HUMAN AFFAIRS *19*, 266–273, 2009 DOI: 10.2478/v10023-009-0040-x

GOMBRICH AND THE PROBLEM OF RELATIVITY OF VISION

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Abstract: The essay argues that Ernst Gombrich's views are relevant to the critical examination of the notion of the relativity and historicity of vision which has been widely accepted as one of the central axioms shared by visual studies, art history and film studies.
Keywords: Gombrich; vision; visuality; plasticity.

I.

Few assumptions in contemporary humanities are as widely accepted as the notion that vision is conventional and socially constructed. The relativity of vision thesis comes, to be sure, in many versions. Some of them—such as feminist theories of the gender determination of vision, stemming from Laura Mulvey's conception of the voyeuristic male gaze—are more popular in some quarters of film theory and visual studies, while remaining too extreme for most art historians. But the core of the constructivist thesis, the assumption that vision has a history, that there existed specific, culturally and historically determined modes of perception, remains virtually undisputed in the disciplines concerned with the visual.

The vitality of this dogma stems at least partly from the fact that it is not the child of theoretical initiatives, based on hypertrophied cultural relativism which has pervaded western academia in the late 20th century, but in its softer versions, it goes much farther back. It could never have achieved its influential position, were it not for the fact that it was in various ways anticipated by some great figures of art history, including those paragons of humanist scholarship against which critical theory and poststructuralist authors set their own agenda. It should suffice here to remember Heinrich Wölfflin's conception of stylistic changes as depending on historically distinct modes of vision, related to the *Weltanschauung* of the period (Wölfflin 1932). Or Erwin Panofsky's study on perspective, which makes a distinction between the ahistorical sphere of sensory experience and the historically changing forms of representation, between which there exist *Anschauugen* and *Empfindungen* that determine space perception in a given historical period (Panofsky 1998, 664–756). Or Otto Pächt who asserts that "our primary sensory impressions differ widely" and the essential need of the art historian is to acquire "unfamiliar visual habits" (Pächt 1999, 86–87). And, of course, Ernst Gombrich, who in his most influential book *Art and Illusion*, presented a by now classical account of how cultural codes shape perception and representations of reality. As his one-time opponent, Nelson Goodman, observed:

> The case for the relativity of vision and of representation has been so conclusively stated elsewhere that I am relieved of the need to argue it at any length here. Gombrich, in particular, has amassed overwhelming evidence to show how the way we see and depict depends upon and varies with experience, practice, interests, and attitudes (Goodman 1968, 7, 10).

But to those who, in subsequent years, waving the flag of new art history, critical studies, feminism or semiotics advanced the case of relativism and the social determination of vision, Gombrich became a target of criticism or simply irrelevant.[1] For champions of cultural relativism, Gombrich's constructivist theory of perception, as seen most notably in *Art and Illusion,* was blatantly lacking in proper concern for the social and discursive aspects of vision. His focus on the role of expectations and habits in perception was far removed from their concerns with the role of race, class, gender, sexual preference, or power structures that these theorists have seen as influencing the processes of vision. But there was also a fact of Gombrich's own mixed position, or, more precisely, a shift between the Gombrich of *Art and Illusion* and other works from the 1960s and Gombrich in his later years. American literary scholar Murray Krieger critically commented on what he perceived as the late Gombrich increasingly denying his own theoretical positions, gradually moving into "anticonventionalist theoretical conservatism". Krieger's formulation of "*the historian taming the theory into conformity with his needs as the years pass*" and his speculative attempt to account for this contradiction in terms of Gombrich's academic conformity appears far-fetched and it is not difficult to see why they so insulted Gombrich, but the difference between his earlier and later views of conventionality of vision cannot be missed.[2]

In the1980s and 1990s, Gombrich felt obliged on more than one occasion to denounce cultural relativism, which he saw as increasingly plaguing humanities and cultural studies. He has chosen to address the perils and pitfalls of relativism generally, without taking up specifically the problem of relativity and the conventionality of vision.[3] This problem, however—as I shall try to point out here—has a direct connection to his brief remarks on human nature and the biological foundations of art which appeared at that time. In his compelling "anti relativist" essay he has written (Gombrich 1987, 695-696):

> Our biological inheritance consists less of overt traits than of dispositions which can be developed or atrophied in the life of the community. Neither among animals nor among humans are all these developments reversible. Some behaviour patterns really become second nature and create certain human types with their own mentalities and their own possibilities and limitations. The humanist who is interested in these complex processes will have to turn to psychology for however many schools and problem areas there may exist in that science...
> I believe with them that we must start from the hypothesis that there are indeed constants in the psyche of man with which the humanist can reckon...I am convinced that the visual arts also rest in a similar way on biological foundations....

These lines were written in the mid 1980s, at a time when momentous changes in the biomedical sciences, which were to exert a major influence on the social sciences, were

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[1] Gombrich's psychology of art came under harsh attack for instance in Norman Bryson´s works (see e. g. Bryson 1983).

[2] See Krieger (1984, 189-190); see also Gombrich's reply in the same issue (1984, 195-201).

[3] See Introduction to the revised edition of *Art and Illusion* (Gombrich 2000a).

well under way. In the last decade of his life Gombrich could have been witness to major developments in biology and the sciences of the human mind: breakthrough research in genetics, an unparalleled boom in neuroscience with its new tools to investigate the neural basis of human behaviour, an emergence—in the territory of psychology—of the new discipline of cognitive neuroscience, or the psychodynamic model of the mind, which exerted such a powerful influence on culture and the arts throughout the 20th century, being gradually overshadowed by the biological model of the mind. Such developments returned to legitimacy the question of human nature (the dirty word of poststructuralist theorists) and its relationship to the world of cultural facts.[4] The very same developments, it should be stressed, also prompt us to engage anew the question of relativity and the social-historical determination of vision.

Given Gombrich's lifelong commitment to biology and psychology and his occasional evoking of human nature (see Woodfield 2003, 163-170), it is worth noting that the publications of his last decade show little acknowledgment of the challenges which biology and the sciences of the mind were bringing to the humanities and of the possibilities that they could offer to his case against relativism and in defense of humanism. But perhaps this should not be unexpected, given his ambiguous relationship to biology and science and his aversion to mechanical reductionism in the name of science, recently discussed by his student John Onians (Onians 2007, 160-162). That such temper against scientific reductionism did not leave Sir Ernest until the end is very much in evidence in what is perhaps his shortest published paper ever, a scornful note of twelve lines published in 2001 in a leading cognitive science journal as a commissioned response to V. S. Ramachandran's neurobiological theory of art. Although ostensibly giving support to Gombrich's view of the biological foundations of art, he did not hesitate to dismiss this theory, a glaring example of a poor application of biology to culture, based as it was on a simplistic and reductionist account of art (Gombrich 2000b, 17; cf. Ramachandran, Hirstein 1999, 15-51).

There are, therefore, sound reasons to assume that Gombrich would remain sceptical and even sarcastic to some of the overblown claims and ambitions of biology and the sciences of the mind to construct grand theories of the origins or substance of art. At the same time, he would very likely recognize that the fundamental issues of perception that kept him busy during his productive career, including the problem of the conventionality and historicity of vision, cannot be approached, let alone solved, from the turf of the humanities alone, but that they require substantial involvement with cognitive science and neurobiology. He might also recognize that the topics of vision and art are a particularly important testing ground and source of potentially important insights into the relationship between nature and culture.

In the remaining part of this essay I shall point out how Gombrich's views—as evident in brief remarks on human nature in his antirelativist essay—are germane to the project of rethinking the issue of the conventionality and historicity of vision.

II.

At the heart of the problem of the historicity and conventionality of vision lies the question of plasticity and cognitive penetrability. Where and how does the vision become open to cognitive and specifically cultural factors? How do we conceive of the interface between biological and cultural? Approaching these questions, from whatever angle and disciplinary

[4] Most comprehensibly argued in Pinker (2002).

background, inevitably requires a working model which would conceptually simplify "the awe inspiring intricacy of vision".[5] Much depends on how vision is decomposed into stages or phases. In art history and visual studies the distinction is often made between visuality and vision. In Hal Foster's formulation, "the difference between the terms signals a difference within the visual—between mechanism of sight and its historical techniques, between the datum of vision and its discursive determinations" (Foster 1988, ix). Or, as more pedestrian metaphor has it, between vision and visuality there is the same difference as between sex (biological act) and sexuality (cultural construction) (Nelson 1996, 2). Such polarity appears useful not least for the fact that it sharply demarcates the boundaries of professional competence: the humanist will focus on visuality, usually ignoring vision as a biological substrate and leaving it to exact disciplines. Indeed, influential voices in contemporary visual studies, putting a heavy emphasis on social and discursive aspects of vision, succeeded in insulating visuality from biological aspects of seeing.[6]

For some philosophers and scientists there is—within vision—similar hard-and-fast boundary between perception and cognition. In contemporary philosophy of art, the distinction has been staunchly defended by Arthur Danto on several occasions. Danto claims that the eye is trans-historical and visual processes are cognitively impenetrable. He thus distinguishes between the minimal visual experience, which is only "the hard core of the extended visual experience", to which the concept of the work of art belongs: *"There must be an impenetrable core of perceptual processing so universally distributed that we all live in the same world"*, claims Danto (2001a, 1-9; see also Danto 2001b, 39-44).[7] Elsewhere he adds that pictorial competence is not, in any obvious way, affected by historical or cultural differences and neither do cultural and historical differences penetrate perception (Danto 1992, 25-29; see also Danto 1991, 214).

Skipping comprehensive discussion, let us point directly out that both such demarcation of vision leave much to be desired.[8] From a much more complicated picture of the processes of vision, emerging from contemporary research, it may be as yet impossible to extrapolate satisfactory model. But an attempt may be warranted to augment the polarity of vision/visuality, or perception/cognition with a model which seeks to capture the process of vision in its biological and social complexity with a bit more precision. The scheme which I propose consists of four levels. Moving in a top-down fashion, there are levels of:

1. Concepts, attitudes, values and motives (and their discursive articulation) about vision and representation—approximately that which is covered by the term visuality*;*
2. The level of cognitive factors strongly shaped by the environment and culture, roughly corresponding to Baxandall's notion of period eye: semantic categories, patterns of inference experience and training in the range of representational conventions etc. (Baxandall 1972, 29-40).

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[5] J. J.Gibson's term which Gombrich adopts in the introduction to *Art an Illusion*.

[6] Mieke Bal (2003, 14) wrote: "…visuality is precisely that which makes vision much like language."

[7] See also replies by Noël Caroll, Mark Rollins and Whitney Davis in the same issue. Similarly, Jerry Fodor (1983, 86-88) insists on such distinction. In Fodor's view, perceptual processes restricted to a narrow range of informational input, early vision is cognitively impenetrable.

[8] Palmieri and Gauthier (2004, 291) wrote: "to understand the bridge between perception and cognition, it is fruitful to abandon any sharp distinction between perceptual and cognitive aspects of visual object understanding."

3. Perceptual strategies and processes—such as mechanisms of recognition, object identification and classification, patterns of saccadic eye movements, of selective visual attention, processes of unconscious embodied emotional and emphatic response, motor reaction activated by seeing etc.—that is, processes that are largely unconscious.
4. Mechanisms of detection of essential aspects of the scene, such as lines and edges, movement, colour, binocular disparity and related aspects of low vision.

Naturally, such a scheme is no more than analytical tool and it implies neither both strict hierarchy and hard boundaries between these stages, nor their mutual encapsulation. On the contrary, there is an ongoing, reciprocal relationship and feedback through which biologically implemented, hard-wired mechanisms mutually interact with the higher levels of vision modifiable by environment. The first two levels—that of visuality and cognitive categories—are culturally relative in a strong sense (as already noted by Baxandall and others). But importantly, there is an increasing body of evidence suggesting that also at the crucial level of perceptual strategies and processes, the culture in some measure penetrates perception.

This is not entirely new, as cultural factors operating in perception have been studied since the late 19th century by cultural anthropologists and social psychologists who demonstrated that some aspects of sensory perception are indeed influenced by natural and cultural environment (Segall, Campbell, Herskovits 1966). Scientific research of perception also influenced art-historical views of vision, most importantly, in the case of Michael Baxandall, who conceived his period eye as a specific manifestation of cognitive style and whose book on the Quattrcoento painters contains a reference to the classical work of Segall, Campbell and Herskovitz on the cross-cultural susceptibility to visual illusion. The model of the human mind which originates and develops from the intersection of brain and external source of activation resonates in contemporary research on the cultural modelling of human experience, particularly in the emerging field of cultural neuroscience. One of the newest strands of the ever-expanding neurosciences, so-called transcultural neuroimaging studies, focus on measuring neural activity in subjects of different cultural groups who are engaged in some cognitive task. The dozen or so studies published so far suggest that a person's cultural background can influence the neural substrate of not only high-level social cognition, but also of low-level perceptual processes (Shihui Han, Northoff 2008, 646-654). Using neuroimaging techniques, such as functional magnetic resonance imaging (fMRI), researchers have demonstrated cross-cultural differences in a number of perceptual and cognitive functions: in patterns of saccadic eye movements while viewing static scenes (Chua et al. 2005, 12629–33), in different strategies for extracting visual information from the human face (Blais et al. 2008, e3022); in attentional control (Hedden et al. 2008, 12-17); in certain aspects of visual object processing (Gutchess et al. 2006, 102-109).; in amygdala responses to fearful faces (Joan Chiao et al. 2008, 2167-74)—the list is by no means exhaustive. Some aspects of perception may be modified even by religious belief—as suggested by a study according to which an otherwise identical group of Dutch Calvinists differ from their atheist compatriots in the means by which they attend and process global and local features of complex stimuli (Colzato 2008, e3679). Cultural neuroscience is still in its infancy and the application of neuroimaging to the study of cross-cultural variability in perception and cognition faces some serious methodological problems—one of them being the fact that such studies typically employ broadly defined cultures, or more precisely, groups of people selected on the basis of race—typically Americans and East Asians and assume homogeneity within the populations thus defined (see Cohen 2009, 194-204; Downey 2009). But despite these problems, it is clear that cultural and social neuroscience has the potential to provide some important insights into cultural dimensions of the plasticity of perception, thus offering a new perspective on the issue of the relativity of vision.

III.

The underlying mechanism for the specific tuning or modulation of visual processes of certain groups is synaptic neuronal plasticity. It is well established that the anatomy of the human brain on the micro-level (and hence the outcome of the brain's operation) depends on the specific patterns of connections among neurons and the strength of their synapses. The structural details of synaptic connections are determined both genetically and through experience. New findings suggest that even in adulthood, the fundamental properties of the architecture of neural circuitry are subject to alteration and modification by experience[9] The plasticity, however, is not limited to the level of neurons and their synapses, it continues on the behavioral and societal or cultural level (Baltes, Reuter-Lorenz, Rösler 2006, 10-14). The theory of biocultural co-constructivism describes (theoretically so far) the reciprocal effects on the nature-nurture and brain-behavior-culture dynamics; it provides a model of how interconnected culture-driven and neurobiology-driven processes tune behavioral and cognitive development throughout the life span.[10] In general, once the brain has been modified by some forms of cultural experience, such a change will have an impact on the behavioral level, in the different interaction of the given subject with the environment, which in turn modifies or reinforces the existing cultural milieu (Baltes, Reuter-Lorenz, Rösler 2006, 78).

On the face of it, the new research seems to lend scientific support to the ruling dogma of relativity and the historicity of vision. It may be too early, however, to jump to such a conclusion. In fact it rather seems to provide an argument against strongly deterministic views which seek the direct causal influence of environment and culture on vision, such as those that pervade John Onians´s neuropsychology of style, which relates the visual environment of city-states of the Apennine peninsula to distinct local artistic styles (see Onians 2001, 239–50). To repeat: there is growing evidence for the cognitive penetrability of vision on the level of perceptual strategies processes and strategies, and for the fact that such visual plasticity is at least partially culturally determined. But this by no means supports the notion of historically specific modes of seeing. The plasticity itself is not all-powerful, but it functions within the framework created by genetic equipment. Visual perception on the level of perceptual processes and strategies may be partly cognitively penetrable, but to a large extent it remains genetically implemented and immune to cultural influences. And despite the enormous recent progress we are still far from being able to analyze the interaction of biological and cultural factors at this crucial level. As neuroscientists admit, it is still unknown how biological factors from genes to brain processes interact with environmental variables to produce individual differences in social competence (Blakemore, Frith 2003). And vice versa: we are no more able to describe how the individual plasticity in visual perception can possibly assume a collective—and historical—dimension. Gombrich's observation that "*our biological inheritance consists less of overt traits than of dispositions which can be developed or atrophied in the life of the community,"* points exactly to the heart of the problem, but we are still far from a satisfactory account of how the dispositions for vision are developed in the interaction of individual, community and environment.

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[9] For neurobiological mechanism of synaptic plasticity (a subject of enormous literature), see most recently, Hofer et al. (2008); for an overview see Fahle (2009, 523–533).

[10] For a formulation of the theory see Shu-Chan (2003, 171-194 and Baltes, Reuter-Lorenz, Rösler 2006). Another view of the relationship between synaptic neural plasticity, genetic change and cultural evolution is forwarded in a theory of neuronal epigenesis of the leading French neurobiologist Jean-Pierre Changeaux (2004).

His conclusion that "*the humanist who is interested in these complex processes will have to turn to psychology for however many schools and problem areas there may exist in that science"* (adding cognitive science and neuroscience alongside psychology) is of course more true now than ever before. It is a timely reminder to those critical and visual theorists who, while taking relativity and historicity of vision for granted, prefer to ignore the biology and ongoing developments in the mind and brain sciences. For anyone interested in these issues, Gombrich's outlook of the "reluctant humanist" and sceptical biologist offers inspiring guidance.[11]

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[11] Gombrich characterized himself as "reluctant humanist" (1984, 15).

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