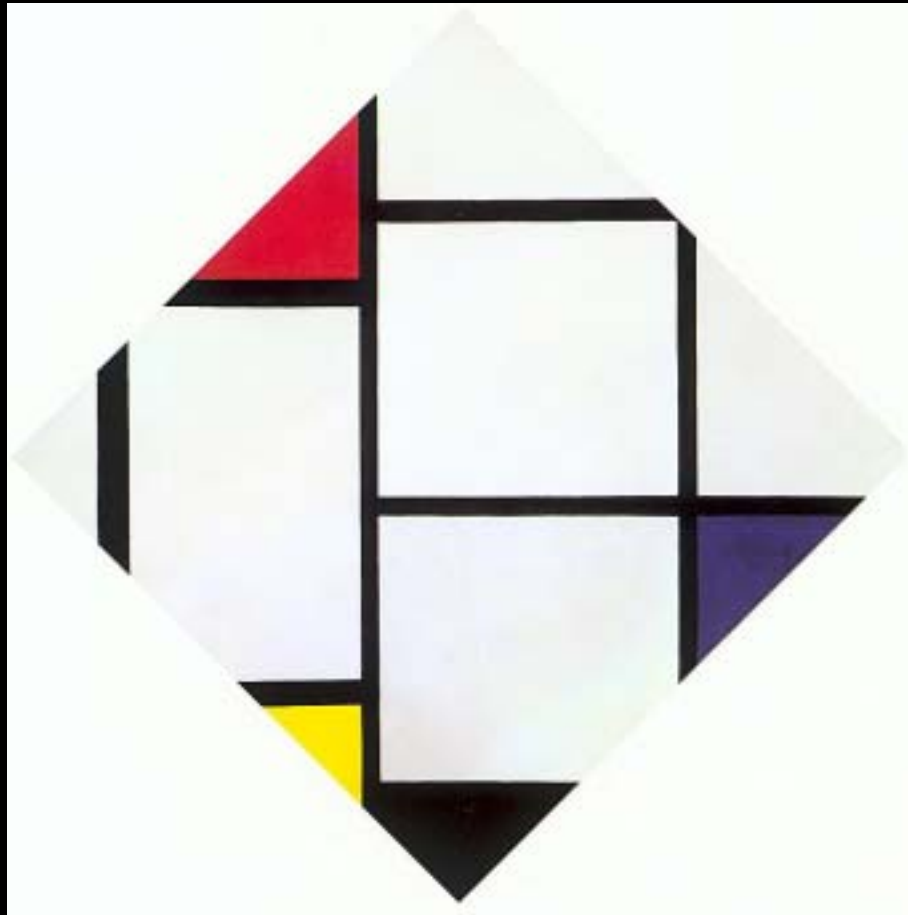


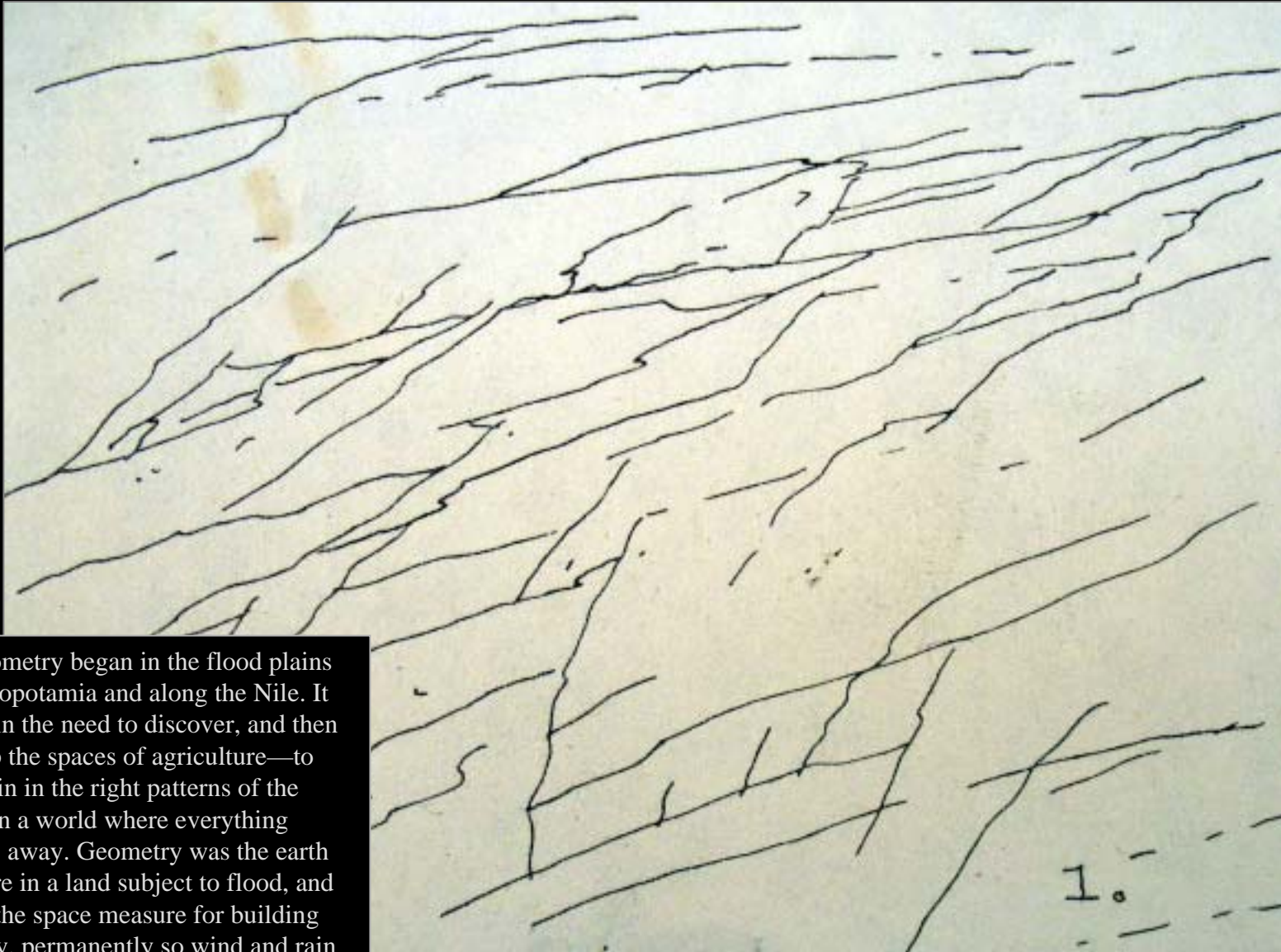
**Geometry and Art
and Geometry and Time**

Part One, Geometry and Art.



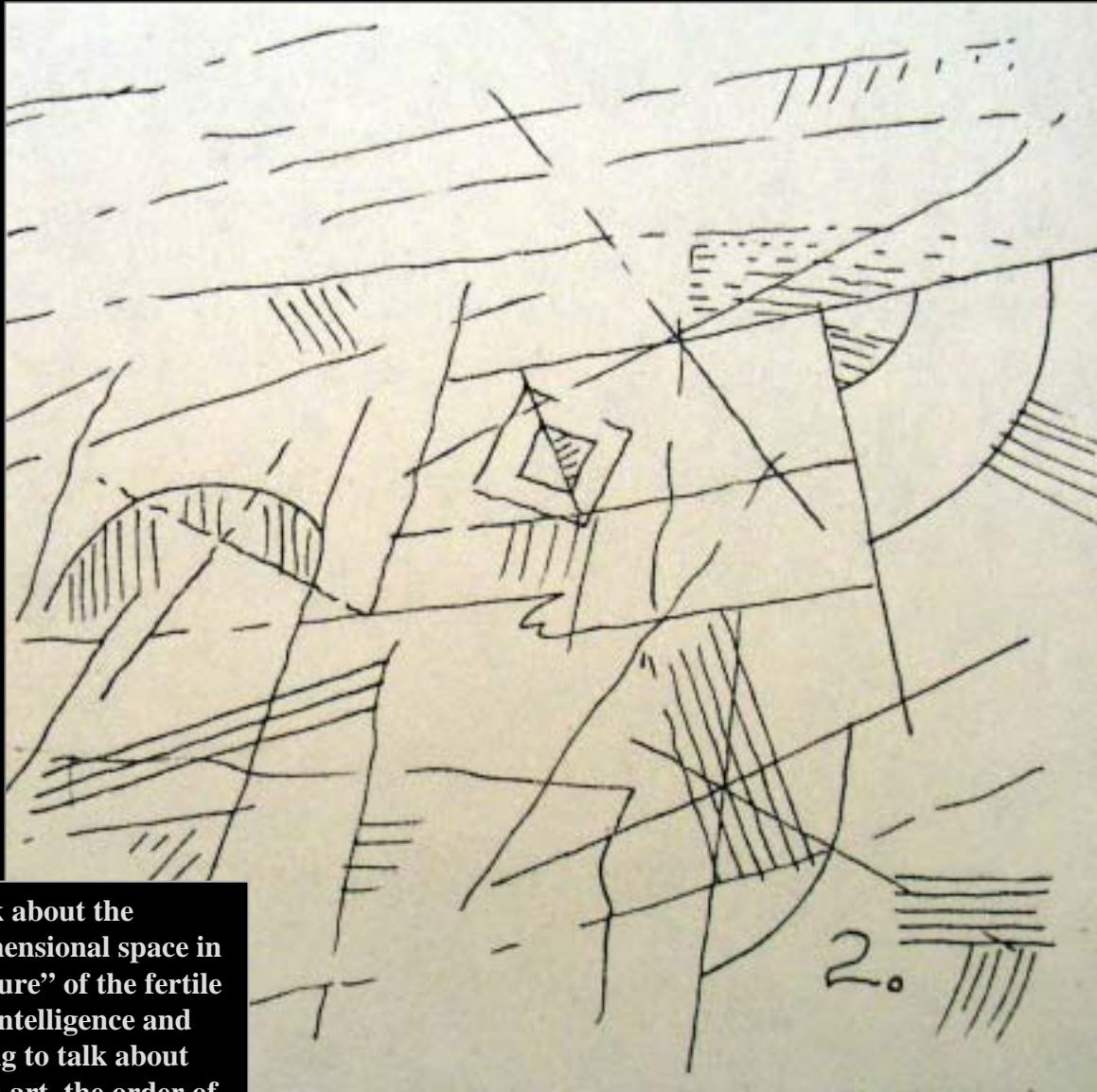
“In the artistic chaos of these last years, when the absolute liberation of the individual instinct has brought it to the point of frenzy, an attempt to identify the harmonic disciplines that have secretly, in every period, served as foundations for painting may well seem folly. But this folly is in fact wisdom. It is the way to a kind of knowledge essential for whoever wants to paint...

--Jacques Villon, in Charles Bouleau: *The Painter's Secret Geometry*



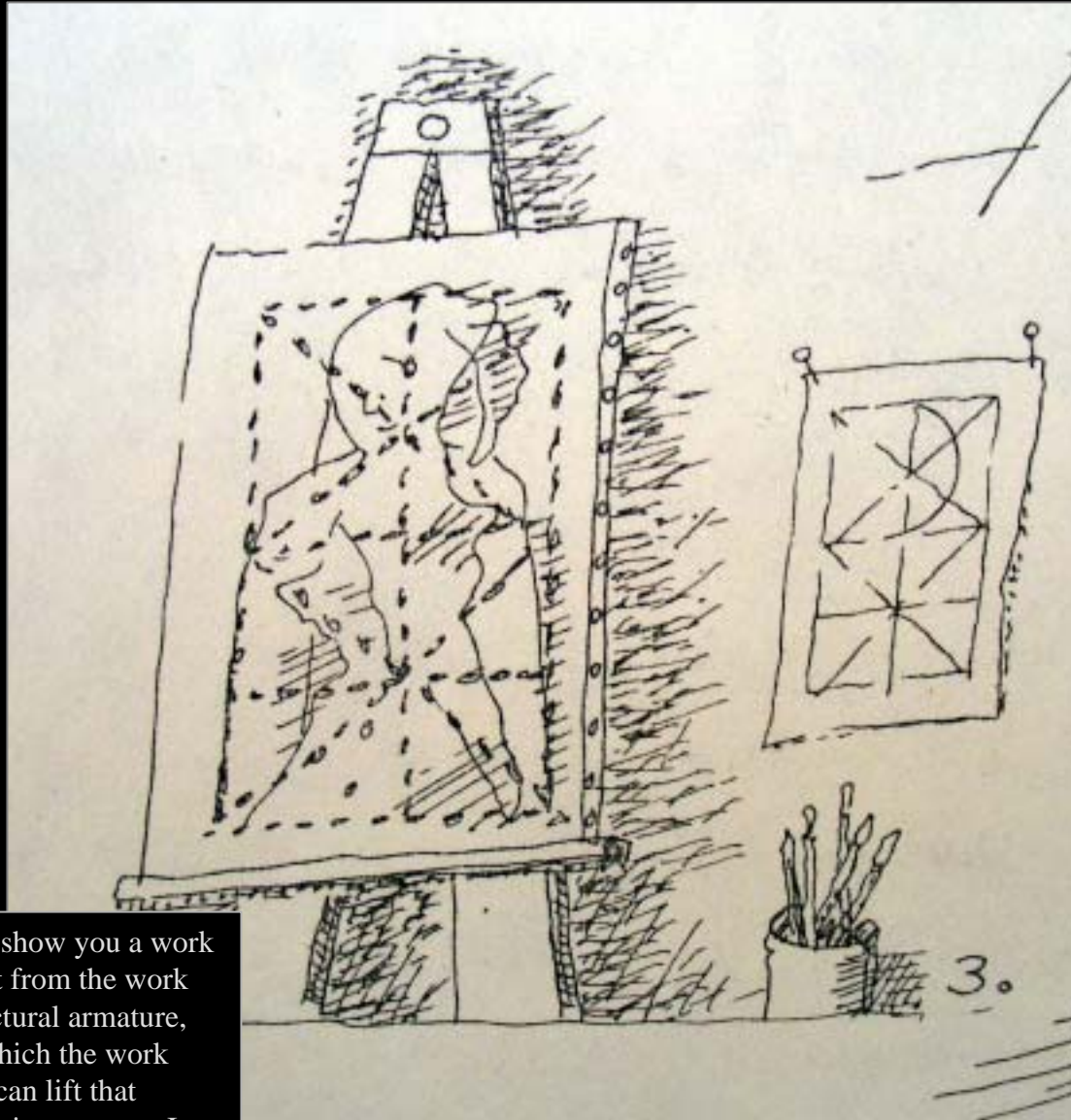
1. Geometry began in the flood plains of Mesopotamia and along the Nile. It began in the need to discover, and then to keep the spaces of agriculture—to maintain in the right patterns of the fields in a world where everything washes away. Geometry was the earth measure in a land subject to flood, and it was the space measure for building soundly, permanently so wind and rain and gravity could not sweep away structure.

The “undifferentiated aesthetic continuum”



2. I am going to talk about the geometry of two dimensional space in art, the “earth measure” of the fertile field of perception, intelligence and intuition—I am going to talk about the order of space in art, the order of space, . the measure of the living mind.

Perceptions in the flood...



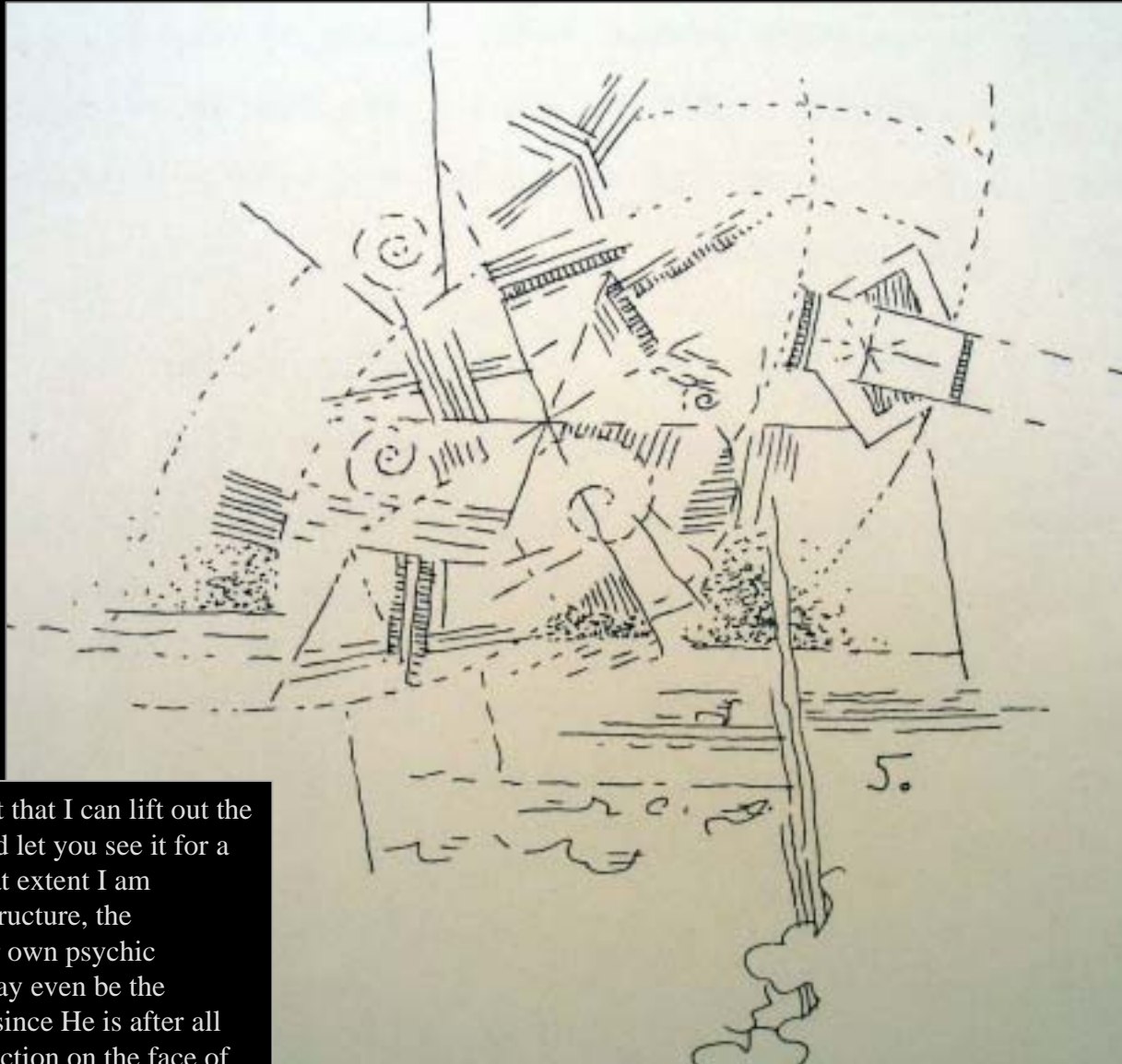
3. To the extent that I show you a work of art and then abstract from the work the geometry, the structural armature, the spatial crystal in which the work moves, to the extent I can lift that crystal from its enveloping content, I am showing the crystal structure of the mind itself.

The structure in the painting, the structure in the mind,
the structure of the age...

4. If you think the origin of that spatial armature is beyond the work, you will hear what I say as metaphysics. If you think it's somehow in the brain, you will think this is either psychology or physiology. If you think it's out there in "nature," you will think this is natural science. For myself, I regard this as the study of the structure of psyche, mind both conscious and unconscious, in a continually expanding, unified relationship grounded far beyond whatever we can perceive with our senses or know with our reason.



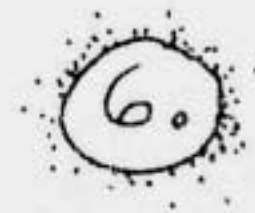
The spiritualists say it's "Psyche,"
the natural scientists say "Nature,"
the anatomists and the psychologists say "Brain,"
the philosopher says "Metaphysics"
.
" Some say, "I don't know."



5. So, to the extent that I can lift out the crystal of space and let you see it for a few minutes, to that extent I am showing you the structure, the “armature” of your own psychic process—which may even be the processes of God, since He is after all only our own projection on the face of the deep, high, far and invisible unknown.

It’s “it”...

6. This is a fertile field for growth. So far, it spreads infinitely in all directions, without boundaries. It is a mass of points, those miraculous geometric entities which have no dimension but which, in their totality, comprise the totality of all space.

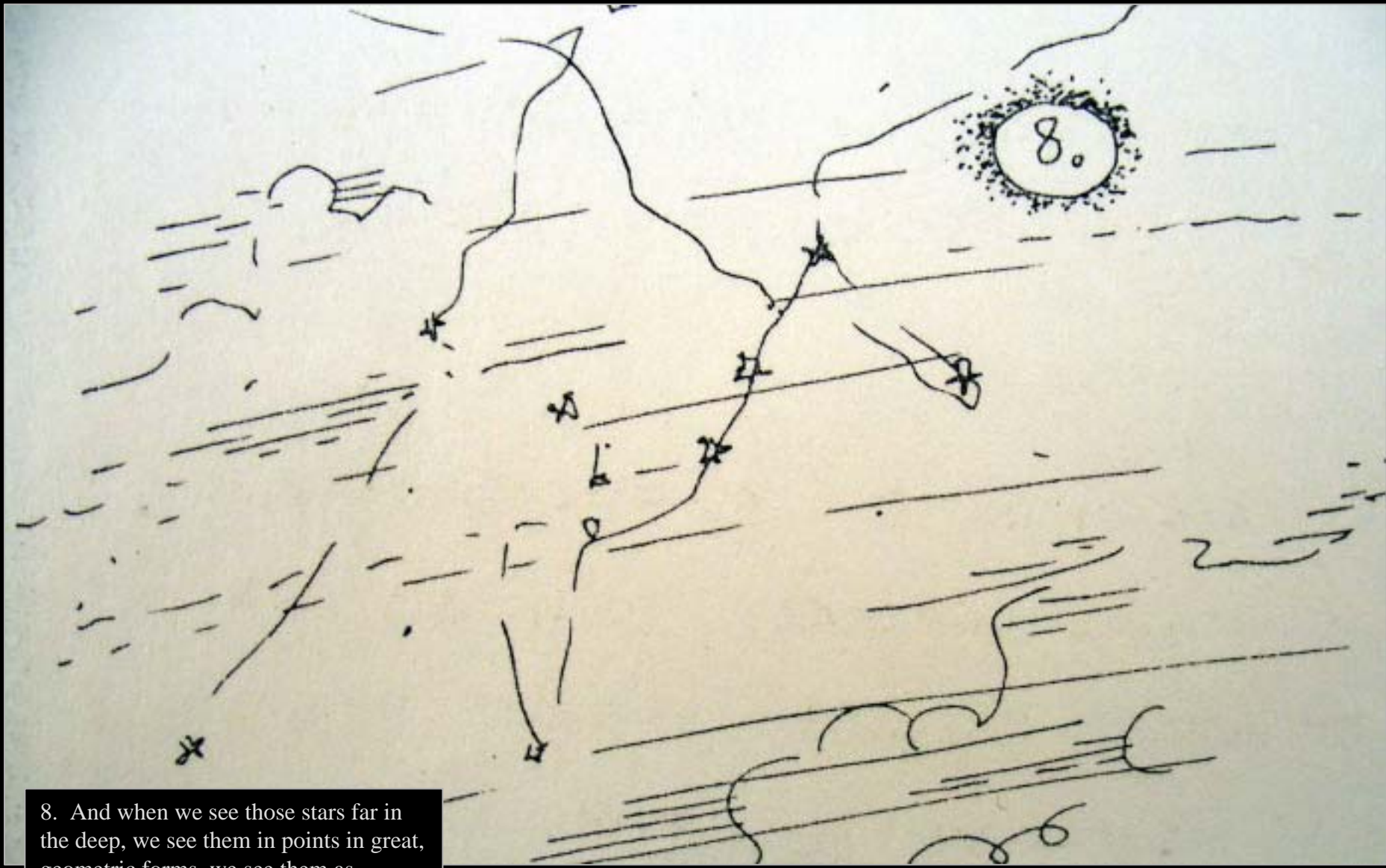


Primal space, the undifferentiated mass of all points...



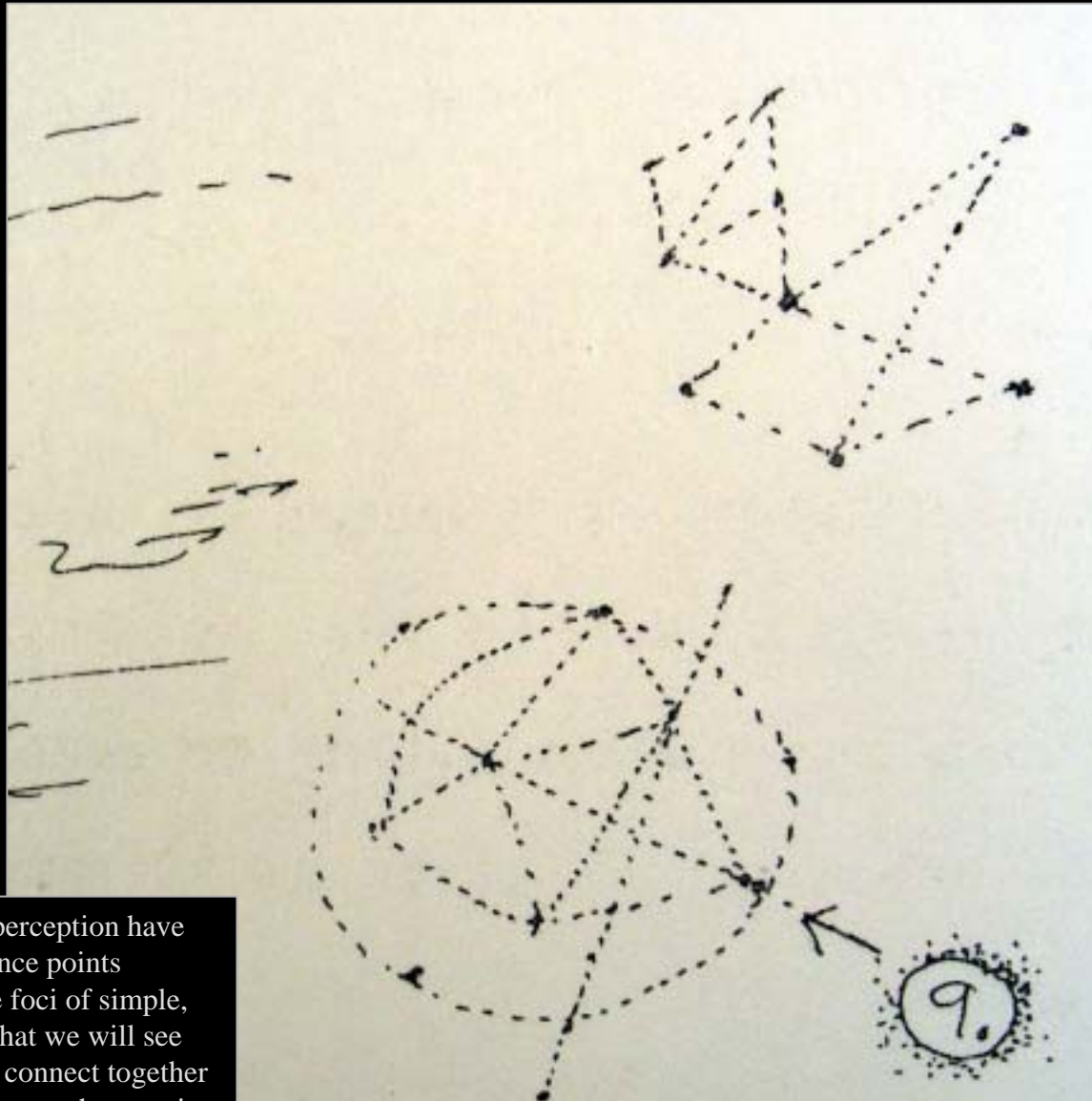
7. But that totality of all points that is the solid block of all space is incomprehensible to us, and we experience instead points in space... That is, foci of positive existence in an infinite void of nothing, of non-being. . . the way we don't see outer space, we see stars.

But we can only experience the “undifferentiated” as points...



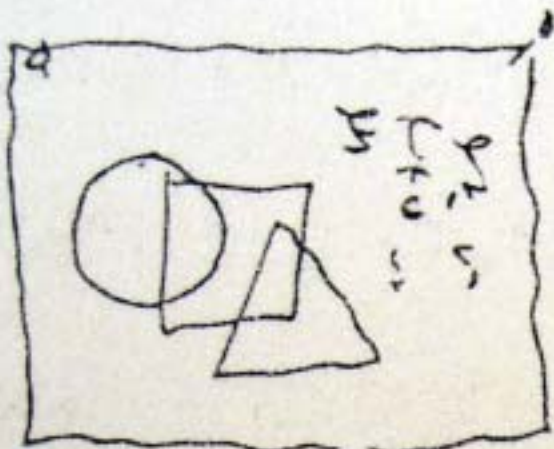
8. And when we see those stars far in the deep, we see them in points in great, geometric forms, we see them as constellations, the structure of the gods...

Like the infinity of the totality of the stars as points, as constellations in the sky...



9. Modern studies of perception have shown that we experience points floating in space as the foci of simple, geometric forms, and that we will see those forms coming to connect together into meaning and structure whatever is given us to experience that is without meaning and chaotic.

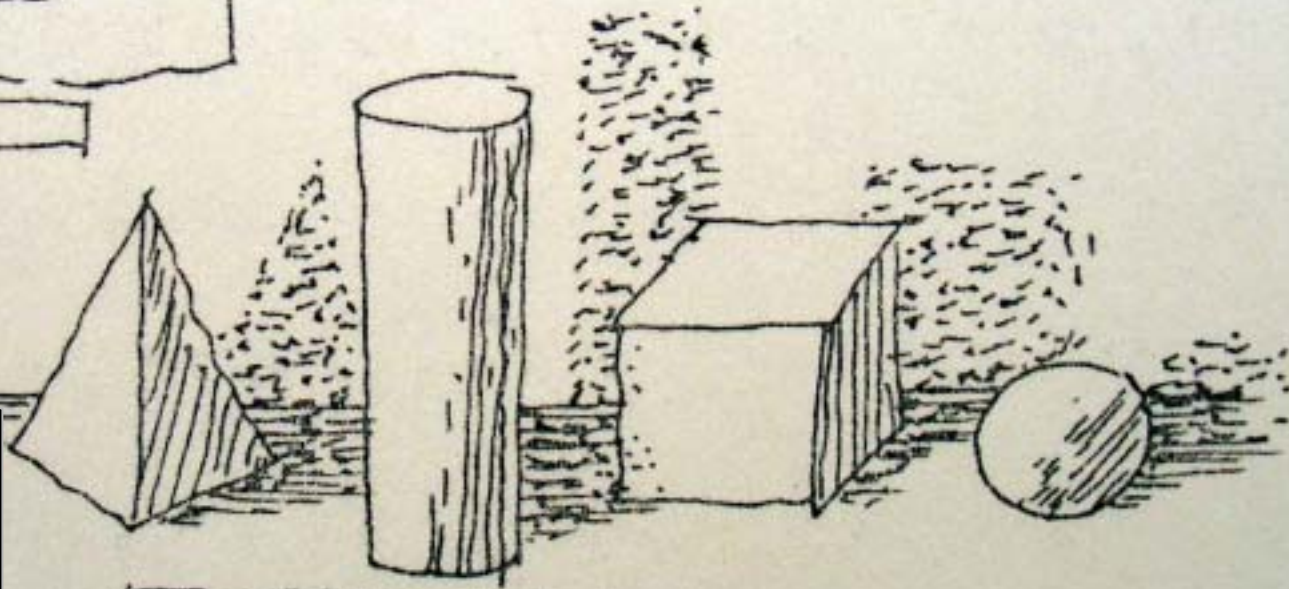
Studies of perception show we experience points as simple geometric forms...



SENGAI



KEPLER



CEZANNE

10. And thus it has been in so many metaphysics for so many millenia, that philosophers and artists found simple, geometric forms at the basis of experience, and so often raised the forms themselves to the function of first principles, as in a scroll painting by the Zen monk Sengai (17th c.), or the sequence of the Platonic solids in which Kepler thought the orbits of the solar system were enclosed, or the solids Cezanne said were the basis of painting.



Artists used them—for instance very often the triangle--to make “harmony and serenity”...



11. So these simple geometrical forms came to form the structure of so many works of art as in this Madonna of Raphael...

Raphael—
Alba Madonna.

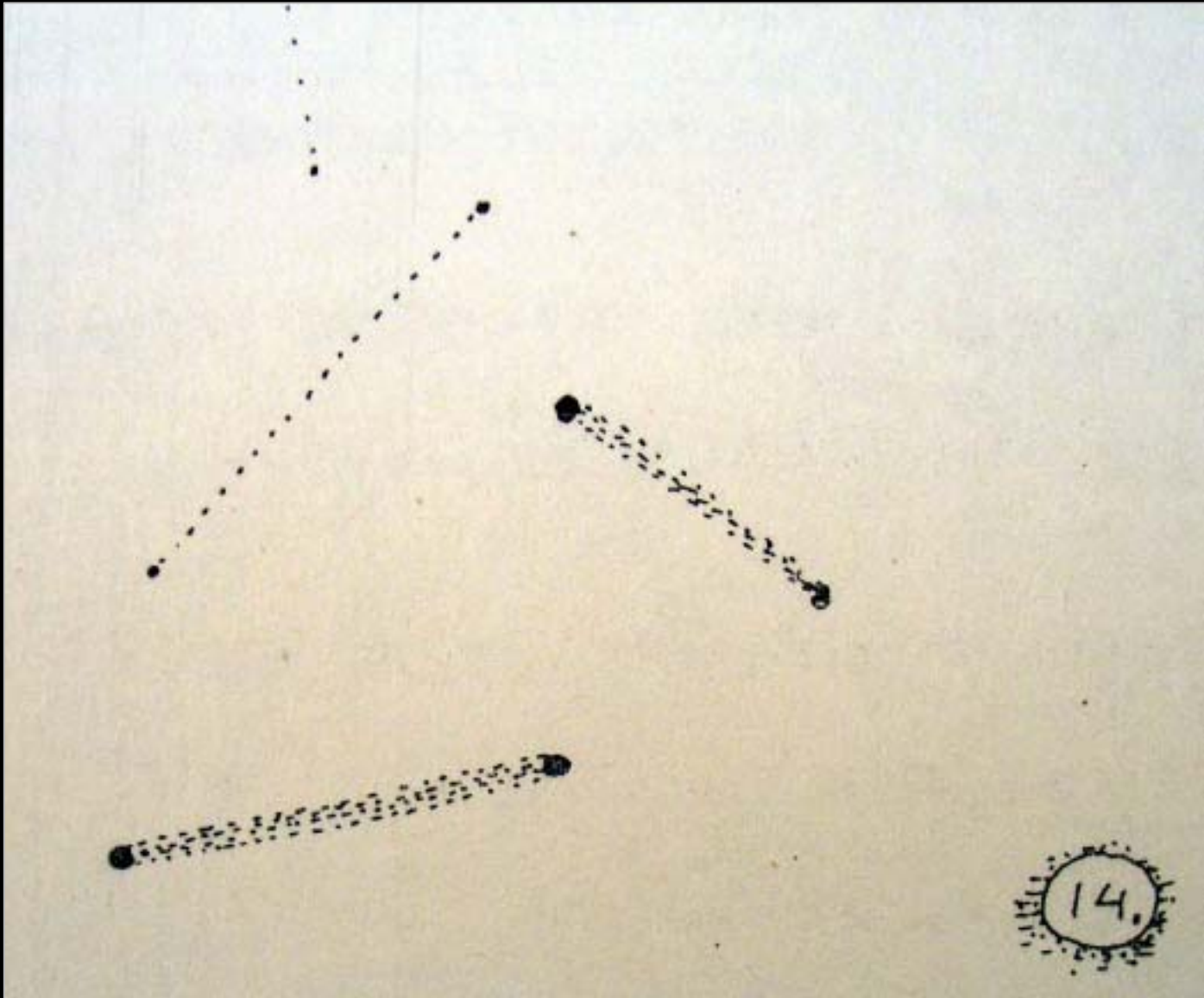
“Raphael adopted the artistic innovations of elder colleagues, in particular Leonardo and Michelangelo, and synthesized them with his own aims. This did not pass Michelangelo by; and in 1541, long after Raphael’s death, M. was still complaining in a letter that ‘everything he knew about art he got from me.’”

—from Mark Harden Artchive



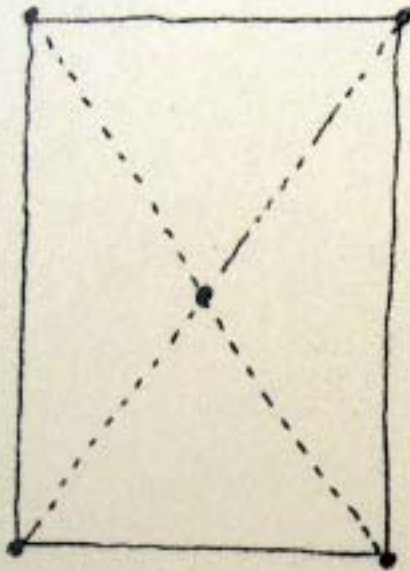
12. Sometimes the simplest geometrical forms have even become the subject itself, as in this sculpture from ancient Egypt...

**Well, for us who might wish to use these perceptions and
ideas to compose a painting...**

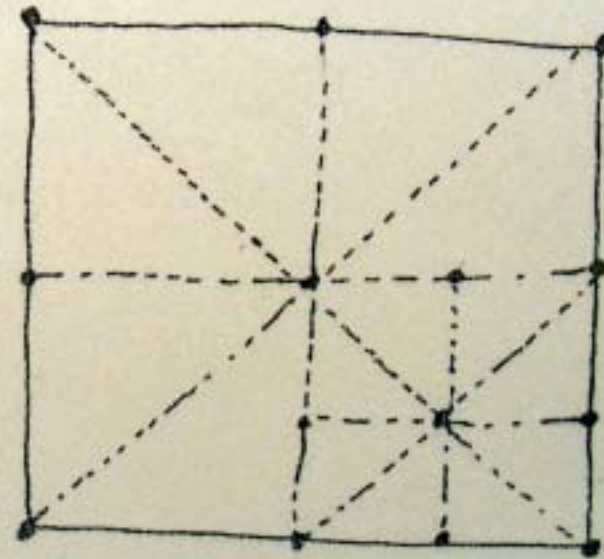
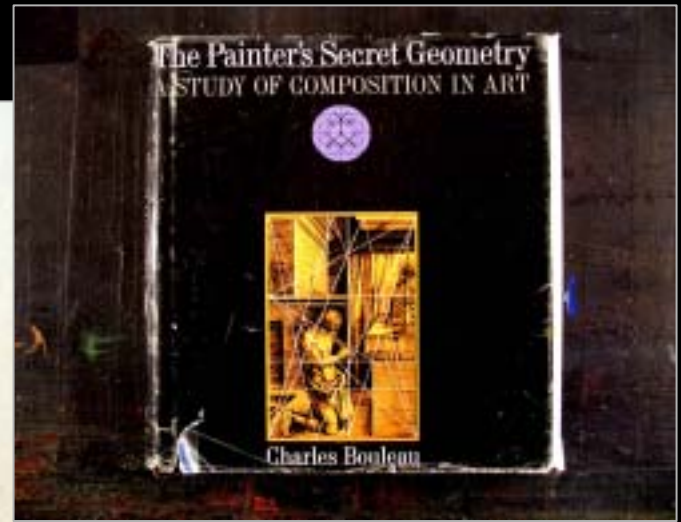


14. Just as any two points will tend to create a line between them...

14.

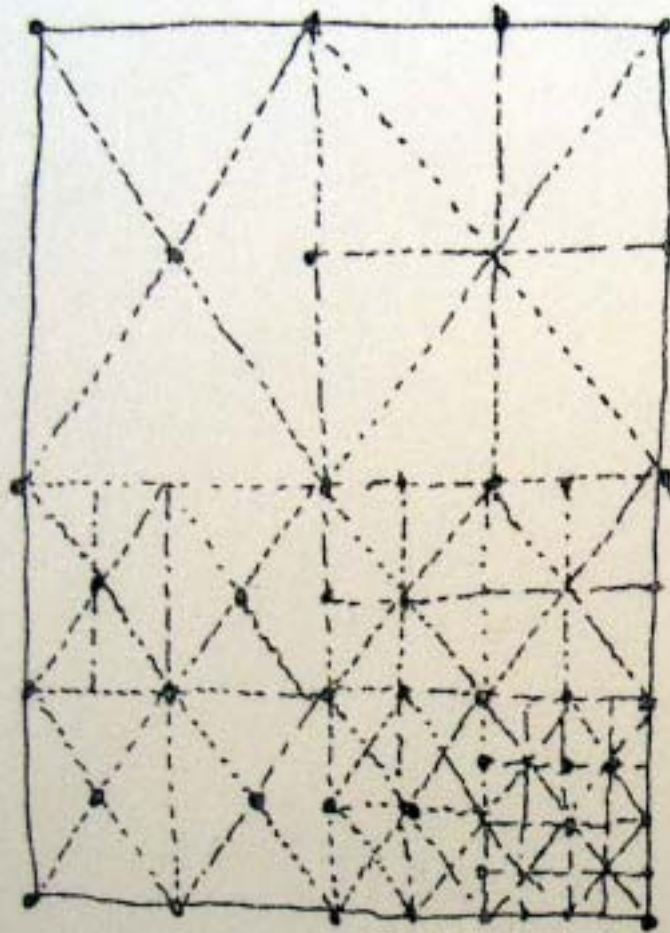


A



B

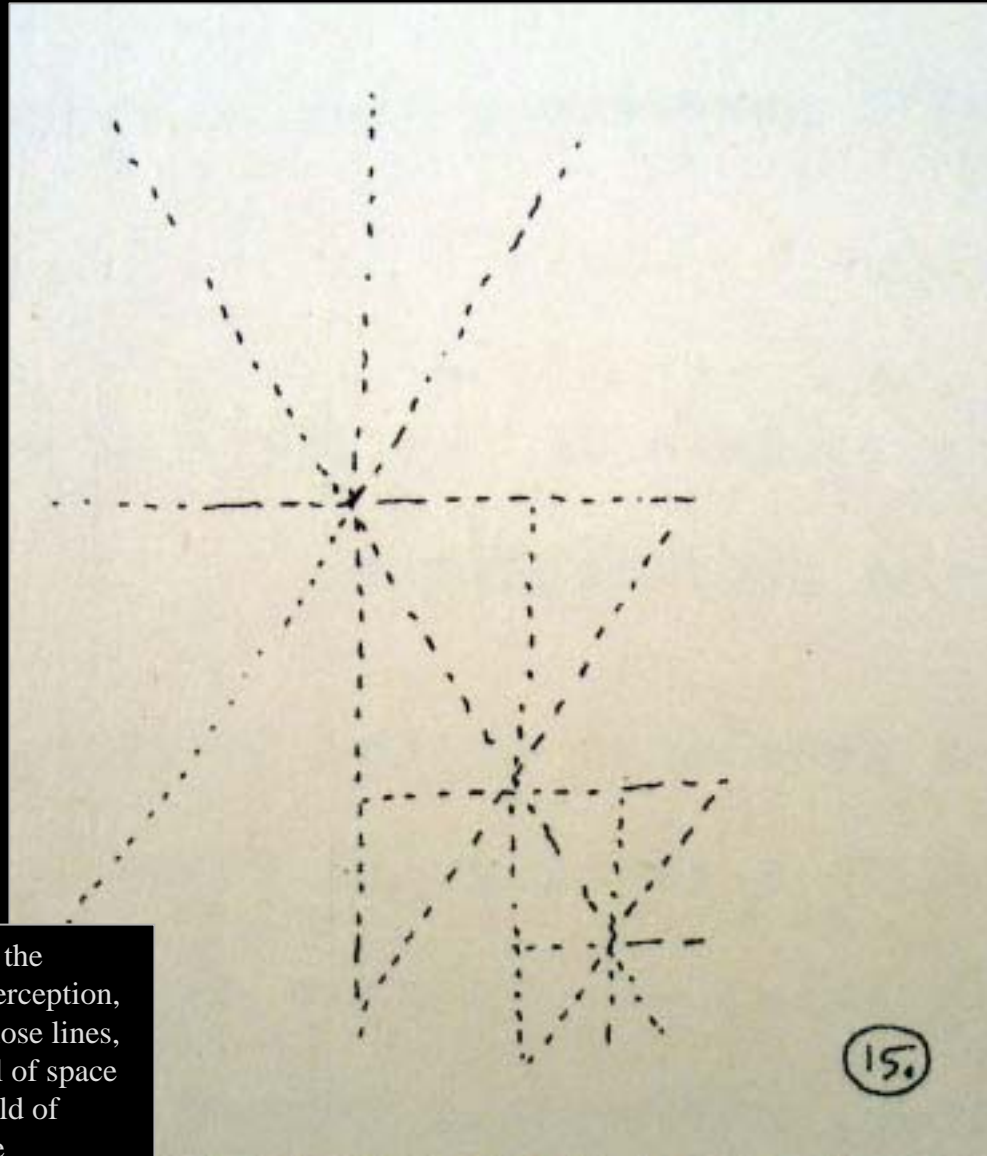
14a, b. So the corners of a rectangular format create points which create lines which create the "Armature of the Rectangle" (Bouleu's phrase)...



DIAGONAL
VERTICAL CENTER
HORIZONTAL CENTER



14c. Because these lines are always generated by the borders, by the format, and because we are used to a rectangular format, we take for granted that they actually exist we have even given them names: diagonal, vertical center line, horizontal center line. Charles Bouleau, in his "The Painter's Secret Geometry," calls them and other lines deriving from the format of the rectangle itself, "The Armature of the Rectangle." I shall often use his term.



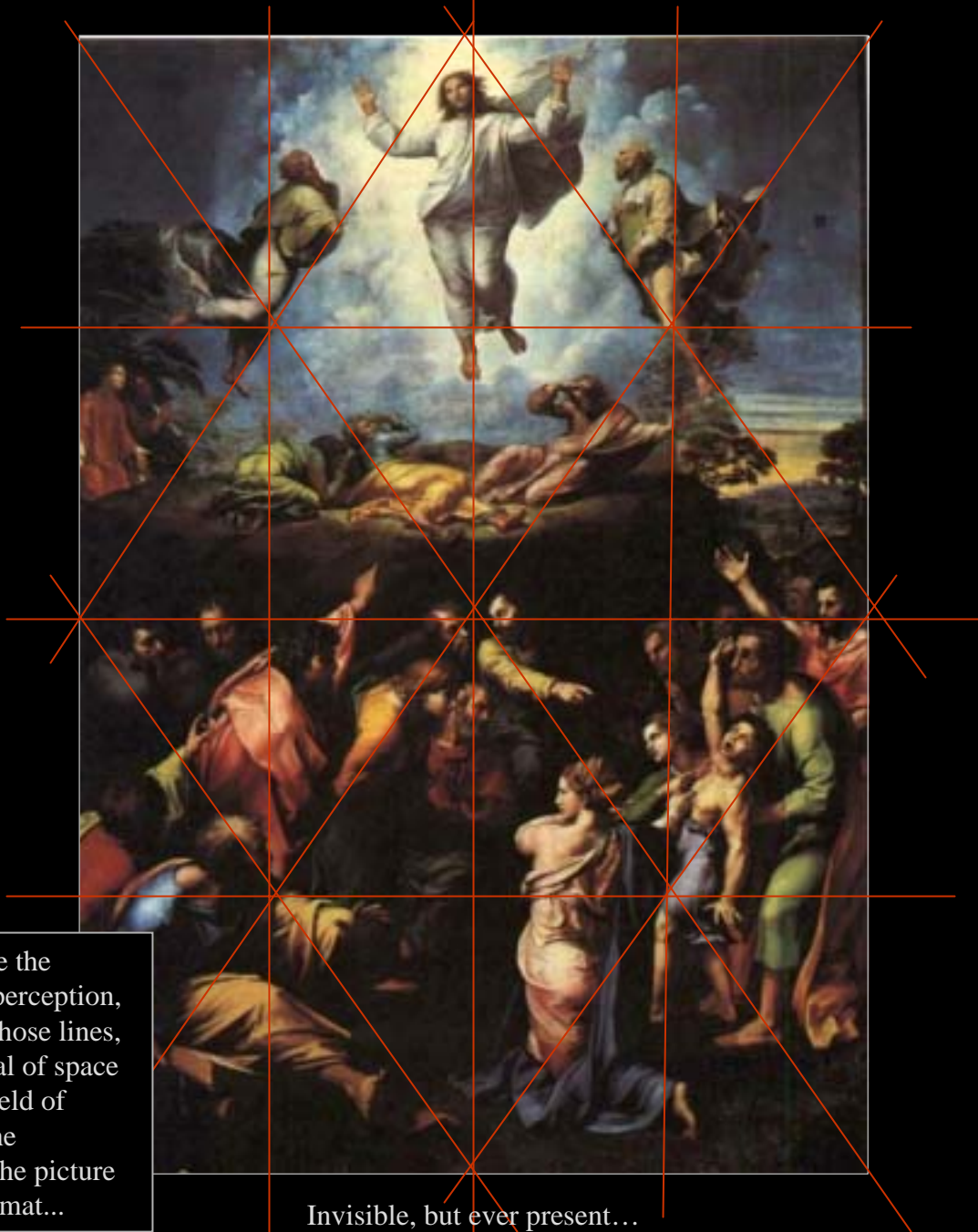
15. And when we experience the infinite flux of the atoms of perception, we find them thickening on those lines, coalescing there on the crystal of space -- the crystal of the fertile yield of perception—coalescing on the geometric grid generated in the picture plane by the action of the format...

Invisible, but ever present...



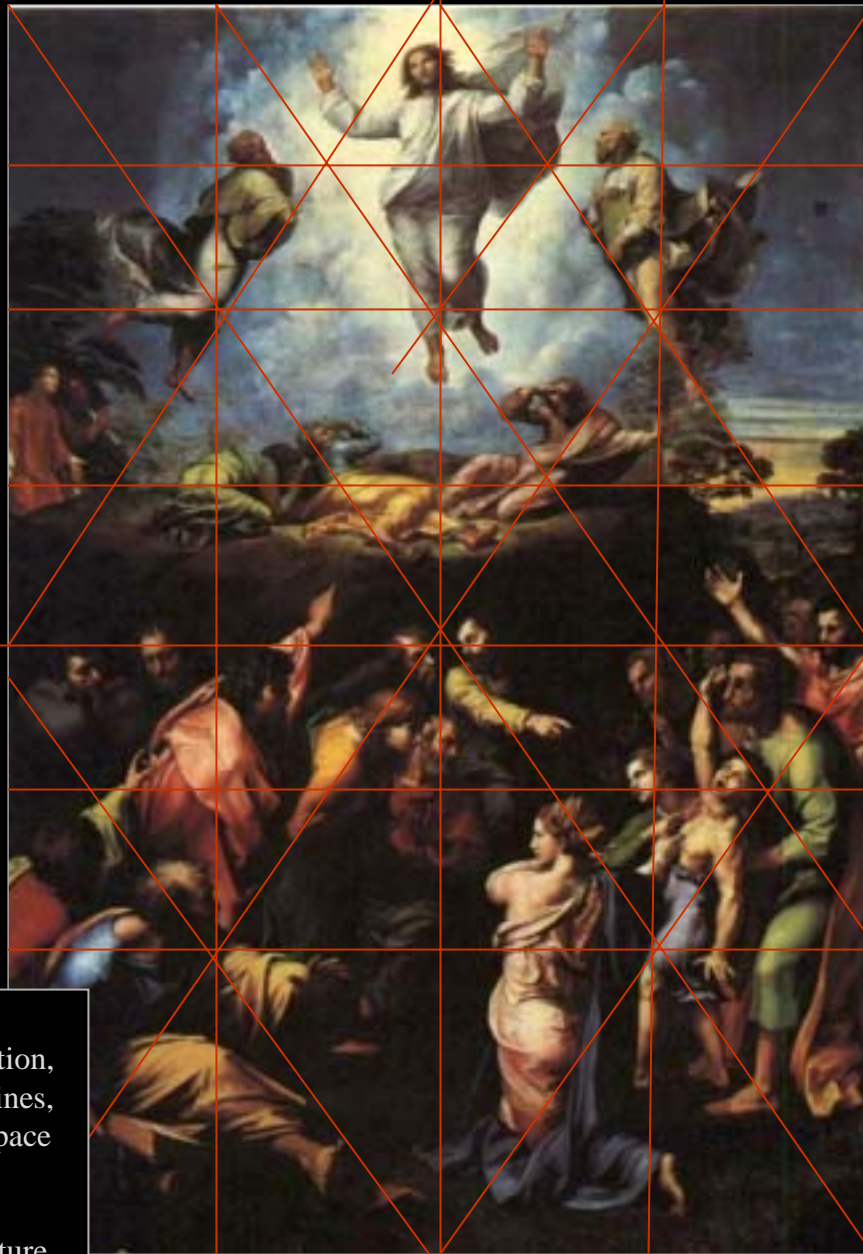
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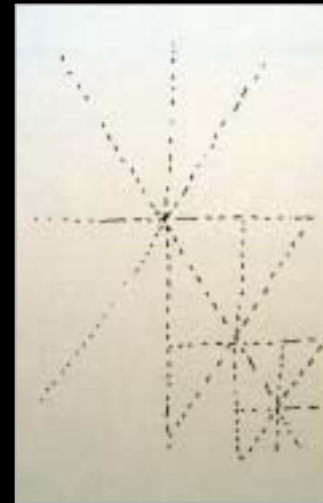
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Invisible, but ever present...



15a. coalescing on the geometric grid generated in the picture plane by the action of the format even in an etching built from a drawing made by the camera obscura, as in this etching by Canaletto.

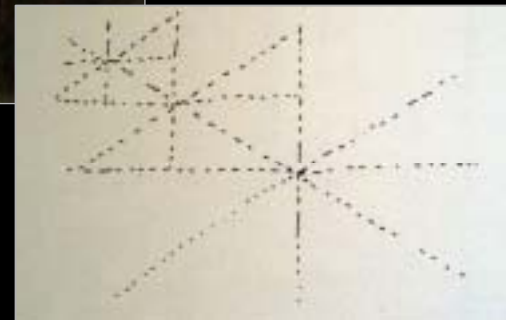
Invisible, but ever present...

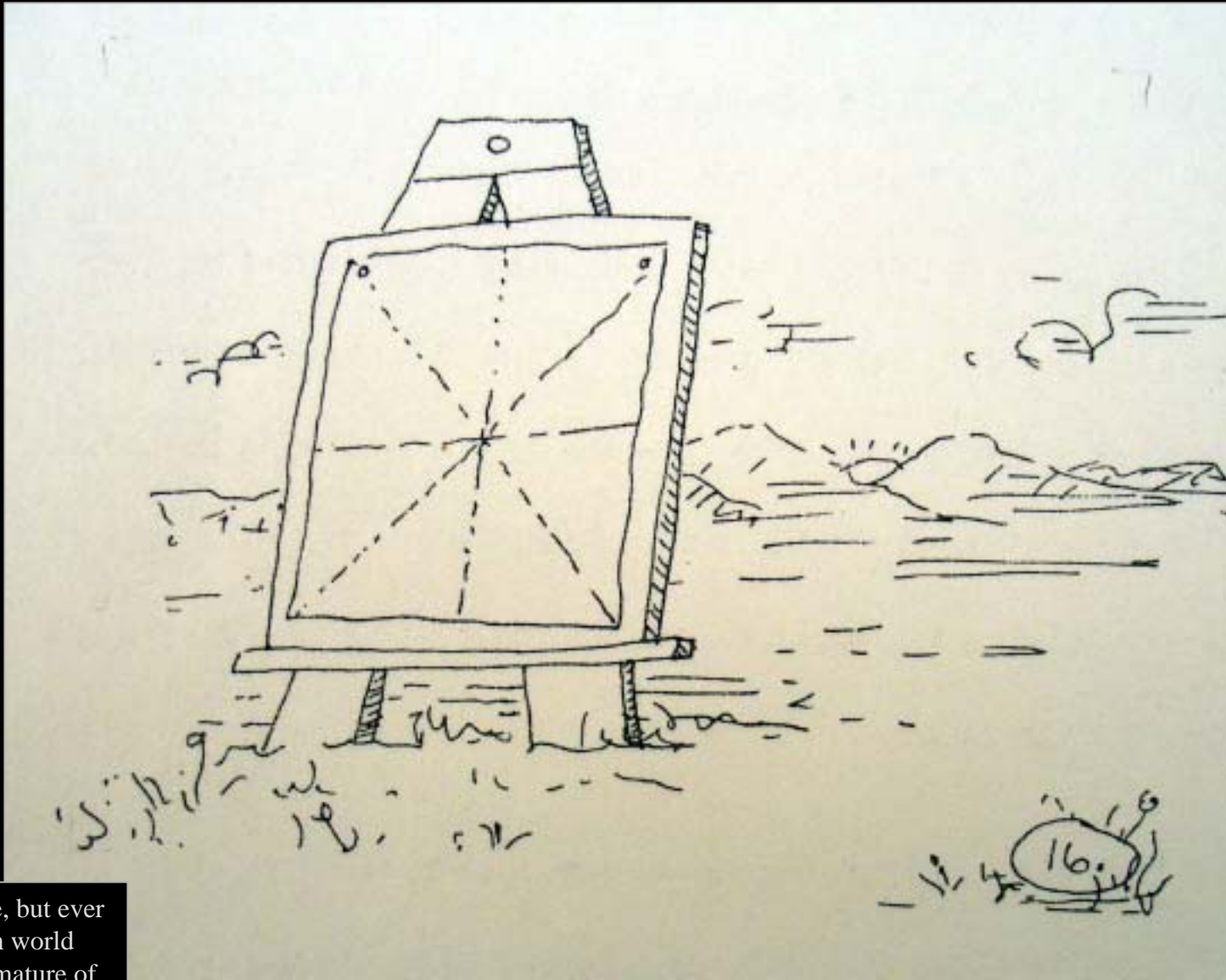




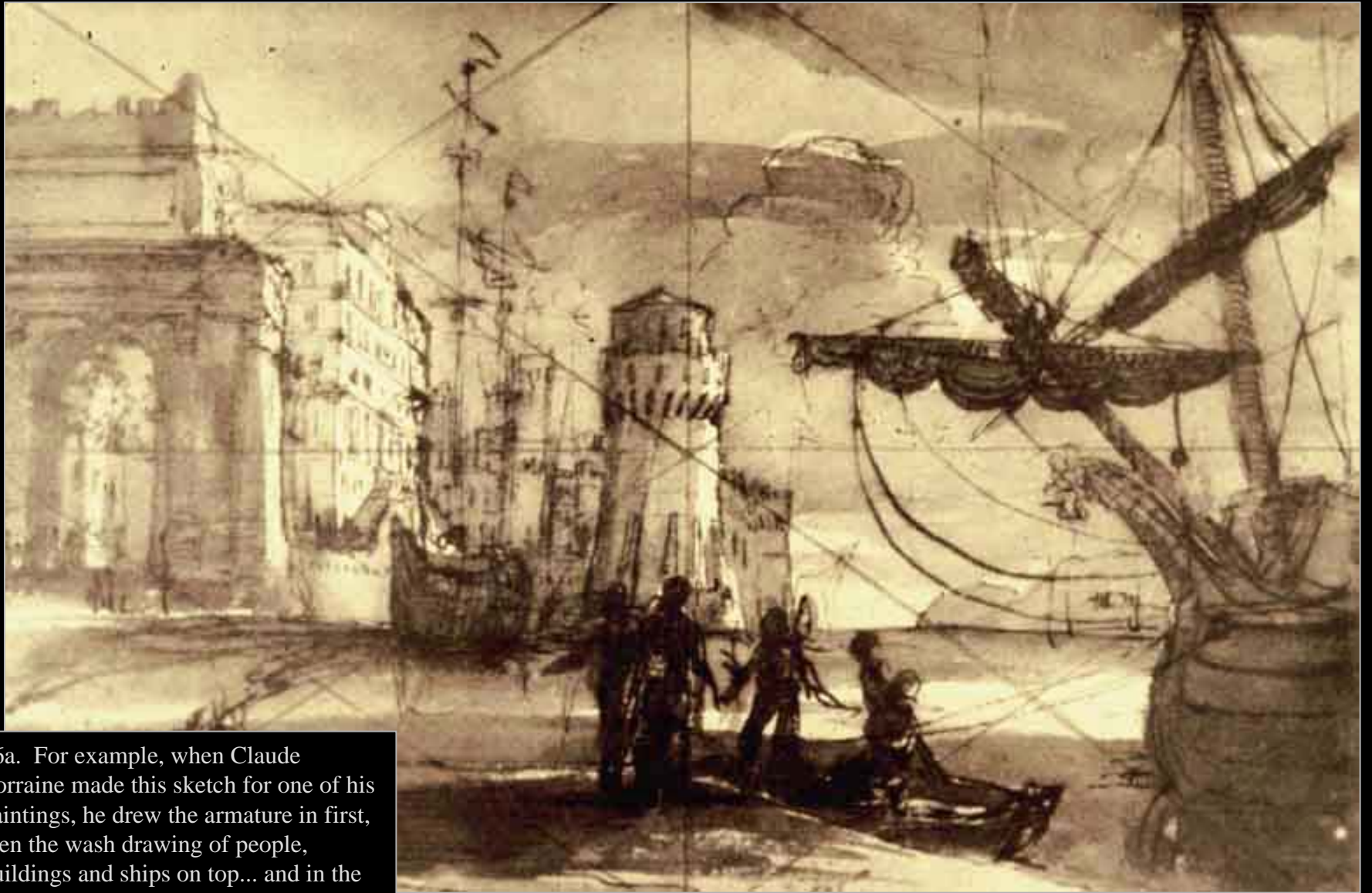
Invisible, but
ever
present...

16. So, the artist's first task, given a perceptual experience and a field of space--a picture plane--in which it is to occur, is to discover the lines of tension in the field and their relation to the image of his experience. There have been several ways, historically, that this has been done. Most often, in Western Art down to a hundred or a hundred and fifty years ago, it was done by direct drawing on the picture plane of the geometry of the format--the armature of the rectangle--and then drawing the subject over it, adjusting the main lines and attention points of the subject to fit the a-priori geometric diagram.

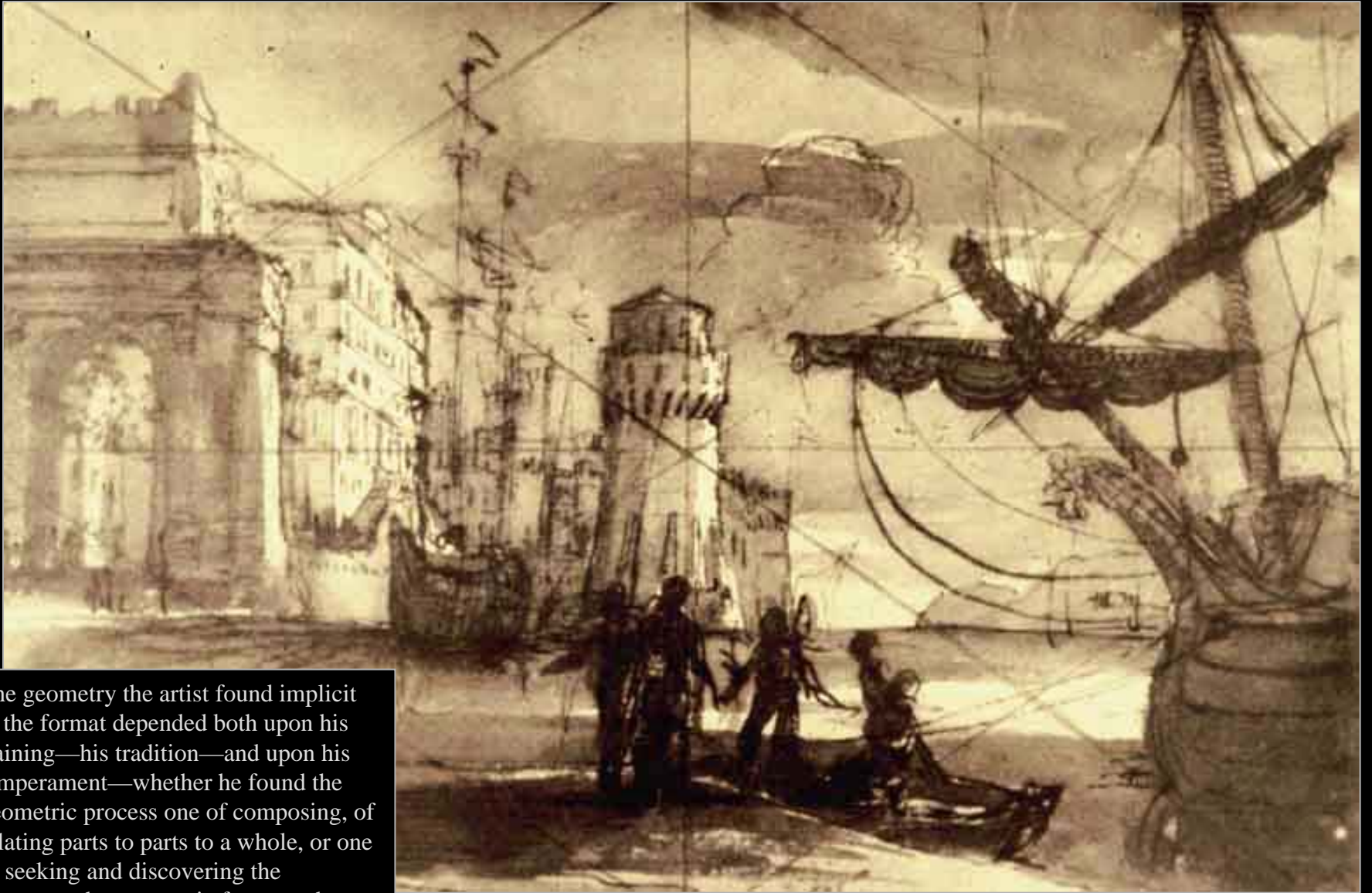




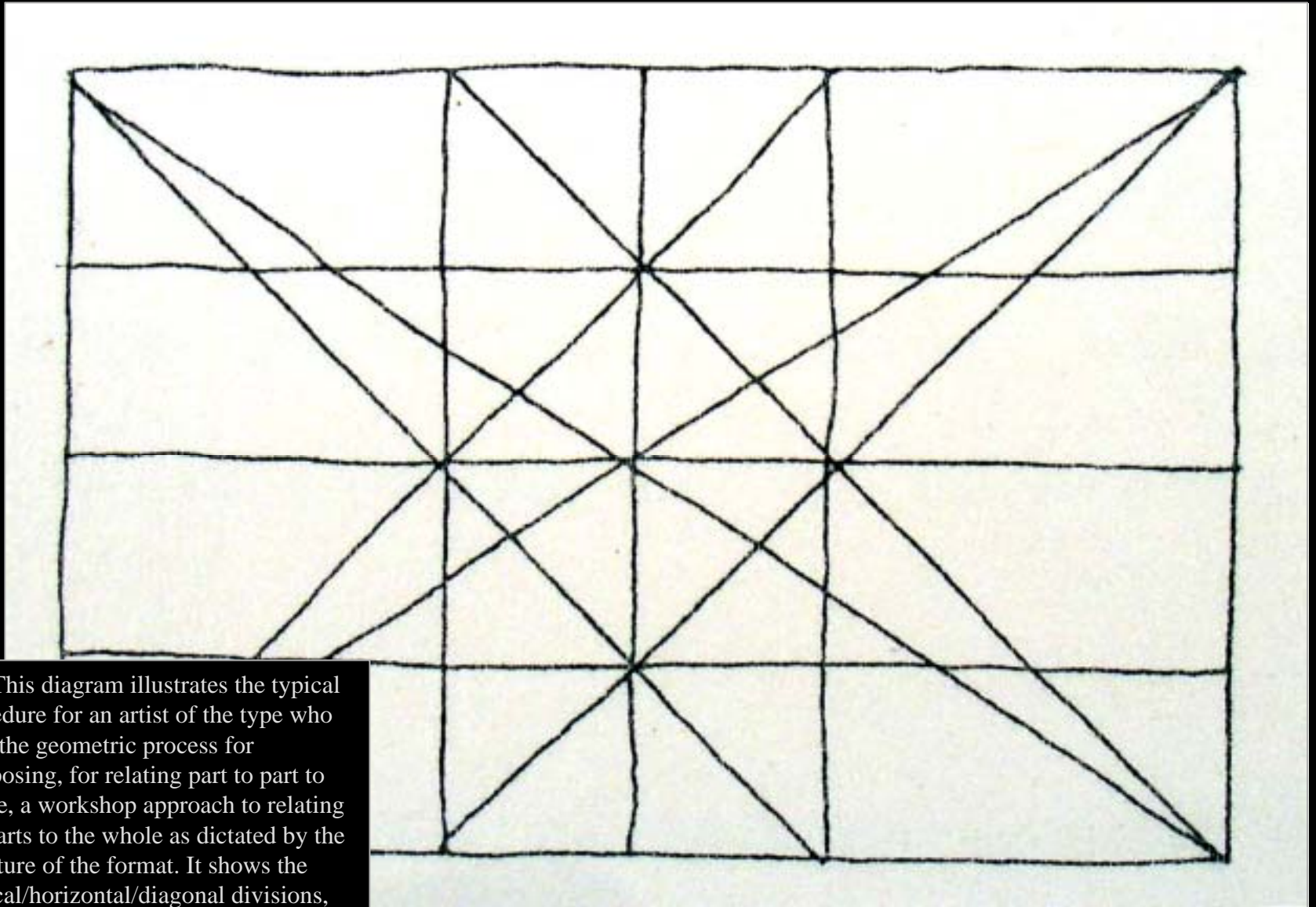
16. Invisible, but ever present when world meets the armature of the rectangular canvas...



16a. For example, when Claude Lorraine made this sketch for one of his paintings, he drew the armature in first, then the wash drawing of people, buildings and ships on top... and in the subsequent divisions, using the diagonals to further divide each rectangle into four equal parts



The geometry the artist found implicit in the form depended both upon his training—his tradition—and upon his temperament—whether he found the geometric process one of composing, of relating parts to parts to a whole, or one of seeking and discovering the essence—the geometric forms at the roots of all things on the way to the transcendent unity of beauty.

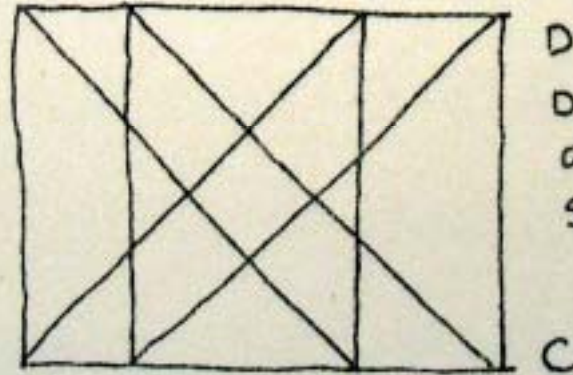
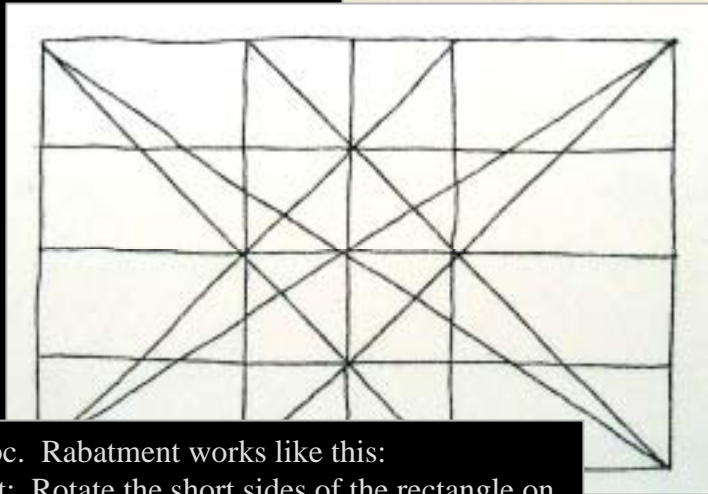
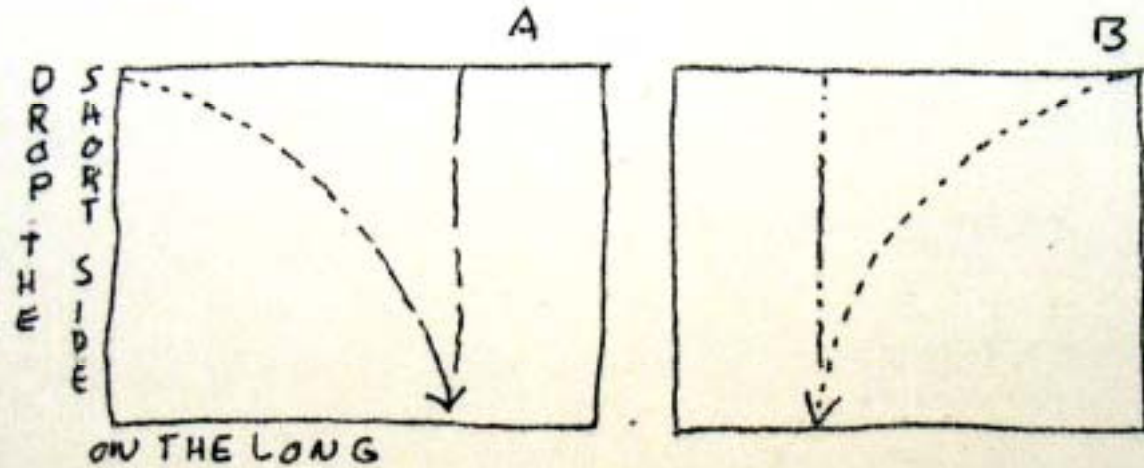


17. This diagram illustrates the typical procedure for an artist of the type who used the geometric process for composing, for relating part to part to whole, a workshop approach to relating the parts to the whole as dictated by the armature of the format. It shows the vertical/horizontal/diagonal divisions, and also those developed for "Rabatment," a process so called after the French word for rotate.

A more elaborate with possibilities, and also less obvious... "Rabatment"

17.

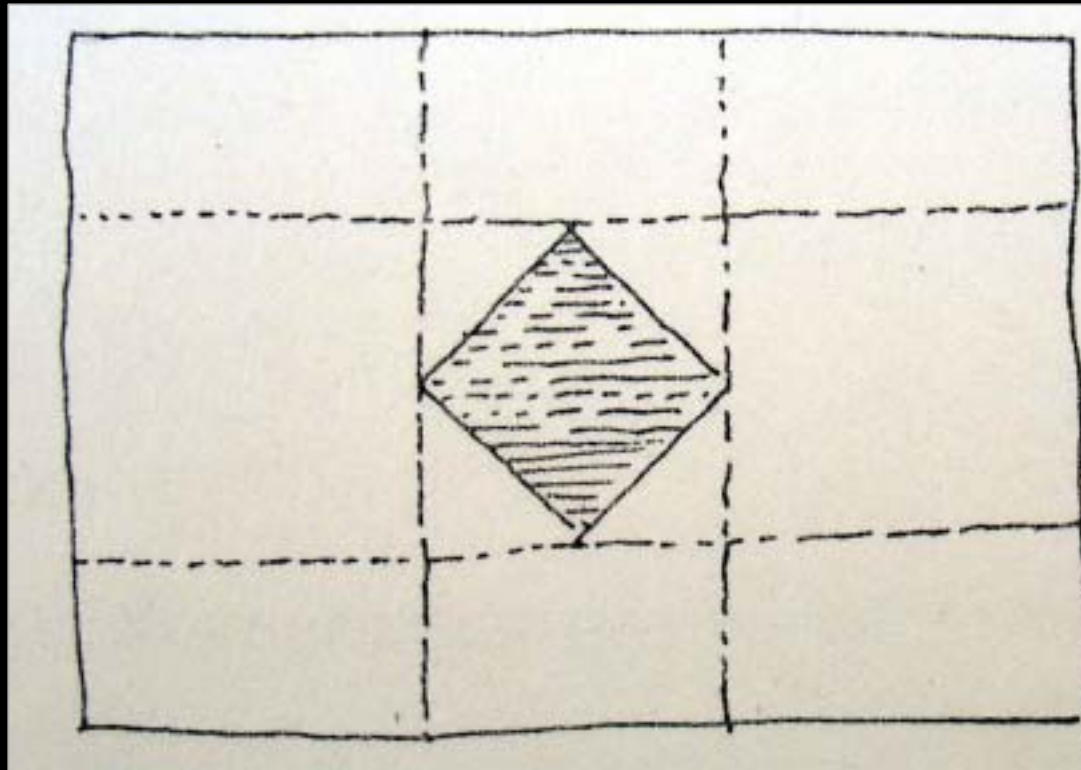
RABATMENT



DRAW THE
DIAGONALS
OF THE
SQUARES

17abc. Rabatment works like this:
First: Rotate the short sides of the rectangle on the longer, thus developing the two squares of the rectangle.
Second: Then draw the diagonals of the squares.
Third: They will intersect to form a smaller square, turned on end, in the center.

A more elaborate with possibilities, and also less obvious... "Rabatment"



THE CENTRAL
SQUARE GIVES
THE POINTS FOR
THE NEW DIVISIONS
DERIVED FROM
"RABATMENT"

18

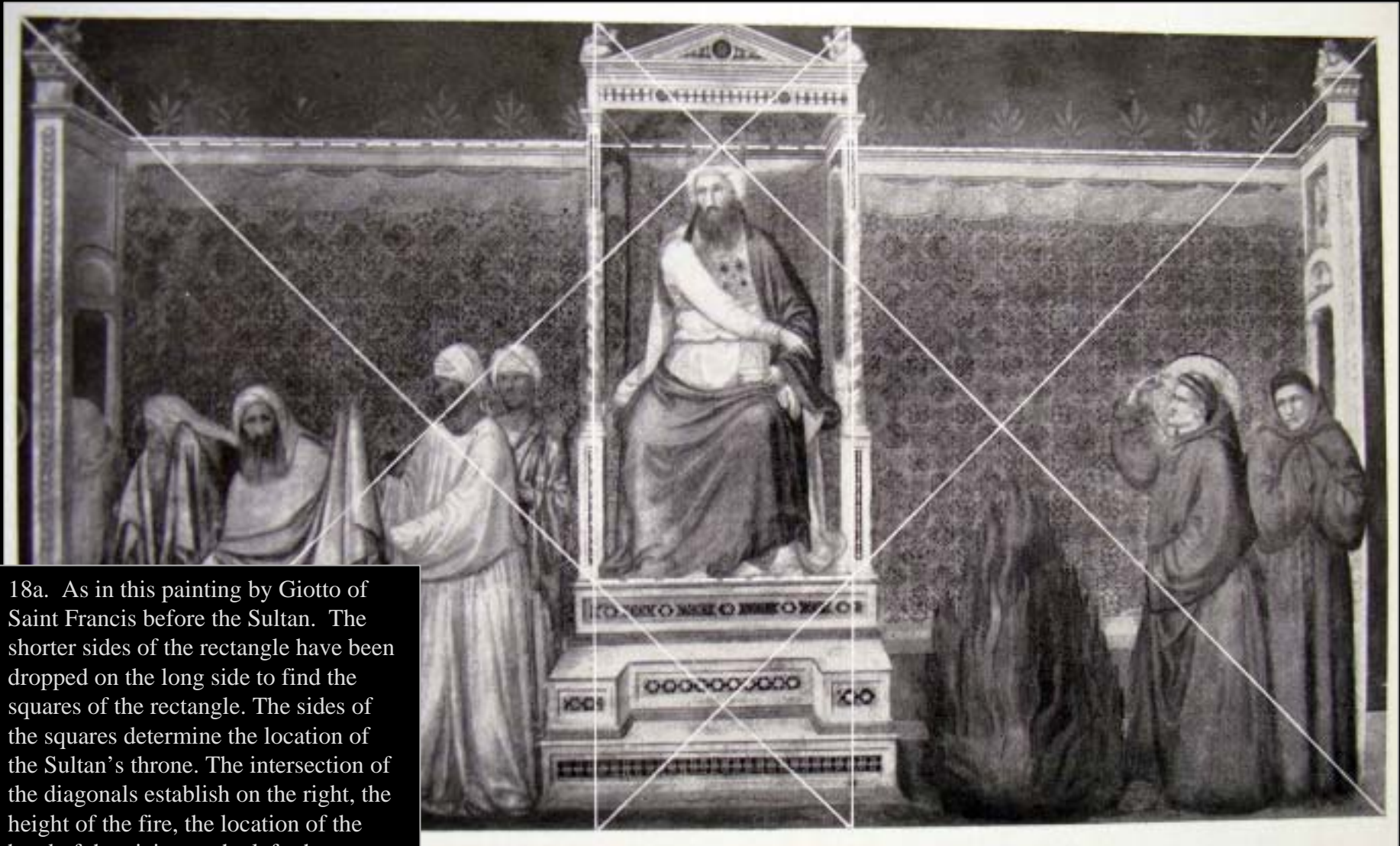
18. The corners of this square mark the points for new vertical and horizontal divisions of the format which will ameliorate the static, monotonous harmony which comes from exclusive use of the armature of the central vertical, horizontal and diagonal lines.

A more elaborate with possibilities, and also less obvious... "Rabatment"

18a. As in this painting by Giotto of Saint Francis before the Sultan. The shorter sides of the rectangle have been dropped on the long side to find the squares of the rectangle. The sides of the squares determine the location of the Sultan's throne. The intersection of the diagonals establish on the right, the height of the fire, the location of the head of the vizier on the left, the location of the head of the Sultan at the top, and the first step of the throne on the bottom. The also give the horizontal division for the top and bottom of the back wall.

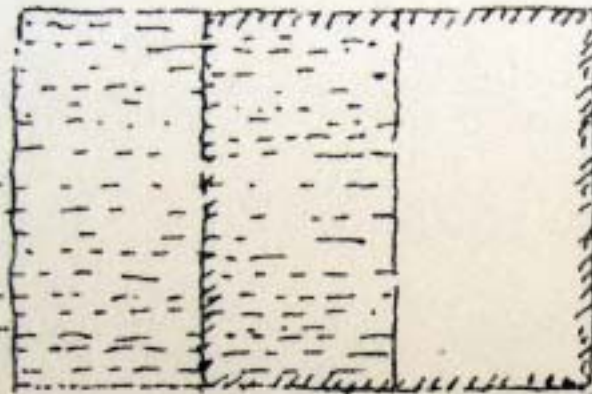


AFTER BOULEAU!
THE PAINTER'S SECRET GEOMETRY

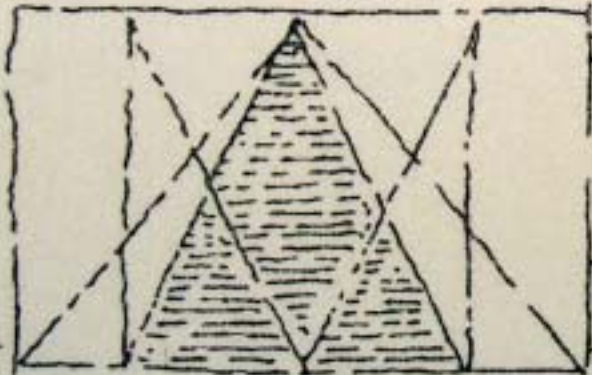


18a. As in this painting by Giotto of Saint Francis before the Sultan. The shorter sides of the rectangle have been dropped on the long side to find the squares of the rectangle. The sides of the squares determine the location of the Sultan's throne. The intersection of the diagonals establish on the right, the height of the fire, the location of the head of the vizier on the left, the location of the head of the Sultan at the top, and the first step of the throne on the bottom. The also give the horizontal division for the top and bottom of the back wall.

(A)



THE SQUARES



THE TRIANGLES

(19)

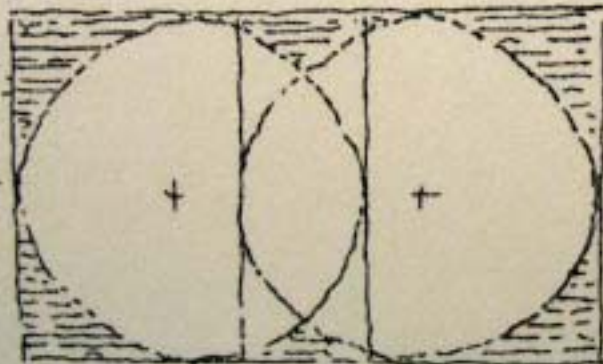
19a. But there was also the other way of working with geometry, a way not so much concerned with practical problems of composition but more concerned to discover how the essential geometric forms hidden at the core of perception itself (and so also hidden of course in the rectangle itself) might give shape to the perceptual experience in the field of the rectangle—might give shape, might give meaning, might relate the specific experience of a given individual to the cosmic whole which those geometric forms were thought to reveal.

But, the “primary” forms themselves: sources of art-craft of composition and secret craft of meaning...

19.



THE
CIRCLES

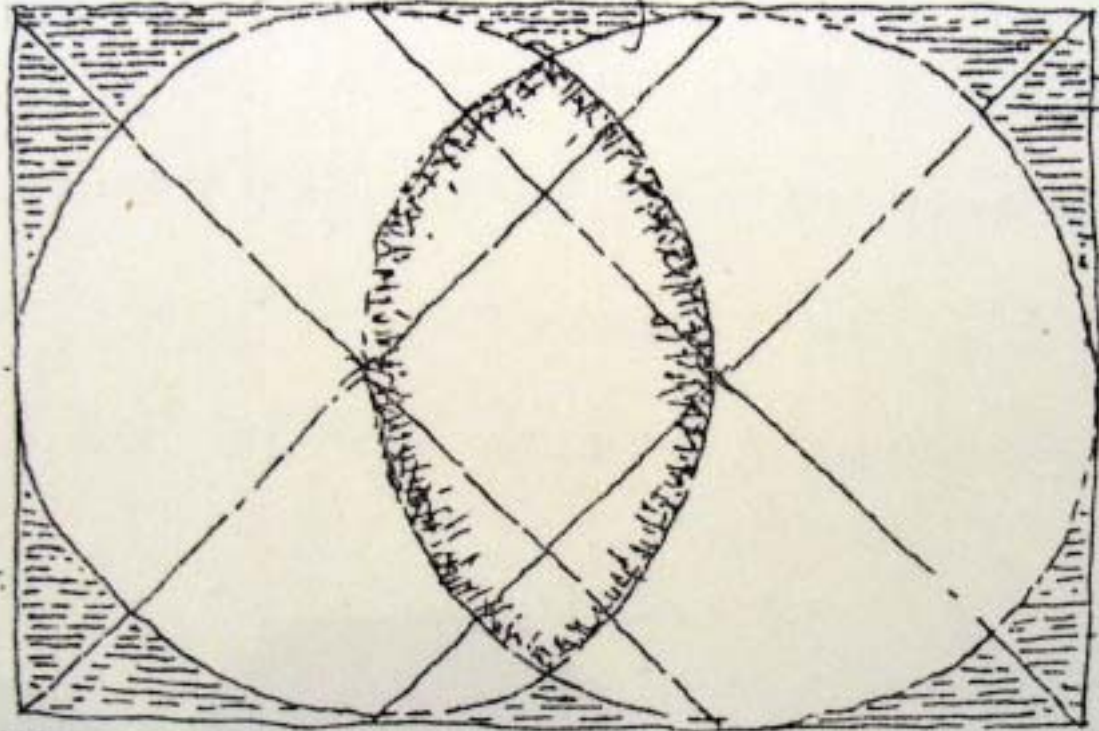


B

19b. Thus, the geometric forms of square, triangle and circle innate to the geometry of the perceptual field might be studied and revealed as the shaping powers behind the process of motion through space and the process of transformation in the soul.

But, the “primary” forms themselves: sources of art-craft of composition and secret craft of meaning...

THE VESICA PISCES:
TWO CIRCLES, EACH



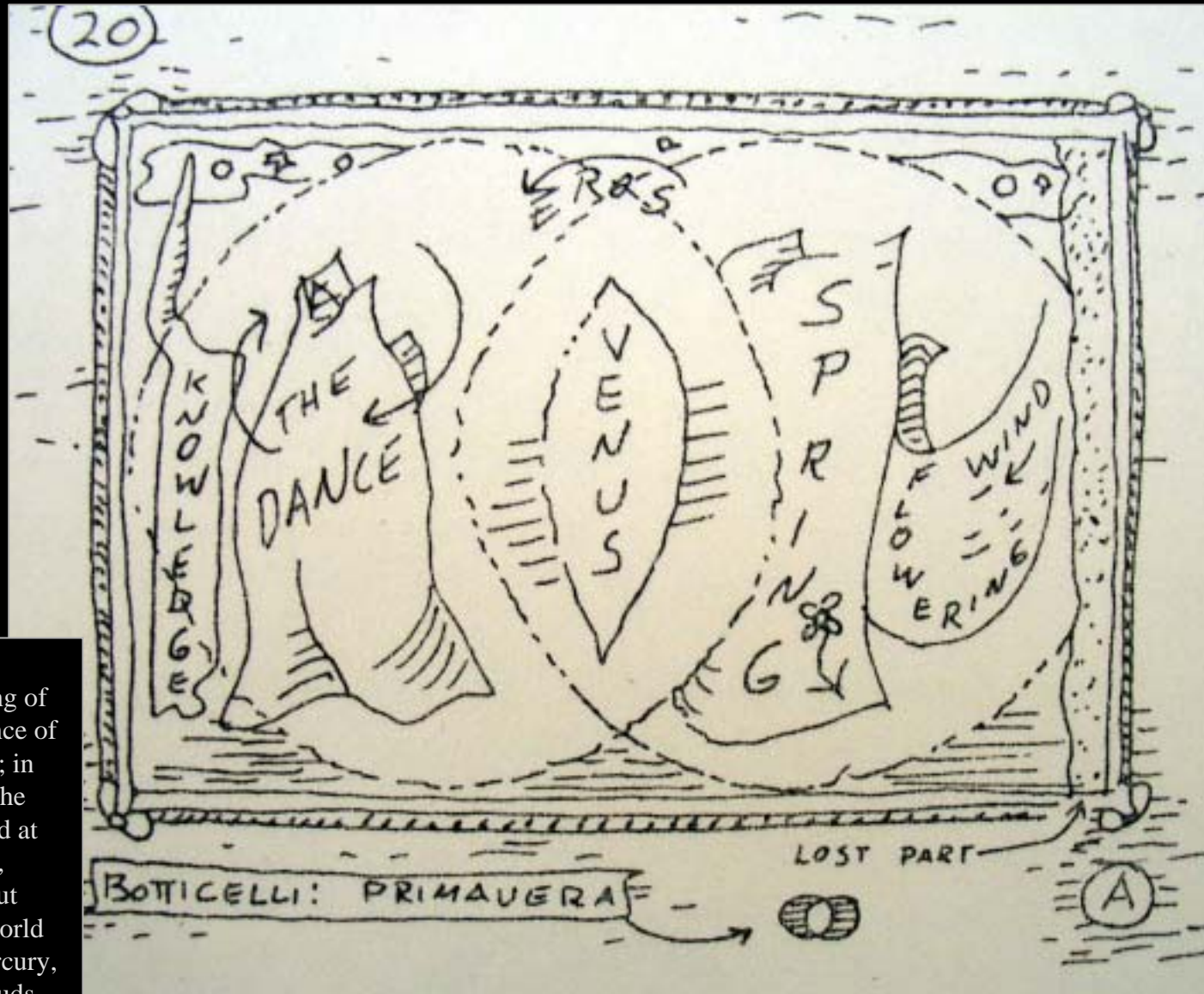
WITH CIRCUMFERENCE ON
THE CENTER OF THE OTHER

20

20. These were the forms of the eternal essences, the forms in which visual experience might echo the transcendent, original Being from which flows all our mere Becoming. Botticelli used one, the Vesica Pisces, to pace the soul's dance around the source, on the way to knowledge and eternal life.

The Vesica Pisces derives from two circles where the circumference of each is on the center of the other. The vesica—the vessel—is the area of overlap of the two.

But, the “primary” forms themselves: sources of art-craft of composition and secret craft of meaning...



20a. In the right circle, Botticelli showed the passion of the flowering of birth; in the left he showed the dance of the senses that leads to knowledge; in the vessel itself he placed Venus, the vessel, womb, mother of us all; and at the crossing of the circumferences, spinning in their intersection, he put Eros, the force which makes the world go round, at the far left he put Mercury, a guide of souls, dispelling the clouds which hide the oranges and blossoms that are the suns and stars of eternal life.

But, the “primary” forms themselves: source of secret craft of meaning in Primavera...



21. In the right circle, he showed the passion of the flowering of birth;





22. In the left he showed the dance of the senses (those are the Three Graces) that leads to knowledge;





23. In the vessel itself he placed Venus,
the vessel, womb, mother of us all;





24. And at the crossing of the circumferences, spinning in their intersection, he put Eros, the force which makes the world go round. At the left is Hermes, the Guide of Souls, dispersing the clouds. And so in this way Botticelli used the traditional knowledge of the armature of the rectangle to give the measure of the dance of the soul on its way to God.





“In the artistic chaos of these last years, when the absolute liberation of the individual instinct has brought it to the point of frenzy, an attempt to identify the harmonic disciplines that have secretly, in every period, served as foundations for painting may well seem folly. But this folly is in fact wisdom. It is the way to a kind of knowledge essential for whoever wants to paint...”

--Jacques Villon, in *Charles Bouleau: The Painter's Secret Geometry*

**Geometry and Art
and Geometry and Time**

**This is the end of Part One, Geometry and Art.
Click the return arrow on your browser to return to
Fred Martin Art Histories
and then click**

Part Two, Geometry and Time.

