective view creates an illusion, a hole-in-the-wall window onto a landscape not really there, requiring us to ignore the reality of the canvas, picture frame and wall on which the work is hanging. A painting is thus a kind of hole *on* the wall, and like a diagram it brackets its content, taking it out of context. A square in a square represents not just a two-dimensional visual field, but also the sense of the field itself in a context: on a wall, in a room, in other dimensions. The Cubist and Purist painters who followed Cézanne in the 20th century consciously tried to order this structure of perception. Just as our weight bends a floor, vision creates a kind of perceptual "load" on the picture plane before us. Although the surface of a painting is flat, through the illusion of depth it proposes space. Do we "read" a painting as a recess into or a projection out of its wall? Once we accept, along with Cézanne, that a painting is not only a simple window to an illusion of space beyond, but also the presence of a very real surface constructed of paint, we begin to feel the drama that can occur at the picture plane. Our eyes seek to resolve this tension between depth and flatness. Do we project the surface rotating about its central horizon or do we imagine a punch through the wall into depth, parallel to our confrontation? Such issues as the conflict as between frontality and rotation can order a "structural design" of perception.

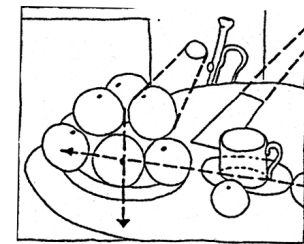
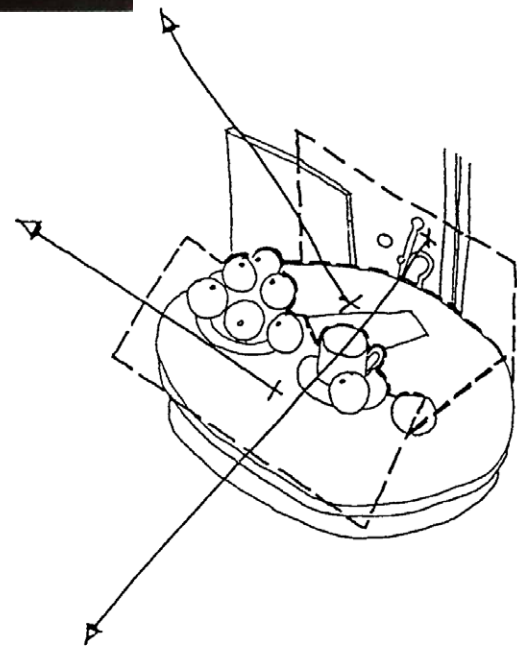
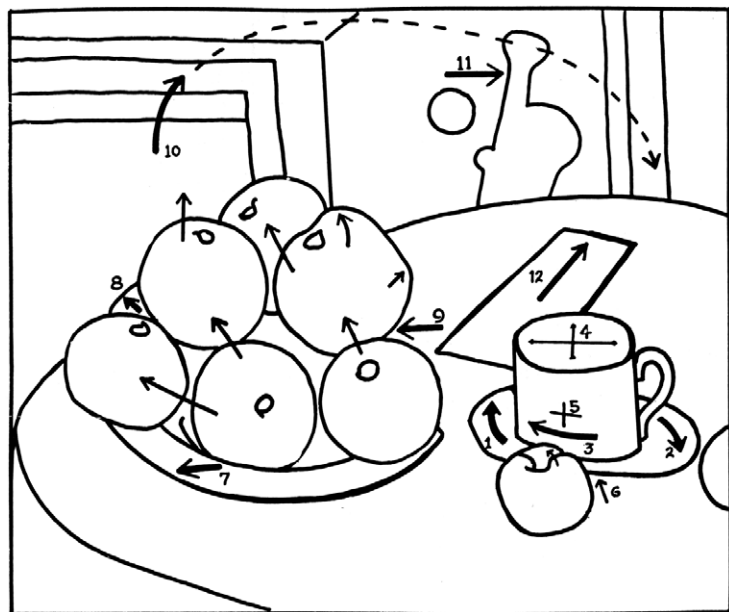




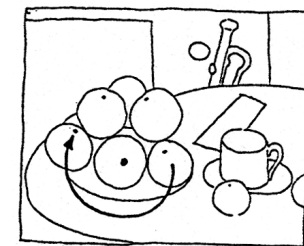
"The most extreme combination of two- and three-dimensionality are illustrated in the diagram above. Illustration A is a tracing from a wineglass in a painting by Picasso. Arrows at the top indicate the same kind of "thrust and return" as that analyzed in Cézanne's cup and saucer. But the top of the glass is seen from above while the bottom is drawn from a horizontal eye level. A combination of two- and three-dimensionality thus exists in the same object.

"Historically the same phenomenon can be traced back to Egyptian murals and Roman and Byzantine art. Illustration a is the general model for all three. I feel certain that Cézanne was not particularly interested in historical predecessors in this kind of drawing; but that he practiced it and very likely was responsible for suggesting it to Picasso and others is evident..."

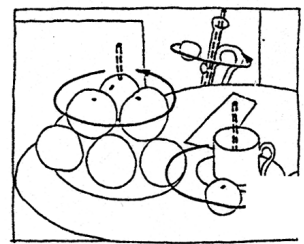
Earl Loran, Cézanne's Composition



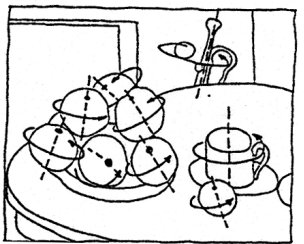
FALLING DOWN: GRAVITY  
FALLING BACK: PERSPECTIVE  
SLIDING ACROSS: BILLIARDS



MOVEMENT IN THE PICTURE PLANE



ROTATION INTO DEPTH



FREE BODIES IN SPACE

Forces Between Volumes

A painter or sculptor may see the play of solids and voids in the geometry of a bowl of fruit. An engineer may see the play of loads and forces in the same geometry. Newton revealed a physical relationship between force, motion and mass. This became the basis for the structural engineer's way of seeing forces: diagramming the magnitude, direction, and position of loads on masses and analyzing how they interact. The engineer's primary concern is to resolve these loads into stable structures, the branch of mechanics called statics, or into integrated moving systems, the branch of mechanics called dynamics. The architect's corollary is to be concerned with the transitions between states like the quality of light in a room over time, or the interaction between program and enclosure.

Gravity pulls each apple in a fruit bowl towards the center of the earth. The push of the topmost apple transfers to the bowl, table, and ultimately the earth itself. An apple in the middle of the pile might be supporting some fruit and sitting on others. The engineer's vision uses vectors and load diagrams to reveal these interactions of matter and forces. A wood or metal beam is a solid filled with matter. But a room is a solid that is essentially empty. The painter's apple has no weight on the canvas, yet Cézanne found a pictorial equivalent to the engineer's concern. Professor Diamond's and Erle Loran's diagrams of *Cup and Saucer with Plate of Apples* do not show literal structural loads on the fruit but rather the visual organization of pictorial elements in the composition. The relation between volumes in space and the relation between two-dimensional and three-dimensional space as recreated in the picture plane depend on the poised resolution of the kind of "forces" revealed in the Graphics studies of Architectonics while suggesting the movement of animation. Cézanne is the painter weighing apples, the painter weighing the space between apples, even the painter weighing light and space! Cézanne, the painter who is also an architect "in all but fact", found vision in the **interaction of volumes**.

Cézanne's Doubt

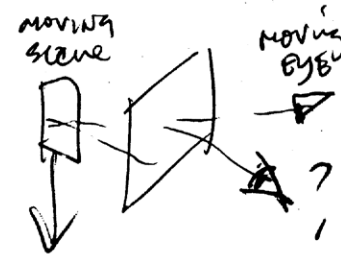
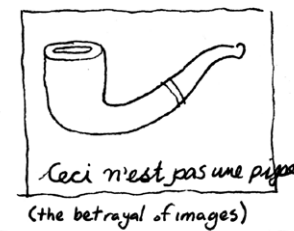
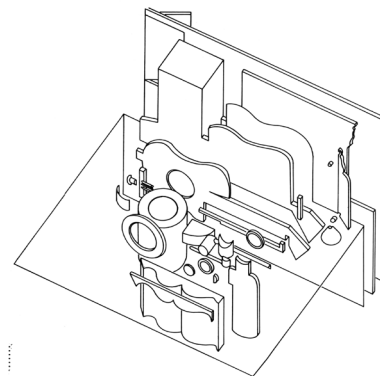
Paul Cézanne confronted the inadequacy of "scientific perspective" as a means of recording his experience of the physical world. Limited to a point fixed in space and time, perspective as a symbolic form was readily legible but limited. Cézanne's painting *Cup and Saucer with plate of Apples* breaks with the traditional use and display of perspective as the guarantor of fidelity to the world as we know it. Cézanne's canvas reveals fragments, seen by an eye in active motion, and reconstructed, more or less, as a continuous fabric. This fabric joins views from before, beside, and above, from various moments in time and space. Cézanne's process evolved into a way of structuring both the surface of the picture plane and the deep spaces it depicts. It enabled him to portray both the force of gravity pulling his apples to the ground and the force of perspectival recession pulling those same apples towards surrogate vanishing points through the surfaces of the rear wall. Diagrams of the painting shows how the axes of the apples lead the eye to the wall and trumpet behind them, how the tilt of the trumpet continues a circular motion in depth back to the foreground, and how a rotation of the cup and saucer continue this orbit. Cézanne painted in such a way that he revealed not only volumes, but also the forces acting on them. He found motion in still life. The viewer can participate in the spacial ambiguity between two-dimensional perception and three-dimensional movement by following the shifting viewpoints needed to see apples in space. Cézanne's paintings are the beginning of movies. The arrows in the analysis reveal Cézanne's recognition of a dynamic world of interacting volumes. Merleau-Ponty wrote of the wisdom of "Cézanne's ignorance"-- his refusal to subject looking to any single overall perspective as an artificial unifying fabric, in his quest to depict how we actually see.



NATURE MORTE A LA PILE D'ASSIETTES ET AU LIVRE. STILL LIFE WITH STACKED PLATES. 1920. MOMA VAN GOGH PURCHASE FUND.

"In this [*Still life with stacked plates, 1920*] the puzzling fragmented world of early Cubism was reintegrated, machined, polished, and endowed with static mathematical precision. Banal, everyday objects were reduced to the most generalized curves and rectangles, then disposed in flat planes parallel to the picture surface. The pictorial conception was not perspectival, but resembled an engineering drawing where the elevation and plan of the object might be included together on the same sheet. The Cubist principle of fusing different views here was regularized: the bottle top for example was treated as a pure circle. Objects and surfaces were contained in their outlines and were spliced together with purely abstract shapes in flat layers. Colour was also restricted by boundaries, and was painted in after the contour had been fixed by the drawing, whereas in analytical Cubism the method had been integral: take the colour away and nothing is left. The Purist range of colours included electric blues, light greys, pinks, ochres, earth reds, greens, black and white. Light was even, pearly, and opalescent." William Curtis

The notes above could almost be a program for building architecture...



to read  
a frame  
in space  
to READ A FRAME  
IN TIME

### WORKING DRAWING

How can we draw what we know rather than what we see? Architects achieve something like this all the time, using the conventions of plan and axonometric projections to communicate not only what spaces they envision, but also the instructions for how to build them (in *working drawings*.) The painters Amedée Ozenfant and Charles-Edouard Jeanneret (who later as architect took the name Le Corbusier) developed Purism, a mode of painting which exploited the conventions of plans, sections, and elevations to render everyday objects like bottles and glasses without visual distortion, true in shape and proportion, in compositions depicting volume organizations in two and three dimensional spacial orders simultaneously.

René Magritte's *Ceci n'est pas une pipe* ("this is not a pipe") presents a dilemma. Clearly, a pipe is represented. But a representation of a pipe is only a drawing. In perception obvious truths may not always be valid or exclusive. The innocent question "what is this thing?" sparks inquiries into the nature of perception, truth, reality, and being. To understand "what is this thing?" we must understand "what does this thing represent?" as well as "what could this thing represent?" We must also determine the qualities of space in which this represented thing sits.

The Cubist painters sought to alter or eliminate traditional perspective, like the Post-Impressionists and Fauvists before them. Without a single vanishing point as arbiter of all resolutions within the depicted space, other cues to volume and depth were invented, like layering and transparency. Plan and section, by no means new inventions, were inserted along with other fragmentary evidence of the actual set-up and remain visible in the finished canvases. The new arbiter of spatial conflicts is the flat and vertical surface of the picture plane itself. Like a working drawing, a cubist painting displays traces of the time, movements, and methods of transformation.

We may think of a cubist canvas as a cross-section through the design studio. (Photographic evidence shows that Pablo Picasso and Georges Braque often worked directly from life, from the objects and spaces in their studios.) Plans, sections, elevations, perspectives, axonometrics, models, details and samples are all present as experimental tools for the laboratory of the canvas. Some refer to the evidence of the studio, others may be fragments from a previous structure, and still others to a yet unbuilt construction. The metaphor of the design studio also provides a sectional view through the creator's imagination to reveal two- and three-dimensional transformation constructions, processes which combine intuition and intellect, analytical and creative faculties. The painting is thus a meditation on the evolution of form, composition, association, and relationship. In this sense, solid form in space, like the physicist's concept of energy, always in flux and capable of transformation, is always conserved.

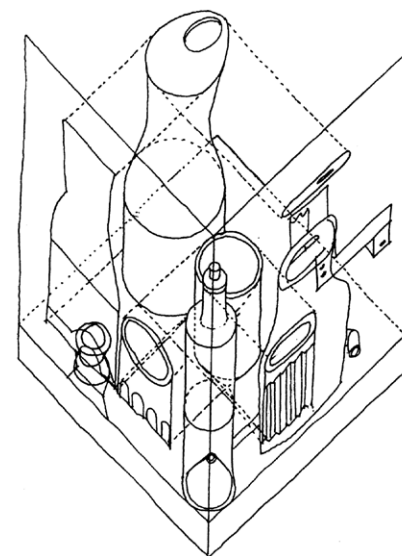
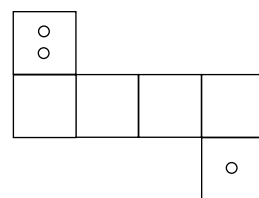
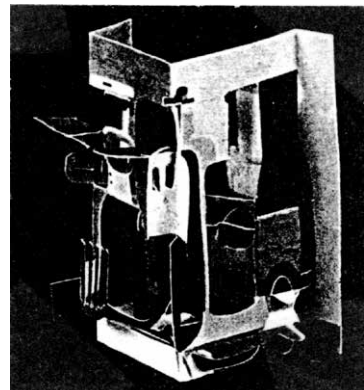
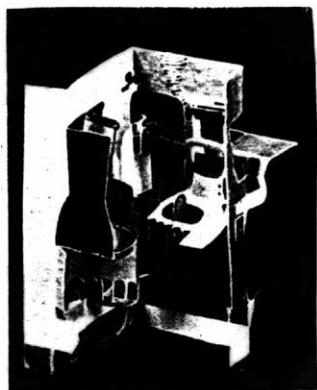
The traditional architect's education examines great monuments of the past, from Stonehenge through the Villa Savoye and beyond, in an attempt to discern that which is immutable. Scale, proportion, order, the use of logic, structure, and material, articulate relationships between architecture and man, the earth, and civilization. The enduring themes of truth, beauty and soul emerge through the eloquent spaces we call Gothic, Baroque, or Modern architecture. But we must also respect that which is temporal, changeable, in flux. The very essence of the act of design is mutation, metamorphosis, and transformation. Creating order, arrangement, and composition is how architects, artists, poets and musicians make meaning. We may explore countless manifestations of an idea before we accept a solution. At other times the variations themselves represent a solution.





LE DÉ VIOLET, BY LE CORBUSIER, COURTESY SPADEN

MARVENE WORRELL



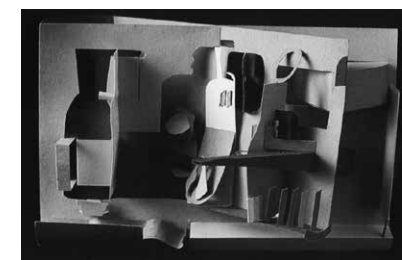
**A MARRIAGE OF CONTOURS**

Purist painters achieved tension between surface and depth primarily through layering, color, transparency, implied folding, and shared boundaries, which they called "a marriage of contours".

"A composition for Le Corbusier was like setting a table: the rectangle of the surface needed to be contrasted to the roundness of objects at differing scale. The convention of the table full of objects functioned for the Cubists like the theme of Madonna and Child for Renaissance painters. Instead of decomposing objects, however, the Purists insisted on respecting their geometric integrity and the truth of their form. Rather than fragmenting volumes, they pursued a method of densification, superimposing many elements on top of each other, which in 1924 they explained as a 'marriage of objects with the same contours in common.' According to Nivola, one of the things that fascinated Le Corbusier most was the opposition of empty and full and the filial dependency of vessels to containers: the empty glass was seeking its opposite in the full bottle."

Richard Ingersoll

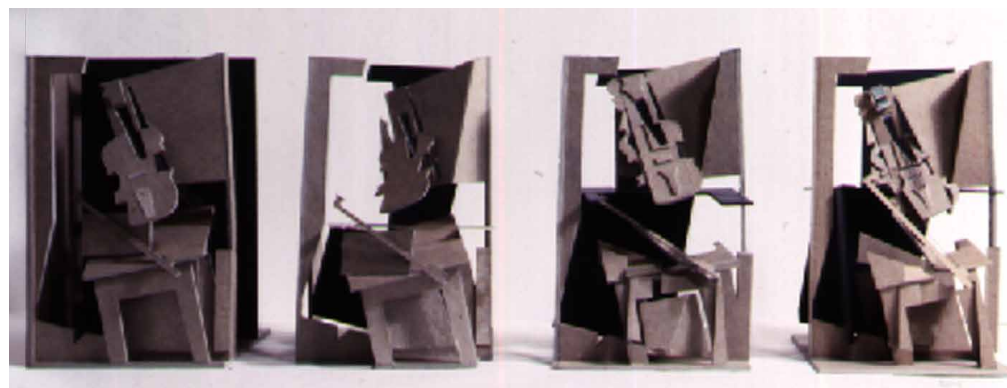
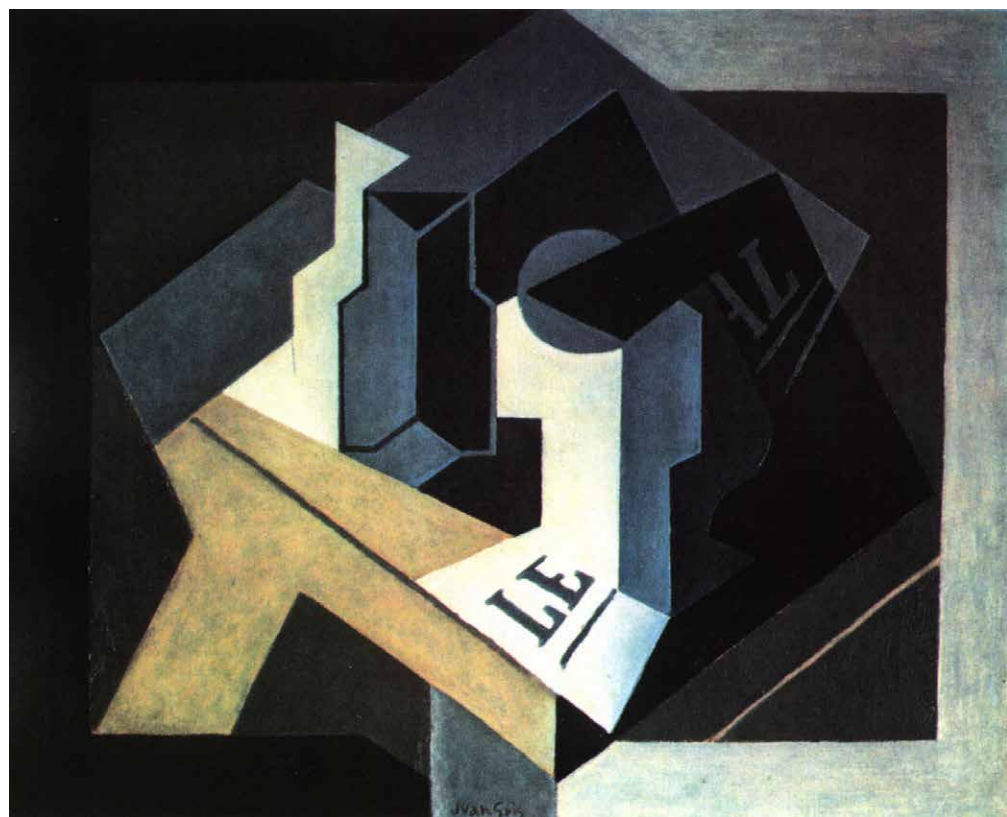
The real subject of a Purist painting is the relationship between object, void and perception—between volumes and viewers. Like a blueprint, Le Corbusier's *Le Dé Violet* carries data that can be decoded to arrive at a possible working *process* of constructing plastic order. Its may be seen as a series of views from front, sides, and above which are taken from the picture planes around the objects and projected onto the canvas as a simultaneous composite. Note the double views from front and side of both glass tumbler and carafe. The vertical edge between yellow and gray sides of the canvas may then be a fold *line* projecting an outer corner of a cubic frame. On the left a shadow suggests that the bottle is a hole in the yellow surface. The bottom of the bottle reads as both inverted "punt" of the wine bottle and as egg in a cup also in front of the bottle. These cues contrast with the painting's right side, where a bottle, bright against its dark background and sitting on a convex base, projects its rounded shapes forward. While the tumbler's fluting and shared contours seem to embed it within the space of this right-hand bottle, the vertically stacked tilted circles (tumbler top, bottle neck, bottle top) tend to project the entire round construction forward from its picture plane. Thus the two halves of the painting present sets of layered planes sheared across the vertical center. Figure on the left becomes ground on the right, and vice-versa, compressing the space between these reference volumes. A third bottle along the central axis reinforces this reading with multiple depth cues. Its left shadows recess this bottle behind the painting's left foreground plane, and its right shadows push the bottle back into that foreground. Another reading of these central shadows has the left ones project the central bottle forward and the right ones pull the bottle to the deepest layer of the painting by merging with the dark background. The central cone both projects forward of the dark right side and joins with it, receding behind the light left side.



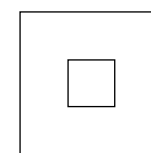
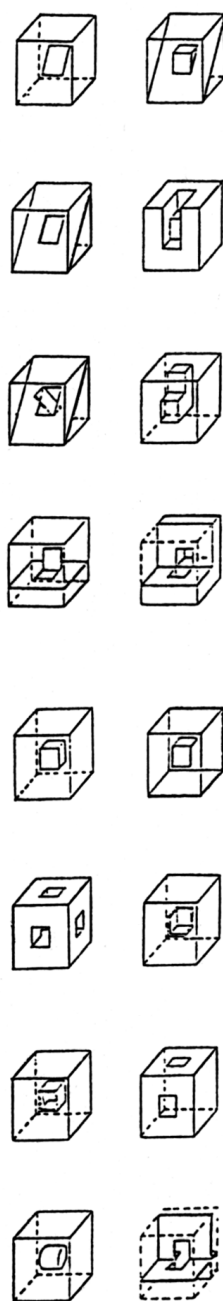
JOHN PAVLOU



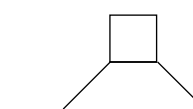
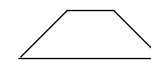
There is thus a simultaneous seesaw of spacial shears and torsions, a fulcrum at the center of the painting like the in-out doors of a cuckoo clock. The painting's English title *The Purple Die* (singular of dice) reveals an understanding of this drama. The bent rectangle with two dark dots in a light field becoming one light dot in a dark field could well be a construction manual for the entire spacial order. This figure describes an unfolded cube, marked to show two sides that cannot be parallel in any single perspective view, but which we know are equal faces in three dimensions. This a set of unfolding, refolding, layered, and twisted planes, this *origami*, becomes the "architectural plans" for reconstructing the play of figures the artist knows *and sees*. *Dé* also suggests *dé a coudre*, a thimble (literally "die for sewing"). This unfolded cube, midway between top and bottom, may well be both *parti* and plan of the whole painting. On the left dark it shows voids cut into the light reference plane while a bright figure projects from its dark surrounds. This in turn implies a projecting space on the left and a receding one on the right. In this sense the Die "sews" the two halves of the space together.



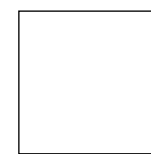
ROBERTO PETRUCELLI



Is this a flat trapezoid...



or floor in perspective?



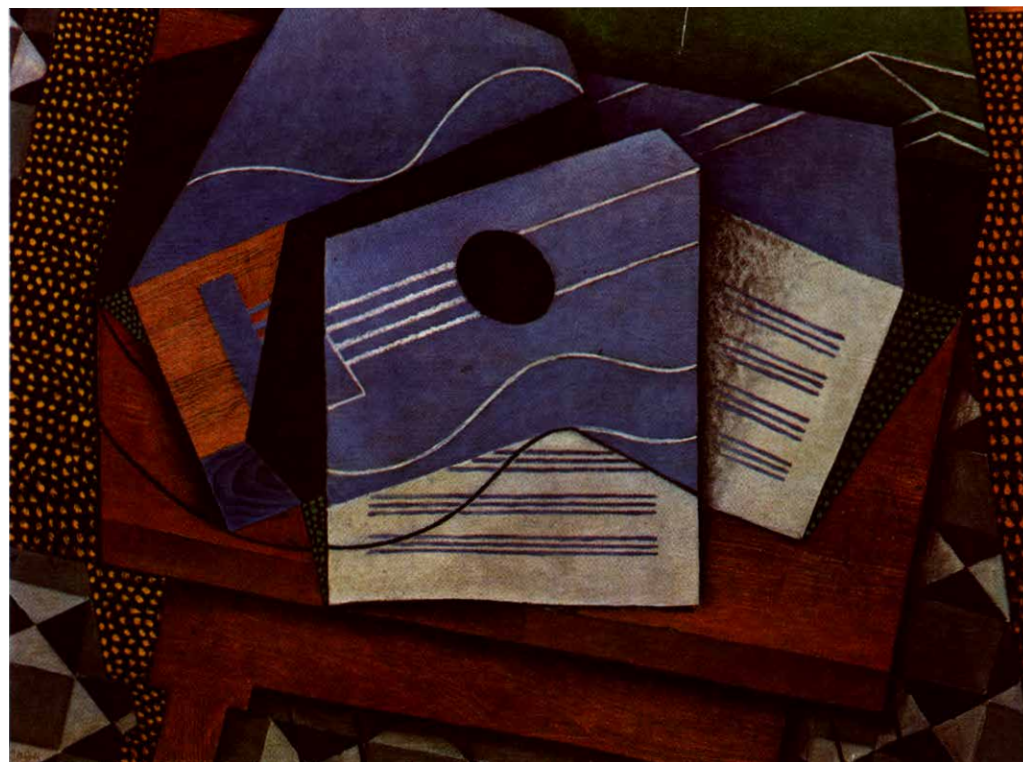
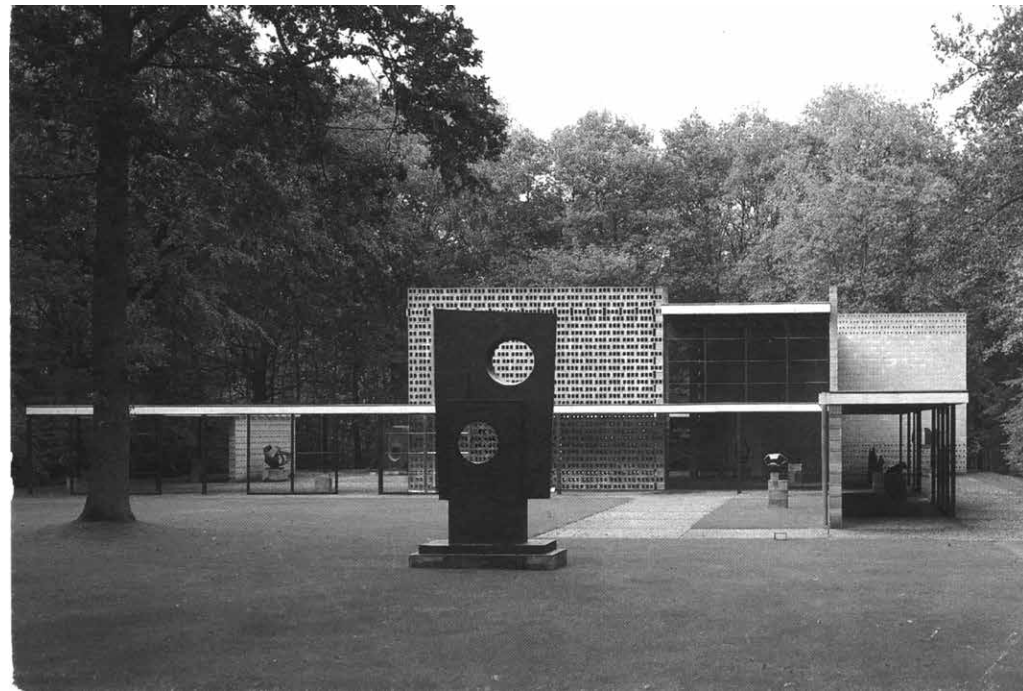
**AMBIGUITY AND SIMULTANEITY**

To "read" an image, we must learn its conventions. Consider the trapezoid to the left. Alone, it reads as a flat two-dimensional geometric figure. When a square is added it is easy to read depth, as the trapezoid becomes a receding floor plane. Like any diagonal, the trapezoid is an inherently ambiguous figure rendering both flatness and depth. Ambiguity has been used to great advantage by Cubist painters and their followers. Transforming three dimensions into two-dimensional order generates multiple interpretations. A square in a square is an ambiguous figure, able to indicate many depth readings including a tilted plane, a bent surface, a cylinder, one plane behind another, and so on, as shown in the accompanying sketches. A figure that yields two or more visual readings yields them *at once*, even if we must process them in our brains sequentially-- ambiguity is simultaneous. A marriage of contours permits multiple depth readings for the same lines or color areas. A complex Cubist painting, like Juan Gris' *Fruit Dish and Newspaper* (1920) is no longer a simple still life. Depth cues of color, transparency, and overlap; tensions between shallow surface and deep relief; and simultaneous multiple views of plan and section, front and back, inside and outside, offer numerous spacial readings. Shifting interpretations make the painting cinematic, closer to a motion picture, a planar sieve catching forms and forces emerging from its depth.

An empty square on a page is already a figure in a field. The tension between a figure and the edge of its paper as frame creates a charged space between them, distinguishing the figure from its surroundings. Framing sets a figure apart from its embedded context. The frame can no longer be taken for granted. How thick is the frame!? Which is the hole? The sculptor Brancusi often devoted as much attention to the base as to the figure it supported. The Cubists had trouble with frames. Sometimes they put their paintings in ellipses, building up planar structures from the center outward, other times they twisted the space against the orientation of the frame-- as did Mondrian, and as does Juan Gris here. Must one frame architecture? Can we inhabit volumes whose plastic order is intrinsic?

With Cubism, the problem of painting became how to order the two-dimensional picture plane into a meaningful and revealing analog to three-dimensional reality. If contour and viewpoint may be manipulated, then a vertical picture plane can support the images of bottles etc. as much as a horizontal tabletop supports the physical bottles. The everyday surface of a table became an arena for changing pictorial/depth relationships, an endless source of the subject matter of perception, an orderable experimental microcosm. The world became simultaneously tabletop, sculpture garden, and picture plane. John Hejduk observed that the sky is a vertical picture plane as much as it is a horizontal dome. Is the checked tablecloth in the breakfast table photo on page 62 parallel to the ground (as tabletop) or to a gallery wall (as window)? The question shows how Cubist space maintains a flux of simultaneous spacial readings. Let us imagine the Cubist visual explorers sitting at a cafe in Paris before 1910, amidst the objects of everyday life. Drinking coffee, liquor, soda, reading newspapers, smoking pipes, they sketch the forms nearby, aligning utensils, studying light and shadow through transparent glass. Perhaps some street musicians come by. How does one draw the reality of a guitar in space? The wood box, with its mother-of-pearl inlay? But what of the music it makes? Its strings vibrate when plucked, turning the box and air inside into an acoustic resonator that shakes the air projecting out of the sound hole to fill even an auditorium with music. How does one draw that?! The room may be very big, yet the strings and wood of the guitar itself would make a tiny pile of mass. Even the volume of its interior is but a fraction of the volume that its music fills. Does that space resonate to the physical shape of the instrument? Can this be something perceptible in a drawing or model? Suddenly a connection is made between the space in a bottle and a clarinet, guitar and siphon! Plasticity!



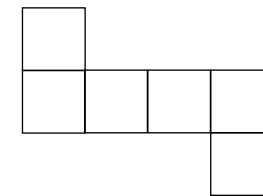


**THINKING**

*there are many ways to skin a cat.... anonymous*

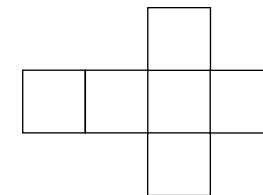
**CUBISM AND ARCHITECTURE**

Why should architects understand Cubism? We believe that such an investigation provides vital tools for the architect, even at the most fundamental level, helping to develop architectural skills and insights for the issues presented in Architectonics and especially Dynamics. The habit of seeing through space and time from all sides, in and out, top and bottom, front and back, then and now, forces an ongoing re-solving of continuity in space, and has led skilled plasticians to find opportunity where traditional forms have perhaps outlived their utility if not their presence as volumes in light, architectural spaces previously overlooked (gardens on the roof) or ignored (the back of the supermarket). Cubism, now almost a century old, is not just a "style" of painting. Fundamental understanding of its plastic principles and those of its cognates and derivatives, including Purism, Constructivism, Neo-Plasticism, Surrealism and Abstract Expressionism, is vital to architects in providing strategies for ordering solids, both filled and empty. The lessons of Cubism now underlay all the visual arts, music, literature and film.

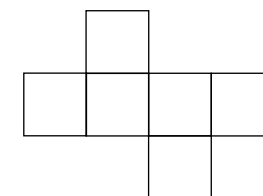


We can distinguish several levels of plastic spacial perception and design ability in students of architecture. This is not the same as the acquired skills of making pictures of workmanlike "professional" or currently stylish "artistic" or "intellectual" facades, showing on the one hand eaves, random shakes, or board and batten "traditional" siding, or on the other hand diagonal deconstructivist floors or rotated windows. Nor is it the same as the technical skills of a thorough knowledge of the application of codes, zoning, economics, etc. which are of course all necessary for the construction of a building-- but which alone are no guarantee that a building will in any real sense be architecture. As Le Corbusier wrote in *Towards a New Architecture*:

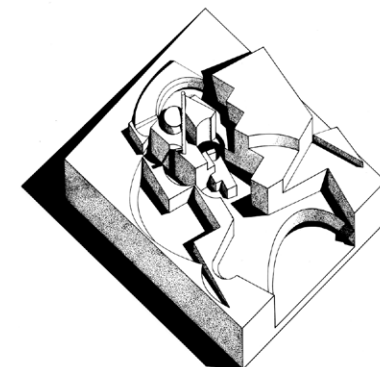
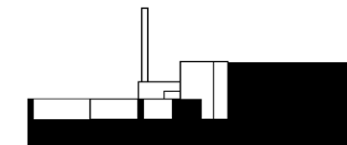
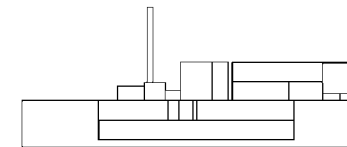
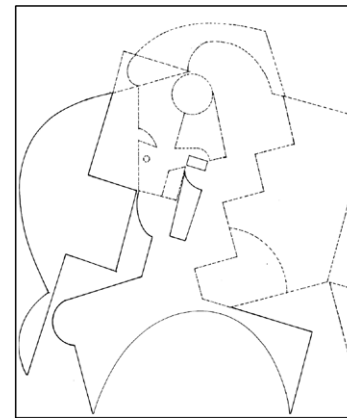
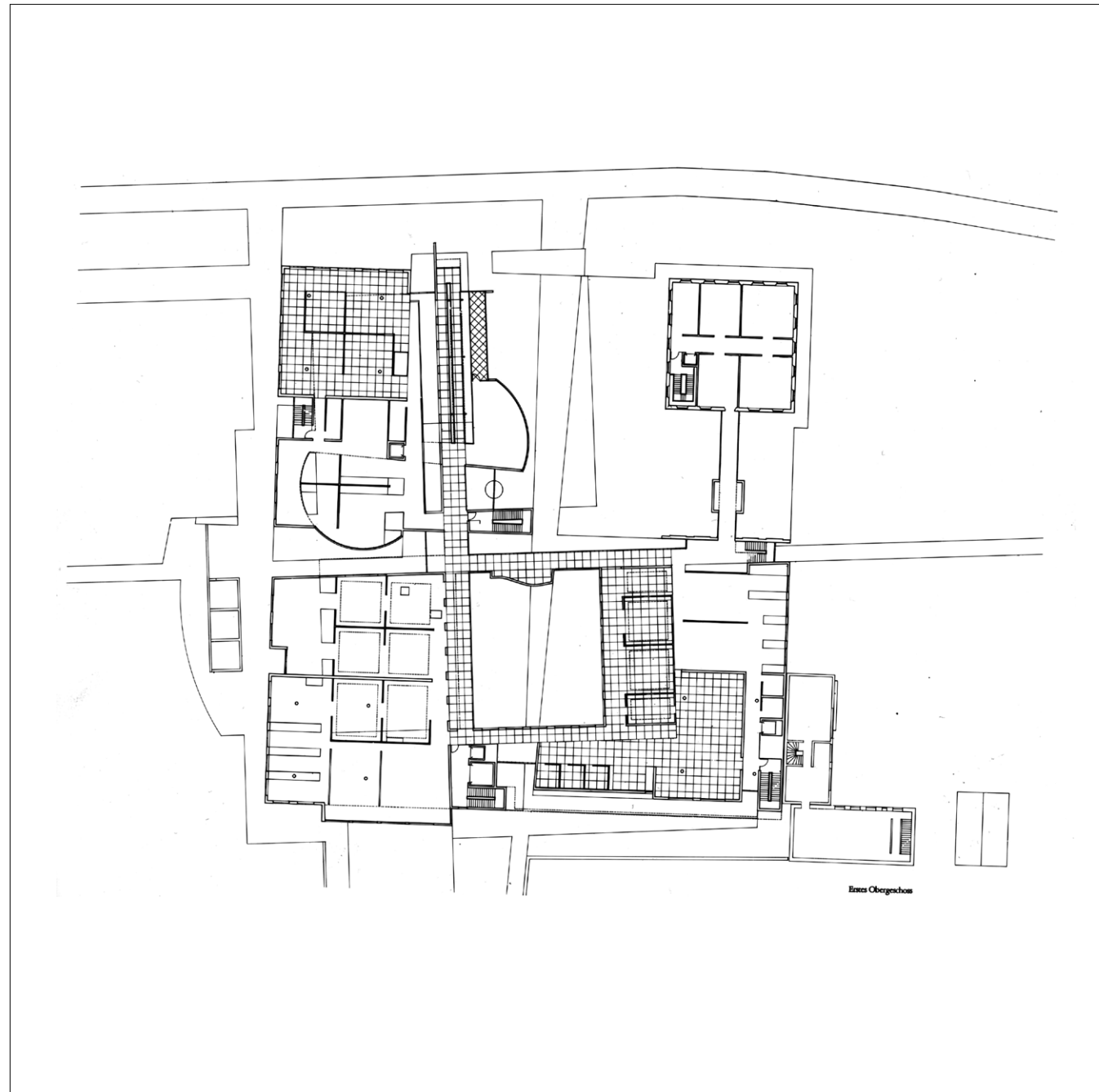
"You employ stone, wood, and concrete, and with these materials you build houses and palaces. That is construction. Ingenuity is at work. But suddenly you touch my heart, you do me good, I am happy and I say: 'This is beautiful.' That is Architecture. Art enters in."



Let us be clear-- if architecture is a humanist discourse through the medium of space, then an understanding of the attributes of the medium is the prerequisite for its realization. These include three-dimensionality, plasticity, plan-section, frontality, light, structure, proportion and scale. Other concerns, like material and texture have an important effect on our experience of a space, but they are not the primary means for marking, developing, ordering, composing or molding space. The structure of *space* concerns not the columns that hold up floors, but rather the structure of the volumes--the array of columns within a space, their orientation to the site or other building elements, the rhythm of their spacing, the alteration of their intervals for events like entries, corners, and so on. A column grid may not only hold up floors in a building, but also contribute to its *spacial* structure. (See Brunelleschi's San Lorenzo Church (page 390) in Florence and Le Corbusier's Assembly Building (page 327) at Chandigarh.) Between two and three dimensions reside infinite possibilities. The diagrams to the left show not one but three ways to fold a (paper) plane of six contiguous identical squares into a cube. There are certainly others. Just as Cubist paintings generate numerous valid readings, so too does transforming two-dimensional order into 3 dimensions generate multiple valid interpretations. There is an art to making volume visible. Early Cubists confronted *seeing*. Borrowing techniques familiar to architects, they found means to make the multi-dimensional reality they inhabited come to the fore in plastic composition in sculpture, cinema, and most vividly, most clearly, in the two-dimensional medium of painting itself! This seems to be paradoxical until we recall the unique ability of the picture plane surface to carry multiple dimensional and color relationships simultaneously. You have already learned this in your Architectonics studies.



these are all cubes -- unfolded



JOHN M. JOHN

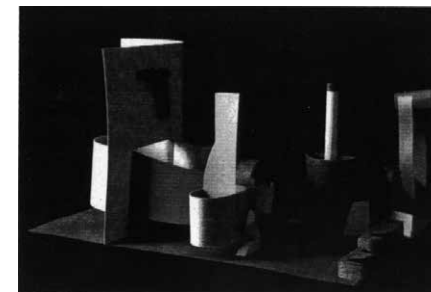
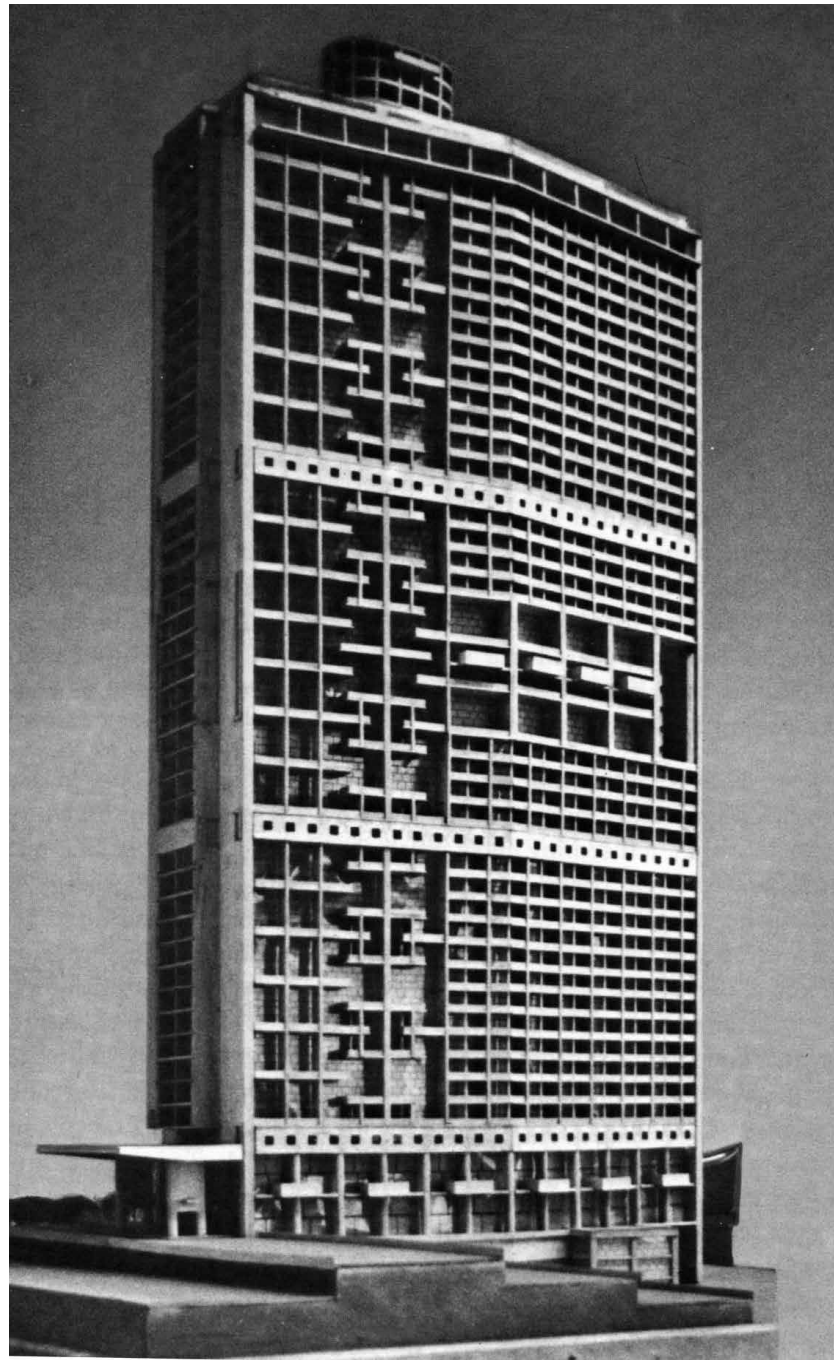
Why do some plans look "klunky" and some don't? How does one attain a grace in resolving spatial conflicts? We can all recall those agonizing plans of octagon buildings, where each corner cranks so crudely that acute closets, elbowed walls, and overshaped (which is to say shapeless) rooms abound. Those designers have not yet learned the secrets: that void, not mass is the "lubrication"; that corners need not be turned by 45° plan bumpers or reflectors but rather by cuts in opposite walls (windows and doors aligning, inflection generated by an eccentric column against a wall); that an extra slot of space may always be invented to include a slipped entry; that paths can pinwheel about a gathering center rather than crossing. Since at least Michelangelo's plan of St. Peters, we have known how to impose more than one volumetric reading in the same space. But Renaissance plans still required carving of massive masonry piers and walls to establish such multiple readings, which made complex shapes of skin and bone, inconsistent in the round (that is to say front does not always result from or reveal back.) Yet in the free plan architecture inspired by Cubism and Purism each element may have a simple form integrity. Columns may be cylinders and walls simple slabs, but the space may yield a complex reading, just as in the paintings of Mondrian and Gris, where simple jigsaw cut out elements may create complex and ambiguous spaces in the overall composition.

"Spatial structure in both visual arts and built environment carries meaning. People can learn to read content and intention by understanding the clues as fragments of a larger whole. Design literacy contributes to the richness of urban experience. Developed, it facilitates appreciation of and demand for meaningful form. For students of design the analytic process provides an example that informs the synthetic process and is a clue to the ways in which we read and understand architectural space. For example, multiple space readings engender multiple plan solutions, i.e. layered/transparent orders of space (clues) at the same location. Architecture is perceived both two-dimensionally and three-dimensionally in the following ways: (1) We often experience architecture through drawings and photography where a system of codes like plan, axonometric or perspective projections provide clues to spatial resolutions. (2) As we inhabit space we encounter both two- and three-dimensional information, like a planar facade and a solid oblique corner. (3) Our understanding of architecture depends on an awareness of fluctuating visual clues, which are the simultaneous combination of flat and deep space perceptions that suggest a larger pattern of the plan, of which each visual clue is a fragment." David Diamond

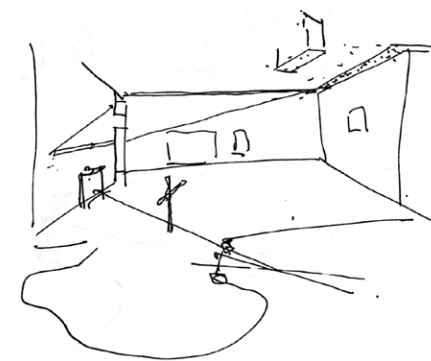
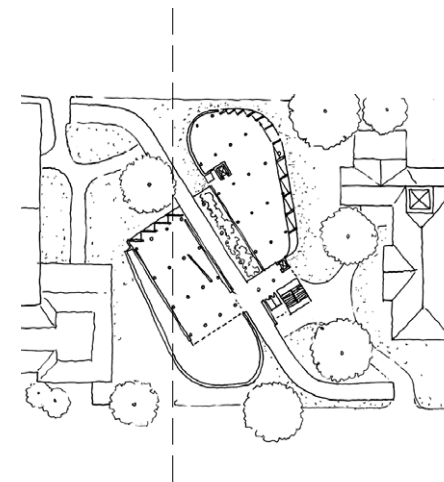
Tantalizing speculations arise. Are the double height spaces Le Corbusier so loved a means to establish Purist layering -- the dotted line of the plan projection the equivalent to the tonal transparent overlays of a painting's picture plane? A corollary: was Le Corbusier's call for an "efficient height for the home" not only a way to get more stories into a building envelope, but also a device to extend Cézanne's compression of the picture plane's depth into the vertical dimension? Can the insights of Cubism lead to a way of not just marking space to make a box, but also to do things to and with the box? Suggestive examples include explosion of the box (Wright at Unity Temple), compression of the box (Le Corbusier at Villa Stein in Garches), bending the box (Alvar Aalto at MIT's Baker Dorm). Boxes can also be proportioned (Schindler and Meier) and intersected (Wright's Isobel Roberts House) in several dimensions simultaneously. Such "moves" mark of a certain sophistication in architectural skill, and are often in evidence in the classics of world architecture. Is this understanding then not a necessary development in the skill of an architectural student?

Painting, like architecture, is imbued with both two and three-dimensional structures. Comparative analysis through drawing and model may teach us a great deal about both arts. For example, models, transparent overlay drawings, diagrams and analytic drawings which map the three-dimensional structures described in a painting of Le Corbusier may reveal plastic analogs for structure, circulation, program, symmetry, pattern, etc. found in his architecture. This kind of study is revealing for architects and painters throughout the history of world culture.





MARIA DI NATALE



### A ROOM IS A BRICK

The room is the architect's brick. A mason's brick is a filled solid we can easily see. A room is an empty solid that without its defining walls, floor, and ceiling would be "invisible". How can architects compose using empty solids? There is an art to making volume visible. We have observed that beginning students of architecture tend to evolve their perception of spatial order and skill in plan/section and volumetric composition through the following major stages:

1. **Picturing sides:** the stage of flat space. The primary sense is that space is flat, that design is accomplished by drawing relationships within a plane. Hence an emphasis on design by drawing elevations or by making plans according to a linear sequence (I come in here, then go to vestibule here, then living room, then kitchen, *ad infinitum*).

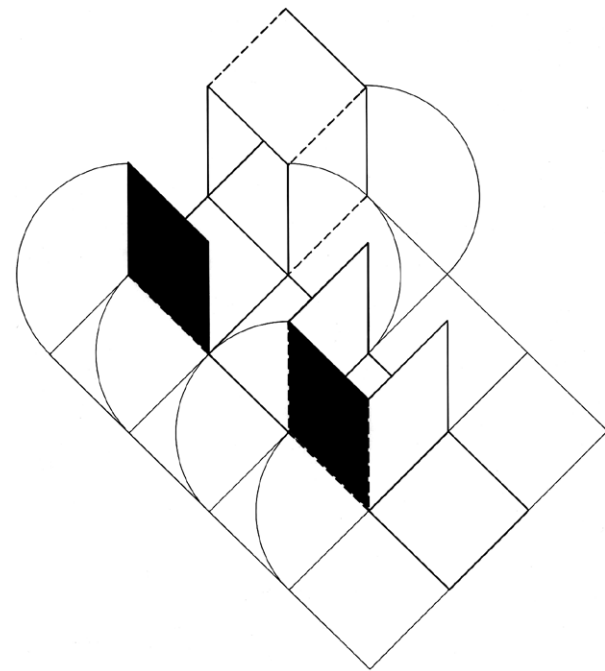
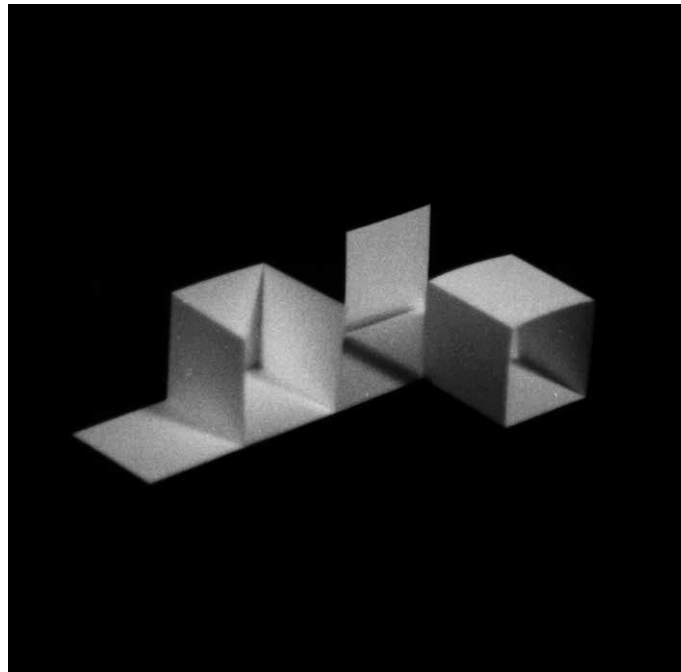
2. **Relating Planes:** the stage of dawning consciousness of planar relationships in three dimensions. Plan and section or front and side elevations may be considered together for purposes of registration and "correctness"-- but not yet as informants to a spacial totality.

3. **Arranging Volumes:** the stage of an understanding of volumetric relationships, in an additive, and subtractive algebraic sense. For example, if 3 of room size **A** equals 1 room size **B**, then a double loaded corridor can accommodate both in the same length. This stage might also lead to a sense of depth relationships, so that if room **B** is double height, and the three **A** rooms are placed on the second level, the space under the three A spaces may establish an entry condition. Only rarely does this stage include a sense in which the spacial markings and events within one volume may influence the order of other volumes within the ensemble and throughout the site-- the beginning of plan and section "force" interactions. (This demands an understanding of phenomenal spacial transparency.)

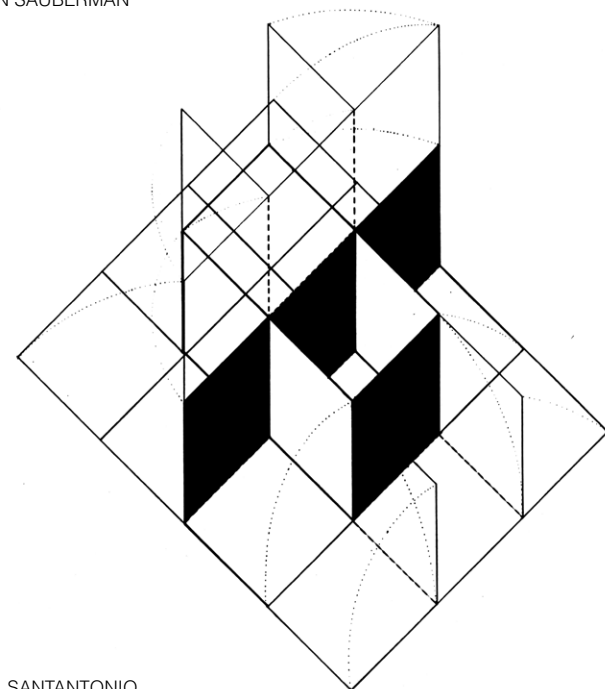
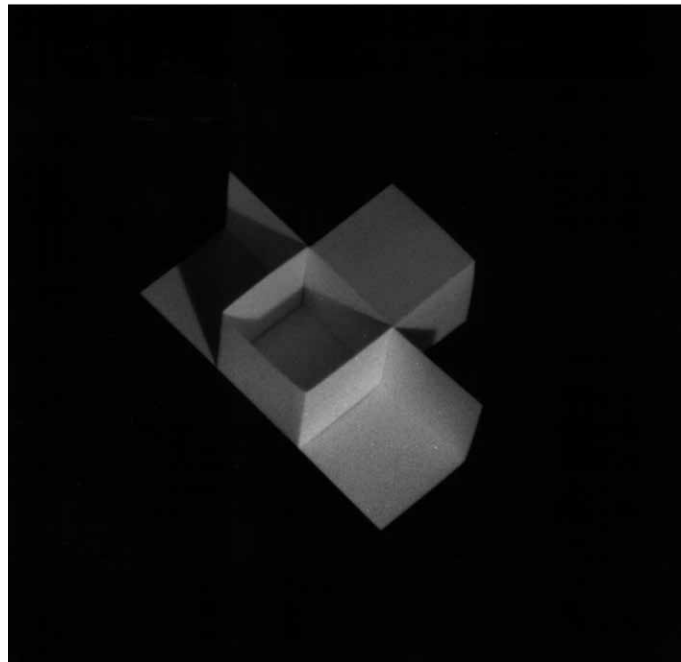
4. **Composing Multivalent Volumes:** the stage of an understanding of how one space may read as part of several "moves" or orders of relationships. This can result in spatially ambivalent conditions of intersecting spaces, as in the Le Corbusier's Algiers Tower (opposite, far left). His design for the Carpenter Art Center at Harvard (plan, this page) gives multiple readings of the same volume in plan: the column grid in is parallel to the major orthogonal walls of the building, but the building itself is rotated to the diagonal of the local street grid. However, the diagonal of the column grid is actually orthogonal to the street. So in a sense to stand in the exhibition gallery is to be simultaneously part of two nonparallel but resolved orthogonal orders. Insights into figure-ground ambiguity, shared contours, and "hues of grids" become planning devices for eliminating "leftover" space in buildings, while helping to maintain the tension between flatness and depth.

5. **Composing light in space and time.** For the very best architects, there is a further possibility. What may be most important to architects about the Synthetic Cubist and Purist sensibility is that their strategies embrace spacial simultaneity and resolution of the total field, both extremely powerful planning tools. This spacial understanding permits "both/and" situations to develop: both light and dark, both flat and deep; both plan and section, both opaque and transparent, both frontal and round, both orthogonal and diagonal oblique. The patient and attentive visitor can find a true sense of the presence of space in time, and the use of light to articulate spiritual and physical realities in the nave of the large chapel at La Tourette. As the sun sets in the west, it traces a beam of light up to and across the west wall through a narrow slot, converging on the altar, darkening to blood red. A skylight above reveals the deepest azure blue in contrast to the red as sun gives way to night.

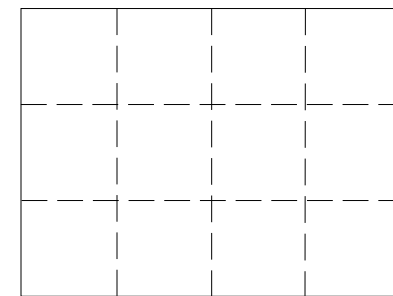




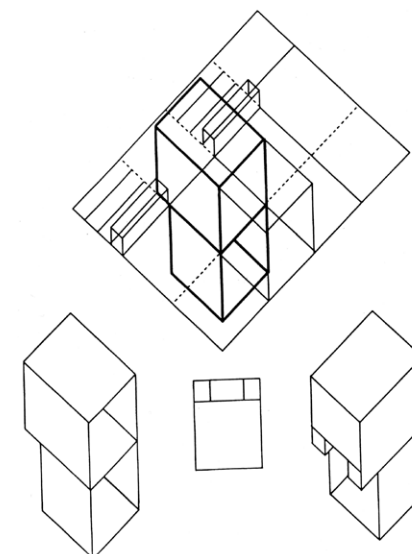
ALAN SAUBERMAN



PHIL SANTANTONIO



TIMESCALE: fold and cut one sheet = 12 minutes



KEN JEROME

**impromptu**

Cubism and Purism are particularly fascinated by the reciprocal relationship of the two dimensional world that lays across our eyes and the three dimensional world our bodies inhabit. This is perhaps one of the most crucial discoveries of 20th Century plastic arts, and is still uniquely suited to understanding our world vision today, where we must carefully time the meeting of a comet and a space mission so that their volumes will intersect, where we can see with sonograms babies before they are born and with CAT scans the inside of our skulls and the Earth, where lasers enable supermarket checkers to read the labels on canned goods from any angle and orientation, and where we understand that "live" television from Saturn takes hours to reach us. Cubism has presented us with a means to understand vision as a set of encoded views which can show complex volume and event relationships in both space and time. Our brains decode and recode these perceptions, so that a Cubist painting becomes a place to live in, an arena of and for animation. To further explore the relationship between dimensions, the following simple exercise explores a kind of *origami Purism* that reveals the plastic eloquence and power inherent in the transformation of surface into volume.

**DYNAMICS**

**Origami Spaceframe**

- A.** Fold one piece of standard 8 1/2 x 11" plain white bond or copier paper into a grid of three by four squares. Using folds and cuts (or careful tears) only, transform this paper into at least three cubes. The paper must stay intact as a single sheet, not broken into separate parts.
- B.** Repeat this exercise four more times, for a total of five *different* variations in all. Which is the strongest? Which is the weakest? Which configuration makes the richest space? Which the simplest? Which modulates light the most? etc...

Document each of these figures with the following:

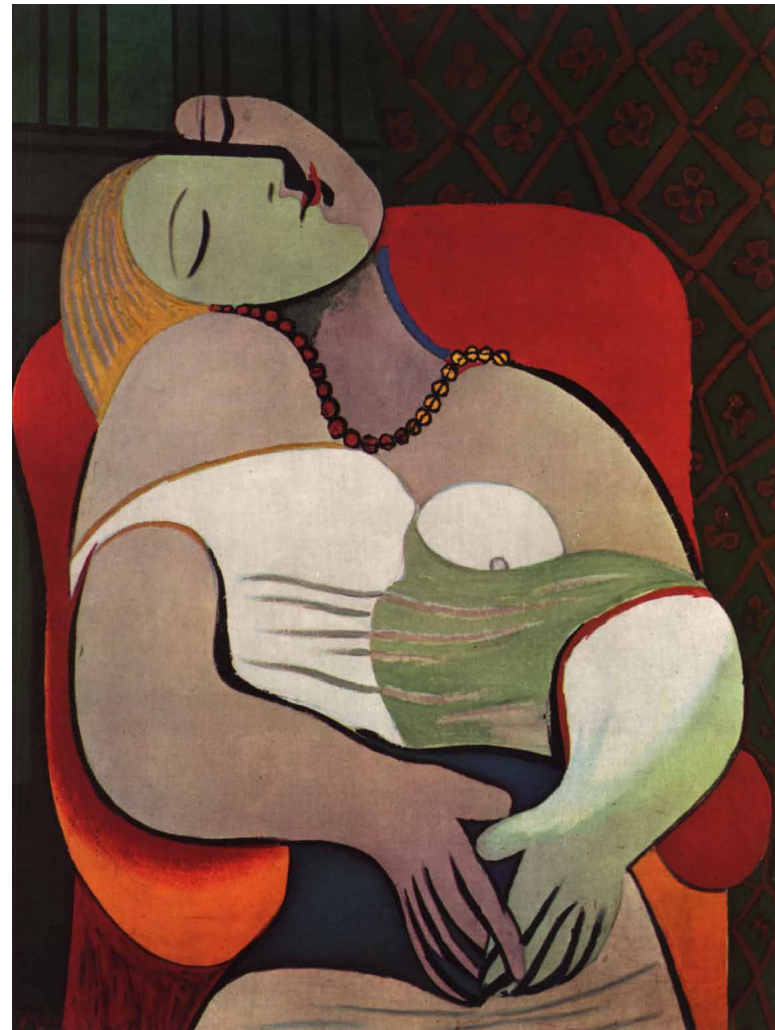
- 1. A "plan" showing the unfolded plane, indicating torn edges with solid lines and folds with dotted lines.
- 2. A set of "final" views, either as projections (axonomic/perspective) or as photographs.

Just as sticks and stones can become rods and cubes (lines and points) in an architectonic order, so too can paper (plane) and perpendicular paper (fold line) generate volume. There is an implicit equivalence between mass and void. Plastic richness comes through a rhythm of filled and empty threads, a fabric of perforation. Thus does space, as the sum of filled and empty solids, become an arena of timeless change, of dramatic and creative tension.

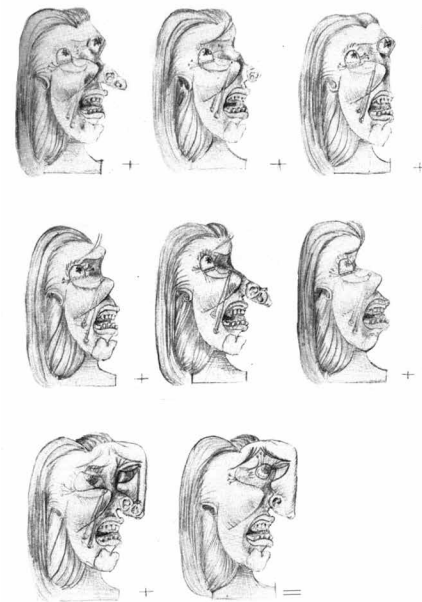
It is interesting to note that the process of this exercise can be seen as a model of the phenomenon of the relationship between architect, builder, and client. The flat paper divided into twelve squares and notated to show cuts and folds is like the architect's plan. The act of folding the two-dimensional paper into three-dimensional volumes is like the contractor's construction of the house. And the final configuration of space defined by planes and volumes in light is like the dwelling the owner inhabits.

**ANIMATION:** In a series of as many frames of successive views as necessary, draw a set of instruction **diagrams** showing the operations required to transform the original plane into the final volume.

**COLOR:** 1. Value 2. *Pre-collage* (See page 462 for more on these color exercises.)



THE DREAM, BOISSELOT, JANUARY 24, 1932, OIL ON CANVAS, 51.1x43.38.18" (130 X 97 CM). ZERNOS VII, 394. COLLECTION MR. AND MRS. VICTOR W. GANZ, NEW YORK



## ANIMATING

### Time in Space: Sequence and simultaneity develop perception in depth

Picasso's famous painting *The Dream* is probably one of the clearest pictorial exploitations of the potential of simultaneous image-making. We see a woman whose head rests on her shoulder, eyes closed, obviously asleep. In profile, the lips are relaxed, the face is in repose. But then we note that the shadow that follows the forehead, nose, mouth, and chin also seems to separate the left side of her face from the right. The left side quietly levitates, animated with its own secret smile, brushing the first profile face on the lips with a kiss of-- of course!-- the dream! Once again we regard the full face in the whole painting, only now we cannot help but see the complexity of the image, frontal view and profile simultaneously, each with a shift of meaning, together a deeper psychology than either alone.

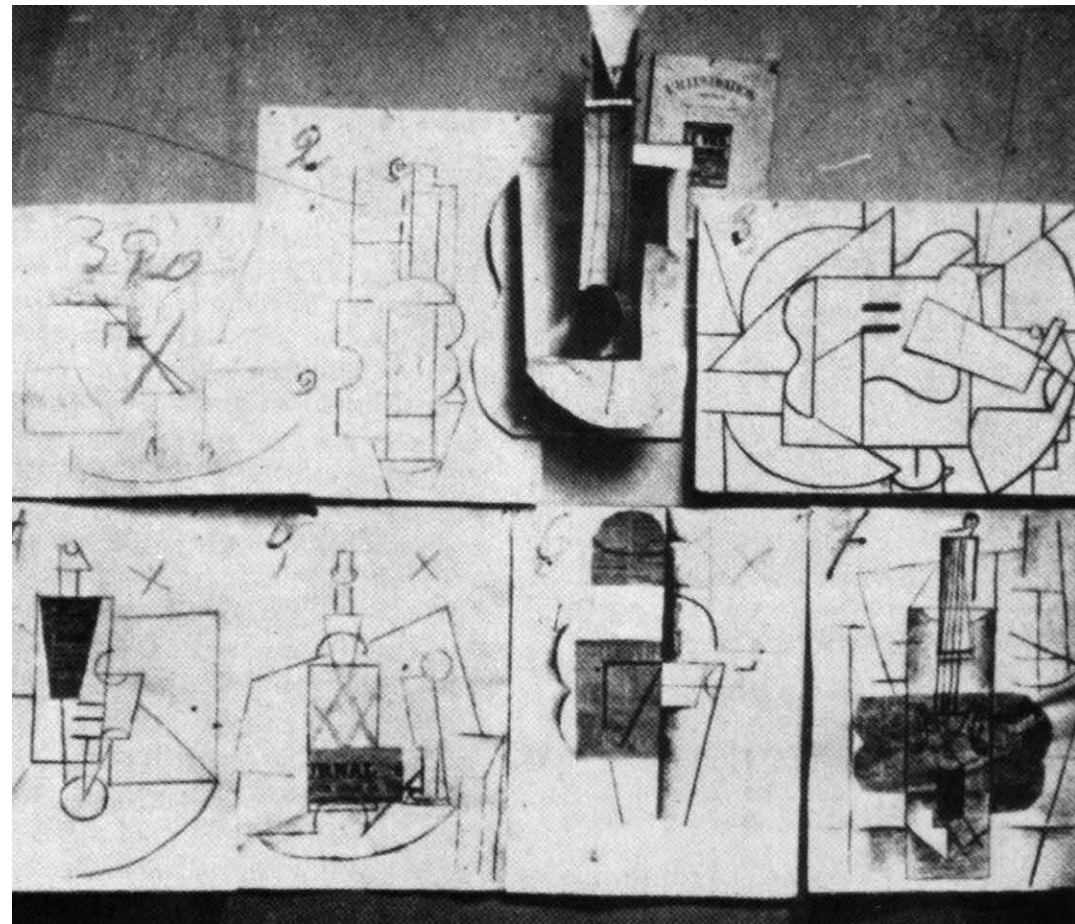
When pictorial methods are combined for simultaneous spatial and psychological readings, the effect can be almost instantaneous, as in *The Dream*-- after all our eyes see all shapes in combination at once, even though our brains may unfold their meanings one after the other. When a single visual structure may be revealed as a set of images in sequence, each with its own plastic cues for simultaneous and ambiguous readings, every two-dimensional picture plane can become cinematic in its effect. Consider the following descriptive analysis of Picasso's study of a weeping woman:

In the old arts, horror was usually rendered through the distortion of the facial muscles, distortion of the open mouth, by enlarged and protruding eyeballs. Picasso intensified this approach by moving and distorting the usually immovable and undistortable elements of the body, such as the eyes, ears, and nose. In *Guernica*, he shifted the eyes away from their normal position; he turned the ears upside down. In the studies for the mural he transformed the eye into a cup and the lower eyelid into a saucer from which tears poured. He exposed the tongue of a screaming, horror stricken victim as a flame, at other times as a dagger to signify despair. In one of these studies he showed a dozen variations of a face, changing the profile of a young mother under the impact of unspeakable suffering-- into the distorted, crumpled features of an old woman. This was done through interweaving the features of a panicky, quickly aging, hideous creature, each expression growing out of the other without breaking the oneness. The same etching, if looked at upside down, solved the enigma by displaying the deteriorated, piggish face of Hitler, the cause of the bestial destruction. The old technique of the trashy "double image" postcards was used here with unusual subtlety to make the psychological spacetime as transparent as an x-ray photograph.

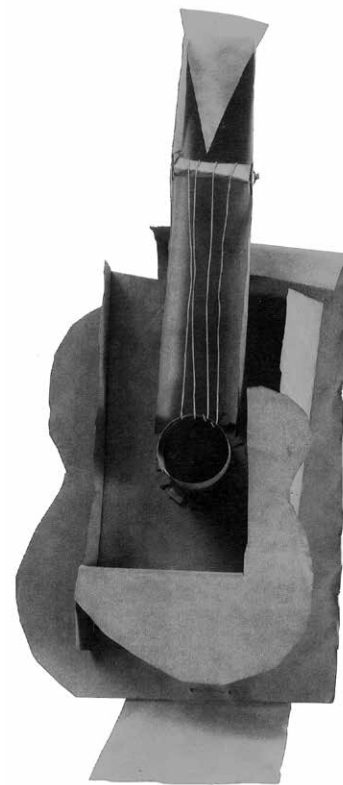
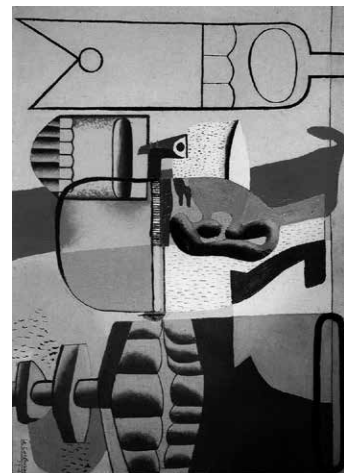
from George Kepes, *Vision in Motion* Theobald, Chicago, 1969, p.250-51



The phenomenon of dimensional ambiguity becomes very clear (yet more mysterious) in color. If a violet area is placed where red and blue zones appear to overlap, layers of space become visible. This is a way to achieve depth without the devices of perspective such as diagonal, size hierarchy, or vanishing point. These devices are thus free as other means of expression. Implied overlapping can create ambiguities of transparency and shared contours. The careful choice of colors may create a visual field that seems filled with light, even though there is no clear or direct source of illumination. Multiple light sources can thus be introduced, which in turn can imply rotation, fracturing, spacial discontinuity with the visual field. Polychromy can translate these pictorial discoveries into the world of three dimensional (plus!) built form. Volume is implied in Cubist/Purist painting, not only through the "front" view of a traditional perspective but also through information about back, inside, and out-- the way architects see their building designs, in plan/section/elevation. Overlapping planes and cast shadows from many (perhaps conflicting) light sources, or from a general luminance of carefully selected color relationships without any shadow at all, create an essentially dynamical vision with roving and multiple viewpoints, as opposed to the fixed station point of classical perspective. These paintings record a perception of the forces that occur as volumes intersect and order each other.



FACING PAGE: PABLO PICASSO, "GUITAR," PARIS (1912-1913), SHEET METAL AND WIRE, 30 1/2 X 13 7/8 X 7 5/8", COLLECTION, THE MUSEUM OF MODERN ART, NEW YORK, GIFT OF THE ARTIST.



### CUBISM: CONSTRUCTING SPACE FROM TWO TO THREE DIMENSIONS

*"Only those who play can be serious."* Marcel Duchamp, painter and chess player

There are many ways to skin a cat. Converting two-dimensional planes into three dimensional structures is both simple and complex. For example, take a piece of paper, crumple it in your hands. The result is easy to make, hard to draw, still harder to construct geometrically or plot in a CAD system. The resolution of the complex crushing forces is chaotic-- predictable to some general degree, but unpredictable in its local specifics. Even when the steps are simple and clear, there may be no unique connection between a three dimensional figure and its two dimensional origins. A cube can be made from many different configurations of folding six flat contiguous squares. To know that a solid is the source of many possible planar mappings is to enjoy the plastic and speculative nature of form in space. Cubism is the 20th Century's gift to vision-- it is a powerful way of both seeing and knowing the world through flux and change. Perhaps the most important work in 20th Century art is Picasso's and Braque's exploration of how inhabited space and pictorial vision meet in the picture plane, a way of seeing that has come to be called Cubism. From about 1905 to 1913, the very years Einstein developed his theories of relativity, Picasso and Braque extended the explorations they found in Cézanne's painting, and invented Cubism. Cubism enabled artists to concentrate on the plastic form of their world and the transition between feeling and looking as a viable subject matter in itself; the subject matter of the composition is the composition, not the pieces of the composition.

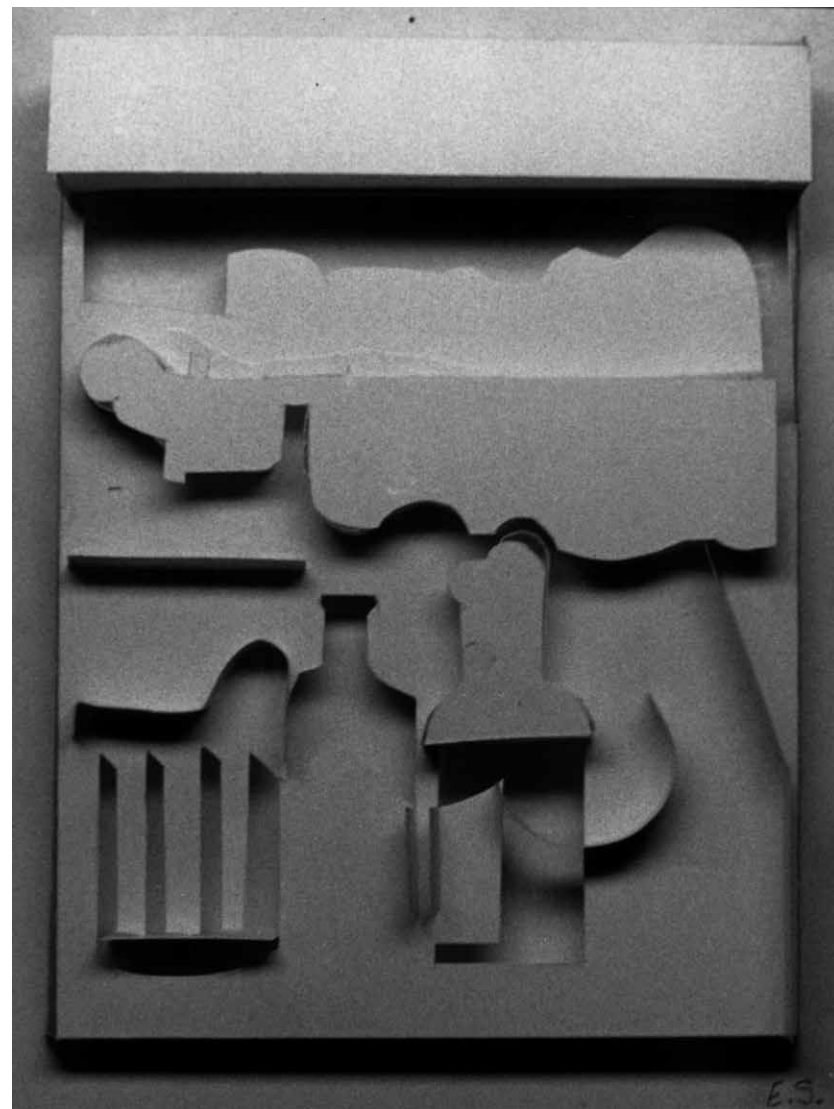
A beginner in the study of the interaction of volume sees stones and sticks as points and lines in empty space, arrangeable in piles, layers, or other mass configuration. An adept sees pregnant and solid volume marked by the position of linear and pointlike elements. Through cutting and bending, shifting and twisting, the expert also finds the means to transform planes into volume.

The visual structure of the 2D field implies many 3D interpretations. And the volumetric order of the 3D field implies many 2D renderings. Picasso exploited these insights in a witty and inventive manner. He found in the wooden mass and acoustic volume of a guitar a motif which suggested a re-representation of spacial order through an arrangement of layers of cut, folded, and re-glued cardboard. The photo of Picasso's studio shows that the guitar construction was a three-dimensional "drawing" in a series of studies that included other guitar drawings (#2 and 3), but also contained studies of tabletops with the objects of a Parisian cafe-- newspaper, siphon, etc. (#4 and 5). Study # 5 shows virtually all the plastic elements in the guitar sculpture-- the long neck, the central box, the sound hole, the curved wall, and the diagonal pegboard at the end of the neck-- but now these elements are transformed into bottle stem, metal mesh over the glass bottle body, circular plan of the bottle, table edge, and newspaper, respectively. The essential form of the drawing and the picture space *remains the same*, even though the subject matter of the two works appear entirely different.

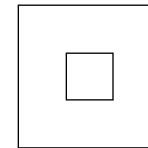
The real subject of these studies is the *arrangement* of elements, whether they make a guitar or cafe tabletop. The configuration of masses and volumes in space and the interplay between three-dimensional construction and two-dimensional vision is the primary concern. Picasso claimed that it didn't matter whether his paintings were upside down or right side up. He said he tested a painting's composition by rotating it through all four 90 degree orientations. Le Corbusier recounts a related incident. While flying over the Himalayas, between his home in Paris and his commission to design a new capital city for India at Chandigarh, he looked at a reproduction of one of his early still life paintings and discovered that by rotating the image 90 degrees he could find in it the visage of a bull. From this emerged his long and fruitful *Taureaux* (Bull) series of paintings.







EMILIO SUSA



JOHN CONTE

## DOING

### DYNAMICS: SPACE PAINTING

#### Transform a Cubist or Purist painting into three-dimensional space.

Obtain a good color reproduction (museum post card or laser copy) of a Synthetic Cubist or Purist painting (Ozenfant, Gris, Le Corbusier, Picasso, Braque). Build its order of perceptions, ie the spaces it demands, simultaneous, transparent, overlapping, warped, diagonal, layered. Make small (4" to 6") study models using construction paper (or pasted together double-sided Color-aid), cutting directly with scissors. Discover how the folding, bending, and joinery become part of the volumetric structure as well as the order of construction. Folded paper can yield structural sections like I-beam and folded plates. An elegant solution may use no glue or tape at all, only tab-and-slot, folds, etc. to integrate construction. Note how perception of volumes as much as rendering of objects is the subject of Cubism. Relief may emphasize planar and frontal ambiguities, but at the expense of a fully realized spacial solution without "back" or "sides". Using material of a single color may highlight purely volumetric relationships, while color models can explore polarities within the painting-- such as black/white, complimentary contrast (red/green, blue/orange, yellow/violet), grouping (all the blues, etc.), or...

Another way to think about this study is that you are the architect/builder. You have just been issued the drawings. But it is only one page. Yet it is plan, section, perspective, elevation and axonometric simultaneously. Animate the transformations necessary to construct the volumes you mind will inhabit.

In your model, explore the contrast between object and structure. Consider issues of representation and abstraction, which touch upon problems of composition, form, and meaning in painting collage and architecture. Subsequent models, based on the structure already discovered, will explore perceptions of depth. Locate/mediate foreground, middle ground, and background, using clues consistently interpreted from the cubist work. (overlapping, color/light contrast, oblique views, etc....) After exploring the ambiguities of structure and depth, determining a "correct" resolution becomes the next level of inquiry. Some suggestions on working methods for this project: Keep turning your model so as to be able to see it from all sides. If you only concentrate on the "front" view, the back will be undeveloped and unrelated to the whole. The same is true for top, bottom, sides. Remember, the model is a plastic 3D construction, **not** a picture. To go beyond a literal reconstruction of the color areas in the original painting, first imagine what views the painting would yield if its volumetric order were seen from the sides of the canvas, from the top, bottom, and back. Then, to avoid simply building a dollhouse shadow box, be sure to build perceptions of space as an accretion of views that reveal what you know to be true of the combined 2D-3D space of the painting-- a circle in plan becomes an ellipse in perspective but can be reconstructed as both circle and ellipse (or cylinder or sphere!) in model.

**DOCUMENT** the final model and other results of your studies through architectural means: plans, sections, elevations, axonometric, perspective, etc. in ink on paper. You may choose to draw the opacities, transparencies, and densities which the actual pieces of the model represent. Consider the "closure" within your model as partial, as more dense than outside the model while permitting continuous space to perforate the continuous mass of construction.

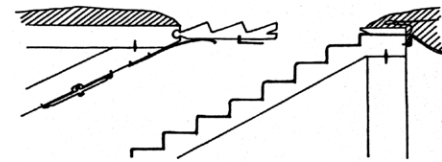
**COLOR: 3. Hue. 4. Chroma.** (See page 462 for more.)

FROM THE PLANIVERSE,  
BY A. K. DEWDNEY

THE HOUSE

The house was essentially a large, rectangular excavation subdivided by beams which were held together by double spikes and formed into a rigid, well-formed structure. Although it appeared to be very complicated, this structure consisted of only 13 horizontal, 16 diagonal, and 22 vertical beams, hardly enough pieces from which to construct a single, three-dimensional room! It is just as well that the Ardeans enjoy such an economy of means, for their construction methods are equally restricted. Nails are useless since they part any piece of material they may be driven through. Saws are impossible. A beam could only be cut with something like a hammer and chisel. Nevertheless, beams may be attached to each other by double-pointed spikes or by pegs driven into prepared holes. Glue supplements the holding power of spikes and pegs, sometimes even replacing them. In fact, glue comes close to being a universal fastener for the Ardeans, not just in houses but in every sort of construction.

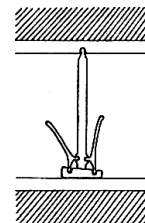
The "swing stairs" are worthy of closer attention. For example, the swing stair at the entrance to the house had a hinge and a spring at one end.



A traveler from the west crosses the entrance to the house by stepping on the swing stair, which under the traveler's weight swings down, until it meets the stairway. The traveler descends three steps, ascends three steps, and continues on. Crossing the entrance from the east is only slightly more difficult: the traveler pushes down on the swing stair with his or her lower eastern arm, catching it with the eastern foot, and then ascending.

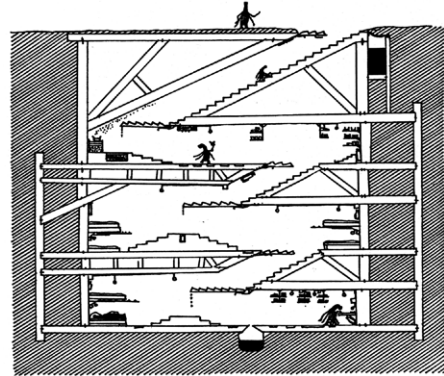
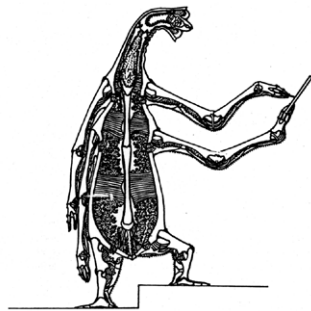
THE DOOR/WALL

This strange but useful device has just four moving parts: a hinged column, two levers, and a shoe. The shoe fits into the bottom of the column at an angle so that it acts like a wedge. It is pushed under the column in order to support the ceiling and it is pulled away to allow the column to hang freely.



Approaching the door/wall from the left, an Ardean pushes the lever, pulling the shoe from out from under the column. It is then possible to swing the column to the right as the Ardean walks under it. In order to return the door/wall once more to its supporting role, the Ardean now pushes the lever on the other side of the door/wall.

An Ardean passing under the door/wall in the opposite direction does precisely the same things, but pulls the lever instead of pushing it.



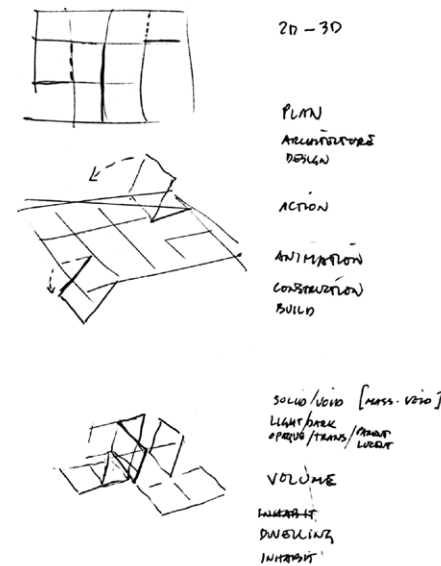
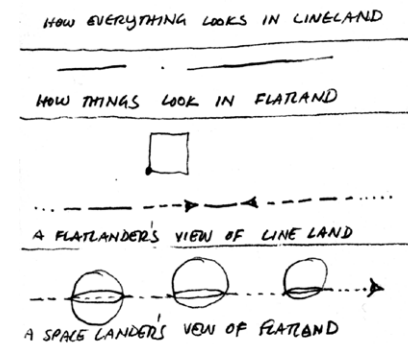
BEYOND THIS DIMENSION

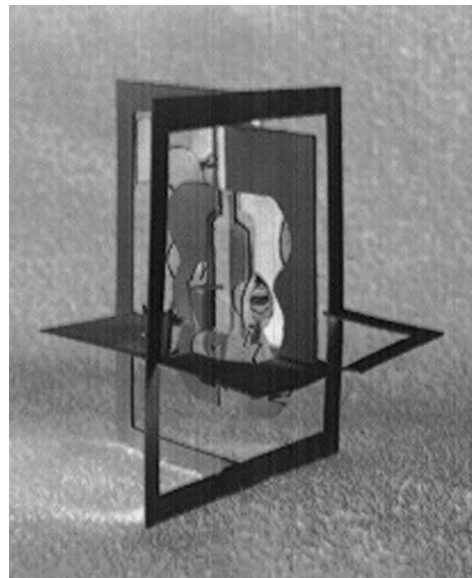
It is hard enough to see empty volume. Can we ever see the four dimensions of spacetime-- or any other four-dimensional phenomenon? Whether or not we can record such images with our retina, we can understand them with our mind's eye. Mathematicians often lead the way into new visions of the reality the rest of us wake up a little bit later to discover they are perfectly evident to our eyes as well. As a way to introduce the abstract notions of geometry in more than three dimensions, Edwin Abbott wrote a wonderful little book called *Flatland*. The inhabitants of two-dimensional Flatland are lines and polygons, who occupy a planar realm. In a few revelatory dreams, one citizen, an open-minded square, encounters first Lineland and then Spaceland. Lineland is a one-dimensional domain inhabited by points and lines. Spaceland resembles our familiar surroundings. The square vainly attempts to enlighten the king of Lineland about the richness and superiority of Flatland. Linelanders, trapped in their one-dimensional line world, are unable to see beyond or to pass their adjacent neighbors. Flatlanders enjoy lateral as well as forward-and-backward movement, and thus are free to assemble and choose their neighbors at will. However, when the open-minded square meets a sphere from Spaceland, who grows in Flatland from point to circle and back to point before disappearing, the square has difficulty imagining a third dimension which doesn't conform to his everyday experience. Spacelanders are free to circulate "upward not northward", heresy in Flatland. "Upward, not northward," implies a privileged plan overview, unimaginable to Flatlanders.

The story helps us understand perception in many dimensions. Linelanders can see only points, whether they are points, lines seen on axis, planes, or geometric solids pierced by the trajectory of Lineland. Likewise, Flatlanders can see only points and lines, be they points, lines, polygon planes or cross-sections through geometric solids seen edgewise. They cannot see planes, even though they themselves are planar. We who seem to live in 3D Spaceland see only two-dimensional shapes on the planar surface of the retina. Our knowledge of solid space and depth depends on perception from another dimension. We must move out of space and into time to build the fully stereometric qualities of Spaceland from the picture plane images in our memory. A "fourth-dimensional" awareness of space and time demands the accumulated experience of all our senses. Video, film, newspapers, software, and blueprints all present many dimensions of experience together. If a picture equals a thousand words, then a plan may equal a thousand pictures.

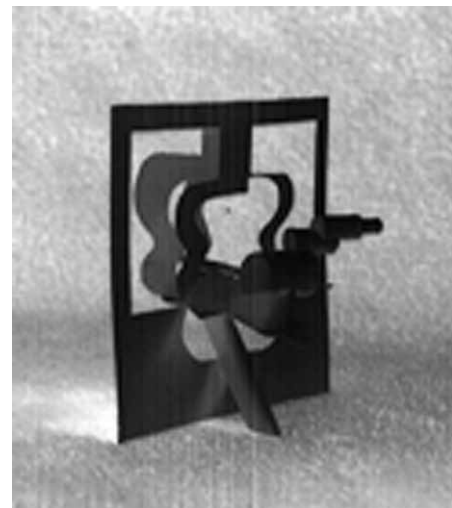
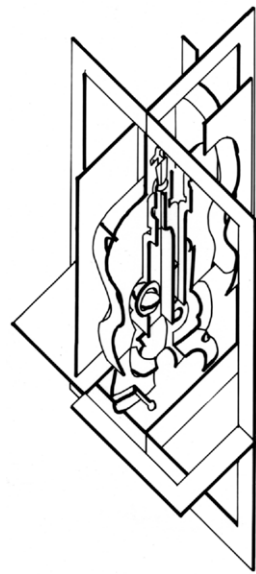
Another mathematician, A.K. Dewdney, wrote *Planiverse*, an extended meditation on how Flatland might really work. His marvelous book explores the biology, mechanics, art, and architecture (naval and aeronautical as well as domestic) of a Flatland civilization as complex as our own. By solving digestion, traffic, security, in two dimensions, he provides insight into thinking beyond assumed dimensional limits. For example, inside our own bodies the complex weave of blood vessels and nerves is akin to how plumbing and wiring in a building manage to avoid cutting each other. Yet how rarely is this topological sophistication applied to a problem like traffic-- only on some highways do cloverleaves and overpasses keeping crossing roads from intersecting. And only in such evolved plans as Olmstead's Central Park in New York City do such weavings keep cars from hitting people and people from slowing down cars.

Perhaps painters too are mathematicians-- mind learners of a mathematics of the infinite Present always before us in the here and now as light cascades into our brain in an electromagnetic and chemical continuum of boundless configuration. Wayne Thiebaud, with only a little help from the topography of San Francisco, shows us in *Holly Park Ridge* that the plan of a city may also be the picture plane of an apartment window. In what dimensions does this vision exist?

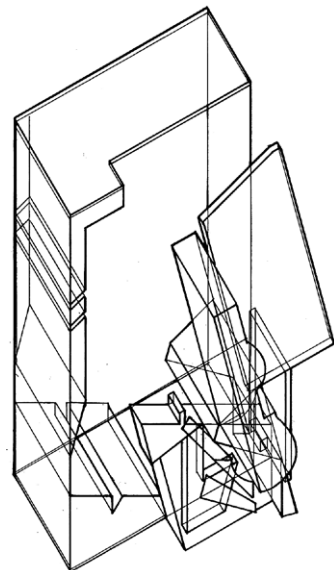




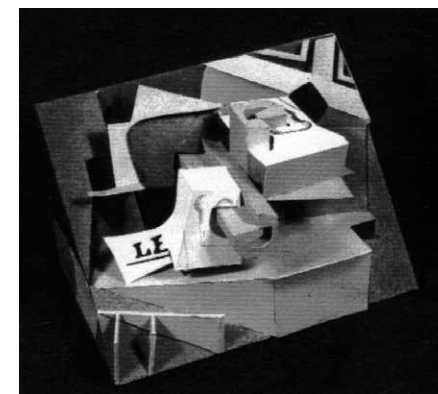
YU CHI YANG



RICHARD PRESTON



RAY GUITIERREZ



JAMES SCALA

## REFLECTING

What do Cubism and Purism suggest for architects? How are these masterful paintings guides for making architecture? How do you draw the plan of the space and time of a child's swing? Recent studies hint that the path between the brain's optic lobe and the eye's retina is reversible, suggesting that vision and imagination may inform each other (a good argument for an architect to travel with sketchbook in hand). Alissa Feldman, a student who pursued these studies entirely in the virtual space of computer modeling, said of her images, "This is a *sketch* model..." To the architect or plastician who composes volumes, hard line precision and shaded rendering remain means, not ends, and the quest is not just superficial pictorial pleasantries, but deeper spacial order, perhaps simultaneously in the multiple dimensions of surface, solids, and spacetime.

Robert Slutzky, a painter, has long been a wonderful teacher and critic of architecture. Reviewing student work he is like a surgeon, cutting right to a problem's essence, which invariably is one of an unclear or improperly formulated geometric conception. (He is known to ask a seemingly simple question like "Why is it symmetric?" that comes as a revelation to the designer. *Of course!! Shrinking the east and expanding the west gardens will solve parking entry and privacy problems, after all sunrise and sunset are similar but basically different phenomena --I coulda had a V8!!*) We are privileged to sample his writings on the pages immediately following. Cubism and Purism teach that each plastic element may be formally simple and clear without sacrificing complexity in the whole. Like the art of Gris and Picasso, Slutzky's paintings show how plastic elements may be interlocking shapes which create compositions of multiple space perceptions in both two and three dimensions.

The Space Painting study usually produces quite revealing results. At first almost everyone tries to make a dollhouse "model" of the "picture", seeking identifiable objects-- tables, bottles, flowers, doorways-- to build what that would "really be". When students realize that Cubism can communicate *perception* of objects, they begin to abandon their literal fantasies of the space of the painting. Realizing that a Cubist painting can be about how to construct the everyday vision we operate with simultaneously-- how to synthesize in a single image or model that experience of complex multivalent spacial ambiguity that is the swirl of our true everyday experience and how to confront the actuality of the picture plane (avoiding Caravaggio's illusion of a hole or Veronese's false window)-- almost everyone tries to make a simple relief. At this point a very effective critique is "what would such a space look like from the side, top, back, etc.?" Only then is plane transformed into volume, is depth implied through layer and rotation, and is the ambiguity of spacial overlap exploited. Further study may reveal, for example, how Gris deliberately played a fabric of planar symmetries against spacial asymmetries. This can lead to greater skill in clarifying form to articulate plastic possibility and in resolving plans by making one space read as several things simultaneously.

## SUGGESTED READINGS:

- Abbott, Edwin. *Flatland*
- Dewdney, A.K. *Planiverse*
- Huizinga, J. *Homo Ludens*
- Ingersoll, Richard. *Le Corbusier, A Marriage of Contours*
- Konig, H. G. *The Planar Architecture of Juan Gris*
- Le Corbusier. *Creation is a patient search*
- Loran, Erle. *Cézanne's Composition*
- Matisse, Henri. *Jazz*
- Rosenblum, Robert. *Picasso and the Typography of Cubism*
- Rubin, William. *Picasso Braque;*
- Slutzky, Robert. *Transparency 1 and 2, Cube Chrome, Aqueous Humor*





## APRES LE PURISME

by Robert Slutzky

*You know these joys: to feel the generous tummy of a vase, to stroke the delicate neck, to explore the subtleties of its lines... letting oneself be gently seduced by the fascinating enamels, by the splendor of the yellows, and by the velvetlike blues; to witness the lively struggle of the brutal black masses and victorious white elements.*

*Le Corbusier, in a letter to Perrin, 11 June 1911*

*The painting PHYSICALLY is a masterly massage appliance.*

*Ozenfant and Jeanneret, Après le cubisme, 1918*

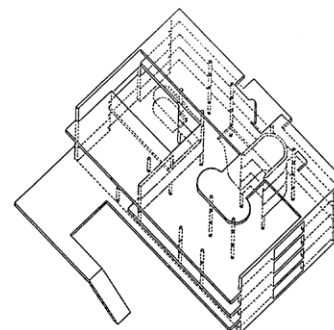
*Verre et Journal*, a little known Juan Gris still life of 1917, now in the storage racks of the Kunstmuseum in Basel, offers the opportunity to open yet another discourse between Cubist and Purist aesthetics. The latter first took issue with the former in a manifesto entitled *Après le Cubisme*, co-authored by Amedée Ozenfant and Le Corbusier (then still Charles Edouard Jeanneret) in 1918. In this document, general praise of Cubist geometries is dimmed by sharp criticism: the Cubist distortion of objects, wrote the authors, had the effect of diminishing the "credibility" of still-life painting; presumably taking to task Picasso, Braque, and perhaps Gris, they cited the "fallacies" of triangular pipes and square guitars. The two collaborators proposed to rescue such objects-types from pictorial misrepresentation by accentuating their inherent architectonic qualities, depicting them through the more "honest" and universal definitions of plan, section, and elevation.

Within this idealized image, a happy marriage *des contours* was to take place, the interaction of concavities, convexities, and orthogonalities engendering a dynamic unfolding of space and surface. To guarantee the preservation of object identities, Ozenfant and Jeanneret prescribed a palette derived from academic painting.

What this systematic vision of the external world entailed was a rather Protestant notion of aesthetics. The mass-produced object of daily use was to be elevated to the highest order of representational importance: mundane utensils were to occupy a place formerly reserved, in still-life paintings of the sixteenth through nineteenth centuries, for the nobler elements of nature, and earlier, before the invention of the still-life genre, for gods and persons of highest standing. Whereas the Cubists had sought to invigorate inert bottles and guitars with the presences of daily life - fruits, bread, newspapers, household patterns and textures - the Purists undertook to ban such pictorial stuff from the canvas, celebrating instead the refinement and elegance of containers of machined shape.

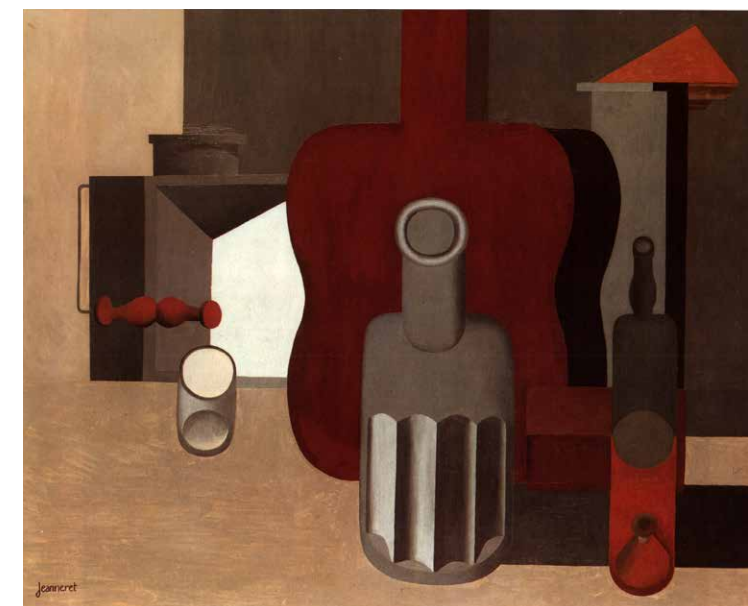
Yet if one looks closely at Le Corbusier's own paintings of this period, one sees how transparency and contour acquire a figural presence not really consonant with the Purist program. It does not require much imagination to suggest that *Après le cubisme* is more the polemic of Ozenfant than Jeanneret. A comparison between the still lives of both painters reveals that whereas the former hones his canvases closely to the prescribed rules of composition and palette, the latter tends immediately toward the subjective and arcane, suggesting, even if in ever so muted a way, the anthropomorphic characteristics latent in the products of a rational technology. Thus pitchers, glasses, bottles, carafes, siphons, pots, dishes, dice, boxes, lanterns, architectural moldings, books, violins, and guitars become actors on the stage of a still-life theater (notwithstanding the curious inclusion of musical instruments in the repertory of mass production). Reclining guitars become surrogate odalisques; bottles and jugs double as orators and statesmen. The "noun" definitions proclaimed in the manifesto give way, in effect, to a syntax nuanced by "adverbial" modifications and "adjectival" qualifiers.

These early Purist efforts of Le Corbusier, often perfunctorily included in the pantheon of modernist art and only recently reexamined within the canon of the architect's work, frequently amount to energetic and complex formal and chromatic cadenzas. They not only expose a painterly originality, but



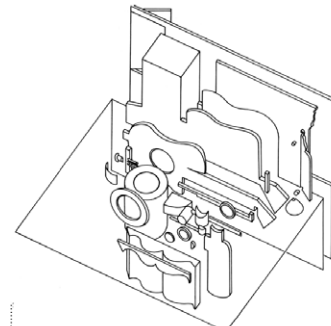
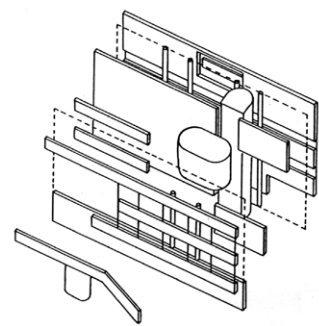
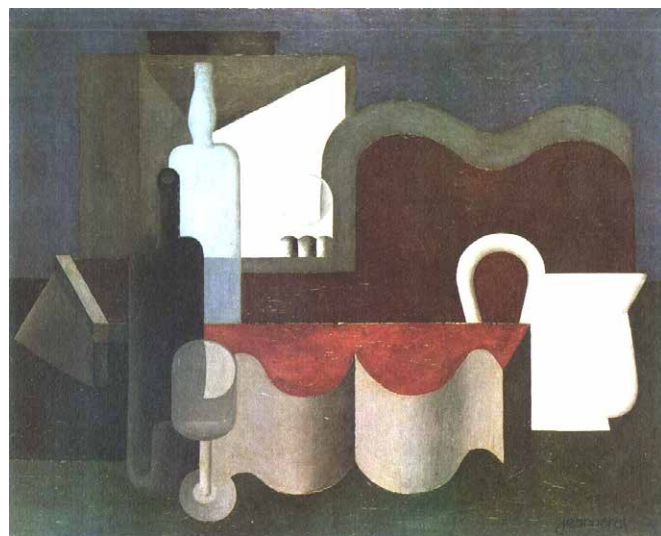
also recall, in strong metaphors, the history and culture of Western painting. But before looking at a few of these works, we must return to the small but monumental Gris still life in the Basel museum's repertory. In doing so, we should recall Le Corbusier's praise of Gris: "the strongest of the Cubists."

In the Gris painting we have a seemingly typical Synthetic Cubist still-life arrangement that upon first glance suggests a traditional foreground-mid-ground-background schema. The orange-browns are appropriately deployed to configure a table leg in the lower left corner, a tableau in the center supports an unclear cluster of objects, while a piece of wall paneling in the upper right corner completes the flattened but essentially Renaissance recessionary reading of objects in space. The style of rendering is peculiarly Cubist, but it is imbued with a disturbing quality of predetermined diagonal symmetries. A pair of opposing and reversed dark shapes in the upper left and lower right corners folds the rest of the composition back into the painting's center, illuminating other sets of complementary shape oppositions that also draw attention to the first and last two letters of the newspaper banner, LE JOURNAL. This syntax of mirror symmetries triggers a revelatory new reading: gender, hinted at by the concavity and convexity of various object-shapes, now surfaces linguistically. Thus in the black-on-white LE diagonally concluded by the gray-on-black AL, a seemingly innocent play of metonymic fragments opens up the possibility of assigning gender to the painting's pictorialized nouns. LE remains a masculine article (French), but now stimulates the reversal of AL to LA, the feminine article (French). This sudden dialogue of gender reverberates back to LE, causing its reversal to read EL, masculine (Spanish). And so a subliminal game of gender interchange, one that Gris will employ much more consciously in his later paintings (for example, *Le Canigou*, where an over play of Freudian readings overlays a "conventional" still-life composition), becomes an added, witty investment into presumably "dumb" objects. At the same time the reversal of French to Spanish suggests the painter's own relation to Paris, a rather significant layer of autobiographical reference.



I have undertaken this somewhat extended reading of a literary-visual pun in the Gris painting to dramatize the potency of Cubist abstraction to generate new meaning. In the canvases of painters like Picasso and Gris, all manner of anthropomorphic and sexual references disguise themselves within a highly organized pattern of innocent geometries. The Euclidean object definitions, nouns of traditional representationalism, are transmogrified by their displacements and reconstructions into poetically allusive roles. Tellingly, a mass-produced object like the daily newspaper, a favored point of departure for the Cubist literary-transformational game, is excluded from the Purist vocabulary. One can only speculate why this and other typographical material are so thoroughly banished: perhaps words and letter in themselves were seen as too culturally determined to be "primary" enough for the universal comprehension to which Ozenfant and Le Corbusier polemically aspired.

In Cubism, metaphor functions as the subversive and emancipatory instrument of a pictorial system in which precise geometries work to fragment objects into alchemical othernesses. The oscillation between surface and depth definitions, between two-dimensional infrastructures and illusionistic representation, provides a friction of contradiction that radically extends the duration of aesthetic time. It is no accident that Cubism attracted the attention of the poets. It no doubt attracted a side of Le Corbusier as well, despite his and Ozenfant categorical demotion of Cubist idiosyncrasies. If it was the academically trained young architect from a Swiss watchmaking town who would naturally have gravitated toward the technical rationalism and pictorial precisions of the Purist program, then it was the traveler to the East, exposed to the exoticisms and sensory seductions of an altogether other culture, then immersed in the intoxicating expansiveness of a Parisian milieu with its attendant cast of luminaries, who would have been susceptible to the pull of a much more liberating aesthetic.



Three Purist-period paintings by Le Corbusier in the La Roche collection in Basel prompt an elaboration of this hypothesis. The *Nature morte à la cruche blanche sur fond bleu* (1920), we are struck by the refinement of interpenetrating and overlapping forms that, in sharing either contiguous contours or common color values, disintegrate the literal spatial emplacements of the objects being represented. Thus, for example, the circularity of the mouth of the goblet in the lower left foreground seems to be inextricably bound to the hemispherical motif of the red-topped architectural molding (open book?), which, in its shared relation to a darker red, flat-axonometric upper half of a guitar lying behind, completes a triadic relationship of expanding hemispheres. The same goblet's transparent adhesion to the dark bottle behind it to the left, and its sharing of the gray value in its right-hand portion with a second bottle above it to the right, dematerializes the prominent stage position of this frontal actor so that it gets subsumed by its taller "parents." What emerges is a metaphor of family - embodied by the goblet and both tall glass containers, the one to the right most anthropomorphic of all by virtue of the strange convexity of its neck/head, the threesome proudly posing in what finally reads as an architected interior space composed by a rescaled vision of ordinary subjects.

Meanwhile the pitcher on the right is attempting to escape its compressed imprisonment. It is checked, however, by the thin surrounding field at its right, but its alliterating bottom curvature completing the half-guitar to its left, and by its circular handle, which triangulates with the round mouth of the goblet at lower left. At the same time, the pitcher's spout nudging the painting's right-hand edge is almost symmetrically countered by a wedge-shaped fascia on the left, a form seeming to belong to the tuning-neck of the guitar and located a hair's breadth from puncturing the left-hand edge of the canvas. These two projective elements, the pitcher's spout and the trapezoidal wedge, create a state of extreme middleground tension by their counterpoint with the compressive vertical elements.

The title conveys further ambiguities. The blue field is almost totally obscured

by the coulisse arrangement of objects in front of it, while the white pitcher is nearly mirrored diagonally by a shaped lantern(?) face, which through its echoing scale and color value effects a contradiction between a background element and one in a more prominent fore- or middleground position. The coloration of the whole speaks mysteriously of complementarity - not a typically Purist device - with a predominant red-green-gray interplay inflected by bleached yellows and shaded blues. One also notes the way the offset "navel" of the canvas is stated by a shift of the mouth of the fluted drinking glass diagonally upward to the left of the painting's actual center.

This latter pictorial device is also seen in *Composition à la lanterne et à la guitare* (1920), where the circular opening of the fluted bottle is shifted to the upper right, and in the later *Verres, pipes et bouteilles sur fond clair* (1922), where the eye-level rim of the central goblet splits the painting into equal top and bottom halves. This perfectly centered horizontal anticipates Le Corbusier's predilection to establish a reflective center line or oculus in his architectural and urban elevations, for example the middle-rise housing blocks of the Ville Contemporaine. In the *Composition à la lanterne et à la guitare*, a palette reminiscent of Gris - red-browns, orange-browns, pale ochre-grays, and blue-grays - organizes a decidedly asymmetrical composition in which a sparse area of light color and chunky elements on the left counterpoints a dense, dark-brown field on the right characterized by compressed verticals. This counterpoint between left and right enframes the two nearly symmetrically aligned main figures, which shift rightward and constitute an intermediary section of light-on-dark and dark-on-light articulations, thus weaving the left-hand side of the canvas through the right side. What is striking about the two central actors is the interchange of figural meanings: the guitar is cropped at the top so as to leave out its tuning board and thus reads as a fat, flat flask; the bottle in turn pirates the guitar's sounding hole, fretboard, and string parts, becoming less a container of liquid and more one of sound. Thus liquidities and acoustics reverse their respective vessels, completing a surrealist exchange of subject and object. The highly articulated fluting on the front bottle also suggests the hand of

the sculptor/musician/painter/architect - multiple roles that Le Corbusier would aspire to embody.

Nor is such a painting all that far from the metaphysical atmosphere of a De Chirico. And in light of Le Corbusier's own affirmation of the role of his painting in the formation of his architectural concepts, we can already see premonitions of the more arcane presences that will lurk within the distorted forms and poetic encadrements of some of his later architecture. The Purist surface manipulations of plan-section-elevation, intended to elucidate the concealed structures of presumably ordinary objects, now in fact have just the opposite effect: that of engendering ambiguously related animistic subjects, trapped within a garden of delights rather more mechanistically inspired than that of Bosch. In the case of the 1922 still life, there is an attempt to infuse translucency into earthy opacities; ochre-orange-green-grays tinted and shaded within a compressed range of values work to release the central black modeling of the fluted goblet, thereby minimally yet powerfully asserting its paradoxical presence. This curious overlapping distortion in what should have been a polemically clear representation recalls the figural excesses of the Gris pointing discussed earlier and definitively signifies Le Corbusier's transition from the Purist vocabulary of reasonable clear tectonic projections to a painterly repertory with distortive and enigmatic characteristics.

Taken together, these four paintings - three by Le Corbusier, one by Gris - offer more than a glimpse of the new poetics of modernist still-life painting. With Gris, the wedding of Euclidean and Orphic impulses will be consummated in his late works of the 1920s. With Le Corbusier, the constraints of Purist aesthetics, of compositional literalness, will be radically loosened, giving way to more ambiguous space and content and allowing the artist's psychic energies to overflow into his work - not only from the containers being represented, but also from the larger, more metaphorical ones that become the canvases and architectural projects themselves. Just as the Dom-ino is succeeded by the subtler and darker intricacies of the Jeanneret-La Roche house and villas Savoye and Garches, so these, in turn,

will be replaced by the more outward energies of the Pavillon Suisse, the Palace of the Soviets, and the Algiers Obus, and, still later, by the poetic imagination of Ronchamp and La Tourette, two structures that encapsulate the subliminal and the sublime.

*What could you not find contained in a canvas if you could obtain the painter's confession? But the canvas goes out alone, making or not making its way, bearing its message. There is a world in a painting or a building as there is also in a work of city planning. Seek, and you shall find. Look into the depths of the work and ask yourself questions. There are illuminations and scenes; there are hours of fullness, agonies, radiant or menacing skies, houses and mountains, seas and lagoons, suns and moons. And there are besides all the cries of the subconscious, sensual or chaste, and everything you can imagine.*

Le Corbusier, *New World of Space*, 1948

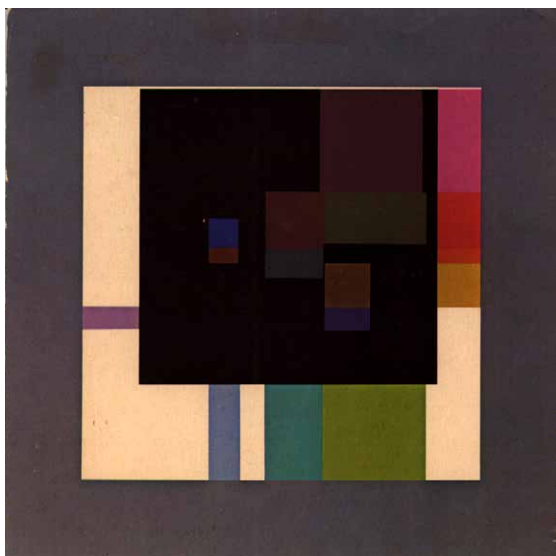
"*Tout calice est demeure.*" (*Every vessel is a dwelling place.*)  
Jean Laroche, quoted in Gaston Bachelard, *Poetics of Space*

#### Notes

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1. For an extended discussion of this theme, see Robert Slutzky, "Aqueous Humor," *Oppositions* 19-20 (Winter-Spring 1980): 27-51.





## COLOR/STRUCTURE/PAINTING

The primary subject matter of my painting is color. For this reason I call it color/structure painting. Consciously turning its back on illusionism and allegory, this kind of art attempts to define its own universe of meanings, and thus, in the polemical act of purifying itself from extraneously derived languages and imageries, aspires to ineffability. How, then do I presume to talk about it? The very notion of talking about an ineffable object is paradoxical.

To be sure, the "unspeakable" painting aspired to by modernist abstraction has frequently had to bear the noisome burden of an irrelevant, often arcane, and sometimes brutish critical language claiming to interpret it. Relatively young (in the perspective of five hundred year of Western art) and therefore fragile, it has been far more vulnerable than representational painting to the violations of a prose language using methods of scientism to verify its seeming simplicity, its overt pictorialness.

The Russian linguistic critic Roman Jakobson distinguished two aspects of language, derived from two conventional tropes of classical rhetoric, the metonymic and the metaphoric. The metonymic mode tends, in the realm of literature, to describe the language of narrative prose. It proceeds by a chain of associations based upon relationships of contiguity and by the substitution of representative parts of wholes. Because contiguity implies a logic of cause-effect, and the associational chain leads to a piling up of "relevant" details, it is strongly realistic. The visual form to which it may be said to correspond most closely is representational painting, which, like realistic literature, may be fruitfully analyzed in terms of its fidelity to or distortion from its subject, and its use of "local color." In this form of painting, the primacy accorded to the mimetic and narrative image tends to assure the authority of the painting's content.

Metaphor, on the other hand, is the predilection of poetry, of rhyme over reason. It is a touchstone, a quantum leap out of the constraints of conventional causality into a transforming relationship based on some aspect of analogous structure. Metaphor connects "pig" to "fig" sheerly by virtue of sound, as well as to "glutton" by a conceptual jump; metonymy, moving from the whole to its parts, would connect it to "ham" and "oink." Fundamentally unstable

and momentaneous, and in this sense opposite from the metonym, which becomes codified by time-honored "trains of thought," the metaphor lives and dies in an atemporal, self-combustible instant of interaction between its two (or more) juxtaposed ideas. But its effect is universal and revelatory: "the metaphor is not the enigma but the solution of the enigma" (Paul Ricoeur).

In the world of painting, color, when inseparably bound to structure, and immersed in a total relational matrix of pictorial cohesion, resonates with metaphoric energies. The effects of juxtaposition, transposition, and competition lead color/structure painting by way of metaphor from revelry in the pure vibrancy of analogous structure, to revelation, finally to reverie, the contemplative dream of an aesthetic world outside of chronological time.

It is in this sense that metaphor is the language of ineffability. The oxymoron suggests the precariousness of the condition. For the ineffable language has to be both daring and cautious so as not to shackle its pulsating subject in linguistic chains, using its technique of analogy as a deferential probe, coaxing to the surface whatever meanings might emerge from the hermetic envelop of color/structure. It speaks through the power of evocation rather than description, extracting essences and cultivating presences. It prefers the more subtle probes of the etymologist to the transfixing classificatory pins of the entomologist, reaching into the unconscious memory of culture, impregnating rather than impaling its mute subject, always seeking to render visible the essential mystery without reducing it.

The color/structure painter discovers his motive for metaphor in conjuring "the half-colors of quarter-things" (Wallace Stevens).

Let us attempt to use this metaphoric language of illumination in discussing some qualities of the painter's cosmos. What is a canvas but the substantiation of an ideal two dimensional plane? Quadrilateral or not, when frontally manifested to the eye, this plane possesses certain innate energies that distinguish it from all other planes. Its existence is further transformed by stretching it over a supportive frame. The raw canvas not only has its own coloration but its own texture, which possesses a specific reflective quality.

Its tooth determines the way it grips the pigment and sucks in the medium, and these prehensile and oral activities together with its confrontational display of surface, suggest a physiognomic entity, a visage, a face. The frame behind this anthropomorphized canvas, like the skeleton and muscle behind the skin, invests the plane with a certain resiliency, a tone that is taut yet impressionable, a complexion that gives and takes. Unlike other planes that get pinned to hard surfaces or are those surfaces, the stretched canvas, in its elastic buoyancy, awaits the first thrusts and parries of the painter.

The painter usually prepares his raw canvas with a ground, applying layers of white gesso or lead-white to heighten the surface's luminosity and tame its tooth. The word ground is fertile with meaning. When coupled with the Gestalt term field, it assumes the significance of earth-ground, suggesting a horizontal plane/plain of landscape awaiting growth through man's cultivation. It is the beginning of culture - from the Latin *colere*, to cultivate, to live in, to bestir oneself, to be busy; related to *agricola*, farmer; also to the French *cueillir*, to gather, to cull; to such English derivatives as *colonize*; and even to the Anglo-Saxon word *wheel*, by way of the Indo-European root *kwel-*, to move around; all of these progeny of *colere* sounding so fortuitously akin to the root of color, *celare*, to conceal; and to the Latin *occultus* (from *occulere*), hidden, secret. Perhaps we can now appreciate the color-wheel as the vehicle to uncover, cultivate, and be busy within earth-fields - hence painting as a primal mode of habitation, dwelling, living... as culture.

The pictorial field is, of course, most decidedly vertical, suspended, as it were, by our voluntary suspension of disbelief, flipped up in defiance of gravity to a direct confrontation with our eye. Thus the surrogate, possibly even paradigmatic, relationship between the canvas and the human body is established. This amplified context is superimposed on what was formerly seen as a neutral and relatively meaningless picture plane of quadrilateral geometry. Figure and field become indissolubly fused, face and earth linked in a coexistent paradigm of the vertical and the horizontal; and the unpainted canvas assumes the character of an androgynous entity.

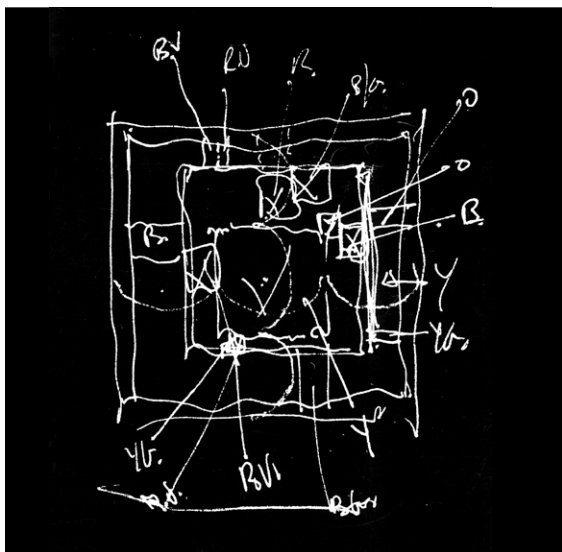
We here arrive at the astounding awareness that the most conceptually

non-figurative aesthetic is describable in anthropomorphic language. And this canvas earth-face possesses still further analogical qualities. On the basis of its size, its proportions, and its reflectivity, our metaphoric vision is led to extract invisible yet intrinsically present structural characteristics. An emergent awareness of foreground/middleground/background dawns on us, created by an inevitably unequal weighting of space, from lighter top to heavier (gravity-bound) bottom, and by "feelings" of tension and compression generated across the surface by natural laws of proportional relations. The innate latitudinal and longitudinal tension/compression in turn recalls tableaux of landscape, interior, and still-life subjects, whose spatial types we know from their paintings. In such manner, the blank field, presumed by scientists and psychologists to be devoid of pictorial meaning, in fact provokes our fictive and fantasizing perceptions, attracting to itself an infl of extrinsic imageries, at this stage still vague, disordered, and even dreamlike, yet deeply rooted in our past experience and in our historical and cultural memory.

Once the actual marking of the canvas begins, vagaries give way to specificities, and a quantum jump is made into purposeful composition, that traditional process of making form and meaning "significant", which takes place even when the artist pretends to avoid it. The maternal earth-field is plowed by the fertile concept (a masculine word, as Gaston Bachelard points out, in virtually all languages that make gender distinctions), and figuration arises from the union. The introduction of the figure into the field is nothing less than the installation of Adam in Eden, his mythical arrival in a still pure world that is nonetheless destined to self-knowledge. The figure in the field becomes the surrogate of man's early existence. And the multiplicity of figures, or configuration, is the surrogate of his society. But only in ways that resist literalness of interpretation: if a metaphor of human existence may be said to be implicit in the evolutionary development of all pointing, it is in the profound realm of structural similarities, in the domain of the deepest possible analogical relationships between figure(s) and field, figure(s) and ground.

And what of the concomitant of structure, color, "the pain of light" in Goethe's





beautiful personification? Does it too have deep metaphorical and linguistic affinities with the anthropo- and geological? Pigments were originally vegetable dyes and essences of earth, refined in air of fire, then bound by a liquid medium. Black, a word by now cloaked in the opacity of its Anglo-Saxon evolution, has its root in the Latin for fire - as in conflagration - signifying burning, the dye-stain of smoke, the ultimate carbonization of life (bones, ivories). White, conversely, is etymologically akin to words for light, dawn, brightness; but also fascinatingly - closely related in Old English to the word for wheat, with its whitish grain and flour, suggesting fields of wheat, white-gleaming fields of wheat, reinforcing the canvas's early analogy, and recalling the image that Henry James used to describe the terrain of "poetry", whatever its artistic form: "the fields of lights." Black as fire, white as both light and fecundity - these associations suggest the impossibility of escaping elemental meaning even when we assume we are addressing the most neutral and austere manifestations of color.

We could pursue this etymological discourse through the rest of the spectrum, discovering relations between yellow and egg yolk, red and fish roe, purple and porphyra and porphyry (algae and mineral). The naming of chroma is literally rooted in earth, water, and sky with their animal, vegetable, and mineral offspring. But what does all this mean to the color/structure painter? Can color in its non-objective and structural role within relational painting be made to capture and exude in essences the variegated richness inherent in these etymological roots? Indeed the earth colors, the marine colors, the colors of fruit and minerals, when unsealed like genies from the painter's tubes and jars and put into the hermetic context of the earth-field, are revitalized by their metaphoric existence. Once in the painterly field, they participate in totally new and highly specific relationships. These relationships are not only a matter of optics: the metaphoric consciousness activates chromatic fantasy. It reveals to the artist that his act is a veritable alchemy, a transmutation of base elements into the combinatory luminosity of painting.

"The painter said: 'If one were to imagine a bluish orange, it would have to feel like a southwesterly north wind.' 'No, that would be a reddish green.'

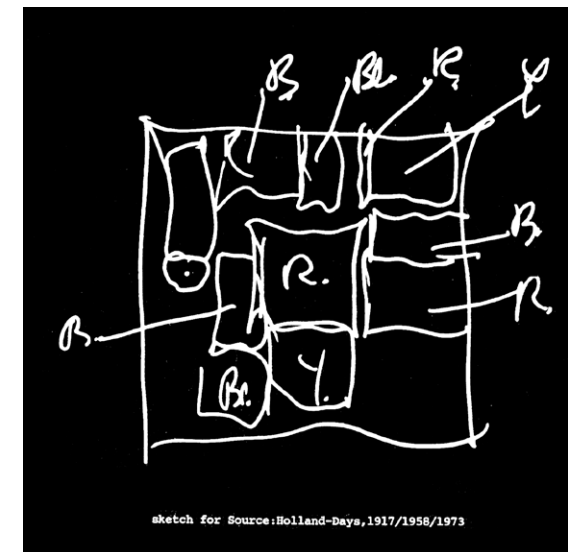
said the other painter. 'It is all the same to me,' said Roy G. Biv. Blessed art thou who bringest forth fruit of the bronze: bells and pomegranates, thunder and lightning. Blessed art thou who brought forth nought of the lead, save Roy G. Biv." - John Hollander, "Orange", from *Spectral Emanations*; Roy G. Biv's name is an acronym for the colors of the spectrum.

It is no coincidence that the advent of abstract painting was heralded by a return to a basic palette of earth colors - black and white mixed with browns and sparing amounts of blue and green. By 1911, Mondrian, along with Picasso and Braque under their "muddy banner of Cubism" (Ortega y Gasset), had forged a revolutionary pictorial space in which minimal color began to be accorded a structural function. Having transported, so to speak, Cézanne's chromatically pellucid late landscape indoors into their urban studios, these painters subtracted chromas as they also compressed and heaved space. The surrogate slice of verdant landscape, flipped up into the frontalized picture plane, lost its verdancy and gained instead earthy opacity and compaction. Abstracted geometric abbreviations of extrinsic subject matter, metonymic tropes of still-life objects, took root in this leaden yet fertile earthen field, as a radically new pictorial syntax sprouted. The earth matrix became colloidal, a suspension of pictorial multiplicities we now know as Analytical Cubism. This agglutination of form and meaning, in dynamic juxtapositions, in turn generated new form-meanings. Color, for the most part, merely recorded the temperature of this yeast-pot of metonymic and metaphoric images, behaving in an unobtrusive manner, simply warming to the degree of intellectual expansiveness in grisaille shades as it essentially subordinated itself to formal animation. Cubist painting became the poetry of an enlightened vision born from an amber and slate-gray plain.

The next event in the evolving infancy of color/structure was the replacement of the earthen palette by primaries. It was de Stijl and Suprematism that shattered the pictorial symbiosis of Analytical Cubism by declaring persona non grata those forces of figuration extrinsic to the elemental clarity of a reborn two-dimensional world. They proclaimed rigorist aesthetic utopias, aesthetic politics of abstention from the forbidden fruits of the full spec-

trum. In employing the unsullied and heraldic colors we call primaries and secondaries, they sought to purge Cubism and all other imagistic painting of its metonymic and mimetic proclivities, presuming the possibility of shutting out or neutralizing one world for the apparently infinite and self-motivated freedom of another. In the strange new world of non-objective space that they created, this self-imposed limitation of vocabulary perhaps represented a felt need to lean how to walk before learning how to run. But we now see (a half-century later) the traps and delusions of such self-denying hermeticism. Even though Mondrian heroically maintained to the end his exclusive formalism, we can already observe in such late paintings as the *Victory Boogie-Woogie* a latent illusionism that refers all the way back to his landscape *House on the River Gein* of 1900. Already, too, in his late New York City paintings, color becomes more complex, as "primaries" vie with other "primaries" for primacy (several blues of differing hues coexisting in the same canvas, for instance). We also know how Malevich, in delimiting his own primary field of action, succumbed to the signs, symbols, and spatial illusionism of geometric fragments traversing aerial fields much as the Sputniks would traverse deep space forty years later. The inadvertent image retained its uncanny ability to infiltrate the most polemically sanitized fields.

Some years later in this selective - and admittedly autobiographical - history, we find a parallel course being taken by another pioneer of color/structure, Josef Albers. (In citing Albers, Mondrian, Malevich, and the Analytical Cubists here as genealogical progenitors of the poetic development we are pursuing, we are clearly neglecting a number of others who cultivated the same or adjacent territory.) If Mondrian pared down the color palette to primaries in order to better explore the structural complexities of horizontal/vertical form, Albers reduced the formal dialogue to the primacy and simplicity of the square in order to explore the complex relational effects of color interaction. But Albers, too, in the abnegations of his rich asceticism, could only advance the discourse of color/structure so far. His paintings ultimately seem overly reductive, demonstration objects rather than provocative instruments of that revelling, revelatory, reverie-inducing action of painted art that we spoke of earlier.



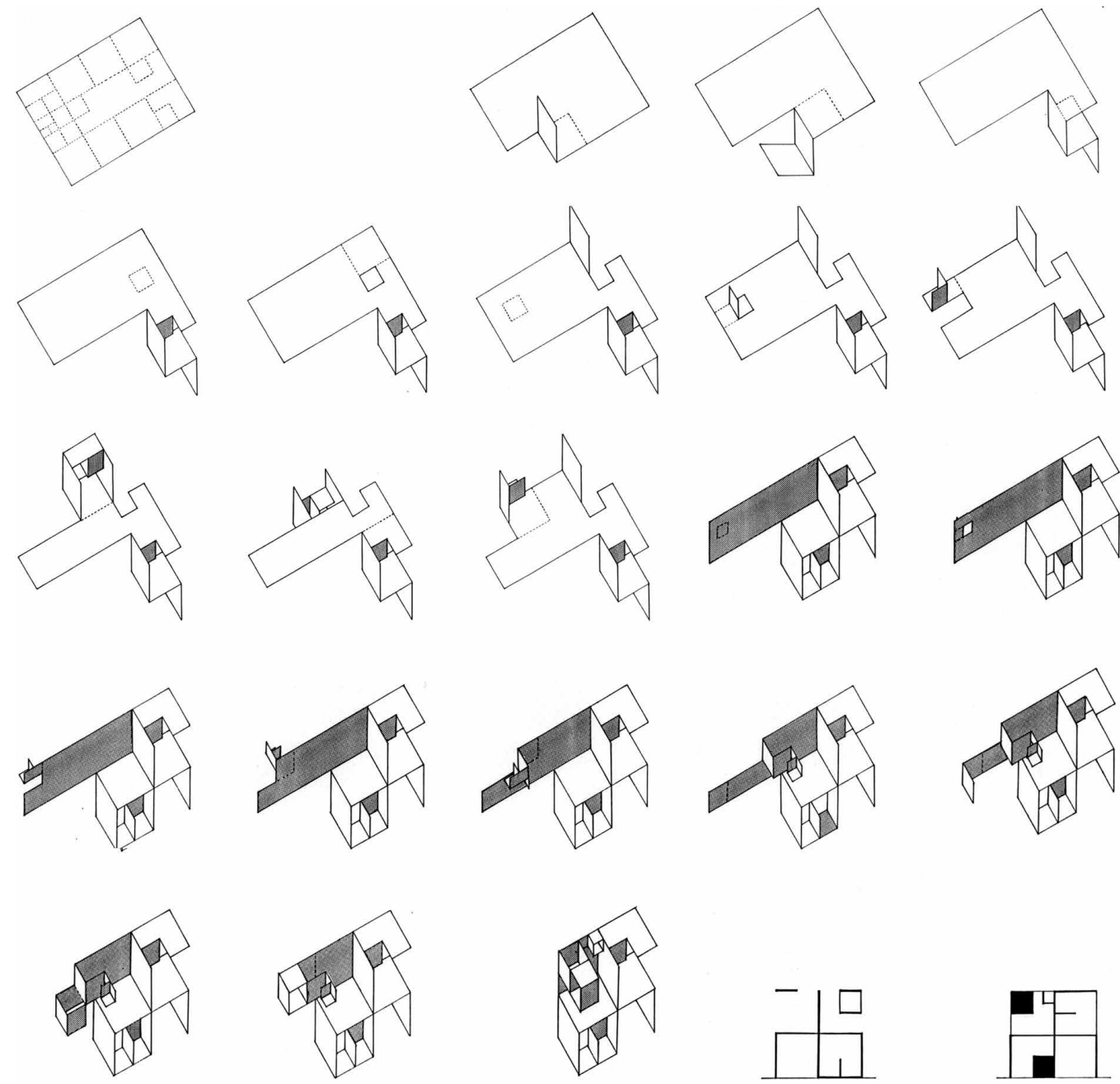
sketch for Source: Holland-Daya, 1917/1958/1973

In the end, the square demanded - demands - a more poetic form of homage. Here we return to the canvas as surrogate I. Another fortuitous similarity of language enters our enriched pictorial cosmos: between *occulere* (from *oculere*, to conceal; which in turn comes from *celare*, the root of color, as mentioned earlier) and *oculus*. The latter is the paradoxical counter-eye in the canvas, confronting artist and spectator alike, the two-dimensional eye, the navel, the geographic center of the hermetic plane. The centered *oculus* transgresses the modernist canon of flatness to mark the void within the illusion, to remind us that what underlies the configurational shifts is the canvas itself, to turn space inside-out like a torus-glove and make figure and field ambiguously one, to still within the radius of its frame the turning wheel of the world.

At the same time this most positive and negative node unanchors our contemplative eyes for distant journeys and far-away places, loci of memories rebirthed. Images float by - a tempestuous painting by Giorgione, Adirondack woods, fog in rice fields, Venetian canals, anthracite tunnels, Saint Veronica's veil, the granite of Roman ruins; loom into view - Goethe's prism and Courbet's cavern, gray Gris, the brutish pink angulations of *Avignon* demoiselles; and disappear - the last gleam on a Pacific horizon, tidal shifts unsea-ing creatures of the depths and shallows; to yield still others, rescued from the edgeless boundary between invisible and visible - squares that are not, greens more red than not, flatnesses that warp, lines that stay and disappear, arid planes that seep and ooze, colors on the threshold of monochromy, the magnetic suction of black.

In short, the alluvial-allusive stuff within the ebb and flow of fictive and factitive perception. The crucible-crx of painterly metaphor.

Robert Slutzky  
with Joan Ockman  
August 1984  
New York City



MARVENE WORRELL?

