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PERCEPTION, REPRESENTATION, AND THE FORMS OF ACTION: TOWARDS AN HISTORICAL EPISTEMOLOGY

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I. INTRODUCTION: CRITIQUE OF AHISTOR1CAL THEORIES OF PERCEPTION

Among the things which are generally taken to change, historically, are ideas, theories, social systems, technologies, customs, beliefs. Biological evolutionary changes or developments are often distinguished from and sometimes compared with these historical changes: Thus, species-change, or the evolution of particular organs or traits, or even geological change are taken to be processes of natural transformation, as distinct from those post-natural or cultural changes which may be characterized as historical, and which involve human action and human history distinctively. Thus, for example, cultural evolution is contrasted with natural or biological evolution, the 'noosphere' is contrasted with the 'biosphere', and transhistorical species-specific traints, such as erect posture, or speech are contrasted with culturally variant features, such as particular natural languages, or even more differentially, styles or customs or political systems.

Human perception has been studied, and conceived as a species-characteristic-in effect as a transhistorical or even more simply, a biological capacity. Its structures and modes have been understood as ahistorical, (though what is perceived obviously varies historically). This has been the practice, certainly, in physiological and psychological studies of perception. It has been reinforced, if not in fact even determined in some measure by the traditional philosophical analyses of perception as a universal human faculty, and by the relation which philosophers have established between perception and knowledge, in various epistemological theories. The view, in various epistemological theories, is that though knowledge may grow and change, and evidence (and what counts as evidence) may also change, the empirical base for such knowledge, or its test in our perception of the world remains anchored in an unchanging and universal human perceptual capacity. Though there is no question that perception is a universal human faculty,

and that it is crucially related to epistemological contexts, I will argue in this paper that the forms or modes of perception, its structures themselves, are historically variant; that this variation is related to historical changes in the forms or modes of human action (or praxis}:

and that this variation or change is perceptual modes in both determined by, and in turn helps to determine such historically changing modes of human action. Furthermore, 1 will argue that if this is true of perception, then several traditional philosophical characterization of epistemological questions are wrong, and that what is needed to replace them is an historical epistemology.

The theses I will argue for, in examining the foundations for such an historical epistemology, are: first, that perception itself is a highly evolved and specific mode of human action or praxis; i.e. that its characterization as only biological or physiological or more generally, in 'natural' contexts, is inadequate; and that moreover, its traditional treatment in philosophy, in the context of an ^historical epistemology, is fundamentally mistaken. Second: that the specific feature of perception as a mode of action is that it is mediated by representation: and third that it is by the variation in modes of representation that perception itself comes to be related to historical changes in other forms of human practice, and in particular, to social and technological practice. For this argument on the role of representation in mediating perception, 1 want to resurrect the traditional term, imagination, in a specific sense, and to relate it to the activities of picturing and modeling.

At the outset, let me say how I think these theses differ sharply from those presented in other theories of perception, and also state what the problem is to which I am addressing myself.

(1) Most classical theories of perception - both rationalist and empiricist - take perception to be an ahistorical and universal species-characteristic - i.e. a general human faculty based on a common perceptual system (whether this system is taken as biologically evolved, or a priori, or simply taken for granted in a common sense way, e.g. as 'seeing', 'hearing', etc). I take human perception much more narrowly (or more differentially) as the specifically human faculty which develops only after the biological evolution of our sensory system has been completed. That is to say, I take it as an historically evolved faculty, and therefore based on the development of historical human practice. In order to sharpen the distinction I am making here, let me contrast it with three other views of perception, all of which lose this distinction:

(a) Essentialist theories of perception

The general or abstract philosophy of perception is mystified by a general or abstract perceptual vocabulary-e.g. 'seeing', 'hearing', etc-and conflates the generality of the terms with the generality of the activities which these terms denote. In that sense, this becomes an essentialist theory of perception, which seeks a definition of perceiving in terms of some essential relation between the activity and its objects, or in terms of some model of human perception which is historically undifferentiated.

(b) Relativist theories of perception

A culturally or situationally variable account of perception is given in some non-essentialist and relativist theories. Here, for example, 'seeing' is reconstrued as 'seeing as', and perception in general is linked to interpretation or judgment, i.e. as a (conscious or unconscious) processing of sensory input in the framework of memory, past experience, intention, cultural or situational context, etc. Thus perception is not simply an essential relation between a perceiver and perceptual objects, or an essential and unchanging structure of an a priori sort, but becomes a more plastic and variable activity or process of interaction, whose variability depends on acknowledged variation in context, use, background-knowledge or framework. However, this variation in perceptual mode is seen in terms of alternative contexts, or situations, or cultures, but not yet as a change or a development, either ontogenetically or phylogenetically, and certainly, not yet historically (though it is compatible with such accounts). One may call such views relativist, pragmatic, or contextual theories of perception.

(c) Developmental or evolutionary theories

Such theories of perception, on the other hand, do give such an account of change in the perceptual activity, or in the perceptual apparatus itself. But it is given in either genetic contexts, e.g. in developmental psychology, in which stages of perceptual change and growth are understood as general species-patterns, mapped into the stages of ontogenetic development; or they are seen, phylogenetically, as stages in the species development, i.e. in the biological evolution of the species. In short, the context, in such developmental or evolutionary theories of

perception, treat it as a species-characteristic in an exclusively biological context. Such accounts are compatible with co-variation and even causal relations between the changes in perception, (and in the perceptual apparatus) and changes in the mode of life and the practical activities of the species; and indeed, such an evolutionary epistemology sees the development of the perceptual system in the context of adaptive strategies and survival values which are selected out by natural processes. But here too, these are pre-hlstorical biological contexts, and do not yet differentiate, as my theory will, between the biological and the historical contexts themselves.

To put the distinctiveness of kriy theory very simply, and nominally: it is neither an essentialist theory concerning ahistorical or transhistorical features of perceptual activity; nor is it a relativist or pragmatic theory of cultural or situational variability in perception; nor is it reducible to those theories which are identified with genetic epistemology or with developmental or genetic psychology; nor yet with so-called naturalistic or evolutionary epistemology. It is compatible with these latter theories insofar as they describe and explain the biological substrate of perceptual activity and its evolution, or even as they propose to account for species-wide mechanisms of perceptual activity and such species-wide features of perceptual processing which can be traced to their evolutionary contexts-e.g. perceptual constancies, cliff-effect, etc.- and which, indeed, can be shown to be common features of many species with closely related sensory-systems.

But my view goes beyond them in arguing that what the species brings to perception, as the product of its biological evolution, is the starting point for an historical epistemology; and that the transformation and development of this genetic inheritance is a function of changing historical praxis; in short, that perception has a history.

(2) Most philosophical theories of perception (with some notable exceptions) work with a model of perception based on seventeenth-century psychology. Having inherited the philosophical problematique from seventeenth-century philosophy-i.e. from Descartes and Locke- they remain also within the confines of that psychological model which gave rise to the characteristic philosophical problems of classical rationalism and empiricism, and have therefore never been able to transcend this particular problematique. In effect, such contemporary philosophical theories of perception are dealing with anomalous philosophical problems generated by an anomalous science. This is

particularly true of British and American philosophies of perception, and most specifically, it is true of the analytic school. Here the fault is especially complex. In part, it is due to the peculiar fact that a major school of contemporary scientific psychology of perception (roughly speaking, the empiricist school) is itself also still stuck within an anomalous seventeenth-century mechanist model of perception, characterized by a Euclidean geometric optics and an associationist logic. What I take to be anomalous here are precisely the mechanist feature of the model which confuses a particular theory of geometrical optics — i.e. atheoryofthe transmission, reflection and refraction of light, especially through lenses, — with a theory of vision, and in particular, with a theory of visual perception. However useful it has been to pursue the analogy of the eye to a camera, the reduction of the philosophical account of perception to the problems engendered by this model of sensory-physiology is surely by now anomalous; and not simply because the contemporary sensory physiology of vision has left the cruder analogy to geometrical optics far behind, but because the reduction of the perceptual model to the constraints of the physiological one confuses two distinct levels of activity. So too, the associationist logic of traditional empiricist epistemology and psychology is no longer adequate as the model even for the relations between the complex of elements involved at the level of sensory-processing; and certainly not adequate to the hierarchical organization and interaction of sensory and perceptual systems, as gestaltlike and integrative properties are discovered at lower and lower levels of the system, down to the individual neurons; and even further, to the regulatory mechanisms at the subcellular level (e.g. protein turnover and renewal, with respect to such biochemical variables as substrate concentration, nutrition, and genetic factors at the subcellular level). In short, much of contemporary philosophy of perception continues to generate its problems from an anomalous seventeenth-century model of sensation, in part because it is this model which now has become that of common sense. Therefore, by remaining ignorant of the relations between changing science and changing common sense, and thereby taking today's common sense to be the universal and unchanging common sense of the species, such philosophy of perception remains blissfully ignorant of its own historical limits, and the historical datedness of its models. (The evasion practised here is highly protected against correction, by the 'linguistic turn', in which the ordinary or common-sense language of perception, or its 'conceptual

grammar', is taken as a norm for our knowledge of perception; or more hermetically yet, when the problem of perception, as a philosophical problem, is reduced to that concerning the uses or meanings of perceptual terms or statements in ordinary or common-sense language.) This failure to recognize the historical limits of a particular theory and a model of perception is related to the ahistorical characterization of perception itself, in such ahistorical theories.

(3) This, in turn is related to the third difference between the theory I will propose here and other ahistorical theories, in particular, the traditional and contemporary empiricist or sensationist theories of perception, as well as those rationalist theories which are dualistic, like Descartes'. A whole group of theories of perception, including here sense-datum theories, representational theories, causal theories and even some gestalt theory see the 'activity' of perception as an 'inner process', in which the activity of association, or of construction, or of modes of response to perceptual stimuli are characterized as 'in the brain' or 'in the mind'; and therefore, sharply distinct from the kind of outer activity usually represented by our various motor-activities (including speech). Even intentionalist theories, (e.g. phenomenological theories) which emphasize the constitutive and directed character of perception and see it as actively engaged upon an object, nevertheless distinguish between such directedness and constitution and the directedness and constitutive nature of actual outward bodily acts. These latter alone are conceived as 'real' interventions in the natural world, whereas the domain of action of perceptual acts is taken to be that of intentional objects, themselves constituted by the act of perception, and thus not natural or spatio-temporal objects at all. This leads either to an outright mind-body dualism, or at best to a phenomenological monism, in which the natural world itself, and even its spatio-temporal features are taken to be such constructs, or constituted entities, and in which Berkeley's dictum - esse est percipi - hold literally. This is the idealist direction in phenomenology. The only other outcome is a phenomenalistic skepticism cum structures of the mind, reconstructed transcendentally in a Kantian spirit.

My own view differs sharply from all of these, in that it is an explicitly realist view of perception in two senses: first, that the 'objects of perception' are taken to be independent of perception, though they are mediated by the_activitY oJJperception, in that they are perceived by means of our representations of them. That is to say, the objects of

perception are not taken to be 'perceptual objects', but real objects—i.e. spatio-temporal or material objects (or processes), which we perceive. The mediative 'entities', which on traditional representational or causal or sense-datum theories of perception, are taken to be the 'objects' of perception, I take to be representations—i.e. perceptual artifacts which we do not perceive, but by means of which we perceive real objects (or processes). Second: by virtue of this, perception is not simply an inward activity, directed upon some 'mental' or 'perceptual' entities 'in the mind' or 'in the brain'; but is itself a (mediated) form of outward activity, which is continuous with other forms of outward human action in the world; and that even in its most interiorized modes (e.g. in perceptual imagination, or in dreaming) it is a mode of virtual outward action. Therefore, in its very genesis, perception is directly linked to that practical interaction with an external world whose qualities and structures are transformed by human action, and thus, by perception as well; but which transformations are nevertheless transformation of an objective and independently existing environment.

In summary then, these three features sharply distinguish the thesis I will present from a standard group of philosophical theories of perception: (1) I take perception to be historically variable, and not an unchanging and universal feature of the species as such. It is universal only in its preconditions, i.e. in terms of the biologically evolved sensory system and the (undeveloped or native) sense modalities. (2) 1 reject the seventeenth-century psychological model of perception as anomalous, and propose an alternative model. (3) I take perception itself to be a mode of outward action; to be derived, in its genesis, from other direct forms of outward or motor-action or praxis; and to be, in perceptual practice itself, continuous with, or a part of such outward action or praxis. In this sense, it is perceptual activity in the world, and of a world as it is transformed by such activity.

WHAT PERCEPTION IS AND WHAT IT IS NOT

Let me begin with a story: The occasion of this conference led me to London, from which I debarked for Helsinki. At Heathrow airport, I had the opportunity to spend some time, before departure, with two friends who were in London. One, (a well-known anti-methodologist

anarchist), when I told him I was to speak on perception, asked me in his characteristic fashion: "Perception of what?" Unprepared for such a question, I stumbled, "Well . . . you know, perception ... the usual thing. In fact, I want to talk about perception and action." Little better informed, my friend and critic pursued me: "You mean that if 1 want to hit you, I have to be able to see you?" Now, finally, I found I could answer clearly. "No", I replied, "on the contrary. If I see you, it's because 1 want to hit you."

The moral of the story is clear and not original. The very genesis of perception is linked to its function and its uses in the life-activities of organisms. Perception is a part, and a function of those interactions between organisms and their life environment in which recognition and response to predator and prey, to danger and opportunity make the difference between life and death. Therefore the perceived world of the organism is in effect a map or an image of its activities: just as, conversely, the perceptual apparatus of various species is itself shaped to the modes of interaction by which the species survives. We do not perceive, and then act; perception is itself one of the instrumentalities or modes of action. That it becomes differentiated and highly specific, and that it can take place 'internally' so to speak, during a suspension of outward motor activity by the entire organism is simply one of the achieved strategies and economies of animal activity. But the relative 'internalization' of this perceptual activity, and its relative autonomy is not a systematic breach between perceptual and other forms of outward motor activity. Rather, it marks that delay between proximate causes and the organized responses of animals which permits the elaboration of information-processing systems characteristic of higher and complex organisms. In the human species, I will argue, the modes of perception, or the forms of perceptual activity are no longer bound only to the biological apparatus which has evolved in the course of species evolution. Rather, the very forms of perceptual activity are now shaped to, and also help to shape an environment created by conscious human activity itself. This environment is the world made by human praxis - nature transformed into artifact, and now embodying human intentions and needs in an objective way. But beyond this, perceptual activity is now also shaped to, and helps to shape a new and different 'world', namely that 'world' which is a cognitive construction, and is embodied in our representations, as theories and models in science, and as pictures in art. To say that we see by way of our picturing, or our modes of

representation, then, is to claim that perceptual activity is now mediated not only by the species-specific biologically evolved mechanisms of perception, but by the historically changing 'world' created by human practical and theoretical activity.

In short, then, I want to discuss an activist or practical theory of perception, in which perception is understood as a mode of human action; and in which it is therefore encumbered or endowed with all the qualities of human action or praxis, namely: effectiveness in the world, as a constituent of practical activity (causal efficacy); intentionality (as it is involved in the conscious teleology of human action); and, necessarily, a mode of physical or organic activity, involving and interacting with the physiological structures and bodily motions of the organism, and exhibiting as well the specific features of reflexiveness or internal activity characteristic of such other organic functions as digestion, emotion, or hormone balance. That this is not a reductive approach to perception should by now be clear. For the very foundation of what is distinctively human in perception is its character as a socially and historically achieved, and changing mode of human action; and thereby invested with a cognitive, affective and teleological character which exemplifies it as a social, and not merely a biological or neurophysiological activity. What is more, it is not an activity o/the perceptual system or of a specific sense-modality, but an activity of the whole organism. Even at the biological level, which we share in common with other animals, it is not the organ which perceives, but the whole organism by way o/the organ. And as a whole organism, the animal embodies not its own, or individual modes of perception, but the species-modes of perception, as they have evolved. Ontologically, of course, it is not a species which perceives, but an individual organism, by means of a species-evolved apparatus, and in a 'world' which is species-defined, in terms of the characteristic modes of activity in meeting life-needs.

Let me say then what perception is.not, in two senses. (1) It is not the activity of an isolated or abstracted perceptual organ. (2) It is not contemplation, or passive reception of an input. I will discuss these briefly here.

(1) Were I to surgically prepare a rabbit's eye, so that all tissue functions were "maintained; and were I to separate the optical and neural function of this eye from the rabbit's body, and were then to project a visual image upon the retina, so that retinal image-formation could be observed by me in the usual way, this would not be a case of visual

perception by the rabbit's eye. Moreover, were I to retain intact all visual activity remaining to a decorticate cat, or to an unconscious and drugged human subject, this too would not be perception. In each of these cases, we would say "the rabbit's eye does not see, nor does the decorticate cat see, nor does the drugged human subject". In the first case, eyes don't see; only whole organisms with visual activity see with their eyes; and even these do not 'see' when the visual activity does not involve the action or life activity of the organism.

(2) Let me go one step further to say what perception is not: it is not 'contemplation', on one classic model of disinterested and passive spectation; not because this latter is not perception, but because this latter, as it is described in classical spectator theory, does not exist. It is an abstractive fiction invented first by scientists, building models of vision according to the canons of geometric optics; then elaborated by philosophers (or these same scientist-philosophers) reconstructing theories of perception on the basis of these geometrical-optical models. Classic-that is to say, seventeenth-century-theories of perception converted an abstract geometry of perception into a theory of the activity itself, thereby mistaking a theory of image-formation for a theory of perception.

Now a theory of image formation is an integral part of any theory of perception, since we perceive by way o/images. Let me make this clearer. We do not 'perceive' the images we form in the activity of perception, but rather operate or act perceptually by way of these images. We do not perceive the retinal (or aural or tactile) images formed by our sensory activity in say, vision, hearing, touch perception. But we do not perceive except by the mediation of images. I take images as representations, constructed by us, for the sake of perception; and therefore, modified by us as our perceptual activity demands; and therefore, further, as the means of instrument of perception. It is an old view, but I think still a correct one, that perceptual action, or perceptual praxis is a form of human (or animal) organic activity - i.e. physical activity in the life-space and life-time of an organism mediated by internal representation. It is therefore not a simple reflex, nor a simple effect or response to a causal external stimulus. It is a processed response, attuned to a certain end, or goal. However, the notion of 'internal representation'-i.e. of internal mapping involving selective elaboration or characterization of an external object or situation-is a dependent notion. It derives, theoretically, from the model of external representation, or picturing. In

the history of the theories of perception, therefore, the imaging or representational mediation is itself conceived on the historical models of then-current modes of representation. Thus, I've said that the classical (seventeenth-century) theory of perception finds its model in geometric optics and its physiological application as a theory of vision. But different theories of perception borrow from different current models of representation; and these may be mathematical; or be taken from physics; or, to an extent much greater than is usually admitted, from the forms of representation in art.

The metatheory of an historical epistemology would therefore involve the critique and analysis of theories of perception, and how they change in interrelation with theoretical and stylistic changes in the history of science and the history of art. But this is a separate matter. We are concerned here with how the actual forms of perception themselves change historically.

3. THE SOCIAL AND HISTORICAL CONTEXTS OF HUMAN PERCEPTION AND THE ROLE OF REPRESENTATION

The key to the historical variability of perception is its link to historically variable modes of non-perceptual praxis; or more accurately, the involvement of perceptual activity in ordinary human action or praxis in its characteristic and historically variable modes. This may be approached in two ways: genetically and reflexively. (1) In the first case, we seek the genesis of perceptual activity itself in pre-perceptual or non-perceptual forms of action. The genesis of perception, in species-terms, or in biological-evolutionary terms would yield at most the necessary, but not yet the sufficient conditions for an account of historically-evolved perception. Thus, if we were to speak of the physiological-structural foundations of perceptual activity, e.g. in the evolution of the sensory-modalities, or in the development of the distinctively perceptual areas of the brain, or brain-function-(e.g. the visual, or auditory cortex) - we would end, at best, with a generalized, or species-specific account of the usual perceptual functions, i.e. 'seeing', 'hearing', etc., but one which is as yet abstract, or unqualified with respect to historically evolved characteristics. One might say that biological species- 'history' or species-evolution, is precisely such an account, and that perceptual development, in a phylogenetic context, yields all the 'history' of perception there is. To the extent that the

mammalian eye evolves, and to the extent that specification takes place further, from say, the higher apes to homo sapiens, then there is this 'history' of adaptation and selection which results in what we would then characterize as an undifferentiated or species-wide human perception. Further, one might argue, in terms of an evolutionary epistemology, that this adaptation itself would include the interaction of alternative perceptual strategies with changing environments. Thus, by the complex mechanisms of selection and adaptation, one may adduce at least a prehistoric 'history' of species-adaptation which yields the characteristic perceptual universals: e.g. the perceptual constancies (shape, distance, object, and colour-constancies, etc.), 'cliff-effect', the psycho-physical laws; and which establishes such perceptual universals in their continuity in the mammalian line, e.g. among the higher vertebrates.

But such an argument stops short just where I propose to begin: at the threshold of historical human praxis. It further assumes that the perceptual apparatus is completed by that time. I will argue that, though the 'apparatus' may be complete, it is not yet, properly speaking, the human perceptual apparatus, but rather only its substrate in physiological terms: what we may call the sensory-motor apparatus on which perception develops. I am therefore proposing to use the term 'human perception' in a somewhat Pickwickian way, though in a way easy to define: 'human perception.begins to develop only with historical human praxis (to be defined shortly). Prior to that we may speak of animal perception, namely, that perceptual activity which we, as an evolved species, share with other animals, but which has as yet not evolved beyond the animal level, to the level of human culture and history. The human perceptual 'apparatus', properly-speaking, transcends the physiology of perception, or its phylogenetic development. To put it differently, the perceptual 'apparatus' includes functions which are presently at least, not accounted for in any satisfactory way by the ncurophysiological account. That is to say, the historical development of modes of perceptual action is not yet mapped into accounts of neurophysiological structure, in present descriptions. There are suggestions that it may be, in recent research, but this is at present speculative and controversial. For example, the differential development of microstructure of the neural system under different experiential modes, (as described in, e.g., expciiments with selective early visual experience of cats, early partial visual deprivation in humans, and with

orientation anisotropies in visual acuity resulting from differing visual ecological environments); or the thesis proposed by Penfield, concerning the effect of differing cognitive and perceptual function (focus, attention) on the ontogenesis of brain mechanisms. So too, molecular theories of memory suppose a structural change with memory activity, at the molecular level of neural structure. All such accounts, at most, provide a hypothesis for the plasticity of brain or neural structure, or of neural development, in its interaction with perceptual experience (of differing environments, or of differentially deprived sensory contexts, or of different modes of selectivity, focus and attention, in perception). Such a physiological-structural hypothesis opens the path to research on the effects of varying historical modes of human praxis, or of active experience on the physiological apparatus itself, or its variability in ontogenetic development. It does not yet provide either a model for, nor a mechansim for historical changes in modes of perceptual action. That is not because such a hypothetical neurophysiological model cannot be conceived; rather, it is because the problem has not been posed in these terms, and therefore, the requirement or demand for such a model is simply lacking in current scientific research.

An historical theory of perception, on the other hand, must begin with the genesis of human perceptual activity (as distinct from animal perception) in historical praxis itself. It must begin, therefore, where evolutionary and neurophysiological accounts of perception leave off, accepting the terminus of the biological evolution or phylogenesis of the perceptual apparatus as no more than the precondition for historical perceptual development; and accepting the ontogenetic or developmental plasticity of the neurophysiological basis of perception as only a promissory note on some future physiological model of historical perception.

What is this 'historical human praxis' which is proposed here as the genesis of human perception? It is, in the first place, the fundamental activity of producing and reproducing the conditions of species existence, or survival. What is distinctively human about this activity (since all species fall under this injunction of reproducing the species life) is that human beings do this by means of the creation of artifacts. Their production, as distinct from the foraging, scavenging or hunting activity of other animals, proceeds by a transformation of part of the environment into an extension of the animal organs-as, e.g. tools are. But, in more generic terms, the 'tool' may be any artifact created for the

purpose of successful production and reproduction of the means of existence. Therefore, the use of language for communication in this enterprise makes language itself such an artifact, or 'tool'; so too is the mode of social organization, or of division of labor which is instrumental in the successful satisfaction of existence needs, or of the needs to reproduce the existence of the species. Extending the notion of 'artifact' as 'tool' still further, the acquistion of skills, in the processes of production (even at the level of foraging, scavenging or hunting, and prior to the introduction of agriculture or the domestication of animals) creates such skills as themselves 'artifacts', even where these skills do not entail the use of tools in the ordinary sense, but only the mastery of the natural organs of the body, and of perceptual skills in pattern-or-cue-recognition, for the purposes of satisfying productive or reproductive needs. The'crucial character of the human artifact is that its production, its use, and"the attainment of skill in these, can be transmitted, and thus preserved within a social group, and through time, from one generation to the next. The symbolic communication of such skills in the production, reproduction and use of artifacts—i.e. the ^teaching or transmissionof such skills is the context in which *minicry or the imitation of an action^ becomes a characteristic human mode of activity.* It is, in effect, this ability to *represent an action* by symbolic means which generates a distinctive class of artifacts, which we may call ^*representations.* (2) This, then, is the second case in which perception is related to historical modes of action, in what I have called the *reflexive* sense. Such representations, then, are *reflexive* embodiments of forms of action or praxis, in the sense that they are symbolic externalizations or objectifications of such modes of action-'reflections' of them, according to some convention, and therefore understood as images of such forms of action-or, if you like, pictures or models of them. Though I will discuss this further, later, it will be sufficient here to characterize such representations in the broadest way as the distinctive artifacts created for the purpose *of preserving* and *transmitting* skills, in the production and use of 'primary' artifacts (e.g. tools, modes of social organization, bodily skills and technical skills in the use of tools). The modes of this representation may be gestural, or oral (linguistic or musical) or visual, but obviously such that they may be communicated in one or more sense-modalities; such, in short, that they may be perceived. We may call such representations, then, 'secondary' artifacts by contrast to the primary ones (e.g. axes, clubs, needTes, bowls, etc). At this stage,

the notion of 'representation' is a functional one, in the sense that *anything* which is capable of preserving and transmitting a mode of action, thus 'representing' it, serves that function. Furthermore, such representations are actual physical and perceptual embodiments of a mode of action or praxis: either in the more permanent forms of physical objects of a certain configuration, or in a certain arrangement—e.g. 'prototype' tools taken as models to be copied; visual symbols or marks engraved or painted or drawn; etc. - or the more transient forms of bodily gesture, ritual performance, utterance- e.g. in hunting rituals, dances, chants or songs. The mimetic character of such representations consists not simply in their imitation of natural objects or animals, but in their imitation and representation of modes of action or praxis. Therefore, the element of convention in the representation comes to play a large role, and any notion of 'natural resemblance' becomes too weak to encompass this range of mimesis. But such representations, as 'secondary artifacts', are not 'in the mind', as mental entities. They are the products of direct outward action, the transformations of natural materials,, or the disposition or arrangement of bodily actions (e.g. in dance) or the social forms of organization tof such activites as hunting, or of such relations as kinship, hierarchy, etc. They are externally embodied representations.
'iy or the disposition or arrangement of bodily actions (e.g. in
This excursus, broadly characterizing historical human praxis in its genesis, is meant to provide, at the same time, the context for distinctively human perception. In summary, then, what constitutes a distinctively human form of action is the creation and use of artifacts, as tools, in the production of the means of existence and in the reproduction of the species. *Primary* artifacts are those directly used in this production; *secondary* artifacts are those used in the preservation and transmission of the acquired skills or modes of action or praxis by which this production is carried out. Secondary artifacts are therefore *representations* of such modes of action, and in this sense are *mimetic,* not simply of the *objects* of an environment which are of interest or use in this production, but of these objects as they are acted upon, or of the mode of operation or action involving such objects. Canons of representation, therefore, have a large element of convention, corresponding to the change or evolution of different forms of action or *praxis,* and thus cannot be reduced to some simple notion of 'natural' semblance or resemblance. Nature, or the world becomes a world-for-us, in this process, by the mediation of such representations, (or more broadly,

such canons of representation), and thereby, in accordance with our varying modes of practice.

The purpose of this construal of human action or praxis is to set the context for the genesis of distinctively human perception, and for the changes in perceptual mode as functions of historical changes in human praxis.

4. A SCHEMA OF THE RELATIONS OF PERCEPTION TO PRAXIS

It may be useful to represent the relations of perceptual activity to other modes *of praxis* or human action, in the form of a schema. This schema places perception in a feedback loop, and proposes that it is mediated, or conditioned by the fundamental modes of praxis - production and communication-and by the instrumentalities or artifacts by means of which this *praxis* is carried out.

The fundamental division of human praxis into 'making' (production) and 'doing' (communication) follows Aristotle, who distinguished the making of things from 'human action', in the sense of relations between people. Thus, Aristotle characterized *Ethics* (from its etymological root) as that science which had to do with the social relations among people. I have broadly characterized this as 'communication' (also suggesting an etymological connotation) in the schema; though the relations *between* things to be made *(factibilia)* and actions to be done *(agibilia)* are to be understood as close. For it is in the social praxis of the production of the means of existence, and also in the conditions for the reproduction of species-life, in the sexual and social processes of generating, rearing and socializing the young, that communication itself develops in a distinctively human way. So it is the Aristotelian schema as it is profoundly transformed by Marx and Engels, in their sketch of an historical materialism, that provides the basic model here.

The means or instrumentalities of this productive and communicative praxis are the artifacts and the skills in the use of these artifacts which distinguish human praxis from animal behavior. These are. primarily, *tools* and the various modes of symbolic communication, or *'languages',* in a ramified sense. (Parenthetically, animals do provide instances of such 'praxis' as well, in primitive or proto-artifacts, and in proto-language; and therefore, I do not insist on an absolute breach between animals and humans in this regard. But incipient modes of such 'praxis' among animals are still to be sharply distinguished from the

dominant mode of this activity among human beings, and therefore, from the cultural transmission and cultural evolution, which the use of tools and of language makes possible. I take the artifacts (tools and languages) to be objectifications of human needs and intentions; i.e. as *already* invested with cognitive and affective content. The tool is *understood,* both in its ,u^e, and in its production, in an instrumental fashion, as something to be made for and used for a certain end. What is characteristic of the production and reproduction of tools, then, is the conscious teleology of that productive praxis; just as the *use* of a tool, obviously, already embodies this intentionality as well. More radically, 1 would claim that it is in the acquisition of these skills that intentionality or conscious teleology makes its *first* appearance in the world. The counterargument, of the anti-teleologist, might be the claim that such skills or modes of goal-oriented behavior are simply conditioned responses, or habituation, shaped by (natural) schedules of reinforcement; and that the attribution of both 'consciousness' and 'teleology' is simply an unnecessary multiplication of entities, loading a specifically adaptive mode of behavior with too much cognitive baggage. My argument is that it is precisely the evolution of representation, or of symbolic embodiments or objectifications of modes of action or praxis,

in an objective artifact, that provides the very genesis of such cognitive consciousness and of such teleology. It is in the use of such representations that a characteristic mode of praxis is preserved, and comes to be transmitted; and in this lies the germ of cultural evolution, substituting the artifact, and the adaptive changes in the modes of social-historical praxis for the alternative and slower *genetic* means of preservation and transmission which function at the biological level. (Thus, as I say in another paper, the *artifact* is to cultural evolution what the *gene* is to biological evolution.)

The objectification of human intention is embodied both in the tools used in production, in the skills acquired and adapted to this use, and in the forms of symbolic communication which develop in language, in art, in dance and poetry, in their origins. Now, it is my argument that our perceptual activity is an activity mediated or conditioned by these very forms themselves. Insofar as our seeing, hearing, etc. are themselves modes of action, the dominant forms of representation are the filters of the purely biological perrceptual mechanisms; and more than this, actually transform the function (and speculatively, also the structure) of these mechanisms. Thus, in the schema, the very use of tools for a certain purpose is what determines how such tools will be seen, handled, etc. The usual view is that this 'understanding' is super-added, as 'interpretation', upon a purely physiological or psychological base (of sensory input; or of 'pure' or 'pre-interpretive' perception). The 'seeing as' arguments refine this view, taking the context as always determining or influencing the way in which something is perceived, so that, at the limit, all 'seeing' is 'seeing as'. But even this notion—e.g. in the discussions of the theory-ladenness of observation - have a residual notion of the *given,* as that which *then* becomes laden with theoretical or other background-knowledge context. What is wrong with this is similar to what is wrong with the notion of 'state of nature' in classical political theory. It is (as Rousseau already recognized) a philosophical fiction, invented for theoretical purposes, and the mistake is to assume that it has existential import as well-i.e. that a 'state of nature', or an 'innocent eye' exists somewhere at the *basis* of what then gets added to it. But if the very origins of the perceptual system are seen in the interactive adaptation of organism and needs to environment, there is no 'beginning' at which such perceptual neutrality, or a perceptual 'state of nature' exists. 'Nature' is always the arena of activity, and for perceiving organisms, what is 'there' or 'given' is always a product of their activity and that

cross-section of the world which this activity encounters and transforms into an environment. In short, 'environment' is itself not a neutral term, but is what is functionally adapted to, and changed by an organism, or by a population of organisms, (some of which then come to constitute parts of the environment for others). One may paraphrase Marx, in this ecological context, by speaking of an "ensemble of natural relations".

In the human case, the transformation is by means of artifacts. But the very production and reproduction of artifacts presents a made world as the symbol of what there is, and as a representation of the modes of .praxis themselves. The tilled field, or the domesticated animal is no less an artifact in this sense than is the spear or bow or pot. Moreover, the very environment itself, as a space of action, is invested with the characteristics of an artifact. Nature becomes transformed, not only in the direct practical way of becoming cultivated, or shaped into objects of use, in the embodied artifacts we call tools, or in the 'instruments' of existence such as clothing, houses, etc.; it becomes transformed as an object or arena of action, so that the forest or the river itself becomes an 'artifact' in this ramified sense. It is a source of food, or of danger; it has a direction or is mapped into regions; it is endowed with familiar properties, or anthropomorphized in a *representation* of its uses, and of the modes of praxis appropriate to such uses. To take an extreme example, perhaps: the hunter, hearing a crack of a branch, or seeing a sudden flight of birds, transforms that very sound and sight into an artifact-an instrument - of the hunt itself. But what the cracking branch is heard *as* is already an index of a social mode of praxis - of hunting, in this case-and therefore, insofar as the hunt has a specific historical form or function, nature itself has become historicized and socialized, and has come to be a *representation* of a certain mode of praxis or human action.

All the more so, if this rather extreme version of perception by means of an 'artifact' of the hunt is translated into the more acceptable modes of representation: the actual pictures of animals, and of hunting; the actual mimetic rehearsal of the hunt in ritual dances; the actual telling of a story in which actions are portrayed in a certain sequence, outcomes are described and the lesson or moral drawn.

That we come to see by way of our picturing I have argued in an earlier paper. 'Pictures, Representation and the Understanding' where it was shown that our canons of representation, the very styles and conventions of our picturing teach us to see differently. The artist, in effect,

reeducates us perceptually, when he presents us with a possible world, different from that which is culturally dominant at a given time. The plasticity of our forms of perception is evidenced, for me, by the fact that, as styles or canons of representation change, historically, the world has seen changes as well. Possible worlds become actual, differentially. It is also a fact that we can live, perceptually, in alternative worlds, adopting different 'sets' or different canons of representation for different contexts.

The schema proposes that the forms of representation - (either in the symbolic function of tools and skills of action as themselves models of the modes of action involved in their production, reproduction and use;
or in the use of representational language, pictures, mimetic performances) - become the very conditions of our perceptual understanding. The feedback loop concerns the way in which a particular mode of perception, mediated by such representational forms, is itself involved in our productive and communicative praxis. What we have learned to see something as, becomes in turn, the guide to our outward' practical activity. Just as, at another level, the perceptual constancies (e.g. for shape, size, distance) are crucial in orienting the motion and activity of animals in their life space, so too in the ramified cultural life-space of human praxis, the adaptations and changes of perceptual mode become crucial in orienting the forms of human action.

This feedback loop of changing praxis and changing perceptual modes has a relatively autonomous r—outer loop as well, which I have characterized in the schema as "off-line'. But it is all-impo.rtant. Here, the forms of representation themselves come to constitute a 'world' (or 'worlds') of imaginative praxis. The mimetic reenactment of the hunt is not a hunt: no animal is killed, and no hunter is endangered. In this sense, the rehearsal for the 'real thing' is 'off-line'; and indeed, as such an imaginative reenactment, it can come to achieve a greater or lesser distance from the performance itself, in that it allows for conventional elaboration, and for the investment of values and needs of a related sort-e.g. for communal participation, for purposes of courtship, or of kinship display, for the expression of joy, determination, aggression - all of which may be indirectly related to the hunt. Still, this relative detachment from the actual direct praxis of the hunt, and the symbolic plasticity of the ritual form itself comes to make the 'off-line' representation a receptacle for the expression and reenactment of a wider range of cognitive and affective needs, intentions and values than if it

were merely or only a hunting-rehearsal. On this reconstruction, we may speak of a class of artifacts which can come to constitute a relatively autonomous 'world', in which the rules, conventions and outcomes no longer appear directly practical, or which, indeed, seem to constitute an arena of non-practical, or 'free' play or game activity. This is particularly true when the conventions of representation—e.g. in art, or in language-become transparent, i.e. when the relation to direct productive or communicative praxis is so weakened, that the *formal* structures of the representation are taken in their own right as primary, and are abstracted from their use in productive praxis. So called 'disinterested' perception, or aesthetic perception, or sheer contemplation then becomes a possibility; but not in the sense that it has *no* use. Rather, in the sense that the original role of the representation has been, so to speak, suspended or bracketed.

An alternative theory for the source of this purely formal or disinterested perceptual activity is that, apart from the sheer utilities of productive praxis, the organism (higher animals and humans) has a need for the spontaneous play activity, in which its faculties are exercised beyond the limits of present need. In Groos' theory, in *The Play of Animals,* he proposes this as 'premonitory' activity, in which the young animal does not *imitate* adult behavior, but rather practises, in an instinctive way, those activities-(e.g. fighting, hunting, sex-play, etc.)- for which the need lies only in the future. This is presumably an adaptively selected 'play-instinct' already conditioned by the species-purposes which it serves. There may, in fact, be, in humans as well, a need, rooted both in biological and in socially evolved contexts, for such 'free' activity; and its relation to the directed forms of 'necessary' praxis is surely complex. But I will do no more than suggest here that this in no way affects the general thesis that such disinterested or 'off-line' activity depends in *its formal* structures on the practical rules, rituals and modes of praxis which are represented in the 'on-line' models of this activity. Which is initiatory is an open question; my own view, at present, is that it is the direct forms of necessary productive praxis that generate the representational forms themselves; and that only by this means is the perceptual activity mediated and does it become historical. The artifacts of the imaginative construction or 'off-line' worlds I take to be derivative, and abstractive. But there may well be a structural component in all this which derives from other (though no less social) needs which transcend the more immediate necessities of productive praxis.

I would characterize such artifacts, abstracted from their direct representational function, as 'tertiary' artifacts, and suggest that they constitute a domain in which there is a free construction in the imagination of rules and operations different from those adopted for ordinary 'this-worldly' praxis. Such possible worlds may indeed reflect the limits of the perceptual praxis in a given 'actual' world — i.e. a world in which direct outward and necessary productive praxis takes place, in accordance with rules, and ontologies evolved through this praxis. That is to say, just as in dreams our imagery is derived from our ordinary perception, but transcends or violates the usual constraints, so too in imaginative praxis, the perceptual modes are derived from and related to a given historical mode of perception, but are no longer bound to it.

Yet, the feedback here is important. If, as I claim, an 'actual' world is a historically selected or achieved one, corresponding to a given level of social-historical praxis, (technology, social organization, etc.), then the 'possible' worlds provide candidates for conceivable change in this mode of praxis itself. The perceptual alternative provides the possibility of a practical alternative, as, so to speak, a^perceptual hypothesis. Such imaginary worlds I do not take as 'dreams' or 'in the head', but as embodied representations, or better, embodied alternative *canons* of representation: embodied *in* actual artifacts, which express or picture this alternative perceptual mode. Once the visual picture can be 'lived in', perceptually, it can also come to color and change our perception of the 'actual' world, as envisioning possibilities in it not presently recognized.

The activity of the imagination is therefore a mode of alternative perceptual praxis, and is 'off-line' *only* relative to a historically actual or dominant present mode of perceptual praxis. What the imagination is, as 'internal representation', i.e. as a picturing 'in the mind' of such alternatives, 1 take to be derivative from the actual making of imaginative artifacts. That is to say, in its genesis I take imaginative praxis to be praxis in the actual world, or the actual production of representations; the interiorization of these representations, as 'mental' artifacts, I take to be a derivative process. In this sketch, I cannot say more than this, programmatically, and it remains to be elaborated in a subsequent paper.

The upshot, however, is that the constructions of alternative imaginative perceptual modes, freed from the direct representation of ongoing forms of action, and relatively autonomous in this sense, feeds back into actual praxis, as a representation of possibilities which go beyond present actualities. ;

That this *is* a mode of perceptual activity, and not simply some abstracted mental imaging should be clear from the very nature of imagery itself, insofar as it is both derived from, and in turn helps to shape and inform ordinary perceiving. The operations of anticipation, familiarity, resemblance, of socalled *'Einstellung'* or 'set' in perception; the selectivity and focus of perception, its involvement with needs, intentions, and feelings, with cognitive and theoretical frameworks, all speak to the inseparability of perception from the whole ensemble of social and individual relations in which it functions, and of which it is an expression. Perceiving is therefore not an *incipient* form of human action; it *is* human action in one of its modes, complexly and subtly involved in all the other modes of more direct productive praxis, or in the motor-activity by which human beings act in the world, and sustain their existence. My argument has been that, because of this thorough integration of perception with praxis, its forms change historically as that praxis changes historically; and that it is both determined by and helps to determine these very changes themselves. An historical epistemology therefore undertakes the task, (sketched here only programmatically) of investigating both the mechanisms of change of perceptual modes, and the history of these changes. Such a history of human perception cannot be an abstract philosophical enterprise, though it relies on the analytic and scientific investigation of the logic and process of perceptual activity, the physiology of human perception, and the characteristic experimental study of perceptual phenomena. In addition to this, however, a history of perception needs to investigate the historical changes in social praxis, and in the 'world' of artifacts and modes of representation which impinge on perceptual change. In this sense, the history of technology, of science and of art become relevant contexts; and so too does that social and cognitive history of human praxis which involves the contexts of belief and ideology, of world views and value-systems - in short, of that social human world in which perception has its genesis, and in which it functions.