Figure and Ground in Philosophy, Neurophysiology, Phenomenology, Psychology, Painting, and Psychoanalysis

So far I have argued that the elements of pictures are simultaneously semiotic and nonsemiotic, at once prone and immune to systematic linguistic and structural descriptions. No graphic mark is merely a sign, but none is a "technical," "meaningless" gesture made only in the service of some higher significance. Readings are lazy in proportion as they ignore the meaningless mark in favor of the historically significant sign, or as they retreat into the safety of the nonverbal studio and speak only of gestures, textures, and paint. The challenge only grows greater when it becomes apparent that graphic marks combine irrationally, into moments of pellucid naturalism and opaque antinaturalism. That is the difference I tried to capture with the words "difficult" and "incoherent": marks themselves are analytically difficult, but their combinations can be incoherent.

The account of pictures I have been building in these first two chapters has been partly aimed against against some tendencies in contemporary semiotics and theories of naturalism. But what I have been saying also works against a much deeper, less visible aspect of our notions of pictures, and that is the idea of pictorial rudiments or foundations. The assumption that visual artifacts possess fundamental properties, and that they are constructed from those properties, is

ingrained in the imagination. It may be difficult to make sense of the notion of a picture without allegiance to some version of the notion of pictorial elements. Probably because we are used to thinking of language as possessing rudiments, and because we have each been schooled in particular disciplines that require introductory knowledge, we assume that pictures work the same way. In art history there is no lack of candidates for the "elements" or "foundations" of visual artifacts. For some Renaissance artists, *disegno* was that principle. For others it was color theory, anatomical schemata, compositional types, the mastery of media, or the enumeration of "tricks" and techniques. Alberti wrote about the "rudiments" of pictures, by which he meant geometric shapes, and the idea that visual forms can be reduced to geometry or constructed out of it is an "element" of visual art can be traced from the fifteenth century to its flowering—at least for the twentieth century—in the Bauhaus curriculum. There has seldom been a body of visual theory or a curricular practice that did not posit some beginning point, some cleared ground on which pictures can build or to which they can finally be reduced. Even in the apparently ruleless practices of contemporary studio art instruction the influence of the Bauhaus ensures there are introductory courses, sequences leading from "2–D" through "4–D," and "basic" concepts such as color, drawing, balance, texture, scale, substance, surface, fictive space, and lighting. This is a Protean field, and I mention these examples in order to evoke how many more choices there are than the ones I have mentioned in the first two chapters. *Trait,* trace, *contorno, orlo, lumen, splendor, tonos,* and *umbra* would not be found in contemporary studio instruction, but mark, contour, surface, field, light and shade are commonplace. Still, it may seem that I have bent too much of this exposition to the vocabulary of philosophy, semiotics, and art history, and that I have omitted other "elements" that might be more plausible, less specialized, or less artificial. For that reason I end the first part of this book with a look at another candidate, one that might be considered more common in more disciplines than the intricate terminology that proceeds from marks and surfaces.

No reason is needed to justify an inquiry into the concept of figure and ground. The relation is so fundamental that it can easily—without any special pleading or technical

introduction—be claimed as the basis of understanding and meaning itself. Without a contrast between one thing and another, I cannot know anything: whether it is the distinction between a printed letter and its white page, or the difference between the person I love and every other person. Contrast creates meaning, and the most rudimentary way to speak about contrast is by speaking of figure and ground. As such the subject has found a place in a wide variety of disciplines. We have glimpsed it in semiotics, where it provides the elementary morphemes of the semiotic model, and some version of it is present in every discourse that attempts to delineate a theory of meaning. The intimate connections between figure / ground, meaning, and structure itself are a good reason to think that pictures might be structured according to figure / ground relations. Strangely, the different senses of figure and ground have not been collected, and what I want to do in this chapter is bring some of the major disciplines together to see how they might contribute to the idea that the figure / ground relation is also elementary in pictures. In this reading I will not be so much concerned to give full or even judiciously representative accounts of the various theories as to watch what they can say about actual pictures. Two things in particular will prove decisive, and turn this account away from the idea that figure and ground are fundamental. First, the various disciplines speak different languages, and they only become commensurable at the highest levels of generality, when all that matters is the existence of a structure that can be called "figure and ground"; and second, the meanings of the figure / ground dichotomy in any one discipline tend to weaken as the writing is applied more closely to specific images. At the level of the picture, figure and ground are no more useful or rational than the terms of marking or naturalism. I will end with some thoughts on the consequences of that pessimistic turn.

Matter and Form in Aristotle

Because the disciplines I will be surveying are all Western, it is not inappropriate to begin as so many Western discourses begin, with the roots of the problem in ancient philosophy. It is

Aristotle, then, who develops the concept of form and matter (*eidos* and *hyl*), which resonate throughout the modern texts. He approaches the question most formally in *Physics* 7, in the course of trying to come to a satisfactory theory about how substances can change. There, in the words of W. Charlton, Aristotle defines form as "an entity the natural expression for which is an abstract noun or equivalent phrase, like 'knowledge of music,' 'sphericality,' 'what it would be to be a man.'" [1] He identifies three elements of every operation of change (*kinsis* or *energeia*): the "measurable matter" from which the change proceeds, the form, and the "lack or opposition," which he also calls the "coming–to–be thing" (*Physics* 7.190^{b}26–28, 190^{a}15). The text is ambiguous, and there has long been disagreement about the precise way to construe the relation between matter and form. Charlton suggests the consensus view is probably that matter is to form as thing is to property, but he proposes evidence that it is more "that of constituent to thing constituted," or "what a thing is made of and that of which it is made makes or constitutes" (71, 73). Using Aristotle's example of a man who learns music, the first interpretation would identify the matter as the man, the form as knowledge of music, and the lack as ignorance of music. In the second interpretation, the matter is "a thing which knows music" (a "constituent"), the form is the man (the "thing constituted"), and the lack is "a thing which is ignorant of music."

The difference is important because it points the figure–ground distinction in two different directions. Aristotle gives several examples from the arts: a bronze statue in which the matter is the bronze and the statue the form, and a stone Hermes in which the matter is stone and the form is the Herm (190^{a}25, 190^{b}7). If matter is the constituent, then it can serve in many kinds of discussions as the surface, field, substrate, substance (*ousia*), unformed material, medium, background or backdrop. In those cases form can be the shape, mark, gesture, trace, color, or *trait*—the "thing constituted." But if the consensus interpretation is correct, and Charlton's reading is wrong, then form is constrained to be the *property* of the matter: an unsatisfactory conclusion if we are to use Aristotle's distinctions as the building blocks for accounts in the visual arts. Constituent and "thing constituted" are a close match for ordinary ways of talking about formal properties as distinct from unformed material.

In considering whether or not it makes sense to begin a history of figure and ground with Aristotelian *eidos* and *hyl*—thereby implying, throughout the later history, that figure has the nature of form and ground of matter—it is worth inquiring into the relative irrelevance of Aristotle's third term, the "lack" or "coming–to–be thing." If the discussion is to concern existing or potential figures and grounds, rather than the creation or apprehension of figures and grounds, then it may not make sense to cite Aristotle's theory, since the connection would radically abridge and misrepresent his meaning—the theory in the *Physics* and the *Metaphysics,* after all, is a theory of *change,* not of structure.[2] But against that are all the theories of matter and form, ground and figure, that either emphasize the "lack" or the nature of the resulting substance. In a short list, there is Heidegger's question of the nature of the thing, which developed out of long reading of Aristotle, and can be described as a question about the conjunction of matter and form, rather than the nature of change between "things." Several recent accounts are involved in rewriting the meaning of the "lack." Luce Irigaray has made the lack a principle of difference, especially gender difference, and later we will encounter Rosalind Krauss's theory of the "third terms" that break the hermetic enclosure of the figure–ground dichotomy.[3] To the extent that Aristotle's account depends on three terms, it could be argued that writers such as Krauss and Irigaray do not so much show a way out of a confining orthodoxy as they reveal the motive principle already inherent in the structure.

The truncated version of Aristotle's theory, comprising only matter and form, fits various ways of speaking about images: it is in accord with the modernist discourse Krauss explores, and with the outlines of the phenomenology of perception and Gestalt psychology. According to Aristotle, whatever comes to be must be composite, since it comes out of the underlying matter and the form. In the example of the statue, the result is a statue and a thing made of bronze, or in the case of the man learning music, it is "a man and a thing which knows music," or in Aristotle's words, "man and knowing music" (190^b21; 77). It is important for Aristotle's argument that results of change be composite; but it is also salutary to bear in mind that matter and form together constitute all products of change—all observable objects (*entelecheia*). In that

way change is embodied and implied in every distinction of figure from ground, so that

Aristotle's account can be best imagined as an unusually explicit working–out of that fact. And

with that caveat in mind we can turn to the more recent discourses on figure and ground.

EXPERIMENTAL PSYCHOLOGY

A useful book by Jan Bouman, *The Figure–Ground Phenomenon in Experimental and Phenomenological Psychology,* traces a path of disillusionment from empirical psychology

through Gestalt experiments and into the discovery of Merleau–Ponty, Husserl, and Heidegger.[4]

At first, Bouman records, he was in the thrall of the Danish experimental psychologist Edgar

Rubin, whose pathbreaking experiments set the stage for later work on the figure–ground

phenomenon. In a series of experiments performed in the first two decades of this century, Rubin

had attempted to prove the existence of the "figure–ground aftereffect," according to which

experimental subjects could be taught to visualize an abstract figure as either "positive" or

"negative." [5]His subjects were shown a series of black cards with "meaningless" white forms on

them, and asked to see them one way or another, and then they were tested by being shown the

same cards again, this time mixed with new examples. Bouman raises many local and global

objections to Rubin's project. Is it possible to speak about "meaningless" figures? Isn't

perception influenced by identification? Bouman appends a list of his own tentative

identifications of the figures ("Face, F, ?, ?, ?, Cradle, Harp, Anchor, ?…") and suggests that

Rubin's subject must have done likewise, so that the ability to see something as "positive" or

"negative" would have been influenced by those identifications (58). Even the "?" figures, like

any unnamable shapes in visual art, would have been seen and remembered by virtue of a

specific indecision regarding their identities. And what about Rubin's demand that the subjects

"strive with all their might to follow his instructions" (*und immer aus allen Kraften bestrebt sein*

Instruktionen zu folgen)? Bouman asks, in a Wittgensteinian mode, "*how* one can perceive 'with

all one's might.'" Perhaps that kind of seeing is not seeing at all (57, 59). In fact the entire *modus*

operandi of Rubin's experiments involves a mixture of "natural" and "forced" seeing. Rubin thinks that with practice, a subject can attain "mastery" over the terms of the experiment and see a figure as positive or negative at will. Bouman remarks that the "natural" response to a white figure on a black ground is to see the figure as positive, and it requires "complicated and artificial instructions" to experience it as negative (55). There are many other objections. Rubin showed his subjects two different sizes of cards, and Bouman points out that may result in two different kinds of figure–ground experience. For small cards,

> it is not difficult to "catch" the whole configuration in one glance. Even when we try to focus on the figure (the white field), we cannot "push" the black field sufficiently to the periphery, because figure and ground are too close. However, when we are confronted with a field which is five times bigger, the whole situation becomes different. We can now fixate parts of the whole configuration in an easier manner. Our eyes find "hooks" to "hang" our glance upon.… it is indisputable that a five times bigger figure is *another* figure (63–64).

Eventually these criticisms lead Bouman to explore Gestalt psychology and phenomenology. But first he asks in an unsystematic manner how far Rubin's experiments can represent the figure–ground problem. Is a white figure on a black ground an example of the figure–ground relation *in general?* Is an abstract figure representative of all figures? Are static figures representative? And is the relation between figure and ground adequately conveyed by the two relations, "positive" and "negative"?

Nor is it ever entirely clear what it means to see a figure as positive or negative. Both Bouman and Rubin use the positive–negative distinction as a synonym for the figure–ground distinction, so that when a white shape is seen as negative, they say the black ground becomes a figure. But does it? One of the ways I can imagine seeing a white shape as a negative space would be to imagine that the black card has been cut out in the middle, so that I see through a hole to a white field beyond. But that does not exhaust the ways I might want to understand the word "negative" in this context. Can't a white shape be "negative" without also being behind

another shape? If I concentrate on the black card, I will begin to be conscious of its shape, including its rectangular frame. My experience then would be similar to what I described in Chapter 1: the black surface will have become a *field* (a surface with a determinate shape)—but at the same time it would not be accurate to call it a figure, because it has no determinate relation to another surface unless I start to take account of the gray background around the card itself. But in Bouman and Rubin there is no room for an intermediate term between figure and ground, and so the question keeps being reduced to figure *or* ground. Rudolf Arnheim does much the same in reviewing Rubin's material, pointing out that the figure / ground relation is "ambiguous," but concentrating on the "rules" for figures and grounds instead of the more specific kinds of attention that throw the binarism itself into question.[6]

To Bouman, there is only one way of describing what happens at the intersection between figure and ground. In either two or three dimensions, "the part in the configuration which becomes figure simply *detaches* itself from the part which is destined to become ground" (197). But does it? In my experience that "detachment" is anything but simple: at the very least, it involves some other terms we explored in Chapter 1—the *orlo* (the nearly invisible outline), the *trait* (the self–erasing sense of the existence of a contour mark), and the *contorno* (the plastic and often multiple line drawn around a figure). Most of the time, Bouman only acknowledges what I was calling the *border* or *edge* (the termination of the figure, without any sense of its existence independent of the figure). But he is also aware of the importance of the border, and he sometimes calls it a "contour" and assigns it unequivocally to the figure: "the contour gives form to the figure and not to the ground" (114). It is not immediately obvious why figures should have exclusive possession of contours; what about the case when the figure is "negative," and the ground presents itself as "positive"? From the point of view of art, it does not make sense to say that "the *frame* around the *figure–ground–together,* which Rubin presented as it is always presented, does not serve as a *border;* on the contrary, it serves to indicate *that there is no border"* (231). A rectangular frame does indicate that there is no border, but it is always also a border itself—and it is a border of a particular kind, different from the inner edge of the ground

and from the outer edge of the figure. It is often a challenge to describe the nuanced differences between them in any one case, and to try to say more than Bouman does, or than Derrida does when he makes a point of the frame's ambiguous relation to the "figure–ground–together." [7]

These are some of the ways that the history of artistic practice might have enriched Rubin's experiments and Bouman's criticisms of them, and in so doing disrupted them, by showing how the experimentalists' way of conceiving figure / ground relations depends on rigorous artificial simplicity. Bouman cites a few others along these lines. The earlier psychological literature itself contains several implicit critiques. The Italian experimenter Fabio Metelli thought that three relations might obtain between figure and ground, instead of the two that Rubin and Bouman use, and his candidates were largely different: objectness (*oggettualità*), stratification (*stratificazione*), and penetrability (*risalto*).[8] But all the alternate theories that Bouman lists—and the book's usefulness comes from its survey of experiments in "English, French, German, Dutch, Italian, Spanish, Portuguese and the Scandinavian languages" and Bouman's research trips to Japan (12)—all the experiments he lists depend on the two fundamental, and often equated, pairs figure–ground and positive–negative. For the understanding of images, the lesson in this literature has to be that the figure–ground relation has often appeared as if it were a black–and–white issue, so that the modifications and qualifications that occur in studio practice and in the history and criticism of art might be interpreted as sophisticated ways of playing with a basic duality. But it is also possible that the philosophic and experimental reductions in experimental psychology are names of a *hope:* that visual perception and change might be studied as simple phenomena, that there might be basic motions and structures that could help explain to actual visual experience. The distance between artistic practice and Bouman's ideas (as far as they had already come from Rubin's) speaks against that.

GESTALT PSYCHOLOGY

Bouman's first departure from Rubin's experimental regimes was in the direction of Gestalt psychology. He quotes approvingly the major figures of that movement when they say the figure–ground problem is the most important structure in all of experience. In Heinz Werner's opinion, the figure–ground issue is "a primitive and basic activity of the organism," Walter Ehrenstein finds it "in all domains of the life of the soul" (*auf allen Gebieten des Seelenlebens*), and Kurt Goldstein claims the "foreground–background distinction is the basic form of nervous activity" (*die Grundform des nervösen Geschehens*).[9] Bouman himself speaks as a Gestalt psychologist when he claims that the figure–ground relation is "the most elementary and fundamental division in every aspect of life" and even an "existential necessity":

> This means no more and no less than that nothing can become intelligible unless seen against a background, a horizon, a surrounding field, a periphery. A figure without limits is unthinkable. We therefore speak always of figures but rarely of grounds (205).

The Gestalt position becomes counterintuitive in statements like this, because there is no correlate in ordinary experience for the sense of meaninglessness that would follow from the absence of contrasting ground. Even in a whiteout (when a snowstorm creates a blinding fusion of sky and ground) I know that figure and ground distinctions continue even though I cannot perceive them—and my sense of touch and gravity help me to navigate even when my eyes fail me. In the *Ganzwelt* experiments, subjects were asked to look at featureless white walls that had been smoothly painted and evenly lit to remove all clues to their distance or orientation. Without a structure in the field of vision, the subjects reported seeing gray, or feeling blind—but it takes something as extreme as the *Ganzwelt* to make the point that the figure–ground relation is an irreducible unit of experience.[10]

When Bouman reflects on his gradual disillusionment with experimental and Gestalt psychology, and his turn toward Merleau–Ponty, he quotes R. B. MacLeod: "The self is the most important component of the psychological field, yet for every study of the self as percept, or of the development of selfhood, there are hundreds devoted to the perception of squares and circles

and the learning of nonsense syllables." [11]From a phenomenological standpoint, this is a fair way of putting the limitations of the laboratory, and their untenable rejection of the experimental subject. But in terms of artistic practice and the reception of pictures, I wonder if there might be another reason why most experiments continued to deal with "subjects" and laboratory conditions. To an experimental psychologist such as Rubin, the answer could well be that the laboratory makes it possible to constrain conditions, so that quantifiable results can be produced, and it is unlikely Bouman would object to such a reason. But *aside from the scientific advantage* of looking at squares and circles, why else would so many experimenters have opted for them instead of trying to include the subject in a more reflexive manner? It seems to me entirely reasonable that squares and circles stood for those more reflexive meanings without entailing them directly, so that Rubin's abstract patterns were taken to be what the art historian David Summers would call "real metaphors" of mental states, and especially of relations between the subject and the world.[12] The pared–down abstract figures on their black grounds would be representations of the subject and its environment, so that figure–ground would be taken as subject–object. That meaning is automatic in response to visual art, and I would assume it is widely so in responses to images of all sorts (including natural images), so that despite objections of the kind Merleau–Ponty raises, experiments on squares and circles are never merely misguided laboratory exercises that omit the wider world, but *exercises in metaphorics*. I say this in order to resist Bouman's conclusion that "the laboratory" is too confined for phenomenological inquiry (as he notes, Merleau–Ponty always kept up with the latest experiments), but also to make the point that the results of experimental psychology, up to and including the Gestalt experiments, can be helpful guides to the meanings we expect from images. The stark black and white cards, and the even more abstract *Ganzfeld* experiments, are clues about the meanings we habitually read into the visual field: that it can be reduced to black and white, or subject and object; that such a relation is at the root of meaning itself; and that it might be erased so that there would be nothing but pure ground or pure figure. Bouman makes several forays in this direction when he cites psychoanalytic literature, and observes that when a

schizophrenic has been overpowered by his world, "the world has become all 'figure' so that it is overwhelmingly confusing" (206). Conversely, when nothing seems meaningful, the depressed patient may perceive nothing but "ground." Mental and physical health would be the continuous negotiation between those extremes: "when we feel well, our body is in an ambiguous way both absent and present" (226).

The Phenomenology of Figure–Ground

For Bouman the turn toward Merleau–Ponty was also a move away from the laboratory. Most of the conclusion of Bouman's book draws on his own experiences—reading letters, looking for a book, typing, hanging up a coat. He reads Merleau–Ponty's notion of "fields" (*champs*)—which is not unrelated to the idea of the bordered surface—as an injunction to study meaning only as a relation between the "situated" human being and the sum total of the objects that confront him (179). "Man" and "world" form a "reciprocal implication–relationship," in which three "existential fields" meet one another. First is the "perceptual field," determining the "*foreground–center–horizon* relationship"; second is the "thinking and feeling field," determining the "*theme–thematic atmosphere* relationship"; and third is the "field of bodily awareness," framing the "*focal–peripheral* relationship" (143–84). And although this entire schema has a second part, in which meanings are "merged within the artificial, bi–dimensional world of design," Bouman does not often return to that possibility.

These three basic "fields" are remarkably variable. The "*foreground–center–horizon* relationship," for example, manifests itself in "geographical" terms as a question of the relation between self and world, or "body–subject" and world, but it also has a temporal aspect, since "in every human being's life, the now is a figure surrounded by a double horizon, the past and the future" (206). In addition, "a thought can be a 'figure' against the 'background' of an object" (214). The second "field," the "*theme–thematic atmosphere* relationship," is just as diverse. Bouman tells a story about coming home and finding a book that someone had promised

waiting for him on a table. Opening it, he loses himself in a reverie about the conference where he had seen the author, how the author had seemed shabbily dressed, how that fact had excited the pity of the other scientists' wives, and so on, until he slowly becomes fully aware that he had meant to hang up his coat before it got wrinkled:

> The thought was there that it was a nuisance to have to get up, or, to express it more precisely, and overall *feeling* of slight irritation at having to get up. It was not just a case of hurrying upstairs so as to get back as soon as possible to my book. No, it was a situation of… reversible thoughts, an ambiguous situation. I also noticed that, somewhat distracted, I put away my coat because other thoughts were coming to the fore (!): to wash my hands at the same time, take a sandwich, take soda water out of the icebox, open the window in the bedroom, disconnect the telephone, etc.… (216).

The relation between the "thematic atmosphere" and the emergence of a "theme" is itself "reversible," in accord with Merleau–Ponty's doctrine, so that figure and ground can take one another's place.

If Bouman's book can be assigned an expressive character, I would say it is sad, because it continuously mourns for Rubin's impossibly crisp experimentation. The meditative domains that Bouman finds himself in are "full of questions, propositions, incitements, and suggestions" as he says in the final paragraph of the book; but they are also hermetic because they belong principally to his own experience (241). And there is a further sadness, since his thoughts are increasingly free not only of the laboratory, but of the theme itself. How closely related to the figure–ground question is a concept such as "theme" and "thematic atmosphere"? And does it still make sense to invoke figure and ground to comprehend structures of experience as distant as the relation of self to time? Are all three "fields" of experience equally closely related to the fundamental theme of figure and ground, or do some fit better than others?

The phenomenology of the figure–ground relation is interesting not least because it strains the concept to its breaking point. How often do I think of questions of attention, time,

memory, conceptual horizon, or focus in terms of figure and ground? When might it be helpful to do so? The same double conclusion that I proposed for Gestalt psychology applies here: on the one hand, Bouman's meditations could be made more articulate if he allowed some of the terms that have been developed in the studio into his discourse. The relation between current self and past selves in memory is more nuanced than a black and white card. It would help at least to consider the relations between the self and the field of memory in terms other than the simple "detachment" of one from the other. The evanescent *orlo* might be a helpful figure here, conjuring the tenuous but essential link between the two. But on the other hand, all of Bouman's speculations have their places in meanings that are routinely assigned to works of art. A figure and its ground, and even a mark and its surface, can easily come to mean subject and world, or temporal distance, or attention and inattention. In that respect, phenomenology helps us think about these relationships in a more systematic fashion. Instead of vaguely noting that a sharp–edged mark is reminiscent of sharp thinking or sharp attention, we might consider how attention itself becomes a theme in markmaking, so that the ground comes to stand for vagueness or thought that fades. The entire roster of properties of the ground, which Bouman lists toward the end of the book, can be metaphors for thought that has become lax. Ground, he says,

> has no form, nature or substance or stuff, is loose, empty, filmy, less articulated, more uniform, more primitive, less dominant; soft colours; shows concave tendency; recedes, appears behind figure; colour arises more gradually; larger in area, duller, less prominent; is enclosing; unaffected by figure contour; is a supporting framework (231).

This is what is promising about phenomenology—it opens the "field" of drawn figures and grounds to metaphorical exploration.

### Neurobiology and "Neural correlates"

Though it may not seem so from the phenomenological literature, the most restrictive laboratory experiments are continuing with great intensity in cognitive psychology and psychoneurology. In the past twenty years the early experiments on visual illusions have been extended to a wide range of experiments on vision in general, with the ultimate goal of understanding the way the brain processes visual information. Even though many of its models are no longer in use, I want to take David Marr's *Vision, A Computational Investigation into the Human Representation and Processing of Visual Information* (1982) as an example because it reports a large number of experiments that have parallels in artistic practice.

Subjective contours, for instance, are universal in Western drawing, whenever a figure is incompletely bounded or the eye has to bridge gaps between marks that do not touch. In the experiments Marr draws upon, subjective contours are usually demonstrated with simple diagrams of triangles and "pac–men":
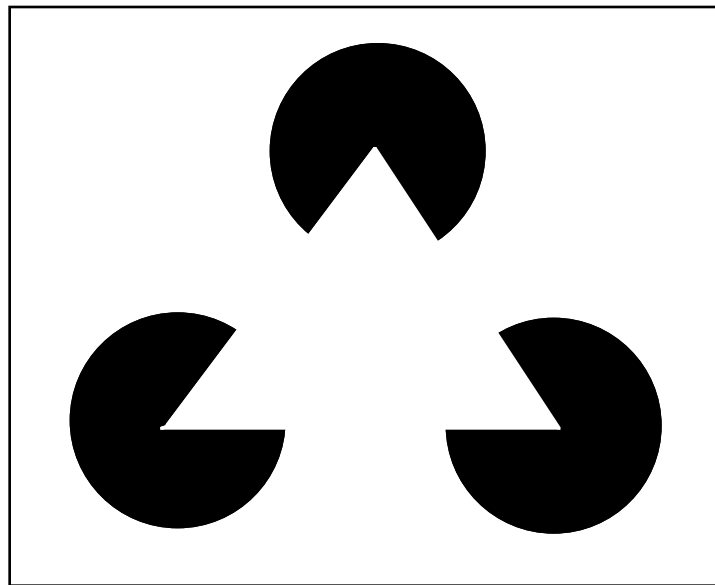
It is easy to see that a pac–man stands for a dark ground and for a corner, so the configuration also alerts us to the importance of corners in judging shape. But the interrupted triangle is too coarse an example for the visual arts, where lines fail to meet in many other ways.[13] One line

may tend toward another, and then swerve away or "behind" the first, and pictures can depend on elaborate variations on those possibilities (as in figures 3 and 4). The experimenters distinguish between subjective contours formed by the shapes of surrounding areas, by line segments that do not quite touch, by textures, and by "line terminators," as in this example:
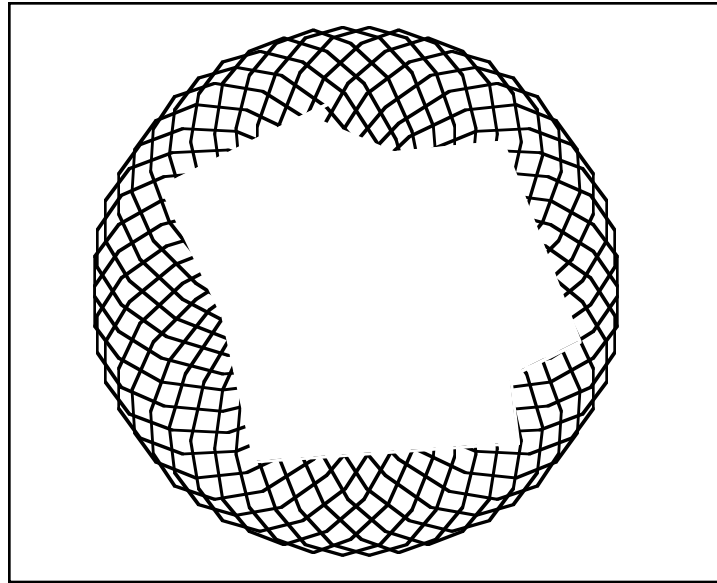
We respond to this pattern by linking adjacent line terminators, and inferring a polygon. Line terminators also have their analogue in drawing where a single–hatched ground or *umbra* might be oriented at right angles to the outline of a figure, so that the hatching terminates without a contour at the *tonos,* the inferred line between light and dark.

There are several dozen other such examples, but for the present context what matters is not the catalogue of possibilities as much as the differences in difficulty between experimental stimuli and actual pictures. Actual examples are more intricate than experimental stimuli, a difference that should not lead us to conclude that pictures depend in any linear way on elementary processes like those described in experimental psychology. But just as important, when an artist chooses among different kinds of subjective contours the criteria can often be understood in terms of the attempt to *delay or thematize* legibility, rather than simply providing

adequate stimuli so that a viewer can tell what is represented. As an example: single hatchmarks running at right angles against a contour are a way of slowing vision, of creating a slight obstacle to rapid comprehension. Some Michelangelo's drawings, such as figure 9, might well be understood partly as attempts to detain the eye by making inconsistent and even incoherent use of contours, *splendor, lumen,* and *umbra.* I would suggest this as a general artistic strategy, and the principal lesson that experimental psychology might take from visual practice: interesting pictures are often built by assembling obstacles to rapid visual comprehension. Just as Michelangelo "misused" the elements of light and shade, so others might go against the simple mechanisms of vision in other ways. Such "obstacles" might be perceived as a self–referential moment in the drawing, when the drawing calls attention to its own form and its maker's decisions. Subjective contours in general are a way of doing that, but some kinds are more overt than others—or, in the language of realism, some will be perceived as naturalistic forms, and others as conventional marks. Experimental psychology contributes to this distinction by showing how some kinds of subjective contours are related to specific mechanisms in the eye and brain, and how others may be more dependent on culturally developed habits of seeing. An entire monograph has been written on subjective contours, and it can be read in this way as a catalogue of neural possibilities that complements the catalogue of painter's strategies.[14]

Marr was impressed by the eye's ability to put together subjective contours from minimal information, and he concluded that "the eye apparently regards changes in depth as so important that they must be made explicit everywhere, including places where there is no direct visual evidence for them" (51). Since paintings and drawings are done on flat surfaces, so that no unambiguous decisions about depth are possible, they suggest two interpretations of that remark: either the lines that appear in drawings misuse these phenomena, so that drawings make new use of neurobiological structures that were originally for the discrimination of depths; or else the flatness of drawings can be taken as a clue that subjective contours also serve to discriminate figure from ground, regardless of depth.

In Marr's account subjective contours are one of a series of operations that combine into what he calls the "primal sketch," the first step in making sense of the visual world. A primal sketch is comprised of a sense of the two–dimensional organization of what is seen, and it is a step above the raw image, which is nothing but a map of varying intensities of light, with no figure and ground relations. In addition to subjective contours the primal sketch uses a battery of other primitive criteria. "Zero–crossings" are perceptions of places in the image where intensity changes; they contribute to the perception of "bars," pairs of parallel edges, and "blobs," parallel edges with common ends (51).[15] There are also "terminations," "discontinuities," and "edge segments," and those come together into slightly more structured "groups," "edges," and "boundaries" (91). In this way the concept of the figure is dissected into precise elements—and it is the lack of precision about information processing that Marr criticizes in J. J. Gibson, and which he presumably would have criticized in Rudolf Arnheim (29–31). But drawings can be just as exacting about the species of subjective contours, or the differences between "zero–crossings," edges, edge segments, and boundaries, and there is a great deal that art historians could do with these concepts. If there are moments when the brain is more aware of "terminations" (the ends of forms, such as line segments) than it is of their orientations, or of the presence of an "object boundary" rather than an "edge segment" or a full "boundary," then drawing may make use of those differences for expressive purposes, exploiting the variable difficulties of perception (51–54). The first chapter of this book suggests another set of "primitives," even more complex than these, but partly continuous with them.

In Marr's view, once the primal sketch is in place the visual system works on a "2 1/2–D sketch" that is in turn the basis for the full "3–D model representation" of the world (37). The theory of the 2 1/2–D sketch has been largely abandoned in recent research, but it is also interesting for what it has to say about the in–between world of pictures, which are neither fully three–dimensional nor entirely flat. One of his examples is the perception of an object formed from two cylinders placed in front of a background that is the same value and hue as the object (figure 11). The brain puts together its imperfect 2 1/2–D sketch from several kinds of

information: the arrows represent decisions about the surface orientations of the object (the background faces the observer, and so its arrows appear head–on); dotted contours are places where "surface orientations change sharply," and solid contours are places "where depth is discontinuous" (129). To construct the sketch, the brain needs some sense of relative distances, which it gets by comparing the views from either eye and information from the "primal sketch," including subjective contours. (The lines are subjective contours, since like all such outlines they do not exist in nature.) For Marr the 2 1/2–D sketch is "computationally desirable on general grounds," because it combines information generated in earlier stages of perception (149). But it is not complete, and the brain then goes on to finish the 3–D model of the world.

The 2 1/2–D sketch is an interesting and specific alternative to Edmund Husserl's idea that the individual perspectives on the world (*noemata*) are taken to be entire objects, or J. J. Gibson's claim that we understand partial views as entire objects.[16] Marr's theory is demanding and a little restrictive: but it begins to do justice to the many levels of incomplete awareness of figure and ground. A fundamental aspect of our responses to pictures is the difference between figures that seem immediately whole and round, and those that beg the question of three–dimensionality. Marr's schema of vision is at least a way to avoid assuming that perspectives are unthinkingly detached from their grounds and "restored" to some imaginary wholeness. Initially we simply take in light, and then we organize it into "zero–crossings," "edges," "boundaries," and so forth—all of them *partial* figures, with nothing complete and closed—and those help determine the 2 1/2–D sketch, another incomplete version of the world. Francis Crick's recent popular-science book, *The Astonishing Hypothesis*, stresses the evidence that "shape, motion, texture, and color could fill in at different times," so that vision would normally be comprised of uncompleted sketches.[17] A fair amount of our perception of any given scene, and at any given time, would be extrapolation.

Even if the 2 1/2–D sketch and Marr's other terms are supplanted by new evidence, neurobiology and experimental psychology are presenting a much more intricate sense of vision than art history, Gestalt psychology, and psychoanalysis tend to assume.[18] The questions that

neurobiologists are interested in remain coarse by pictorial standards, but that is only because the visual examples have to be obvious in order to provide testable hypotheses.[19] The amount of information currently available is enough to justify a book–length exploration of parallels between visual processing and the history of drawing. Among the many topics for such a study it would be interesting to look at the phenomenon of "focal attention," which is the scientists' way of naming the difference between ordinary looking and concerted attention. In figure 12, the region with the little crosses pops out, but there is also another region at the right, formed from T's instead of L's. The psychologist Bela Julesz uses diagrams like this to study the kinds of visual objects that are not easy to see, as opposed to those that "automatically" form figure and ground.[20] Seeing that second region, and especially apprehending its outline, takes a peculiar kind of attention that is a little tiring. Julesz calls the individual elements (little line segments and crosses) "textons," and says that the effortless "preattentive visual system" can pick out groups of them, and alert the eye to their presence so it can rapidly comprehend a visual scene. But anything beyond textons themselves, such as their organization into L's or T's, requires "focal attention," which takes time—as long as one-fifth of a second—and energy.[21]

His account sharpens the usual distinction between "local" and "global properties," which art historians know as the difference between Northern "episodic" and Italian "unified seeing." [22] Artists know this same kind of distinction as the difference between looking at the world, and looking with the intention of later making a drawing. If I intend to draw an animal, I have to shut down my ordinary ways of seeing and look in a concerted fashion at just these kinds of elusive clues.[23] And if that happens in life, then it stands to reason it will also be a quality of pictures. Some parts of pictures are the records of the easier mode of seeing, and others show signs of being products of concerted staring and memorization. Drawings and paintings are often composed of remnants of those two kinds of seeing, and experiments by Bela Julesz and others can help us think about how they might be further classified or described. On the other hand, they are rarely so clearly separated as in the example of drawing from memory, and the experimental work has yet to approach the entanglement of "preattentive" and "focal" that

happens in any picture, or the seething variety of marks and groups of marks that constitute "textons" in any given viewing.

<p style="text-align:center">FIGURE–GROUND IN PAINTING AND DRAWING</p>

When figure and ground are discussed in scientific texts, it is routinely assumed that the phenomena are under study for the first time, and even in accounts of modern art history figure and ground are taken to be modernist concerns. If we accept visual artifacts as evidence of figure–ground relations, then the problems are as old as marking itself; but even confining the issue to those periods that had a developed written discourses about figure and ground, the "prehistory" of the subject goes back a thousand years in China and India and five hundred in the West. Looking only at the Western tradition (because my examples in these chapters have all been Western), and putting aside the fragmentary references in sources such as Pliny, Aristotle, and Plato, the history begins in the fifteenth century.

The story concerns nothing less than the origin of the concept of drawing, as we have inherited it in the West. Some time in the fifteenth century in Tuscany, the medieval *exemplum* (roughly, a small sketch kept as a model and mnemonic) and the various kinds of preparatory drawings—*modelli,* understood as composition drawings, *disegni* and *concetti* (designs and ideas for pictures)—came together or made way for a new set of possibilities centered around the drawing as such. Before, drawings had been kept in "pattern books," given to apprentices so they could practice, or lost under frescoes as *sinopie,* preparatory drawings. By the sixteenth century that entire system had changed, and drawings had new names—*pensieri* (thoughts), *schizzi* (sketches) and *studi,* specially made studies of portions of compositions. As the concept developed it brought several previously unrelated ideas together. Charles de Tolnay's study of the emergence of drawing is still the best, even though it appears today as if it were under a thick varnish of Hegelianism, Neoplatonism, and Crocean idealism. Tolnay lists the principal theories of the origin of the modern concept of drawing—for example, that it came from medieval pattern

books, or that it developed from preparatory drawings made on the panels and walls themselves —and he includes in the list an idea that is crucial to the figure–ground relation: "in contrast to the severe style of closed contours of the Romanesque and Gothic illustrators," he writes, "modern drawing is thought to have brought about a dissolution of contours, so that figures and objects no longer seem isolated but mingled with the background which has become a symbol of empty space." [24]It is a remarkable sentence, binding two notions that would seem at first to be independent of one another. Before the blank page could be regarded as a representation of hollow space, modern drawing was inconceivable, and it is also true that our idea of drawing is inseparable from the notion of the spontaneous, immediate, intimate quality of drawings—their *non finito* qualities—that often depend on dissolved contours.[25] But are the two connected? Is the intuition of space in drawing (as opposed, perhaps, to finished paintings) dependent on an uncertain or a loose relation between figure and ground? Historically, it often has been, and if Tolnay's conceptual analysis is roughly correct it would mean that we should consider that in the same decades when perspective was being developed, and when the flat page was reconceived as structured fictive space, the relation between figure and ground first became a question, or a problem.

Tolnay points out that drawings with loose contours are nothing new in Western art. A tradition of what he calls—somewhat awkwardly, I think—the "'pictorial' technique"—can be traced from Greek vases through Byzantine manuscripts. In those drawings where contours are incomplete, faint, multiple, or blurred, *and at the same time* the conception of spatial relations approaches the modern one, figure and ground become an issue in a way that they had not before. I don't think it is possible to overestimate the importance of this change: Tolnay's intuition illuminates the difficulty that the concept of drawing has come to have by demonstrating the connection between our idea that important, interesting, intimate, expressive pictures might depend on posing figure and ground as a subject, or as a question.

The later history bears that out: like the Baroque academies that followed it, the French Academy was an institution that taught drawing, and the theoretical edifice it built around the

concept of drawing was centered on the proper management of marking, contour, figure, and ground. As the aesthetic of the sketch developed it came into conflict with the ideals of polished execution that were appropriate to painting, and one of the principal subjects of concern in the eighteenth–century literature is the problem of preserving the intimacy and expressiveness of the sketch in the "corrected," polished final painting. As Denis Diderot said, "in a picture, I may perceive clearly a single theme; but in a sketch, how many things I may imagine that are only faintly indicated!" [26]Albert Boime has traced a number of these debates, and in his account they were largely resolved in romanticism, when the qualities of the sketch were finally accepted as appropriate properties of completed paintings. Boime takes special note of the fact that the critic Delécluze thought at first that Delacroix's paintings were too much like sketches, but that he slowly began to appreciate those very qualities; and that Delacroix himself was concerned about his lack of strong contours in the *Massacre de Scio,* but gradually changed his mind as he grew away from the influence of the Academy.[27] Certainly romanticism was a turning point, but in the broad history I am trying to trace here it is only one of several moments in the Western history of drawing in which the clarity and "strength" of contours became an issue. David Karel has discussed similar questions in relation to eighteenth–century drawing practices, and has brought out the existence of a precise vocabulary that was brought to bear on the criticism of *académies,* the nude studies done from the model. Words such as sensitivity, touch, dryness, thinness, and coldness were all ways of speaking about the ideal of drawing plausible flesh—and plausibility in turn depended on avoiding too much "strength" and linearity in the contours.[28] The same questions are latent in Vasari's own collection of drawings, which contained some with the "modern" *maniera,* and others that he took to be more typical of drier, less graceful periods. It would even be possible to trace this concern all the way back to the ancient terms *skiagraphia* and *scenographia,* the former denoting "unfinished" work, and the latter polished and exact work.[29]

Ultimately these exchanges between connected and broken contours are matters of the appropriate degree of contrast—whether a figure should be strongly contrasted against its ground

by means of a dark sinuous contour, or partly identified with its ground via an opened, incomplete contour. David Summers has shown how the figure–ground question was understood as a matter of rhetorical clarity or vividness (*perspicuitas*), so that the contrast between figure and ground was assimilated to the rhetorical figure of *antithesis*.[30] Although Alberti distinguished contrapposto from chiaroscuro, the two were not always firmly separated, and Lodovico Dolce "extended the formula of *contrapposto* to include light and dark in general, thus counterpoising what in Alberti had been a mere conceptual polarity" (353). That conceptual blurring extended to other pictorial strategies as well. Since contrapposto was borrowed from ancient rhetoric, "it edged easily and without transformation into iconography, making form and meaning structurally congruent" (358). Eventually any pictorial strategy could be interpreted as an opportunity for clear expression:

> perspective was replaceable by antithesis, which fulfilled a similar demand of presentation. In what might be called visual rhetorical terms, in short, perspective and antithesis were much the same. *Chiaroscuro* (to take the visually most inclusive and compositionally most basic form of antithesis) could thus complement perspective, or even make it redundant and supplant it… (360)

Although Summers's concern is to show the rhetorical meaning and function of the more important organizing principles in Renaissance painting, they could also be considered as forms of the figure–ground relation. Clarity, antithesis, and *perspicuitas* are each names for the opposite of the half–dissolved *contorni* and smudges that characterize the sense of drawing I have been considering. The "elastic or flexible" (*liant*) contours preferred at the French Academy are a sign of the other, more finished kind of drawing, where figure and ground are the most fundamental of all expressive contrasts.[31] It is in terms like these that art history has long engaged the question of figure and ground, and the terminology—I have tried to give a sample of it here—is available for scientific use, just as Marr's terms and theories are consonant with elementary artistic strategies. As a way of describing the rudiments of pictures Summers's observations are limited only by
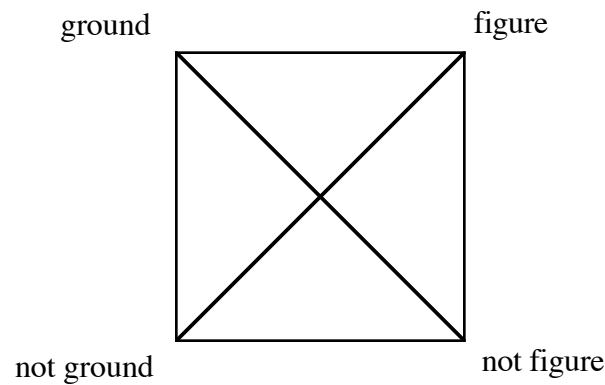
their historical purview, since they depend on the knowing use of Renaissance methods including contrapposto, *chiaroscuro,* and perspective.

<div align="center">THE BODY IN THE FIGURE</div>

As a way of bringing this survey to a close I want to consider the transformation of some of these ideas in postmodernism. My example, Rosalind Krauss's book *The Optical Unconscious,* is a sustained critique of the logic of modernism, which she describes as a faith in the disengaged contemplation of the formal properties of vision and images, in contrast to "the way that human vision can be thought to be less than a master of all it surveys." [32]The principal writers and artists who stand for modernism are Clement Greenberg, Michael Fried, Piet Mondrian and Frank Stella, and those who stand against it include Merleau–Ponty, Jacques Lacan, André Breton, and Georges Bataille, and artists such as Pollock, Ernst, Giacometti, Dalí, Man Ray, and Duchamp (21). While Mondrian thought of the "rationalization of painting" and its "set of abstract theorems," Duchamp thought of "unstable," "antiretinal" artworks and Giacometti created kinetic sculptures "that imparted… the irritating awareness of failure" (11, 96, 196). The principal strategy of the book is to pose modernism as an autonomous logical *system,* self–enclosed and apparently not in need of anything beyond its formal vocabulary, and then to put the principally surrealist "optical unconscious" against it, as a way of thinking about seeing that takes account of the viewer's desires, blindnesses, and implication in the subject.

Since the central example of modernism is a schema involving figure and ground, the book might easily have been subtitled *Beyond the Figure–Ground Principle*. The figure / ground schema stands for the basic decisions about the relation of figure and ground, mark and surface, object and space, form and matter, and in the course of the book Krauss demonstrates perhaps two dozen substantial strategies for dismantling those oppositions by acknowledging the place of the viewer. The starting point is the structuralist "Klein group," a square that posits the sum total of logical possibilities in any closed conceptual system, whether it is religious belief or linguistic

categories. The group begins with a simple opposition, and complements it with a second pair, which is its negation:

```
ground                    figure
        ┌─────────────┐
        │  ╲       ╱  │
        │    ╲   ╱    │
        │      ╳      │
        │    ╱   ╲    │
        │  ╱       ╲  │
        └─────────────┘
not ground                not figure
```

Following the structuralists, Krauss names the top the complex axis and the bottom the neutral axis. As she points out, the beauty of the Klein group for Claude Lévi–Strauss and others is the way it captures and orders complex data such as variations of myths, ensnaring them and giving them geometric order. The complex axis conveys their explicit dichotomy, and the neutral axis is their "more flexible, shadow correlate." Together these possibilities "can be seen to have generated one modernist icon after another: the grid, the monochrome, the all–over painting, the color–field, the mise–en–abyme of classical collage, the nests of concentric squares or circles" (14–15). Modernism, in Krauss's account, begins with the rejection of the concept of background—that is, an ontologically and naturalistically subsidiary surrounding or setting for the figure—and the instating of ground—understood as ontologically *equal* and co–dependent with the figure. Given that, the Klein group is already in existence, and there is nothing more to do than work out the various ways that ground is strengthened into figure, or denied into not–ground, or shifted into not–figure, and so forth. Mondrian's "plus and minus" compositions of 1915–17 provide the opening examples, since they "resist" the figure and substitute an ambiguous scattering of not–figure, "itself however logically invested with *its* mirror condition, as "ground" (16). Her argument operates at a fairly high level of abstraction, because the Klein group affords an infinite combinatorics (not–not–not–figure, and so forth) but modernism only

made use of negatives and double negatives, and nothing further than that is easy to conceive or perceive.

      Krauss's text is occasionally elliptic and self–contradictory, but it is also the most intensely reasoned exposition of the logic of the Klein group and its dismantling at the hands of psychoanalytic and poststructuralist criticism.[33] Each of her two dozen or so critiques could be analyzed independently; here I will consider three that present fundamental and strongly different, ways of conceiving how the figure–ground structure might be broken. Most important, and first in the book, is Lacan's "L schema," which opposes the subject *S* to *a'*, the *objet petit a* (roughly speaking, the object of desire, experienced as an external object, but incompletely differentiated from the subject), the ego *a,* and the Other *A:*
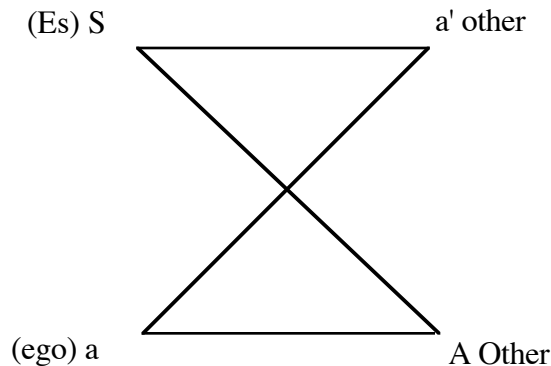

At first, Krauss notes, the L schema and the Klein group appear isomorphic, but Lacan's diagram is not a system of opposites but a picture of "permanent circulation, continuous flow" as the *objet petit a* constitutes the ego, which forms the sense of the Other, which stabilizes the philosophic subject, and so on: in Lacan's analysis, mutual misunderstandings, misperceptions and self–deceptions constitute the ego and finally the entire psyche (24). Far from being an autonomous observer of the world, the ego has been made a "captive" of its own needs. As Lacan says, seeing is chiasmatic—I do not so much define objects by seeing them as I define myself by seeing myself in the world, and watching as I am seen.[34] Hence the L schema is a way of putting the subject "in the picture" that seemed to be outside it, in the world. If the L schema does not stand

alone in *The Optical Unconscious,* that may be partly because what Lacan says always remains to some degree within the Lacanian project, and even though Krauss subscribes to elements of it, there are other ways of putting the question that begin from different places.[35] In Lacan's theory of the gaze there is also ways the question of how believable the constructs are outside the system: How easy is it to come up with examples like Lacan's famous sardine can that "looks" back at its viewer? How exactly are those intuitions about chiasmatic seeing to be developed beyond the obvious ones (when we are being stared at, when we look in the mirror)?[36]

A second schema is the *informe,* the surrealist concept that Krauss employs as a name for whatever works against the meanings generated by the various differences figure / ground, figure / not–ground, and so on. The *informe* works to "produce the absence of difference" (152). It is a "disturbance… in the modality of *alteration,* of ambivalence," so that there can no longer be a stable distinction between figure and ground, or any pair of "alternating" opposites. Nothing is secure, and forms and figures vacillate or shimmer rather than oscillate in a regular motion. The *informe* is a principle that works against the concepts of antinomy, binarism, opposition, structure, and ultimately, figure itself (166). In various ways several tropes of surrealism are instances of the *informe,* which recurs in different guises throughout the book: the disfigurement of ecstasy, which "undoes the *form* of the human form"; the lure of "base materialism," which promises the appearance of pure unabstracted matter (in the Aristotelian sense); Roger Caillois's vision of the camouflaged insect giving in to the lure of space and dissolving itself into the "picture" of its surroundings; and in the surrealist interest in decomposition and decay (157, 150, 158, 180). The *informe* itself does not take the shape of a schema at all: it is the force that works against any stable geometry.

The third model is taken from Jean–François Lyotard's *Discours, figure,* a book that has had increasing importance for French and Anglo–American visual theory since its publication in 1971. It is still untranslated, and perhaps because it is so dense and multivalent, Krauss's exposition of a key passage is the first detailed analysis—as opposed to the many summaries and evocations—in any English–language text. It concerns the section Lyotard titles "Fiscours

Digure," which is in turn a reading of Freud's "A Child is Being Beaten." [37]Although Krauss does not make use of it, Lyotard's founding concept of *figure* is already an *informe,* since Lyotard calls *figure* anything that stands like an inert clot in the way of the uninterrupted flow of information that constitutes *discours*. Language, with its oppositional structure, is a perfect instance of *discours,* but any intrusion of the non–verbal—such as the italics in these sentences —slows reading, distracts it, and finally even derails it. In so far as *figure* is whatever chafes against smooth meaning or congeals in the middle of systematic communication, it is already available as an especially eloquent—and figural—example of the *informe*. But Krauss concentrates, rightly I think, on the section "Fiscours digure" where Lyotard attempts to write a *theory* of the absolutely asystematic and alogical force that informs concepts such as the *informe*. He finds it in the unaccountable meanings of "A Child is Being Beaten," where in Freud's words, the "being–beaten is now a meeting–place between the sense of guilt and sexual love. *It is not only the punishment for the forbidden genital relation, but also the regressive substitute for it*." Krauss emphasizes Lyotard's "pleasure" in the phrase "but also," since "A Child is Being Beaten" is "ruled by this wild ambivalence, this simultaneous holding of two contradictory positions" (220). It is the unconscious speaking, demanding that a single thought express "wildly" different things, and that it refer simultaneously to two different times in the patient's life, and speak from two different points of view. Lyotard calls this aspect of the unconscious that seems so impossibly dense with contradictory meanings the *matrix* (the Latin for "womb") and it allows Krauss to rewrite the Klein group in another form, where "gestalt" is whatever is not–figure, and "matrix" is a not–ground, a "gesture of refusal" that is "neither figure nor ground, but their structural precondition," which turns out to be "carnal and temporal" (two dimensions denied by the asexual, purely optical schema of high modernism) (192):

figure   ground

"matrix"   gestalt
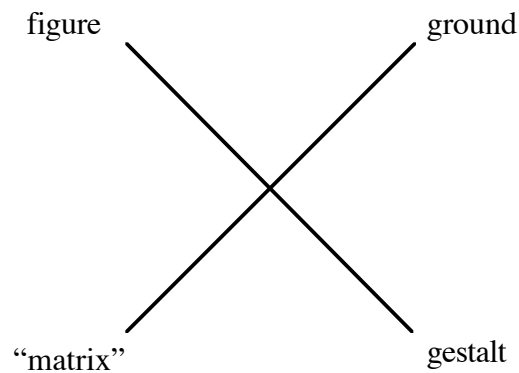
But there is a problem here, as Lyotard recognizes: Freud's exposition may be the record of

something inconceivably dark and dense, but it is itself a logical argument that produces only the

simplest of logical opposites. Like any paradox, Freud's are readily described by shifting

interpretive frames. The result cannot be the founding principle that Lyotard wants, and in

addition the very notion of the matrix itself *is* a form, the form of the matrix, and so it raises the

possibility that matrix and not–matrix might constitute a new structuralism, and so on without

end. Lyotard's answer is as canny as it is possible to be, given the psychoanalytic frame of his

enterprise: he identifies the examples of "bad form," the matrix, and the "but also" with the death

instinct. This is Krauss's gloss on his conclusion:

> Then he thinks of *Beyond the Pleasure Principle* and the two different pulses that
>
> Freud weaves together there. One is the hum of charge and discharge as the
>
> pleasure principle operates toward the release of tension and the maintenance of
>
> the lowest levels of excitation. This rhythm, which is the on / off throb
>
> of $+-+-+-$, or of the presence and absence of contact, can be imagined as the
>
> metrical "figure" of *to beat* [that is, the repeated fantasies reported in "A Child is
>
> Being Beaten"]: its form. But the second pulse is not a principle of recurrence
>
> guaranteeing that an "on" will always follow an "off"; it maps the principle,
>
> instead, of interruption. It is a pulse that is rather to be figured as $+0$, which is to
>
> say existence followed by total extinction. It is thus a "beat" that does not promise

the return of the same, but simply re–turn, the coming of nothing. This second
pulse is not a good form, not a good gestalt. Rather, [Lyotard] thinks, "it is a form
in which desire remains caught, form caught by transgression; but it is also the, at
least potential, transgression of form" (222)

This is crucial both for *Discours, figure* and also for *The Optical Unconscious:* it is as close as
either come to a description of pure transgression, unalloyed by any return to structure. In my
reading, it is the weakest and most interesting part of *Discours, figure,* since it is a direct attempt
to say—that is, to *say logically*—what cannot be said without being subsumed into *discours*. It is
less important in Krauss's book, because it is only one of what I am calling the three principal
models for non–structuralist modes of figure and ground, but it is still central because it raises
the question of the limitations of the "optical unconscious" as a way of rethinking figure and
ground.

That limitation has to do with the level of detail that the various strategies afford. In my
brief summary, the first is from Lacan, the second from Bataille, Breton, and Caillois, and the
third from Lyotard. In each there is a disparity between the many modes of the Klein group and
the unitary transgressions of the optical unconscious. Remaining within the modernist logic has
the virtue of opening a world of specific and nuanced differences, but transgression only leads
away from form and structure. Perhaps the strongest chapter of *The Optical Unconscious* is the
last, which reviews the modernist version of Pollock as a "sophisticated" painter, interested in
figure and ground, mark, space, and illusion (245). Krauss argues persuasively for another
Pollock, the one for whom every mark was made *against* some real or imagined Picassoid figure,
so that the very enterprise of painting on the floor was an act of visceral, deliberately
"unsophisticated" defiance. Krauss mentions the early critics who compared the paintings to
drooling, dribbling, and childrens' drawings, and she cites Cy Twombly as someone who
understood Pollock's sadism, and Andy Warhol as someone who got the point of his rude
transgressions (especially in Warhol's *Piss Painting*). Pollock was "engaged in striking, or
canceling, the figure," and not in performing intellectual experiments in vision or abstraction

(289). This has the limitation of all accounts that strike against the formal logic of figure and ground: by choosing to concentrate on the negative transgression, she is not able to speak at any length about the *structures* that inevitably result. In that sense, *The Optical Unconscious* has to be a better guide to the system it deplores than the non–system it advocates: the former can be analyzed, and the latter only evoked. Just as *Discours, figure* moves from method to method in search of the grail of unimpeachable non–method, so *The Optical Unconscious* is nomadic, always looking for alternate "pulses," "beats," and principles of "bad form," so that none keeps center stage long enough to be subsumed into a fully articulated system. And as Krauss realizes, that is perhaps the best testament to the power of the Klein group, and any formal construction of figure and ground: it generates the desire to transgress, and prohibits any transgression from achieving meaning that is not a representation of the original schema.

PSYCHOANALYTIC OBSERVATIONS ON FIGURE AND GROUND

There are at least two principal ways in which psychoanalysis encounters the figure–ground problem. In the widest sense, the unconscious is the ground of the psyche, the formless stratum or "matrix," in Lyotard's terms, against which the conscious forms its figures. Any idea that can be formulated as such is conscious, and it becomes an idea by its differentiation from the inconceivable "dark" unconscious. This is a poetic, and perhaps also a useful way of thinking about the construction of the unconscious, and I can see how it might be developed in art criticism (by thinking of unarticulated fields and masses as signs of the unconscious) and in psychoanalysis (by making it possible to form alternate models for cathexis, in which unconscious elements might be molded into conscious thoughts, instead of being shifted as in the Freudian economy). An example that illustrates both comes from my own experience: I was teaching a class on psychoanalysis and painting, and a student, who was also a painter, told me he would be interested in trying his hand at painting mandalas in the way that Jung describes—that is, as if they were for therapy. A few weeks later be brought in a series of nearly identical

drawings that he had been making at regular intervals, and asked how Jung might have judged them. Each drawing was formed of concentric circles, made by turning the broad side of the charcoal in large arcs. The individual strokes met and sometimes overlapped one another, so that the pictures were accented by more or less uncontrolled irregular abstract shapes. I suggested that Jung would have wanted him to delineate comprehensible symbols, and that a Jungian analysis might have begun once those symbols began to differentiate themselves from the ground of gestural marking. He replied by proposing that since he was an artist, his unconscious had no "ideas" or symbols in it, but only abstract shapes of the kind that he had created by overlapping the circular arcs. That assertion, which a Jungian analyst might be tempted to read as a gesture of resistance or negation, might also have its deeper sense if we understand the relation between conscious and unconscious in terms of figure and ground: in that case, figure might grow from ground in the way that these marks grew one from another, passing through states of indeterminate formlessness, and slowly gathering form and meaning. The way the student used the word "artist," it means those people for whom it is plausible that the unconscious contains no ideas. In the psychoanalytic model, shared by Jung and Freud, the unconscious is replete with ideas, and for Jung that implied the presence of nascent visual symbols. But the ground of the psyche might also be nascently visible in another sense, since the figures of consciousness might emerge from it not the way Athena emerged from Zeus, but the way that a drawn figure emerges from its network of marks.

A second, and much more fully developed, point of connection between psychoanalysis and the figure–ground question concerns the nature of the visual field according to Lacan. As Richard Boothby has shown, Lacan was influenced by the Gestalt psychologists' claim that certain images are "imprinted" on the psyche in such a way that they become static emblems, permanently influencing our behavior.[38] Reading Lacan's accounts of the mirror stage, it becomes clear that the image in the mirror is not merely an agent of homogeneity, stability, coordination, bodily unity, and organization, but it is an emblem of *motionlessness*. In Boothby's words, the imago has a "tendency toward temporal inertia or fixity," which Lacan takes "as a

general and fundamental feature of the imaginary function" (25). There are reasons for its rigid sameness, since it is the ego's hope of stability, and a figure for the consistent recurrence of the drives (28). But Lacan also stresses it, creating what Mikkel Borch–Jacobsen memorably calls "the statue man." [39]Some writers, such as David Macey, have traced these ideas out into the cultural sphere, emphasizing Lacan's connections with the surrrealists and their propensity to visualize static nightmares instead of figures in motion. Borch–Jacobsen takes another tack and works down, into the roots of the issue in Hegelian philosophy. He suggests that to Hegel and Lacan, all knowledge is experienced as a metaphor of reflection, so that an object—a "thing," in the word so influential to Lacan and Heidegger—becomes "visible" when it is imagined as occupying some place or position apart from the self (56). As Borch–Jacobsen puts it,

> thus is the world described by Lacan so strangely petrified and static, a sort of immense museum peopled with immobile "statues," "images" of stone, and hieratic "forms. (59)

Since "images organize and schematize the ego's reality," "the ego is the other," and the self is seen in and as the other (63). It follows that "the image must not be understood as a simple, 'enfeebled' (and, as such, 'imaginary' and 'illusory') re–presentation of reality. It is instead the very reality of the ego" (62). The "ego–world" is a statue: as hard as stone, as cold as ice, it is *standing in front of* the ego that is petrified there—that is, in the ego–world, it both gazes at and petrifies itself (60). And although Borch–Jacobsen argues against the idea that experience and identification are specular, and that ontology must be understood as something allied with light— a "photology," or "onto–photo–logy" (53, 56)—he does not provide as strong a theory of non–visual identification as the visual theory he decries. Lacan's world is very strong: Slavoj iek's narratives, which are widely taken as adequate reports of Lacan, exaggerate the petrified quality of the Lacanian imago and extend it into the world of horror and fantasy. The virtue of the Lacanian model is the way it shows so clearly that the figure–ground distinction is fundamental not only in representation, but in the construction and maintenance of the sense of self; and its weakness, from this point of view, is that it is both rigid and almost entirely abstract, so that it

has only a few connections with visual images—or rather, it is to the ordinary discourses on pictures as the droning ground–bass is to the melodies and harmonies above it. Even if every image is ultimately an occasion for self–definition and self–deception, an image can only be said to routinely function that way within psychoanalytic discourse. Otherwise that function is hidden in a thousand ways—under the guise of other meanings, other uses, and even of the kind of formalism Krauss deplores—and the hiding itself, as Lacan would have acknowledged, has to be hidden.

Modes of Figure–Ground

It is not my purpose to advocate one of these approaches over another, and certainly not to suggest that scientific experiment should be given a privileged place—as one scientist did when he praised a paper by Francis Crick, saying "such an outcome would represent further progress, as we try as scientists to take yet another topic away from the philosophers." [40]Instead I want to show the subject for what it is: a far richer field than appears from any one discipline, but one that is largely disconnected from individual pictures. At the same time, it could be said that the literature gives the sense of three different more or less simultaneous conversations. One has to do with the formal properties of figure and ground, and it asks about how a figure might be *over* a ground, or incised *into* it, or—as in Rubin's work—how a figure might be seen *as* a ground. Its questions have to do with perception, and often with the spatial relation between figure and ground. I think Krauss's idea of encapsulating them in the structuralist square is a felicitous way of bringing out the fundamental assumption of this kind of discourse, that figure and ground are essentially a *logical system*. If a figure can be seen as a "negative space," then it has become the opposite of what it was, and if a figure is *on* a ground, then that is an opposite of its being *in* a ground.[41] The Gestalt doctrine that figure and ground are the irreducible condition of experience is of a piece with this since it insists on the necessity of structure itself, and the notion that structure is comprised of binary contrasts.

In other cases the study of structures is be less important than the effect the structures elicit, and in that case the reading may become *psychological*. In one of the more provocative theories about figure and ground, Gilles Deleuze describes Francis Bacon's work as a question of the figure straining against the ground, about to rupture its own outline and escape into what Deleuze calls the "material substance." [42] In Deleuze's view, a prototypical Bacon painting contains three elements: the figure, in a turmoil of flesh; the garish "material substance"; and an intervening structure, which he calls the "circle" and which may be a round platform, a geometric armature, a stage–set room, or the figure's own skin. Bacon's figures want to project themselves beyond the "circle" by vomiting, melting into colored shadows, or leaking into carpets and furniture. In describing this organic perdition Deleuze uses mechanical and geometric metaphors, but the state he is concerned with must ultimately be referred to psychology. He invokes his own concept of the "body without organs," and he alludes to one of the original models for that concept, the simple protoplasmic cell that Freud considers in *Beyond the Pleasure Principle*. The interpretive ground in Deleuze's account, therefore, is psychoanalytic, and the entire reading of Bacon's work becomes a question of the discharge and stasis of desire: in this case, the desire to void the body, to evacuate it through any orifice and to dissolve into the surrounding structureless field of color.

Although this is an extreme case, I think psychological interpretations are common throughout the history of art. In the fifteenth century, Tuscan and Venetian drawings were often done with black chalk and white highlights on brilliantly colored grounds such as magenta, purple, green, and lilac. When the drawings are in metalpoint—especially silverpoint on crimson paper—the effect can be dazzling, and reminiscent of the way it can be difficult to see a painting if it is embellished with too much gold leaf. It is particularly interesting that some drawings on brilliantly prepared papers are done in very faint chiaroscuro, so that the gap in the value scale between dark shadows and white highlights is supposed to be bridged by the colored ground. Drawings attributed to artists such as Filippo Lippi can be very faint and incomplete, leaving large stretches of unmarked paper between shadows and lights, and in my experience it can be

quite difficult to see the intervening color as neutral "fill" within the figure, or to see the same dazzling color outside the figure as ground. The high chroma makes the paper surface come forward, and weakens and disperses the drawing. In cases like that I experience resistance on the part of the color, since it refuses to merge with the lights or darks, and refuses to "lie down," to use the studio phrase, and behave as a ground. It is a reluctant ground, yielding in the end to the accommodation of my eyes as they become used to the color and bleach it back to a neutral hue. Other grounds are compliant, and both grounds and figures can take on a wide range of psychologically inflected meanings: irritating, intimate, weak, confused, exacting, tight, flimsy, fraught, or restrained. Even the logical structures can be rewritten in psychological terms, and we could speak of figure–ground relations that are conflicting, opposed, paradoxical, or balanced.

The logical and the psychological are two modes, and I would name a third to round out the list of general possibilities: it is also possible to emphasize the changing nature of the figure–ground relationship, as Aristotle did, rather than describing only its static configurations. In most graphic art, change is implicit, but it can be a primary effect in any image. Emphasizing *process* leads to several common possibilities: figures might fragment and scatter through grounds, or grounds might envelop and suffocate figures, or figures and grounds might interpenetrate until they mix to create a new composite ground. For the most part these questions are being investigated in psychology, where experiments are made on after–effects, "repetition blindness," and subjective motion.[43] Like most psychology experiments, they depend on simple stimuli; in one model of apparent motion, subjects looked at annulus with radial bars of black and white bars:
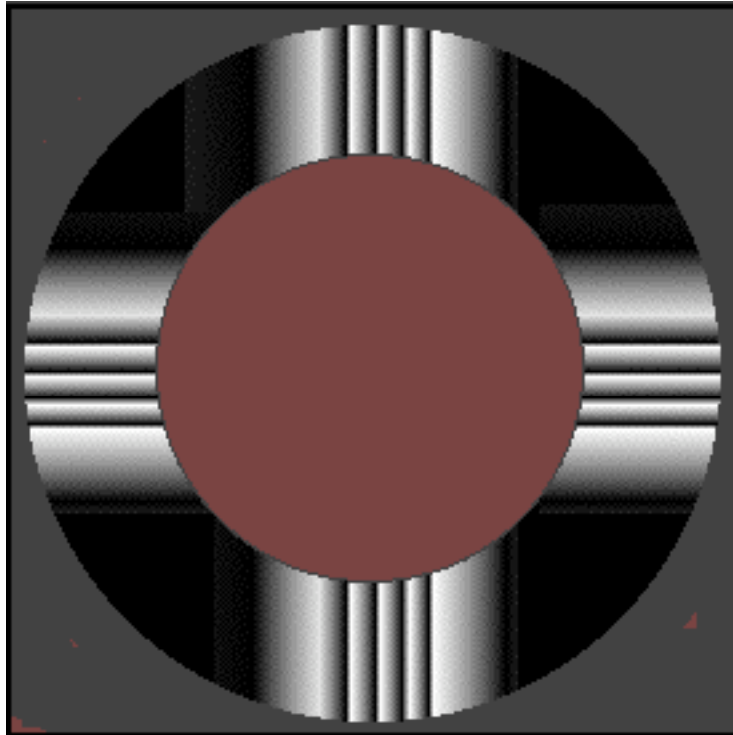
As differently patterned annuli flashed on screen, the subjects reported the directions in which the annuli appeared to rotate.[44] The experiment is part of a tendency to abandon more elaborate earlier hypotheses about subjective motion in favor of models of neural processing that depend on much less information: instead of claiming we see motion by identifying shapes or texture areas that remain constant (as if, for example, we would conclude a car is moving by seeing its shape in two different places), the newer research looks at "spatial frequencies" of areas with indeterminate shape.[45] Neural net models promise even greater quantitative precision, and they often stand even more remote from intuitions of vision.[46] From the standpoint of the history or production of art, the limitation of this and similar experiments lies in the initial conditions of the experiment. Why use a circular annulus, instead of a line, or at least an ellipse? Why leave the center blank? Why use only bars, instead of a range of forms? Since the answers to these questions depend largely on the constraints of the model that is being tested, an artist or historian might want to say that what is being investigated is a much smaller subset of the problem of apparent motion than the papers may imply.[47] The history of pictures is replete with subjective

motion, but it usually takes place in a way that is both more intricate and *more specific* than the methods of experimental psychology. Let me illustrate that claim with two examples.

Figures can emerge from grounds, as in this Coclé bowl from Panama (figure 13).[48] In writing about a similar bowl, Mary Helms notes the way that the background color is allowed to come through the figure itself, creating "a certain visual ambiguity of subject with background." [49]That "interplay" is a dynamic feature, but it is only one aspect of the image, since the Coclé figures can seem to be *progressively* trapped in webs of lines that entangle both figure and ground. Helms says that "the active pattern… becomes a unified surface of curves, dots, and triangular elements surrounding the central figure." [50]In this example, what first appears to be a web *around* the figure slowly reveals itself as a network extending *from* the figure. First my eye follows the body in both directions, and finds its two heads. Then I see the four feet (two uselessly up in the air, the way that lizards sometimes rest), and the rows of hooked spines. The heads have curving crests with their own spikes, and there are curlicue hooks sprouting from two knees, from behind the smaller legs, and from the noses. Finally I can see that almost everything is part of the figure. The crests on the monster's heads are inscribed with barbed echoes that may seem to be unattached—but they only repeat the floating forms *inside* the figure's abdomens and heads. In the entire image there are only two forms that might be unconnected to the figure: the little rolling eyes on the rim, one above each head. Having seen all this—if I can hold it all in my mind at once—the bowl is *nothing but* figure. The creature has disentangled itself from its patterned habitat, twined and sprouted until it has engulfed the very idea of ceramic ground or surrounding air. Another archaeologist who has studied this material notes that the Coclé potters, especially in this late or "baroque" phase (c. 700 to 1100 AD), had an active "dislike of empty space," and they would sometimes create irrational assemblages—"a third foot or an additional arm"—just to fill the remaining area.[51] In these terms, I would say this is less a classic instance of *horror vacui* than it is a desire to see a figure imperceptibly, or even suddenly, appear from— or within—a meaningless ground.

And if the figure–ground relation can be described as the gradual engulfing of ground by figure, then it can also happen the other way around. This Chinese bronze vessel is an example of an extremely complex tradition that spans over two thousand years of continuous activity (figure 14).[52] The majority of the vessels have some variant of an animal form known as a *taotie*, an imaginary composite formed from thoughts of tigers, buffaloes, birds, snakes, and dragons. In some cases the *taotie* is in full relief, with rounded shoulders, curling horns, and a full body with a tail. In others it is simply a bird, or a lizard–like creature. But in many instances the *taotie* is locked into its decorative frame and merged with its register lines, so that it is not secure as a figure. In this Shang Dynasty kettle, the creature is reduced to curious eyes, a pointed nose, curled ears, though the swirling meanders also preserve remnants of its horn and grinning mouth. The *taotie* can occur in several forms on a single vessel: there are more snakelike *taoties* on the neck of this vessel, two on each side facing an unusual frontal mask. The lid is a coiled snake, and the legs have abstract cicada motifs. To a viewer who knows the anatomy of *taoties*, the bodies of the large *taoties* emerge here as they might in the Coclé bowl; but there are other cases where the linear stylization has gone so far—or, since the development occurs in both directions, where the body has not yet emerged in strong relief—that there seems to be almost no figure at all. A wine vessel, also from the Shang Dynasty, illustrates how an entire mythological figure can be reduced to a button-like eye and a forest of meanders (figure 15). In this instance there are echoes of a horn, and four rows of teeth beneath the grinning mouth, but this figure is on the point of extinction. "Thunder pattern" meanders, as they are called in Chinese art, tend to burrow into the figures, collapsing them into flat fields. The bovine head on the lid is undergoing that process, as its body flattens into a curled leaf–shape scored with thunder patterns (at least one reforms into a small animal), and its shy or attentive expression makes an appropriate contrast with the entirely disembodied, and therefore more mysterious *taotie* lurking below. This is what the psychologist Arcangelo Galli describes as a figure "losing itself in the ground," so that its very "thingness" is threatened. "Il fondo la assorba," he writes—"the ground absorbs it." [53]And is it too extravagant to imagine that the *taotie* might also "absorb" the calf, as if the calf were

watching an eye moving silently behind a dense thicket? In crepuscular light—the half–light that Galli studied—the figure slips away, until there is nothing but the uneven background with its nascent figures.

These are the kinds of phenomena that both art historians and psychologists might study more closely. Both of them depend on highly specific sets of patterns and textures; neither the Coclé figure nor the *taotie* would work the way they do without *all* their associated forms. At the least, art historical examples would provide psychologists with new ideas about mechanisms of apparent motion, and ultimately they might help both art criticism and psychology to recover their conceptual roots in the Aristotelian concepts of change, matter, and form. Are the questions raised by figure / ground interaction in the Coclé or Shang examples best understood as composites of simpler mechanisms of vision? And conversely, what are the limitations of the theoretical models that have compelled researchers to abandon higher–level models of motion identification in favor of more elementary questions of orientation, "textons," or spatial frequencies? When and why does it become unhelpful to break well–defined historical and artistic practices, which depend on specific arrangements of forms, into elementary moments in the processing of images? Those are the kinds of questions that might be addressed by an inventory and concordance of figure / ground criteria in the two fields.

WHAT IS THE SIMPLE FIGURE / GROUND?

These three conversations within the multidisciplinary discourse on figure and ground (that is, formal and structural anaysis, psychological interpretation, and studies of process) are only one way of ordering this material. The figure / ground question is still scattered, and though I would suggest that writers in various fields make the attempt to find links between disciplines in order to avoid working with diminished versions of the problem, the very diversity of approaches goes to show how unsuitable the figure / ground relation is as a "simple" element of pictures. As I suggested at the beginning of the chapter, these accounts only become

commensurable at the highest levels of generality, where "figure" and "ground" are nothing less than the basic constituents of meaning itself, or the names for sites of attention and inattention. The second thesis, that the figure / ground discourse tends to weaken as it leaves the laboratory (or the library) and encounters actual images, is the best reason to be skeptical of accounts that depend too much on the dichotomy as a founding principle. In that spirit I want to end with one final example of a dauntingly complex figure / ground assemblage.

What are we to make, I wonder, of the astonishing images of the nameless goddess from Teotihuacan, Mexico (figure 16)? Some of the elements of her body—the feminine sex is inferred partly from the "skirtlike platform" on which it apparently rests—are known from related images. There are two three-fingered hands, fitted with jaguar claws and jade rings, and embellished with feather cuffs; there is a headdress with yellow and red triangles and a feather border; and there is a mouth, floating in a red ground. The "scrolls" that issue from the mouth are sounds, or utterances, like the balloons in Western comics, but the culture of Teotihuacan had no developed writing and the flowers in the scrolls may be ideographs, or naturalistic images representing springtime or fertility. In addition the scrolls might be her breath itself, since they curl like smoke or steam, and water lilies drip from her mouth and from the scrolls at either side. The ambiguity is captured in the two names archaeologists use for the scrolls—speech scrolls and water scrolls.

Esther Pasztory, who has made the closest studies of the murals of Teotihuacan, says the goddess "has no eyes or even a clear face," and so even though this is clearly a frontal figure, it is "represented in the form of a diagram, and not as a naturalistic image." [54]And how naturalistic could she be when her speech might be water? Yet there are gestures in the direction of the kinds of naturalism that occur elsewhere in Teotihuacan: the hands continue into red and blue bands that arch over the mouth, as if a body were seen from above or below; and the mouth with its deep red surround and flanking water lilies suggests a red face with blue eyes. But the closer we look, the more those clues are rescinded, and the body wavers undecidably between three options: either it is a pattern or a "diagram," stamped on a red page, with no thickness or depth;

or it is a squat figure with a red face; or it is a tunneling and circling ambiguity, with a hovering mouth, arms that recede into strips, and scrolls that pour outward and then recede.

The other surviving examples of this image show that the form was closely copied, so that it may have been regarded more as a "diagram" or a single large linguistic sign than a figure —but in Mesoamerica, symbols or "diagrams" could also be naturalistic, and so we may be dealing with a symbol that can also be read as a figure.[55] In another essay Pasztory calls the image a "glyphic emblem," since it is not part of a glyphic writing system, but could signify in a looser fashion.[56] All these possibilities—those forced upon us by our lack of knowledge about the culture, and those intrinsic to the image—combine to make it impossible to say what the figure–ground relation might be. The face is spectral: at one moment it is there, red and oblong, with starry eyes and leafy eyebrows, and then it vanishes, replaced by a sign and a red ground. Since the red of the background is also the red of the "face," the red of the intervals between the pleats of the skirt, and the red of the triangles in the headdress, the entire figure can seem to be stenciled onto an opaque surface. But from what we know about the fascination with caves both in Teotihuacan and as far back as the Olmec (who represented gods seated in the mouths of caves, breathing moisture into the sky), this mouth might be the only visible portion of a truly frightening creature—and in that case, the hands would be like the apparitions of a nightmare, suddenly coalescing out of the rock, so that the cave itself, like a chrysalis, molts into the body of the goddess. Figure would be that–which–becomes–ground, and vice versa: a suitably paradoxical, and non–Aristotelian, moment on which to end.

In each of these first chapters I have tried to argue that what appear to be the irreducible, simple, self–evident, transparent, necessary, systematic elements of pictures are really among their least understood aspects. In effect the stable of terms that have accumulated in these chapters amounts to a demonstration that pictures are incoherent *ab ovo*, from the outset of perception and from the first moments when they seem to generate meaning. They only gradually

reform themselves into the shapes of historical interpretation and semiotic structure by appealing to our desire for meaning and our aversion to blatant meaninglessness.

If graphic marks are undecidably meaningless and meaningful, unstructured and linguistic, potentially systematic and repeatedly self–defeating, "shimmering" on the verge of incoherence even in the simplest naturalistic pictures, then it is difficult to see how they can be counted among the rudiments of pictures. Instead they seem like treacherous places to begin learning about images. Although my emphasis has not been pedagogy, it is worth saying that curricular terms it begins to make less sense to train beginning art students in naturalistic depiction or to work on their acuity in regard to shapes, textures, compositions, and other concepts, since those concepts depend in turn on unstable and poorly understood terms such as mark, trace, contour, light, and shade. On the other hand, it is necessary to take seriously the depth of our commitment to the notion of rudiments, and to acknowledge our inability to conceive marks or colors or highlights as anything other than the building blocks of pictorial sense. Without irreducible graphic foundations, there might not be much left of our concept of a picture. So I would not claim that the forms I have been decribing are parts of a version of pictures that has no foundations or depends somehow on a shifting community of signs, non–signs and nonsense. The most vigilant response to pictures would acknowledge the fictional nature of pictorial elements at the same time as it would use them to build accounts of pictures: yet another, and perhaps the deepest source of analytic difficulty for any interpretation.

This is as far as I know how to take this critique of foundations, but it is not the only way to explore pictorial incoherence. In the second Part of this book I consider how the entire notion of the picture can be weakened and scattered by attending to prehistoric and nonwestern images.

Notes

[1] *Aristotle's* Physics, *Books I and II,* translated by W. Charlton (Oxford: Clarendon Press, 1970), 70. Further references will be in the text.

[2] The best account of the *Metaphysics* is Mary Louise Gill, *Aristotle on Substance, The Paradox of Unity* (Princeton: Princeton University Press, 1989).

[3] Irigaray, "Interval/Place," in *Ethics of Sexual Difference* ( ). I thank Peg Birmingham for drawing my attention to the Irigaray and emphasizing Heidegger's dependence on Aristotle; the characterization of *What is a Thing?* is my own.

[4] (Stockholm: Fallmarks Moktryckeri, 1968). Further references will be in the text.

[5] Rubin, *Visuell wahrgenommene Figuren, Studien in Psychologischer Analyse* (Copenhagen: Gyldendal, 1921), translation of *Synsoplevede Figurer, Studier i Psykologisk Analyse* (1915).

[6] Rudolf Arnheim, *Art and Visual Perception, A Psychology of the Creative Eye, The New Version* (Berkeley: University of California Press, 1974), 228.

[7] Derrida, *The Truth in Painting,* translated by G. Bennington (Chicago: University of Chicago Press, 1987).

[8] Metelli, "Oggettualità, stratificazione e risalto nell'organizzazione percettiva di figura e sfondo," *Archivio neurologie psichiatria a psicoterapia* 2 (1941): 831–41, discussed in Bouman, *op. cit.,* 192.

[9] Heinz Werner, "Thought Disturbance with Reference to Figure–Background Impairment in Brain–Injured Children," *Confinia neurologica* 1949: 255–63, and see also Werner, "The Figure–Ground Syndrome in the Brain–Injured Child," *International Rec. Med.* 169 (1956): 362–67; Walter Ehrenstein, *Probeme derGanzheitspsychologischen Wahrnehmungslehre* (Leipzig: Johann Ambrosius Barth, 1954), 282, and see also Ehrenstein, "Untersuchungen über Figur–Grund Fragen," *Zeitschrift für Psychologie* 1930: 339–412, and Ehrenstein, "The Region of the Visionfield Within which Arbitrary Reversion of Ambivalent Figure–Ground Patterns is Possible," *Journal of Experimental Psychology* 27 (1940): 699–702; and Kurt Goldstein, *Der Aufbau des Organismus, Einführung in die Biologie unter besonderen Berücksichtigung der Erfahrungen am kranken Menschen* (The Hague: Martinus Nijhoff, 1934), 74. The quotations are from Bouman, *op. cit.,* 52.

[10] W. Metzger, "Optische Untersuchungen am Ganzfeld. II. Zur Phanomenologie des homogenen Ganzfelds," *Psychologische Forschung* 13 (1930), 6–29, and J. E. Hochberg, W. Triebel, and G. Seaman, "Color Adaptation under Conditions of Homogeneous Visual Stimulation (Ganzfeld)," *Journal of Experimental Psychology* 41 (1951):153–59.

[11] MacLeod, "The Place of Phenomenological Analysis in Social Psychological Theory," in *Social Psychology at the Crossroads* (New York: Harper and Brothers, 1951), 215–41; the quotation is from 234–35, in Bouman, *op. cit.,* 229.

[12] Summers, "Real Metaphor," in Norman Bryson, Michael Ann Holly, and Kieth Moxey, editors, *Visual Theory* ( ).

[13] For other research on the pac–man figure and the related question of occluded objects, see Philip Kelman and Thomas Shipley, "Perceiving Objects Across Gaps in Space and Time," *Current Directions in Psychological Science* 1 (1992): 193–99; Kelman and Shipley, "A Theory of Visual Interpolation in Object Perception," *Cognitive Psychology* 23 (1991): 141–221, especially 144–145; and K. Nakayama and S. Shimojo, "Experiencing and Perceiving Visual Surfaces," *Science* 257 (1992):1357–1363, and Steven Yantis, "Perceived Continuity of Occluded Visual Objects," *Psychological Science,* forthcoming.

[14] *The Perception of Illusory Contours,* edited by Susan Petry and Glenn E. Meyer (Berlin: Springer–Verlag, 1987).

[15] Marr, *Vision* (New York: W. H. Freeman, 1982), 54. The term "zero–crossing" comes from the second derivative of the change in intensity across a segment of the visual field. The first derivative of the change produces a spike, and the peak of the spike becomes a "zero–crossing" (a line through the origin) in the second derivative. See also Marr and E. Hildreth, "Theory of Edge Detection," *Proceedings of the Royal Society of London* ser. B 207 (1980): 187–217.

[16] E. Husserl, *Erfahrung und Urteil* (Prague: Academia Verlagsbuchhandlung, 1939); J. J. Gibson, "The Ecological Approach to Visual Perception of Pictures," *Leonardo* 4 no. 2 (1978): 227–235.

[17] Francis Crick, *The Astonishing Hypothesis, The Scientific Search for the Soul* (New York: Charles Scribner's Sons, 1994), 56.

[18] I. Rock and S. Palmer, "The Legacy of Gestalt Psychology," *Scientific American* December 1990: 84–90.

[19] An example of controlled psychological experiments that make use of entire pictures is Helene Intraub's work on the phenomenon of "boundary extension," whereby viewers tend to remember more of the boundaries of a scene than they had actually been shown. Intraub's interpretation of the phenomenon has to do with the imagined distance from a "window" on the scene; I would suggest that art history could provide evidence that the changes are due to expectations of what pictures are like, and that the kinds of pictures could be found in the history of Western art. See for example Helene Intraub and Jennifer L. Bodamer, "Boundary Extension: Fundamental Aspect of Pictorial Representation or Encoding Artifact?" *Journal of Experimental Psychology: Learning, Memory, and Cognition* 19no. 6 (1993): 1387–1397.

[20] See Crick, *The Astonishing Hypothesis*, *op. cit.*, 62, and Bela Julesz, "Early Vision is Bottom–Up, Except for Focal Attention," *Cold Spring Harbor Symposia on Quantitative Biology, The Brain* 55 (1990): 973–78.

[21] Bela Julesz and J. R. Bergen, "Textons, The Fundamental Elements in Preattentive Vision and Perception of Textures," *The Bell System Technical Journal* 62 no. 6 (1983): 1619–45, especially 1641.

[22] For "local properties," see for example S. Ullman, "Three–Dimensional Object Recognition," *Cold Spring Harbor Symposia on Quantitative Biology, The Brain* 55 (1990): 889–898, especially 892.

[23] For concerted seeing, see Elkins, *The Object Stares Back*, *op. cit*.

[24] Charles de Tolnay, *History and Technique of Old Master Drawings, A Handbook* (New York: H. Bittner and Company, 1943), 28.

[25] For the *non finito* see me essay "On Modern Impatience," *Kritische Berichte* 3 (1991): 19–34.

[26] Quoted in Albert Boime, *The Academy and French Painting in the Nineteenth Century* (London: Phaidon, 1971), 84.

[27] Boime, *op. cit.,* 85–87, 89–91.

[28] David G. Karel, "The Teaching of Drawing at the French Royal Academy of Painting and Sculpture from 1760 to 1793," PhD dissertation, unpublished, 2 vols. (University of Chicago, 1974), vol. 1, pp. 184–90.

[29] See Chapter 8, and Eva Keuls, "Skiagraphia once Again," *American Journal of Archaeology* 79 (1975): 1-16; the reply by E. G. Pemberton in *ibid.,* 80 (1976): 82-84; and Wesley Trimpi, "The Early Metaphorical Uses of Skiagraphia and Skenographia," *Traditio* 34 (1978): 403-13.

[30] Aristotle, *Rhetoric* 1409–10; for *perspicuitas* and *antithesis* see Summers, "Contrapposto: Style and Meaning in Renaissance Art," *The Art Bulletin* 59 no. 3 (1977): 336–61, especially 347 and 359.

[31] Karel, "The Teaching of Drawing at the French Royal Academy," *op. cit.,* 209.

[32] Krauss, *The Optical Unconscious* (Cambridge, Mass.: MIT Press, 1993), 180. Further references will be in the text.

33 Although the entire text presumes knowledge of the primary sources, there is also one passage too elliptic to make sense at all (I would cite p. 19, paragraphs 4 and 5) and another that is self–contradictory as it is set out (189–90).

34 Elkins, *The Object Stares Back* (New York: Simon and Schuster, forthcoming).

35 There are several variations on the L schema, including an interesting anticipation of it in Bataille's analysis of Dalí's *Lugubrious Game* (161), and it reappears in fragmentary form whenever Krauss alludes to the Lacanian lexicon of screen or *objet a,* or the Freudian uncanny (165, 177).

36 I have tried to do something of the kind in *The Object Stares Back, op. cit.* See also Alphonso Lingis, "The Visible and the Vision," *Journal of the British Society for PHenomenology* 15 no. 2 (1984): 155–63, for an example of the difficulty of finding suitable examples. (The" view upon Arles from above," *ibid.,* p. 157, is simply wrong: Lingis is describing the view *from* the subject's vantage, not the trees and other objects as if they were doing the viewing.)

37 Lyotard, *Discours, figure* (Paris: Klinksieck, 1971), 327–54.

38 Boothby, *Death and Desire, Psychoanalytic Theory in Lacan's Return to Freud* (New York: Routledge, 1991), 22.

39 Borch–Jacobsen, *Lacan, The Absolute Master,* translated by Douglas Brick (Stanford: Stanford University Press, 1991), chapter 2.

40 M. P. Stryker, "Summary: The Brain in 1990," in *Cold Spring Harbor Symposia on Quantitative Biology, The Brain* 55 (1990): 1066, responding to F. Crick and C. Koch, "Some Reflections on Visual Awareness," *Ibid.,* 953–62.

41 This kind of classification—principally by preposition, as in figure *on, under, as,* and *in* ground —is pursued in a work in progress, *Concept of Art.*

42 Deleuze, *Francis Bacon, Logique de la sensation.* La Vue le Texte, vol. 1. (Paris: Editions de la Différence, 1981), 2 vols. The argument is discussed in my *Pictures of the Body, Pain and Metamorphosis,* unpublished MS (1994).

[43] In the recent literature see for example Jooyong Park and Nancy Kanwisher, "Determinants of Repetition Blindness," *Journal of Experimental Psychology* 20 no. 3 (1994): 500–19. This and the next references were read in a seminar led by Howard Egeth, Michael Rudd, and Steve Yantis, and I thank them for introducing me to the material.

[44] Peter Werkhoven *et al.*, "The Dimensionality of Texture–Defined Motion: A Single Channel Theory," *Vision Research* 33 no. 4 (1993): 463–85.

[45] It is important to note that there Mary Peterson has proposed a figure–ground model that is the opposite of this tendency: in her model—to take the title of one of her papers, "object recognition processes can and do operate before figure–ground organization." See Mary Peterson, E. H. Harvey, and H. L. Weidenbacher, "Shape Recognition Inputs to Figure–Ground Organization: Which Route Counts?" *Journal of Experimental Psychology: Human Perception and Performance* 17 (1991): 1075–1089, and Mary Peterson, "Object Recognition Processes Can and Do Operate Before Figure–Ground Organization," *Current Directions in Psychological Science* 3 no. 4 (1994): 105–111. See further Stephen Palmer and Irvin Rock, "On the Nature and Order of Organizational Processing: A Reply to Peterson," *Psychonomic Bulletin and Review* 1 no. 4 (1994): 515–519, which concludes an exchange that began with Stephen Palmer and Irvin Rock, "Rethinking Perceptual Organization: The Role of Uniform Conectedness," *Psychonomic Bulletin and Review* 1 no. 1 (1994): 29–55.

[46] See for example Stephen Grossberg, "A Neural Network Architecture for figure–Ground Separation of Connected Scenic Figures," *Neural Networks* 4 no. 6 (1991): 732–42.

[47] For a general model see Edward Abelson and James Bergen, "Spatiotemporal Energy Models for the Perception of Motion," *Journal of the Optical Society of America* 2no. 2 (1985): 284–99, and the neurological model in J. McLean *et al.*, "Contribution of Linear Mechanisms to the Specification of Local Motion by Simple Cells in Areas 17 and 18 of the Cat," *Visual Neuroscience* 11 (1994): 271–94.

48 For the Coclé culture, see Samuel Kirkland Lothrop, *Coclé, An Archaeological Study of Central Panama* (New York: Kraus Reprint Co.., 1970); Peter Briggs, *Art, Death, and Social Order: the Mortuary Arts of Pre–Conquest Panama* (Oxford: B. A. R., 1989); and *El Cano, Comunidad y Cultura* (Panama: Editorial Mariano Arosemena del Instituto Nacional de Cultura, 1993).

49 Mary W. Helms, "Cosmovision of the Chiefdoms of the Isthmus of Panama," in *The Ancient Americas, Art from Sacred Landscapes,* edited by Richard Townsend (Chicago: Art Institute of Chicago, 1992), 217–27, especially p. 224.

50 *Ibid.,* p. 226.

51 Olga F. Linares de Sapir, *Ecology and the Arts in Ancient Panama, On the Development of Social Rank and Symbolism in the Central Provinces*. Studies in Pre–Columbian Art and Archaeology, no. 17 (Washington, D.C.: Dumbarton Oaks, 1977), 54, 58.

52 See my "Remarks on the Western Art Historical Study of Chinese Bronzes, 1935-1980," *Oriental Art* 33 (1987): 250-60.

53 Arcangelo Galli, "Percezione totalizzatrice della forma attraverso alla fovea centrale nella luce crepuscolare," *Contributi del laboratorio di psicologia* ser. 7 (Milan: Società Editrice «Vita e Pensiero», 1935), 1–27, discussed in Bouman, *Figure–Ground Phenomenon, op. cit.,* 189.

54 *Teotihuacan, Art from the City of the Gods,* edited by Kathleen Berrin and Esther Pasztory (San Francisco: Thames and Hudson, 1993), 195.

55 In addition to the example illustrated in Pasztory, *op. cit.,* see the painting in the Museum für Volkerkunde, Berlin, illustrated and discussed for example in Pasztory, *Teotihuacan: An Experiment in Living* (Norman, OK: University of Oklahoma Press, 1997), 214. *Feathered Serpents and Flowering Trees, Reconstructing the Murals of Teotihuacan,* edited by Kathleen Berrin (Hong Kong: The Fine Arts Museums of San Francisco, 1988), p. 72. For naturalistic figures that are also linguistic signs, see my essay "The Question of the Body in Mesoamerican Art," *Res* 26 (1994): 113–24.

[56] Pasztory, "The Natural World as Civic Metaphor at Teotihuacan," in *The Ancient Americas, Art from Sacred Landscapes,* edited by Richard Townsend (Chicago: Art Institute of Chicago, 1992), 143.