tion by the viewing gaze, style is something dense, non-flammable, inert. Ontogenetically, the individual painter is unable to subdue the inclinations and habits of creatural clay; phylogenetically, a generation of painters is unable to see and to overcome the dead weight of inherited formulae.

5. *The model of communication.* The content of the image is alleged to antedate its physical exteriorisation. The present case is posited as the echo or repetition, more or less distorted, of a prior instance for whose existence, nevertheless, there is no evidence; or rather, the present instance is itself viewed evidentially, as product and proof of an earlier and more perfect incarnation. The location of the earlier image is a mental space within the psyche of the painter. The present image does what it can to transport intact the event within that space into the corresponding mental space in the consciousness of the viewer. A physical entity – the material image – is required if the interchange between non-physical mental spaces is to take place: yet in so far as the material image interposes its own physicality between the communicating fields, it constitutes an impediment to their union. Success can occur only when the image manages to minimise or to conceal its independent material existence.

My aim in this book is the analysis of painting from a perspective very much opposed to that of the Natural Attitude, a perspective that is, or attempts to be, fully materialist. Where it falls short of that aim, on its own terms it fails, and the degree of its failure is for the reader to judge. The topics on which the book touches could be discussed at far greater length, and in choosing to limit discussion to its present brevity, I hope I am not subjecting my reader to undue strain. In reading the text, he or she may well sense a difficulty of topology or affiliation which I myself have been unable to resolve. Where the discussion stands in relation to the work of Gombrich, Wittgenstein, and Saussure, is clear, at least to me. Where it stands in relation to the work of N. Y. Marr and V. N. Vološinov, and to the Soviet materialist tradition in general, is harder to estimate. The intellectual quality I find most to admire in materialist thinking is its firm grasp of a tangible world. My approach to the subject is historical, and it is materialist; yet my argument finds itself in the end in conflict with Historical Materialism. Throughout the writing of this book, I have felt the difficulty of mapping the political implications of its intellectual position on any right-to-left spectrum. It is quite possible that all I understand by 'materialism' is clear-sightedness.

*Chapter Two*

# *The Essential Copy*

Perhaps the most powerful arguments against the Natural Attitude have come from the sociology of knowledge. The doctrine of technical progress towards an Essential Copy proposes that at a utopian extreme the image will transcend the limitations imposed by history, and will reproduce in perfect form the reality of the natural world: history is the condition from which it seeks escape. Against this utopia the sociology of knowledge argues that such an escape is impossible, since the reality experienced by human beings is always historically produced: there is no transcendent and naturally given Reality. The implication of this general proposition of most concern to the image is that the natural attitude is mistaken in thinking of the image as ideally self-effacing in the re-presentation of things: the image must be understood instead as the milieu of the articulation of the reality known by a given visual community. The term 'realism' cannot therefore refer to an absolute conception of 'the real', because that conception cannot account for the historical and changing character of 'the real' within different periods and cultures. The validity of the term needs to be made relative, and it is more accurate to say that 'realism' lies rather in a coincidence between a representation and that which a particular society proposes and assumes as its reality; a reality involving the complex formation of codes of behaviour, law, psychology, social manners, dress, gesture, posture – all those practical norms which govern the stance of human beings toward their particular historical environment. It is in relation to this socially determined body of codes, and not in relation to an immutable 'universal visual experience', that the realism of an image should be understood.

This second and more subtle description of realism, which begins to emerge once the anti-historicism of the natural attitude is called into question, touches on a phenomenon familiar to social anthropology. For example, in their work *The Social Construction of Reality*, Peter Berger and

Thomas Luckmann comment extensively on the drive inherent in all societies to 'naturalise' the reality they have constructed and to transform a world produced by a specific socio-historical activity, into a World given from the beginning, a Creation, natural and unchanging. While 'social order is not part of the nature of things and . . . cannot be derived from the "laws of nature", social order being only a product of human activity', nevertheless the social world is typically and habitually experienced by its inhabitants 'in the sense of a comprehensive and given reality confronting the individual in a manner analogous to the natural world'.[1] In connection with the image, realism may be defined as the expression of the idea of the *vraisemblable* which any society chooses as the vehicle through which to express its existence to itself in visual form.[2] Clearly the historically determined nature of that *vraisemblable* must be concealed if the image is to be accepted as a reflection of a pre-existing real: its success lies in the degree to which the specificity of its historical location remains hidden; which is to say that the success of the image in naturalising the visual beliefs of a given community depends on the degree to which the image remains unknown as an *independent* form.

Naturalisation is not, then, the goal of the image alone: it is a generalised process affecting the whole social formation and influencing all of its activities, including among many others the production of images. Culture produces around itself a 'habitus' which though discontinuous with the natural world, merges into it as an order whose join with Nature is nowhere visible.[3] If the context of animal species is the habitat, the habitus of the human species consists not only of the physical environment, but of a whole assemblage of maxims, morals, proverbial lore, values, beliefs, and myths which will ensure for the members of a given social formation the coherence of their experience, and will secure for them the permanent reproduction of the regularities of their cultural process.[4] The habitus may involve explicit cultural knowledge, such as codes of justice or articles of faith, as well as the patently enculturated domain of art, where this is socially institutionalised; it may equally involve implicit cultural knowledge that exists nowhere in codified form, but remains at a tacit level. Either way, the internal absorption of such knowledge becomes, through habituation, the natural attitude of the human agent towards his surrounding world.

This argument for cultural relativity might at first seem to overturn the confident refusal, within the natural attitude, of the dimension of history. Essential to the work of naturalisation and of the habitus is the mobility of



the place at which the 'join' between cultural and natural worlds lies hidden, as a kind of blind spot or blank stain within social consciousness: travelling through time and across the shifting cultural spaces, its invisible accompaniment and participation is vital to the process of cultural reproduction. Its migratory existence might never be known if it were not for the traces it leaves behind: the outline, in ochre and black, found in a cave; the painted canvases of the West. It is within this blind spot of culture's vision that the image is fashioned, and in the strangeness of the traces left behind by the natural attitude, the relativity of experience within differing social formations stands out in stark relief: no single Essential Copy can ever be made, for each strange trace left behind by the habitus was, relative to its social formation, itself an Essential Copy already. And a sense of the impossibility of a final Essential Copy would seem to bring about, as an immediate consequence, an end to the doctrine of progress that dominates the traditional account of painting from Pliny to Francastel.

Yet the concession made to historical *relativity* does not substantially alter the traditional account: it merely forces the account into epicycles from which it emerges with rather greater sophistication and force. Insistence on the fluctuating character of the social construction of reality by itself leads readily to a position in which the stylistic variety of the image through history is attributed to the variability of the real, leaving no room for variation in the 'technical' means whereby the changing nature of the real is 'registered'; leaving no room, in fact, for a history of art, but only of society. The problem is this: critical analysis of the natural attitude, whether conducted by way of the sociology of Berger and Luckmann or the anthropology of Mauss, still leaves open the utopian option of the Essential Copy, since within each fluctuating phase of the social formation, an image is capable of being fabricated that will correspond exactly, if things go well, to the collective beliefs of its members, equally, the obstacles whose gradual conquest is chronicled in the traditional account may, if things go badly, prevent the fabrication of such an image: the intransigence of the medium, the inadequacy of technique, the detritus of inherited formulae, and the rest, are free to reappear. All that 'relativisation' of the real accomplishes, as a concept operating in isolation, is a reduction in the scale of the ancient Plinian fable: the Essential Copy may no longer exist at the end of the historical rainbow, but instead of disappearing it on the contrary multiplies, as a possibility open to each stage of social evolution. Even within a relativised cultural history, a Giotto may still outstrip a Cimabue.

What is required, if the doctrine of progress towards the Essential Copy is to be successfully overcome, is something much more subtle than an all-encompassing sociology, for besides the history of the montage of notions, behavioural norms, myths, values and beliefs from which a society constructs its particular reality, another history must be supplied, which is that of painting as a *material practice*. It is obviously absurd to suppose that a social agent, however fully enculturated by the codes of his community, and supplied with brush and pigments, will be able to produce, from scratch, a fully fledged image adequate to the society's standards of accomplishment. Besides the codes of the real, there are codes specific to the material signifying practice of painting; codes which cannot be mastered, so to speak, simply by inhaling the atmosphere of a given culture. To approach the image from the sociology or anthropology of *knowledge* is to risk ignoring the image as the product of *technique*. If the concrete nature of technique is overlooked, analysis of the image falls into immediate simplification: only its semantic or iconological side is noted, and then linked to a corresponding structure of knowledge within the habitus. For example, a local change at the level of content, let us say a change in the representation of poverty, is linked directly to a fluctuation in the economic base. Yet even if we admit the model of base and superstructure, nonetheless between changes in the economic sphere and change in the representation of poverty there stretches a long, long road that crosses many separate domains.[5] In the case of painting, there exists the vast corpus of technical problems and their solutions, of studio practices, of prescriptions, models, familiar and unfamiliar formats, long-discovered pitfalls, together with the means to avoid them; a whole tradition of previous courses taken and of options not fully explored, of systems of perspective, modelling, shading, composition, colour; in sum, everything the apprentice must learn in the atelier. While this corpus of skills within the domain of painting stands in decisive relation to the ideological, political, and economic domains within the social formation, it is in no sense derivable from them directly. As the painter takes up his position before the canvas and begins his work, there is an encounter between this complex of practical knowledge and the new situation; under the pressure of the novel demands of the encounter, the complex itself is modified, and its tradition extended.

Here the situation of painting contrasts strongly with that of language. The word possesses a social ubiquity which the image entirely lacks: indeed, whereas a society that banned the use of imagery could continue



functioning, a society that banned the word would instantly grind to a halt.[6] The word is involved in every social domain and in every contact between people: present in every labour process, in every political exchange, in the home, in the school, the word responds instantly to each change in its surrounding world. For this reason it acts as a supremely sensitive index of change within the social formation: painting must filter social change through the elaborate density of its technical practices. While painting may indeed perform important functions in the naturalisation of events and beliefs at work in the social formation, an adequate account of painting cannot reduce its object to those functions alone, or assume that in the enumeration of the ways in which painting confirms and supports the work of the habitus its description will be exhausted. In the Plinian account, the unchanging nature of the real established and highlighted variation within painting as the result either of shifting emphases on and selections from different segments of the real, or of the autonomous work of painting practice. Historical relativisation of the real renders such ascription uncertain, and from one point of view that is its advantage; yet unless combined with further analytic concepts, it risks crudifying the account, in which variation in painting practice is attributed directly to the fluctuation of collective experience.

The theory of the image produced by cultural 'relativisation' is focused too much on undemonstrable social experience to possess objective criteria that will determine the *degree* of naturalisation, or indeed establish with certainty that naturalisation is actually occurring. It has no means of testing whether the image in fact represents that which the theory of naturalisation claims it does, a *view* of the habitus from the inside: to prove that, it would first have to demonstrate the 'view' in abstraction from the image, in order to claim identity (or non-identity) between naturalised 'view' and image. Yet the image is the only evidence for that view which can be adduced; the image cannot, then, be accorded the status of reflector to a 'view' allegedly prior to this reflection, and accurately or inaccurately repeated within it (yet undemonstrable outside it). The contradiction here puts the whole concept of naturalisation in jeopardy. The methodological limitations are extreme: there is no way to discriminate between what might indeed be a perfect registration of the view of the habitus 'from inside', and an imperfect registration, or to distinguish either of these from parody, or hallucination. The practical consequences of this debilitated theory can make for some grim reading. At worst, there is reversion to an untenable sociology of art where events within the social formation in one column are

'read off' against their corresponding artistic consequences in another. Those familiar with the depressing stultifications of this approach will not need to be reminded of the names of its adherents and practitioners.

Despite its promise, historical relativisation does not, therefore, dislodge the Essential Copy or significantly modify the doctrine of artistic progress towards it. The stronger challenge to the Essential Copy comes in fact from another direction: its most complete expression is found in the work of Sir Ernst Gombrich. Gombrich's view of representation marks a major break with the anti-historicism of the natural attitude. Indeed, the centrality of the problem of historical change within representational art is asserted on the first page of *Art and Illusion*.

> Why is it that different ages and different nations have represented the visible world in such different ways? Will the paintings we accept as true to life look as unconvincing to future generations as Egyptian paintings look to us? Is everything concerned with art entirely subjective . . . ?[7]

The renunciation of the Essential Copy, or rather the claim to such renunciation, is explicit in Gombrich in a way it is not in the aesthetics of the image derived from the sociology and anthropology of knowledge. Its disappearance is brought about from another direction altogether: from the philosophy of science, and in particular through the application by Gombrich of certain aspects of the theory of scientific discovery developed by Sir Karl Popper. The connection between Gombrich and Popper merits the closest attention. Rarely – perhaps not since the alliance between LeBrun and Descartes – have artistic and scientific theorisation followed in such close formation and conformation as here. To understand exactly why in Gombrich the Essential Copy is precluded, or seems to be precluded, there is no better place to begin than with Popper's arguments concerning the status and validity of scientific propositions. 'I should be proud if Professor Popper's influence were to be felt everywhere in this book . . . .'[8]

The aspect of Popper's work of most direct interest to Gombrich concerns his contribution towards a solution of the problems raised for scientific method by the principle of *induction*. Induction's general features can be sketched roughly as follows. The scientist carries out controlled experiments that yield precisely measurable observations: he records his findings and in due course builds up a corpus of exact and reliable data. As the corpus grows, certain recurrences within the data begin to appear, certain regularities within the body of information, which the scientist then abstracts from the data and restates as propositions of a general nature. The inductively derived proposition is based, that is, on the accumulated data arising from observation of specific instances. Science is the name given to the overall structure of such propositions: its development consists in the addition of new propositions of a general and lawlike character to the existing stock of propositional knowledge.



This classical doctrine of induction has long been open to objection.[9] No matter how large the number of observed instances, mere observation does not entail that the proposition derived from the data observation yields will be generally true. Even when it is the case that in every recorded instance, event $y$ has always followed another event $x$, observation does not guarantee that in any future case the same sequence will occur: observation has no bearing on prediction. Of course, when in the experience of all men it is found that $y$ invariably follows $x$, there will be *expectation* that the sequence will continue to recur in the same way. Yet that is a fact of human psychology and not of logic. The principle of induction is incapable of being inferred here either from experience or from logical procedure. Although it may seem psychologically true that the degree of probable truth is raised by each confirming instance, especially in those situations where $y$ has followed $x$ through innumerable confirming instances without a single counter-example having ever been found, nevertheless the accumulation of confirming instances cannot prove the truth of a general proposition; nor does such accumulation logically, as opposed to psychologically, increase the probability that the proposition is true.

In the challenge raised against the principle of induction it is the whole status of scientific knowledge that is at stake. In the words of Bertrand Russell, 'If this one principle is admitted, everything else can proceed in accordance with the theory that all our knowledge is based on experience.'[10] Popper's answer to the Humeian challenge begins by drawing a crucial distinction between *verification* and *falsification*. While no number of observations of white swans enables the derivation of the universal statement that 'all swans are white', one single observation of a black swan is sufficient to produce the derived and universally valid statement that 'not all swans are white'. Empirical statements, in other words, may never be verified so as to yield propositions of a lawlike character; but such proposi-

tions *can* be derived if the path followed is that, not of verification, but of falsification.[11] Scientific propositions based upon empirical observation do not possess the status of universal laws, as induction had maintained, and the accumulation of such propositions will never yield a final or certain blueprint of the physical world. Their status must be seen instead, according to Popper, as that of hypotheses, testable in spite of being unprovable. The process of testing through systematic attempts at refutation therefore constitutes the central activity of science. The propositions will never produce a perfect map or model of the universe and can never transcend their provisional status; but this should not deter science from continually producing provisional statements about the universe, or from building on the solid foundation of the falsifiable hypothesis.

Step by step, the Popperian arguments are transported by Gombrich from science to art. To the classical view of induction corresponds the Plinian account of faithful representation. Just as the inductive scientist starts with observation and the recording of data, so the inductive painter starts with observation and simply records his findings on canvas. According to inductive principle, scientific laws are the secondary result of accumulated information: the primary encounter is between the innocent, untheorising eye of the scientist and the surfaces of the physical world, an encounter that takes place without mediation, and above all without the mediation of the hypothesis. Similarly the theorisation of painting in terms of the natural attitude posits the innocent eye of the painter in unmediated encounter with the surfaces of a luminous world it must record and register; nothing intervenes between the retina and the brush.

To Popper's rejection of induction and to his advocacy of the provisional hypothesis corresponds Gombrich's insistence on the *schema* as the painter's prime transcriptive instrument. Hypothesis and schema stand here in exact alignment. In *Objective Knowledge*, Popper characterises the work of the scientist as a continuous cycle of experimental testing. First there is the initial problem ($P^1$) that science is to explore. A Trial Solution (TS) is proposed, as the hypothesis most appropriate to the problem and most likely to lead to its solution. An experimental situation is devised in which the strengths and weaknesses of the hypothesis can be submitted to falsification: let us call this the stage of error elimination (EE). The resulting situation reveals new problems ($P^2$) whose existence or importance were not apparent at the commencement of the process.[12]

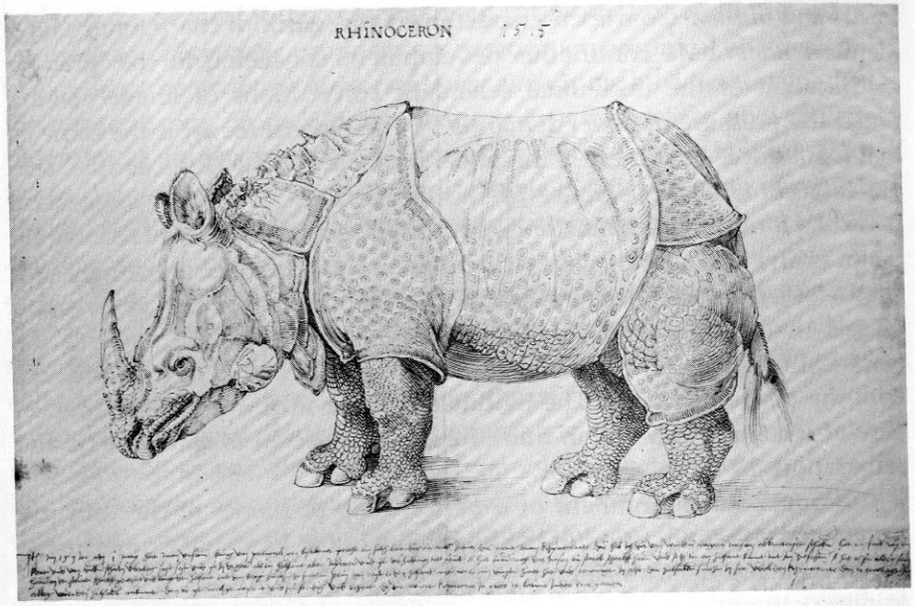
$$P^1 \rightarrow TS \rightarrow EE \rightarrow P^2$$



In *Art and Illusion* Gombrich characterises the work of the painter along identical lines: as a continuous development consisting in the 'gradual modification of the traditional schematic conventions of image-making under the pressure of novel demands'.[13] The pattern for art is the same as that for science. First there is the initial problem: Giotto, for example, sets out to record the appearance of the human face. Tradition suggests a particular formula or schema for its transcription on to canvas: let us imagine that it is an early Giotto, where the influence of Cimabue is strongly felt. Giotto tests the schema against actual observation of the face. Observation reveals that here and there the Cimabue-schema is inadequate to the empirical findings, and that the schema must be modified in accordance with the discrepant data. The modified schema in turn enters the repertoire of schemata and will in due course be subjected to similar tests and elaborations as its predecessor.

To Popper's abandonment of a perfect map or model of the universe corresponds a renunciation of the possibility of the Essential Copy. Just as universal scientific laws cannot be inferred from empirical experience, so painting can never hope to produce a true, certain, or absolute image that will correspond perfectly to optical truth. The painter does not, according to Gombrich, gaze on the world with innocent or naive vision and then set out to record with his brush what his gaze has disclosed. Between brush and eye intervenes the whole legacy of schemata forged by the painter's particular artistic tradition. What the painter does, what the scientist does, is to test these schemata against experimental observation: their production will not be an Essential Copy reflecting the universe in terms of transcendent truth; it will be a provisional and interim improvement on the existing corpus of hypotheses or schemata, improved because tested against the world, through falsification.

Gombrich's viewpoint seems to succeed, therefore, where the approach from the sociology of knowledge failed: the Essential Copy has been sacrificed, and with it, one might think, the commitment of the traditional or Plinian account to a progressive history of art. Moreover, by concentrating on the evolutionary history of the schemata, Gombrich avoids the danger inherent in the sociological approach, of denying the independent materiality of painting practice. In the end this is perhaps its most valuable feature. Yet Gombrich's account of the evolving schema bears striking resemblances to the classical Plinian version: so far from questioning the Whig optimism of that version, it in fact reinforces its evolutionary and teleological drive. Whether Gombrich actually renounces the Essential



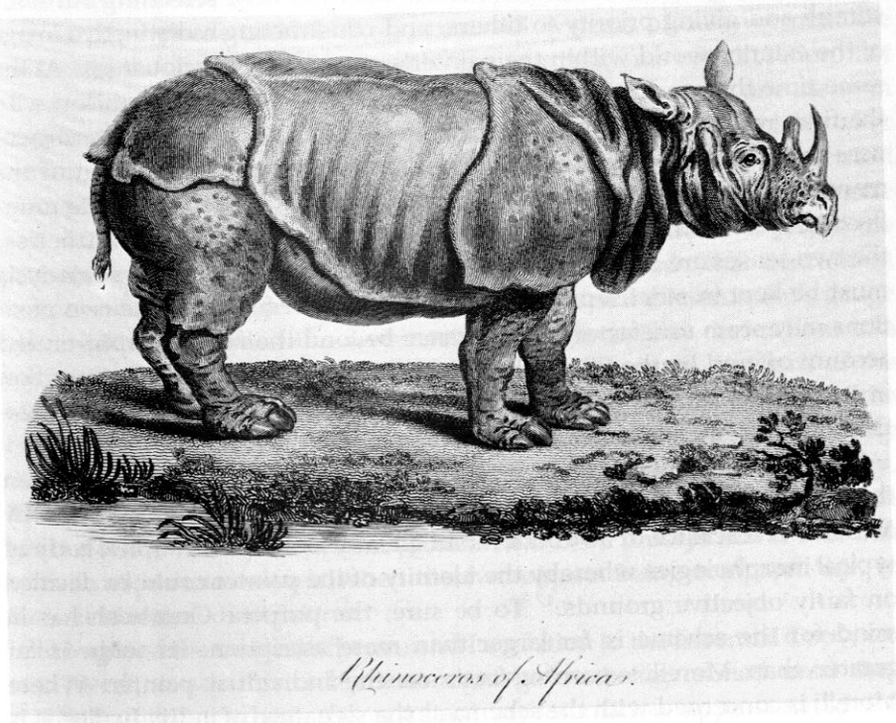

4 Dürer, *Rhinoceros*

Copy is very much in question. In general terms, the work of Gombrich amounts to a transitional aesthetics that recognises but cannot yet theorise in depth the material nature of the painterly sign. Let us take an actual example, from *Art and Illusion*.

The idea Gombrich intends by the word 'schema' is in itself straightforward. When Dürer, in his drawing of 1515, comes to deal with the problem of representing the likeness of a rhinoceros, the image he creates reveals to a striking extent his dependence on secondary accounts and descriptions of this novel and extraordinary beast; in particular, his dependence on prevailing taxonomies of the animal kingdom where the rhinoceros is categorised as a grotesque anomaly or aberration, a kind of horned dragon equipped with an armour-plated body and scaly, reptilian limbs: the result is a creature out of Borges's *Book of Imaginary Beasts* (Illus. 4).[14] When the English engraver Heath is called upon to provide illustrations to Bruce's *Travels to the Source of the Nile* (1789) the influence of the medieval bestiary has largely disappeared, yet even though Heath announces that his engravings are 'designed from life' and have been based on first-hand observation, the image he produces clearly owes as much to Dürer's drawing as to his actual encounter with 'the motif' (Illus.



5). The persistence of Dürer's chimerical beast attests to the importance, not only in this limited case but as a general rule for image practice, of inherited schemata.[15] Heath may not even have been aware of the degree of his dependence on Dürer's precedent and in the daily, practical activity of art history it is at present not considered essential, when positing image $x$ as a source for image $y$, evidentially to prove that the producer of $y$ actually saw image $x$ at such and such a time, or to enquire into the level of conscious awareness of the source (all that need be proven is that it would have been *possible* for the producer of image $y$ to have seen image $x$). The artistic schema here directly matches the scientific hypothesis in Popper's account of objective knowledge: repeated observation of the natural world enables the continuous falsification of the earlier hypothesis, and the continuous future refinement of hypotheses. At no point will the rhinoceros be perfectly represented, any more than the scientific proposition based on falsifiable observation will yield a verifiable and absolute natural law. The




5 Heath, *Rhinoceros*

object towards which both scientist and artist direct their attention is not simply the world 'out there', as in induction, or in Pliny's *Natural History*, but a double entity: hypothesis-in-interaction-with-the-world.

At this point we must ask of the schema a crucial question: are we to think of it as an objective structure, like a *stencil*, mediating between retina and brush, a set of received formulae operating exclusively, so to speak, in the hand and musculature of the painter, or is it a mental structure, like a *Gestalt*, responsible for configuring the perception of the artist into distinctive and historically localised form? To put this another way: is it a *manual* entity, whose existence is confined to the habitual muscular training of the painter's hand; or a *noumenal* entity, residing within the painter's field of consciousness?

It must be said that Gombrich himself oscillates, to the confusion of many of his readers, between the two positions.[16] There is, of course, no reason why the schema should not, following an Anglican compromise, be both of these things: a schema might exist partly in the form of a Gestalt filtering the content of sensory stimuli in a certain way, screening out some stimuli and giving priority to others, and constructing a distinctive image of the exterior world within the painter's perceiving consciousness. At the same time the same schema, or a second schema working in unison with the first, might then act as a further filter between the field of consciousness and the surface worked by the hand. A rough combination of the manual and noumenal senses of the word 'schema' is probably what unreflecting opinion is content to take away from the argument. Nevertheless, the two senses are diametrically opposed, and for the purposes of analysis must be kept in strict separation. While a blurred fusion of the two positions may seem satisfactorily to advance beyond the far less sophisticated account offered by the Plinian tradition, inquiry into each distinct position in turn raises serious doubts as to whether the tradition has been questioned in any significant way.

If the schema is to be understood in a manual or executive sense, then the account has not moved appreciably beyond the stage established by Morelli. The science of attribution had already isolated a complex body of typical morphologies whereby the identity of the painter could be decided on fairly objective grounds.[17] To be sure, the purpose Gombrich has in mind for the schema is far larger than mere ascription: its scope is far greater than Morelli's narrow focus on the individual painter. Where Morelli is concerned with the schema as the signature of individuality, it is exactly the schema's transpersonal nature that is of interest to Gombrich.



History is admitted as a force acting at a higher level than that of the individual biography: the schemata are seen as a general cultural legacy available to the individual artist as a total repertoire of potentialities, and then localised and adapted by the individual painter in the immediate circumstances of painting practice. We may say that whereas Morelli screens out the general legacy as the area which, because transpersonal, will be of no use to the science of attribution, and that he concentrates exclusively on individual variation of schemata, Gombrich gives equal weight to both terms. Yet neither Morelli nor the Gombrich of the manual schema breaks with the traditional emphasis on the dualistic portrayal of the encounter between the painter and the world: a third term is added – the corpus of schemata – but only as a problem of competence, of efficient performance of the transcriptive task. The Essential Copy, here, can not only be created but to within a hair's breadth can be known to have been created. The only impediment that remains concerns the *measurement of discrepancy* between the Essential Copy and the reality towards which Gombrich insists the image can only 'approximate'.

This point needs careful clarification. All systems of measurement are subject to the limitations imposed by their instruments of calibration. Let us say that a section of plastic is to be cut to a measure exactly one metre in length. An accurate result will be obtained by comparing the block, after cutting, against the original metre that serves as a standard for all metrical calculation. In order to estimate the discrepancy between that Ur-metre and the block, a scalar instrument must be employed that will gauge the discrepancy between the two lengths (in practice, only that instrument will be used to measure the block). The accuracy of the instrument's gauge may be of a high order: the divisions of the scale are, say, in fractions of a millionth of a millimetre. Yet within the margins of two divisions of the scale between which each end of the block falls, the exact termini of the block cannot be determined. It may be the case that the block is precisely the length of the Ur-metre. But that cannot be ascertained with certainty. The gauge-divisions of measuring instruments may evolve towards ever greater refinement, yet exact measurement is not a process that is ever met with in experience – even when the two objects being compared are, in fact, of identical dimensions.

In terms of the manual schema, and its relation to the Essential Copy, we can therefore say this: schemata might go on being refined until they reached a point where the resultant representation approximated the anterior reality to a very high degree; although – and it is this that Gom-

brich lays stress on, as part of his apparent renunciation of the Essential Copy – just as measurement in absolute terms can never actually be carried out, being subject at every turn to the limitations of the calibrating instrument, it would be impossible to determine whether an Essential Copy had actually been achieved. But however much the argument for the relativity of measurement is stressed, there remains a crucial, and insuperable, objection. In the same way it is possible for the block cut from plastic to be identical in length to the Ur-metre (although that identity can never be ascertained with certainty) it is possible for the copy to coincide in its dimensions *exactly* with the prior object of representation. While the matter can never be proved, nonetheless it is possible that an Essential Copy had in fact been made.

The schema considered as an executive instrument allows, therefore, for perfect illusionism; the fables of Zeuxis are reinforced and renovated. Indeed, we note here an asymmetry between Gombrich and Popper in which the domains of art and science are mutually out of phase. The crucial objection raised by Hume against the principle of induction concerned the *predictive* value of 'laws' derived from observation: that the sun has risen at the dawn of every day of which we possess records in no way entails that it will rise again tomorrow; we will never, accordingly, be able to derive from experience a body of physical laws that will be true for all time, an ultimate blueprint of the universe's structure. Yet however much the predictive aspect of scientific propositions is threatened by the Humeian objection, there is no reason to suppose that the vicissitudes of induction here, within science, will have their immediate counterpart within art. In fact the sense of a painting's having *predictive* value is obscure. A camera reproduces the phenomena in front of its lens without meditation on the laws governing those phenomena: to rule out the ultimate blueprint of scientific law does not rule out the Essential Copy at one and the same stroke. Popper's concern is with the status of scientific propositions, and were we to imagine a scale for the status of propositions, it would be a scale of *validity*. Predictive propositions would not be accorded absolute validity, being always provisional; nor would statements of measurement, since measurement is always subject to the limitations of calibration. The scale along which the artistic representation moves is one of *accuracy*: 'tomorrow' does not feature in its calculations, since everything turns on the degree of approximation between the original reality and its copy *now*, in this instant of time when the two can be seen together, as the copy is completed. There may be no future occasion when the two can be



compared. And while accurate measurement of discrepancy between the two is incalculable (a limitation on the validity of statements of measurement), it may nevertheless be the case that the two terms, original and copy, are dimensionally identical and that the Essential Copy has in fact been actualised. The asymmetry is therefore total: the Ultimate Blueprint can never, the Essential Copy can certainly come into being.

If the schema is to be understood in a noumenal sense (Gestalt rather than stencil), the situation of Gombrich's account changes; it must be said that the account becomes among other things much more interesting. The claim now made for the schema is that it lodges within the perceptual rather than the performative apparatus of the painter: in the nervous system, so to speak, rather than in the musculature. The world reflected by the painting exists within the consciousness of the painter, which however is no longer to be equated with the retinal surface or image but with the mental image processed by the brain out of the neural messages arriving from the retinal membrane. Although the word 'Gestalt' is probably the best shorthand term for designating the structures intervening between the stimuli and the noumenal field, the term does not do justice to the historicism of Gombrich's description. A perceptual Gestalt, in its classical definition and exposition, is a physiological datum – the workings of a Gestalt will be the same for all members of the species and are not constructed in the first place by cultural experience and cultural work, although these may be able to some extent to modify the Gestalt.[18] What is interesting about Gombrich's schema, noumenally defined, is its immanence in history. Giotto *perceives* the subject before him through the grid inherited from Cimabue, until by focused attention he discovers the grid to be inadequate to the complexity of the observed material. Giotto's modification of the schema is then recorded on the pictorial surface, and this will in turn serve to provide the grid through which those who follow may organise their own perceptual material. The claim is that perception follows the same route as the Popperian hypothesis:

$$P^1 \rightarrow TS \rightarrow EE \rightarrow P^2$$

Let us imagine that a painter comes across a phenomenon in the physical world which he is unable, given the limited schemata at his disposal, to register on canvas or even to hold clearly before his eyes: it is a subtle, elusive detail he has not remarked before in the visual field; certainly he has never seen it represented within the image. Even attending to it and



6 Chi-Rho Page, *The Book of Kells*



fixing his mind upon it requires a tenacious effort: he has noticed that some of the shadows cast by the objects before him are faintly, yet distinctly, blue in coloration – even though he can find neither a blue-looking source of light nor any actually blue objects in the visual field; it is a sort of nebulous haze, reminiscent of an aerial perspective yet affecting objects that are physically near ($P^1$). He attributes the shadow to a slight deviation of the atmosphere from normal conditions: the air here, he supposes, is somewhat smoky; and he registers the supposition on canvas by casting over his image a glaze of almost imperceptible milkiness (TS). Yet turning again to the phenomenon, after completing the glaze, he recognises that there is a discrepancy between the image and what he now, more clearly, perceives: not all of the objects are evenly saturated with the bluish cast (EE); and he cannot work out why this should be so ($P^2$). Perhaps there is a slight redness in one of the scene's sources of light: where the light from the source is obstructed by one of the objects, the residual light seems blue by contrast (TS). Yet even this will not do; the distribution of colour varies from place to place (EE → $P^3$); and he constructs a further hypothesis, that shadows vary in colour according to the colour of objects near the shadows, objects reflecting their own colour into the shaded areas (TS).

This stress on the hypothetical character of perception is backed by now-famous diagrammatic examples. The hoariest of these chestnuts is the drawing which looked at one way seems to represent a duck, and another way a rabbit; a further diagram, rather more strained, shows an attractive young girl who shortly transforms into a withered crone (the 'Wife/Mother-in-law').[19] The point is that the drawings do not change, only the perceptual configurations we bring to them; configurations that may relate to the neurological Gestalten of perceptual psychology, but also depend on taxonomies and categories which the perceiver brings to the drawings as part of his general experience of enculturation. The moral is that all artistic creation follows these lines: the painter, working with (of course) infinitely more sophisticated visual hypotheses, activates these structures in his painting practice; where the structures prove inadequate, he devises new ones; and so on.

A conspicuous merit of the hypothesis-theory of perception, though its advantages took some time to emerge fully, is its ability to account for non-representational art: for many years readers of *Art and Illusion* had supposed that the weakness of Gombrich's arguments lay in their fixation on representationalism and that Western twentieth-century painting, for example, lay beyond their scope. Yet by the simple substitution of the

viewer for the painter, the hypothesis-theory is able to advance into the territory of abstraction with ease.[20] Illustration 6 shows a page from the Book of Kells. It is recognisable at once as a representation of the Greek letters *chi* and *rho*; and whatever may subsequently happen to vision as it probes the interior of the letters and the intervening spaces between them, the overriding shape of the characters stakes out the fundamental boundaries and resting-places for the adventures and vagaries of a glance soon driven to perpetual mobility. The eye may come to welcome the hospitality of these enclosures as much for relief as for orientation, for once vision has left their confines and has plunged away from their sides it is caught in mazes so intricate and so devoid of termini that before long only two options seem to exist: either to follow the labyrinths faithfully to their exits and entrances (where these exist), or to derail the glance and to create visual trajectories that refuse the complex *entrelacements* mapped out definitively by the design. Only the former course does justice to the planning behind the Chi-Rho page. The presence of symmetry, of privileged areas that are variously cross-overs, entrances, exits, and pivots of rotation, all these promise that vision will be able to resolve the tangled surface into separate strands and to apprehend the hidden logic behind their apparent confusion. The eye needs only to forge *hypotheses*: if this band is taken to be 'above' the band it crosses, what is its resultant fate? The task of keeping track is countered by a suite of playful obstacles: here the band seems to cross both above and below, there it meets a clover-leaf junction where its re-routing overturns expectation, there again it seems to falter under the impact of a design clearly separate before but now encroaching into it, capturing it and carrying it away as plunder. Combining the strengths of meticulousness and of anarchy, the lines know in advance the pleasures they can yield by playing into the speculative gaze. When it is safe to assume that the viewer is myopically detained by the plaiting of minute abstract forms or is fully taken up in pursuit of a complex pattern back to its lair, it is then that the lines release their wild anthropomorphic and zoomorphic repertory, of domestic animals and fabulous beasts, disembodied heads and chimerical angels. When an obvious symmetry, coloured highlight, or other distraction can be relied on to draw the first tentative explorations of the probing eye, the lines at first clear before it the smoothest of paths and supply unequivocal signpostings; but a moment later the signposts are pointing in opposite directions at once, the band has narrowed to a filament, and a competition has begun between the rival skills of viewer and craftsman – between the eye of the needle and its



thread. The mind, fascinated with fascination itself, discovers in the pleasures of abstraction all the happiness of Binet's lathe, in *Madame Bovary*; hypothesis and counter-example interlocking in a satisfaction where all aspiration ends.[21]

There is little point in dwelling on the drastic reductivism of this description of non-figurative art; except perhaps to observe that a theory which ends by reducing the achievement of Klee, of Mondrian, of Jackson Pollock, to the level of a visual *puzzle*, cannot do much to further our understanding of non-representational art in this or in any other century: it is difficult to conceive of a theory of 'abstract' art more committed to its banalisation and trivialisation. More to the point, for our present purpose, is the theory's confirmation of the exclusive stress placed by Gombrich on *cognition* as the motor of artistic production, and on the all-embracing claim made for the perceptual hypothesis; it is this claim we will continue to examine. Fully elaborated, the claim comes close to producing a kind of phenomological *épochè*.[22] The picture of the world constructed within the painter's perceptual consciousness is posited as the source of the image, subject to possible and further filtration by the schema's performative intervention. This picture is not in any sense absolute, is not itself an Essential Copy of the world existing 'out there' beyond the retinal bar, and for this reason the images made from the picture can never themselves be regarded as Essential Copies of the world in the style of the natural attitude. What the painter perceives is a construct derived from, but not identical to, the retinal stimuli arriving from the outer reality, and the construct varies according to the degree of development within the schemata: Cimabue perceives in a manner that is less differentiated than that of Giotto. Perception is therefore an historically determined process, never yielding direct access between consciousness and the outer world but instead disclosing the limited version of that outer reality which the given stage of evolution in the schemata permits. To the extent that the theory includes the dimension of history, and indeed extends 'history' into the innermost recesses of the perceiving brain, it marks a radical break with the traditional account of what painting is and what it represents. It converges with and amplifies the cultural relativism where the terms 'naturalisation' and 'habitus' have important tasks to perform. Perhaps this is to be over-generous towards the kind of implicit anti-historicism revealed in what the theory has to say about non-figurative art, as it is revealed also in the duck–rabbit and related diagrams, where the hypotheses activated by the viewer are so primitive ('is the band "above"

or "below"') as to be almost indistinguishable from the rudimentary neurological Gestalten of Köhler and Koffka: but let us stay with schemata of a more sophisticated order, of the kind we might suppose activated by Giotto or Dürer or Constable. Is it actually the case that the mental field they 'construct' is of a historically fluctuating nature?

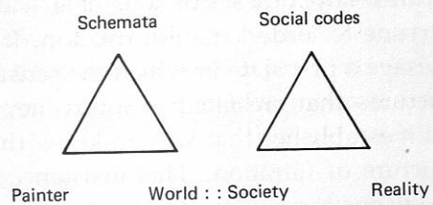
The following is a passage from Popper's *Conjectures and Refutations*.

> The belief that science proceeds from observation to theory is still so widely and so firmly held that my denial of it often met with incredulity . . . . Twenty-five years ago I tried to bring home (this) point to a group of physics students in Vienna by beginning a lecture with the following instructions: 'Take pencil and paper; carefully observe, and write down what you have observed!' They asked, of course, *what* I wanted them to observe. Clearly the instruction, 'Observe!' is absurd . . . . Observation is always selective. It needs a chosen object, a definite task, an interest, a point of view, a problem . . . it presupposes similarity and classification, which in its turn presupposes interests, points of view, and problems.[23]

The painter, in Gombrich's view, is in the same position as Popper's students. Without the instructions that indicate *what* is to be observed, observation cannot begin, and it is just this needed set of instructions that the schema supplies. Indeed a minor problem emerges here concerning the origin of the schema, for if observation is *always* selective and dependent upon schemata and if the schemata are constructed by the active work of the perceiver (unlike the biologically given Gestalten of Köhler and Koffka) then it is difficult to see how the first observation – the first perception – could have arisen. Popper, who with the words 'a definite task, an interest, a point of view' links observation to a material reality where necessary labour is to be performed, is able to resolve the problem by going *outside* the circle of perception into the realm of physical necessity: the hunter who is hungry is going to start looking for food. Gombrich's attempted resolution of the problem of the first schema is, significantly, divorced from such pressing concerns: the first artistic schemata, he speculates, were formed within the orbit of perception in an encounter between the eye and visual *randomness*; unable to make sense of the randomness, vision formed a randomly chosen schema (no external or material pressures at this point recommended one schema over another). Once begun, the process of schema-building gradually increased the extent and



sophistication of its repertoire, eventually yielding a coherent visual field.[24] It might seem, if we are unwary, that Gombrich's account is now identical to the sociology of knowledge's 'construction of reality' since the perceiver starts off with a *tabula rasa* and his perception of outer reality is formed entirely on the stage of history. But it is still true that in Gombrich's view the participation of others only aids and accelerates (as Cimabue aided Giotto) a process of reality-building which the individual could carry out, at an admittedly much slower rate, even if he existed in Adamic solitude. To conflate Gombrich with Berger, Luckmann, or Alfred Schutz would be a mistake. Let us see what happens if we try to do so. The painter constructs a world out of noumenally existent schemata: the society constructs a world out of social codes.




But the symmetry of the diagram is false. The structures proposed by the sociology of knowledge construct reality *in toto*: there is no other Reality to be experienced beyond the reality the social process constructs. But in Gombrich's account there is always an ulterior and veridical world which *exceeds* the limited, provisional world-picture built from schema and hypothesis.

Let us return to the painter at work. His instruments include not only brush, pigment, and canvas but a whole repertoire of visual hypotheses that come to him from his artistic tradition. The hypotheses are found to work until observation discloses a counter-example; at that moment they cease to perform efficiently.

$$P^I \rightarrow TS \rightarrow EE \rightarrow P^2$$

Point $P^I$, the emergence of the problem, is created at the instant when the schemata no longer function, when an ulterior world breaks through the reticulated layers of perception and filtration with stimuli too powerful for the schemata to censor or screen out. In order to cope with $P^I$, the painter

constructs a hypothesis that will, he hopes, restore the systems of filtration to order; yet invariably it proves, in time, inadequate to the task in that certain stimuli continue to stream in as anomaly, aberration. This is exactly what happens at EE: the painter/scientist discovers what errors are yet to be accounted for. In the course of examining these, he uncovers further problems; that is, observations which formerly had failed either to be observed or to be recorded generate a new cycle of hypotheses. At each point of movement in the linear diagram there is access from the observer to the external world; at each transitional stage in the process the schemata or hypotheses are rendered inoperative as raw and disorderly stimuli press past them from the outside.

The account is in open contradiction with itself. It posits a separation between the stream of information coming into the mind so to speak at the gate, and the structures – hypotheses or schemata – which *then*, at a subsequent stage, intervene to 'order' the information. It demands, in other words, that we envisage a first state in which the sensations or stimuli are exterior to the structures that are fated to intervene; and in so far as it makes that demand it establishes that we can know that first state *eo ipso*, by-passing the structure of filtration. This insistence on a separate first stage belongs to the expository order of the account and might, perhaps, be regarded in wholly abstract terms as a component of the theory necessary to its intelligibility but not empirically discoverable without manifestation in the world. Yet it is then *re*-stated as a crucial phase in actual perceptual work. The stage when the schemata/hypotheses cease to 'work' is not a momentary embarrassment to the account, a split-second anomaly which it is best to leave to others to sort out, while the history of science and of art pursue the more serious question of the important 'intervening' structures. That moment recurs again and again. It is when theories break down in the light of observations that contradict them that falsification occurs: it is *the* crucial moment; and at that moment the screens of speculation are broken open in a dyadic encounter between self and world with all the qualities of directness and absence of mediation familiar from innocent or Plinian vision. The only significant difference between Pliny and Gombrich here is that whereas for Pliny the encounter is continuous, for Gombrich it is intermittent: grey and monotonous periods of rule by aberrant schemata, interrupted by the brilliant restorative flash of falsification.

Infrequent though its occurrence may be, polluted by the inert residue of erroneous schemata though it may become, access to a world beyond the



schema, a world against which the schema is constantly to be tested, is therefore central to Gombrich's account. Where unmediated contact between consciousness and world is able to take place, the only difficulties that remain for the production of the Essential Copy are on the executive or manual side of the schema. Progress towards that Copy will be slow but inevitable since the 'falsification test' will constantly triangulate the schema's position in relation to the world beyond it.

Yet how inevitable is that progress? Both Popper and Gombrich would seem to subscribe to the very error of 'accretionism' they had criticised in inductive method. Their argument appears to work by subtraction. Just as the withdrawal of psychic projections from the world is supposed, by certain psychologists, to result in clear and mature perception of its real nature, so the elimination of error is alleged to constitute of itself advance towards knowledge. In the case of the linear diagram $P^1 \rightarrow TS \rightarrow EE \rightarrow P^2$, the possibility of its *cyclical* nature is denied. Even complete failure to solve $P^1$ is believed to teach at least this, that the particular trial solution applied was wrong; its falsification may be reckoned to mark a decrease in the total sum of our ignorance.[25] Before, we did not know TS to be absurd: now we do. But inability to start the car can hardly be counted as part of the journey. Suppose that a second, a third, a million such trial solutions are tried and abandoned: are we any nearer our destination? Indeed, it seems quite possible to argue that the creation of the second, third and millionth erroneous trial solution amounts to an increase in the total sum of our ignorance, rather than the reverse. Access to a world beyond the schema is essential if the false start is to be distinguished from advance, and both of these distinguished from regression: the difference between *progress* and *change* depends on our knowing in advance the conclusion of the process, so that degrees of distance towards and away from the conclusion may be measured.[26] Between Cimabue and Giotto there is certainly change, but our decision to call it advance rather than to categorise Cimabue and Giotto as two equally invalid 'false starts' will depend on their degree of approximation to the Essential Copy: the latter is essential to the doctrine of progress, even when Giotto's advance beyond Cimabue is alleged to consist in the elimination of Cimabue's errors. And for as long as the Essential Copy remains a necessary component in the theorisation of painting, analysis of the image will continue to preclude the dimension of history.