

A defence of light: Ernst Gombrich, the Innocent Eye and seeing in perspective¹

Branko Mitrović

The spirits that I invoked
I cannot get rid of.
Goethe, 'Der Zauberlehrling'²

It has often been observed that metaphysical positions cannot be denied, let alone refuted, without the articulation of new ones. Even a person who is about to prove that metaphysics is impossible, an Oxford philosopher remarked once, is but a brother metaphysician with a rival theory about first principles.³ What applies to philosophers applies to historians as well, and the old metaphysical dilemma of one and many is notorious for generating conflicting historiographies. For a philosopher, the question is whether a multitude is always a mere sum of individuals, just a name of a set of particulars. Should particulars not be assumed to be mere manifestations of the multitudes they belong to? If so, then multitudes would be primary explanatory entities, and particulars merely derivative. For a historian, these particulars are individual humans and multitudes are collectives such as cultures, ethnicities, classes, races, historical contexts.⁴ Individualist historiography assumes that the name of a collective

¹ The original stimulus to work on the problem of the innocence of the eye came from a lunch discussion with Thierry de Duve and Michael Ann Holly during my tenure as a fellow at the Sterling and Francine Clark Art Institute. The paper was written during the time I was a guest of the *Technische Universität Berlin* as the recipient of the Humboldt Research Award. I should like to express my gratitude to the Sterling and Francine Clark Art Institute, the Humboldt Foundation, *Technische Universität Berlin* and my home institution Unitec Institute of Technology for the intellectual stimulation and the *otium* that enabled me to work on the project. I have received important help, support, advice and encouragement from Adrian von Buttlar, Lars Blunck, Hagi Kanaan, Ian Verstegen, Nadja Kurtović-Folić, Richard Woodfield and Nick Zangwill. Sections of the paper were presented and discussed in the doctoral seminar of the Architecture Department, University of Novi Sad. My exceptional gratitude to Karen Wise and Cameron Moore for help with written English.

² Die ich rief, die Geister,
Werd'ich nun nicht los.
Goethe, 'Der Zauberlehrling'

³ Francis Herbert Bradley, *Appearance and Reality*, Oxford: Clarendon Press, 1930, 1.

⁴ For a discussion about individualism and collectivism (holism) in history writing see Ernest Gellner, 'Holism versus Individualism in History and Sociology' and J. W. N. Watkins, 'Historical Explanation in the Social Sciences' in Patrick Gardiner, ed., *Theories of History*, Glencoe: The Free Press, 1959, 489-503 and 503-515; Arthur Danto, *Narration and Knowledge*, New York: Columbia University Press, 266 and Branko Mitrović, 'Intellectual History, Inconceivability and Methodological Holism', *History and Theory*, 46: 1, 2007, 29-47. For a discussion of this debate in art history, see Branko Mitrović, 'Ruminations on the Dark Side.

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refers exclusively to a set of individuals, that any activity of a collective is ultimately describable by listing the activities of its individual members and their interaction. From this point of view, individuals are typically assumed to possess free will and rationality equivalent to that of the historian—for Erwin Panofsky, these assumptions were the cornerstones of humanist historiography.⁵ Membership in a group in that case does influence individual creativity, thinking and conceptual framework, but this influence is always reducible to the influence of other individuals.

According to the opposing, collectivist viewpoint, collectives are the primary entities of any historical account while individuals, their thoughts and actions, are derivative. Membership in a collective is taken to explain (and therefore must determine) whatever individuals think or do; an individual's mental processes and capacities are mere manifestations of his or her participation in a collective. From this point of view, there can be no universal human rationality or human nature, because this would mean that some mental capacities are independent of membership in specific groups. An implication is that a historian describes the reasoning capacities of the members of various human groups the same way a zoologist does with various animal species.⁶ A variation of the collectivist position is the view that human perception is always predetermined by the available conceptual framework, that 'there is no innocent eye', and that consequently, since conceptual frameworks are predetermined by an individual's membership in a collective, perception must be too. And this brings us to the beginning of our story.

Sins of the eye

For it was Gombrich's important insight that individualist historiography can be combined with the view that there is no innocent eye. It is reasonably easy to establish what he meant by the 'innocent eye', even though the phrase is metaphorical. A systematic survey of relevant statements by Gombrich, as well as those by Karl Popper and Nelson Goodman, presented in Appendix One, shows that for him the central aspect of the thesis that 'there is no innocent eye' was the position that there could be no visual perception independent of conceptual classification, that one cannot perceive what one cannot classify. The same view can be formulated by saying that there is no perception separate from interpretation; it is contrary to the view (which Popper and Gombrich rejected under the name of 'the bucket theory of mind') that one *first*

History of Art as Rage and Denials', *Journal of Art Historiography*, 1: 1, December 2009.

⁵ Erwin Panofsky, 'The History of Art as a Humanistic Discipline', cited here according to the version published in Erwin Panofsky, *Meaning in the Visual Arts*, Chicago: The University of Chicago Press, 1955, 1-25. See also Branko Mitrović, 'Humanist Art History and Its Enemies. Erwin Panofsky on the Individualism-Collectivism debate', *Konsthistorisk Tidskrift*, 78: 2, 2009, 57-76.

⁶ Czeslaw Milosz argued that claims on 'broader understanding' of 'historical processes' are pretexts: 'What they are really after is to push others into the position of objects in order to look upon themselves as subjects'. See his *Native Realm*, trans. from Polish by Catherine S. Leach, New York: Farrar, Straus and Giroux, 1968, 80.

perceives objects and only *then* recognizes what they are, i.e. subsumes them under concepts and conceptualizes an already acquired visual experience. For Gombrich the view that perception is inseparable from classification had no exceptions—otherwise it would be reducible to the mere platitude that our perception is sometimes affected by our conceptual framework.

Thus understood, the view that there is no innocent eye was neither a new nor philosophically unproblematic idea by the time Gombrich's came to promote it. There are even fragments from Porphyry and Priscian of Lydia in which they argued that the soul perceives what is already in the soul.⁷ In a recent book about Duchamp, Lars Blunck has described how widespread the view was among artists at the beginning of the twentieth century.⁸ In the Introduction to *The Sense of Order*, Gombrich referred to Gestalt psychologists as the early precursors of the view.⁹ Husserl discussed such a position in his *Logical Investigations* decades before Gombrich, Popper and Goodman, and warned that it ends up in an infinite regress.¹⁰ If one says that one cannot perceive a blue cube without classifying it as a blue cube, this means saying that a blue cube is perceived only as similar to other blue cubes—i.e. that one does not perceive specific things (properties), but rather their *similarity* to other things and properties. But, then, it follows that such similarities themselves are perceived only because of their similarities to other similarities; and to perceive these further similarities one needs to perceive their similarity with other similarities, and so on *ad infinitum*. Another important problem, not stated by Husserl, is that if we cannot separate perception from classification, then only what can be classified can be perceived. It then becomes impossible to perceive things or properties which we do not know how to classify. But without perceiving things and properties that we have not encountered in the past, we cannot learn to classify them—and it would follow that starting from birth, we cannot learn to see new things or properties. It is then unclear how we can perceive anything, except for those things and properties whose classifications are inborn (if there are any). It does not help to say that we classify certain things as unknown when we perceive them for the first time and then re-classify them as things of a certain kind when we get to know more about them. If this were the case, since it is assumed that our classifications determine the totality of our perception, all unknown things would have to look exactly the same.

Such problems are indeed inherent in the view that there is no innocent eye. If one rejects the 'bucket theory' of the mind, Husserl-style regress can hardly be avoided

⁷ According to a fragment preserved in Nemesius, Porphyry's view was that the soul in encountering visible objects recognized itself as being visible objects. Similarly, Priscian of Lydia assumed that in sense perception the soul projected *logoi*, innate to the soul, outwards so that they would match the forms or appearances in the outside world. See Peter Lautner, 'Perception and Self-Knowledge: Interpreting Fr. 264 Smith' in George Karamanilos and Anne Sheppart eds, *Studies on Porphyry*, London: University of London, 2007, 77-91.

⁸ Lars Blunck, *Duchamps Präzisionsoptik*, Berlin: Verlag Silke Schreiber, 2008, 13-36.

⁹ Ernst Gombrich, *The Sense of Order. A Study in the Psychology of Decorative Art*, Oxford: Phaidon 1979, 4.

¹⁰ Edmund Husserl, *Logische Untersuchungen*, (*Husserliana* vol. XIX/1), The Hague: Martinus Nijhoff, 1984, 197-207, esp. 200-201.

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while the perception of unknown things cannot be explained. At the time Gombrich and Popper formulated their statements, these arguments would have been probably regarded as hair-splitting. Their adoption of the view that there is no innocent eye needs to be understood in its historical context; it coincided with the rise of 'New Look' psychology during the 1950s. Present-day psychologists, such as Zenon Pylyshyn, associate the view that there is no innocent eye with the psychological theories of the 1950s and the impact of Jerome Bruner's and Cecile Goodman's influential article 'Value and Need as Organizing Factors in Perception'.¹¹ Bruner and his collaborators tested school children's perception (estimation) of the size of various USA coins; the tests suggested that children from less affluent social background tend to overestimate their size. The study was an immediate success and triggered a virtual industry of similar studies about the impact of social and cultural background on human perception. Within the next decade more than three hundred studies were published in the endeavour to show that human beings perceive only in categories previously known to them and that perception is inseparable from available classification categories.¹² A large number of Gombrich's psychological examples from *Art and Illusion* belong to this production and it is hard to deny that the 'New Look' hugely affected his thinking on the subject.¹³

Scholars in the humanities are often not aware how obsolete the view that there is no innocent eye has become in the meantime.¹⁴ As Pylyshyn puts it, this way of conceiving of human vision was part of mid-century *Zeitgeist*.¹⁵ It was largely Pylyshyn's own work on the cognitive impenetrability of vision from the 1990s and

¹¹ Jerome S. Bruner and Cecile C. Goodman, 'Value and Need as Organizing Factors in Perception', *Journal of Abnormal and Social Psychology*, 42: 1, 1947, 33-44.

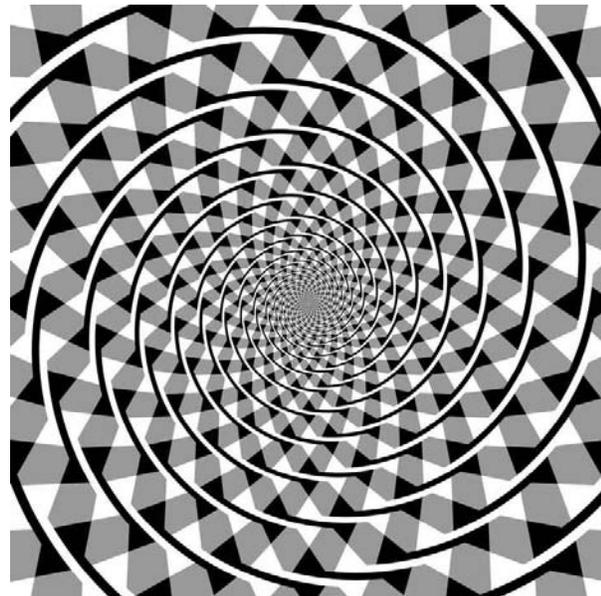
¹² For a historical summary of this research see Zenon Pylyshyn, 'Is vision continuous with cognition? The case for cognitive impenetrability of visual perception', *Behavioral and Brain Sciences*, 22:3, 1999, 341-423, esp. 342-343.

¹³ See Ian Gordon, 'Gombrich and the psychology of visual perception' in Richard Woodfield, ed., *Gombrich on Art and Psychology*, Manchester: Manchester University Press, 1996, 60-77, 63 for a discussion of early Gombrich's relationship with these sources. Gordon in particular cites books by Charles Egerton Osgood, *Method and Theory in Experimental Psychology*, New York: Oxford University Press, 1953 and Robert Sessions Woodworth and Harold Schlosberg, *Experimental Psychology*, New York: Holt 1950 on which Gombrich relied. They 'give numerous examples to support the empiricist (or constructivist) position. And these books were important sources for a generation of young researchers. As a result, the research literature in the next decade abounds in examples of perception being tricked in ways which reveal the involvement of knowledge, experience and familiarity – the types of central psychological processes help to be responsible for flashing out impoverished sensory data. Publications of the time describe oddly-shaped rooms which appear normal when viewed through peep-holes, pictures and figures which are difficult if not impossible to decipher without verbal hints, delays in recognising briefly exposed words when these are threatening or taboo, and of course, many illusions. Showing the malleable and vulnerable aspects of perception under laboratory conditions increased the belief that this was how perception must be all the time.' (63)

¹⁴ See for instance, Mieke Bal's statement in her 'Visual essentialism and the object of visual culture', *Journal of Visual Culture* 2: 1, April 2003, 5-32, that 'looking is inherently framed, framing, interpreting, affect-laden, cognitive and intellectual.' (9)

¹⁵ Pylyshyn, 'Is vision continuous with cognition?', 342 and 402. See also his book *Seeing and Visualizing. It's not What You Think*, Cambridge, Mass.: MIT Press, 2006, 83.

David Marr's studies about early vision published in the 1980s that sent the view into history. The 'cognitive impenetrability' of perception means, according to Pylyshyn's account, that perception is impervious to the direct influence of conceptual thinking.¹⁶ The old interpretation of visual illusions, such as the Fraser spiral [Fig.1] (which consists of concentric circles which are perceived as a spiral), stated that they result from the penetration of our expectations and conceptual thinking into our visual processes. This is also how Gombrich discussed them.¹⁷ But Pylyshyn points out that we perceive these illusions *even when we know about them*: 'it is a remarkable fact about perceptual illusions that knowing about them does not make them disappear'.¹⁸ He infers that our visuality is impenetrable to our conceptual thinking. Even before Pylyshyn, David Marr differentiated between 'early vision' and subsequent visual processes that include object recognition, whereby it is 'early vision' that generates the representation of the spatial layout.¹⁹ According to Alva Noë and Evan Thompson, the 'orthodox view' in contemporary psychology postulates that 'perception is thought-independent' whereby 'the beliefs and expectations of the perceiver are thought to have no influence on the character of the subpersonal computations that constitute perception'.²⁰ While the view that there is no innocent eye is obsolete today, Gombrich's positioning in the debate and his treatment of the theoretical problems he faced still have much to teach us.



Ausgeburth der Hölle

The view that perception is inseparable from classification does not necessarily imply the collectivist understanding of relationship between an individual's cognition and his or her collective. One may believe that a person's conceptual framework determines perception, but that this

¹⁶ Pylyshyn, 'Is vision continuous with cognition?'. See also Chapter 2 of Pylyshyn, *Seeing and Visualizing*, 59-158. For the similar argument before Pylyshyn, see Richard Gregory, "How do we interpret images" in Horace Barlow, Clon Blakemore, Miranda Weston-Smith, eds, *Images and Understanding*, Cambridge: Cambridge University Press, 1990, 310-330, 329.

¹⁷ See Gombrich's discussion in *The Sense of Order*, 134. Also, Ernst Gombrich, *Art and Illusion. A Study of Psychology of Pictorial Representation*, London: Phaidon 1960, 220.

¹⁸ Pylyshyn, *Seeing and Visualizing*, 64-68, 64.

¹⁹ David Marr, *Vision: Computational Investigation into the Human Representation and Processing of Visual Information*, San Francisco: Freeman, 1982. A good summary is in Gary Hatfield, *Perception and Cognition*, Oxford: Oxford University Press, 2009, 102-103.

²⁰ Alva Noë and Evan Thompson, eds, *Vision and Mind*, Cambridge, Mass.: MIT Press, 2002, 2-3.

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framework is purely individual, a result of an individual's experience and interaction with other individuals. Nevertheless, by Gombrich's time, the thesis that there is no innocent eye had accumulated some very sinister collectivist precursors. The racial version of the argument was articulated by a number of Third Reich thinkers. The Nazi philosopher Erich Rothacker formulated his *Satz der Bedeutsamkeit* as the principle that what can be perceived or interpreted is only what is relevant and meaningful for a specific collective.²¹ The view was endorsed by the art historian Dagobert Frey, in whose interpretation Rothacker's 'law' says that without meaning there can be no perception.²² In Frey's view, because of temporal-ethnic determinism, a Japanese and an European perceive differently.²³

Much more significant than these early collectivist precursors of the idea is the fact that the humanities of the 1960s, when Gombrich's *Art and Illusion* appeared, were largely dominated by collectivist paradigms. The assumption that all human thinking is verbal was promoted at the time by a number of major figures in analytic philosophy, such as Willard van Orman Quine, Gilbert Harman and Michael Dummett.²⁴ Since languages are always social conventions, if conceptual frameworks are mere manifestations of languages we speak and if they determine human perception, it follows that human perception is a result of one's membership in a linguistic community and as conventional as languages. A similar collectivist understanding of human visuality can be found at the time in Thomas Kuhn's highly influential *Structure of*

²¹ Rothacker was a Director of a department in Göbels' ministry of propaganda and subsequently taught in Mainz, where he was the *Doktorvater* of Jürgen Habermas and Karl-Otto Apel. The Satz says that '...erlebt, wahrgenommen, ausgedeutet, bearbeitet und wortinhaltlich differenziert wird *de facto* nur was für die betreffende Gemeinschaft in irgend einem Sinne bedeutsam und belangvoll wurde...', Erich Rothacker, *Zur Genealogie des Menschlichen Bewusstseins*, Bonn: H. Bouvier u. Co., Verlag, 1966, 44-48, esp. 44.

²² Frey was a former student of Max Dvořák's *Denkmalpflege* who collaborated with the *Wehrmacht* during the German occupation of Poland. He phrases the principle by saying that 'ohne erlebte Bedeutung keine Wahrnehmung', Frey, *Kunstwissenschaftliche Grundfragen. Prolegomena zu einer Kunstphilosophie*, Darmstadt: Wissenschaftliche Buchgesellschaft, 1992, a reprint of the edition Vienna: R. M. Rohrer Verlag, 1946, 33.

²³ 'zeitlich-volkhaften Bindung der darstellenden Gestaltung den Stoff'. Frey, *Grundfragen*, 33.

²⁴ For a general history of the view that all thinking is verbal, see Michael Losonsky, *Linguistic Turns in Modern Philosophy*, Cambridge: Cambridge University Press, 2006. The idea goes back at least to Johann Gottfried Herder in his *Abhandlung über den Ursprung der Sprache* [1778] (Stuttgart: Phillip Reclam, 1966) and in English-speaking countries it was popularized by Edward Sapir and Benjamin Whorf. Michael Dummett explicitly identified analytic philosophy with the view that all thinking is verbal, see his essays 'Language and Communication,' and 'What Do I Know When I Know a Language,' in Michael Dummett, *The Seas of Language*, 166-187 and 94-105, esp. 97 and 171. Similarly, Willard van Orman Quine in 'Meaning in Linguistics' (in Willard van Orman Quine, *From a Logical Point of View*, New York: Harper and Row, 1961, 47-64, 61), argued that 'there is in principle no separating language from the rest of the world. . . . It is not clear even in principle that it makes sense to think of words and syntax as varying from language to language while the content stays fixed. . . .'. For Gilbert Harman's views see his essays 'Language: Thought and Communication' and 'Language Learning' in Gilbert Harman, *Reasoning, Meaning and Mind*, Oxford: Clarendon Press, 2005, 166-182 and 183-191. Occasionally, Gombrich comes close to endorsing this view in its Sapir-Worfean articulation. Gombrich, *Art and Illusion*, 90. But see the comprehensive discussion of Gombrich's views in Richard Woodfield, 'Gombrich on Language and Meaning', *British Journal of Aesthetics*, 25: 4, April 1985, 389-393.

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Scientific Revolutions.²⁵ In Kuhn's view, scientific revolutions change the conceptual frameworks of sciences so radically that scientists from one epoch cannot comprehend the works of scientists from another.²⁶ Changes in conceptual frameworks also affect perception and according to Kuhn, 'when Aristotle and Galileo looked at swinging stones, the first saw constrained fall, the second a pendulum'.²⁷

The form of the collectivist reception of Gombrich's *Art and Illusion* in the decade when the book came out can be gauged from Nelson Goodman's 1968 book *Languages of Art*.²⁸ After endorsing Gombrich's arguments against the innocence of the eye, Goodman went on to claim that realism in painting is unrelated to any similarity between the picture and the object represented.²⁹ In his view, it is the *ease* with which one reads information from a painting that makes a painting realist, and this will depend on how stereotyped the mode of representation is. Realism in painting is thus 'relative ... for a given culture or person at a given time'; it is a result of inculcation. (37-38). In other words, similarities between what we see in a picture and that which is perceived in nature (the blue sky in a painting and the perceived blue sky) are conventional. Since a convention is always the convention of a group, it implicitly follows that an individual's membership in a group determines all of his or her visuality. Any perceived similarity between a painting and reality exists only for the members of a specific group within which there is a convention of perceiving things as similar in a certain way. Perspective too, according to Goodman, is a social convention. In his review of *Art and Illusion* he criticized Gombrich's non-conventionalist understanding of perspective: 'his treatment of this subject is often puzzling'.³⁰ Similarly to Goodman, Marx Wartofsky argued that human perception has history and that this history results from the common ways of visual representation within a group.³¹

²⁵ Thomas Kuhn, *The Structure of Scientific Revolutions*, Chicago: University of Chicago Press, 1996, first edition 1962.

²⁶ The idea that the content of concepts is determined by the theories in which they participate is normally called the "Theory-theory" of concepts. For a general account see Eric Margolis' and Stephen Laurence's introductory text "Concepts and Cognitive Science" in the collection of essays they edited: *Concepts. Core Readings*, Cambridge, Mass.: MIT Press, 1999, 3-82. Jerry Fodor described this understanding of concepts as follows: 'You utter 'Some dogs have tails'. 'No dogs have tails' I reply. We seem to be contradicting one another, but in fact we're not. Since taillessness is part of my theory of dogs, it is also part of my concept DOG ... Since you and I have different concepts of dogs, we mean different things when we say 'dog'.' Jerry Fodor, 'Concepts; A Potboiler', *Philosophical Issues*, 6: 1, 1995, 1-24, 19-20. See also his account of the "Theory-theory" in his *Concepts. Where Cognitive Science Went Wrong*, 112-119.

²⁷ Kuhn, *Scientific Revolutions*, 121.

²⁸ Nelson Goodman, *Languages of Art: an Approach to a Theory of Symbols*, Indianapolis: Hackett Publishing Company, 1976, first edition 1968.

²⁹ Goodman, *Languages of Art*, 35-36.

³⁰ Nelson Goodman, 'Art and Illusion; a Study in the Psychology of Pictorial Representation by E. H. Gombrich', [book review] *The Journal of Philosophy*, 57: 18, 1 September 1960, 595-599.

³¹ Marx Wartofsky, 'Art History and Perception', in John Fisher, *Perceiving Artworks*, Philadelphia: Temple University Press, 1980, 23-41. See especially the way he uses 'our' when he talks about 'the world by way of our picturing' (26) and when he says that the 'unit' that determines human vision is 'the more complex, socially and temporally extended sort of thing connoted by the term 'style'.' (28)

The collective that determines the convention is, presumably, culture. When Goodman says that ‘The world of the Eskimo who has not grasped the comprehensive concept of snow differs not only from the world of the Samoan but also from the world of the New Englander who has not grasped the Eskimo’s distinctions’³²—he is presumably not referring to a racial or ethnic difference as were Frey or Rothacker. The same applies to another collectivist critic of Gombrich, Norman Bryson, who insisted that the viewers implied by the medieval Church, Raphael or Vermeer were quite different.³³ We have no reasons to ascribe racist views, of the kind shared by Rothacker, Frey and (also) Wölfflin, to Goodman or Bryson.³⁴ Theirs is social-historical or ‘cultural’ determinism. But, to repeat here an argument originally formulated by Donald Davidson, the problem is that all of them—Rothacker, Frey, Goodman and Bryson—are making claims they implicitly admit that they cannot possibly substantiate.³⁵ If membership in a group indeed determined an individual’s conceptual framework, they could not know what the conceptual framework (‘world’, ‘expected viewer’) or the resulting perceptual experience of a Japanese, Eskimo or a Medieval Churchman would be like. To know this, they would have to share the conceptual frameworks which they themselves state that they cannot: in their view, conceptual frameworks derive from membership in a group, while they belong to different groups and cultural contexts.

The answer that can be given to this argument is that the authors who promote the idea that human thinking is determined by membership in collectives *need not claim to know* what the worldview of the members of specific collectives was like in order to write about it. Since the membership of these authors in their own respective groups determines their opinions about other groups, all they can anyhow do is articulate these opinions. They cannot pretend to be saying what the conceptual frameworks of the members of other groups are *really* like, but only state their group’s prejudices. In fact, there is nothing to be known or said about the world or reality that is not merely a result of one’s membership in a group. Talking about something is never more than reproducing one’s group’s standard verbal behaviour in relation to the topic.³⁶ One cannot acquire knowledge of any aspect of reality, but only culturally acceptable skills of talking about it. But then this situation must apply to the statement that all statements (beliefs) are predetermined by one’s membership in a collective: it must be also a result of membership in e.g. contemporary ‘Western’ culture. We thus finish with a classic circular argument: our membership in a culture determines us to believe that our membership in a culture determines our beliefs. It was a peculiarity of the humanities at the time when Gombrich lived that for many scholars such circular reasoning became a more plausible view than the belief in the existence of reality.

³² Nelson Goodman, *Ways of Worldmaking*, Hassocks: The Harvester Press, 1978, 9.

³³ Norman Bryson: *Vision and Painting. The Logic of the Gaze*, London: Macmillan 1985, xiii.

³⁴ For Wölfflin’s racist views see Mitrović, ‘Ruminations’, note 27.

³⁵ Donald Davidson, ‘On the Very Idea of a Conceptual Scheme’, cited according Ernie Lepore and Kirk Ludwig, eds, *The Essential Davidson*, Oxford: Oxford University Press, 2006, 196-209.

³⁶ Norman Bryson directly combined behaviorism and anti-realism. See the discussion below.

Farewell to reality

Through his career Gombrich vehemently rejected and denounced the view that human cognition is determined by the individual's membership in a collective; his polemics pertaining to this problem have been presented in a study by Ján Bakoš.³⁷ At the same time, the important message of *Art and Illusion* was that there is no innocent eye, that perception is inseparable from classification and interpretation. It was thus the same claim as the one collectivists insisted upon—only that they would add that these classifications and interpretations were always collectively determined. Inadvertently, the authority of Gombrich's book did provide support to a significant segment of their claims. Having come out in the same year as Willard van Orman Quine's *Word and Object* and Hans Georg Gadamer's *Wahrheit und Methode*, eight years before John Goodman's *Languages of Art* and two years before Thomas Kuhn's *Structure of Scientific Revolutions*, Gombrich's *Art and Illusion* must have appeared to many as part of the same wave of cultural relativism. In his 1984 article 'The Ambiguities of Representation and Illusion' Murray Krieger described how *Art and Illusion* 'radically undermined the terms which had controlled discussions of how art represented 'reality''.³⁸

It is not entirely surprising that in the beginning the anti-realist camp read *Art and Illusion* the way they did. After all, Gombrich did assert in *Art and Illusion* that 'there is no reality without interpretation'. (363) One important problem with the view that there is no innocent eye, which Gombrich failed to address, goes as follows. If perception is inseparable from classification, one cannot say that when perceiving e.g. a red and a blue ball, we perceive the two objects as different because we perceive their individual colours and then classify one of them as blue and another as red. Rather, we perceive the blue object as blue and the red object as red *because* we classify them that way. (As Marx Wartofsky put it, the assumption that "if I want to hit you, I have to be able to see you" is replaced by "If I see you, it is *because* I want to hit you".³⁹) But then, if one asks *why* we classify things as red and blue, there are two possible answers: either the classification of objects into blue and red ones is absolutely random *or* it is based on

³⁷ Ján Bakoš, 'Introductory: Gombrich's Struggle against Metaphysics', *Human Affairs*, 19 (2009), 239-250. *Art and Illusion* opens with such an attack on Hans Sedlmayr; later in the book Gombrich emphasized that while the form of representation cannot be divorced from the requirement of society, we can precisely understand these conditions since mankind can have hardly changed since the time of the archaic Greeks. Gombrich, *Art and Illusion*, 119. He calls the tendency to think about the past in terms of its typical style 'the physiognomic fallacy'—it would be harmless, he says, if it did not strengthen the illusion that mankind changed as dramatically as art did. Ernst Gombrich, 'Art and Scholarship' in Gombrich, *Meditations on a Hobby Horse and other Essays on the Theory of Art*, London and New York: Phaidon, first edition 1963, cited according to the third edition 1978, 105-119, 108.

³⁸ Murray Krieger, 'The Ambiguities of Representation and Illusion: An E. H. Gombrich Retrospective', *Critical Inquiry*, 11:2, December 1984, 181-195.

³⁹ Marx W. Wartofsky, 'Perception, Representation and the Forms of Action: Towards an Historical Epistemology', in Marx W. Wartofsky, *Models*, Dordrecht: D. Reidel 1979, 188-210, 195. For an analysis of Wartofsky's views see Whitney Davies, "The Presence of Pictures: Arthur Danto and the Historicity of the Eye," *Journal of Aesthetics and Art Criticism* 59 (2001), 29-38.

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some properties these objects possess (e.g. objects reflect light of certain frequency, which one perceives as colour). However, if we classified objects in a certain way because of the properties they possess, it would be necessary to perceive these properties *before* and *independently* of classification, which, it has been assumed, is impossible. It follows that the properties we perceive on objects are independent of any objects' properties and it becomes unclear in what way perception differs from dreams.

Such anti-realism was, however, not part of Gombrich's programme. Krieger's article describes the growing disappointment caused by Gombrich's subsequent distancing from the positions that were originally (mis)attributed to him.⁴⁰ While Gombrich's later writings condemned conventionalism, 'to those whom he criticizes, it was his writings that seemed to point them towards what he sees as their excesses.'⁴¹ In his response to Krieger, Gombrich stated that he was aware that 'this school of criticism...had apparently convinced themselves that the book [*Art and Illusion*] lent support to an aesthetics in which the notions of reality and nature had no place.'⁴² They attributed to Gombrich the view 'that all that remained were different systems of conventional signs which were made to stand for an unknowable reality.'⁴³ Like Goethe's *Zauberlehrling*, by the early 1980s Gombrich could observe, that he had invoked spirits he was not keen to be associated with: 'If I am not resigned, after all, it is for the simple reason that I regard such intellectual sloth as an alarming symptom of academic decline.'⁴⁴ One is reminded of the old Panofsky who gradually realized the collectivist implications of his youthful theses about space and perspective and gradually distanced himself from them.⁴⁵

Published a quarter of a century after *Art and Illusion*, Norman Bryson's *Vision and Painting* presented a comprehensive attack on Gombrich from the position of the collectivist and anti-realist dogmatism that dominated English-speaking academia at that time.⁴⁶ Bryson does away with reality by saying that it is 'always historically produced' and that 'there is no transcendent or naturally given reality'; 'real' has 'historical and changing character ... within different periods and cultures'. (13) According to Bryson, not only perception, but the reality that is perceived derives from

⁴⁰ Krieger, 'Ambiguities', 183.

⁴¹ Krieger, 'Ambiguities', 186.

⁴² Ernst Gombrich, 'Representation and Misrepresentation', *Critical Inquiry*, 11:2, December 1984, 195-201, 195.

⁴³ Gombrich, 'Representation', 195.

⁴⁴ Gombrich, 'Representation', 199.

⁴⁵ See Mitrović, 'Humanist Art History' for an account of changes in Panofsky's views that resulted from his rejection of collectivist historiography.

⁴⁶ Norman Bryson: *Vision and Painting. The Logic of the Gaze*, London: Macmillan 1985. Another similar example of a criticism of Gombrich's views as conservative is by Joseph Masheck, 'Alberti's 'Window': Art-Historiographic Notes on an Antimodernist Misprision', *Art Journal*, 50: 1, Spring 1991, 34-41. Masheck accuses Gombrich for encouraging 'antimodernist misunderstanding of the Albertian 'window''. (38) 'Modernists do have reason to be suspicious of Gombrich, whose insights can seem to come as if with attached, ready-to-sign petitions against anything radical.' (38)

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one's membership in a collective.⁴⁷ Contention between Bryson and Gombrich ultimately derives from their different positions in the individualism-collectivism debate. Bryson complains that Gombrich's understanding of painting as a record of perception suppresses 'the social character of the image and its reality as sign' (xii) and that in Gombrich's account there is always an ulterior and veridical world which exceeds the world-picture. These criticisms are meaningless outside a wider collectivist metaphysics: they make sense only if it is assumed that an image can only be a conventional sign, constituted into what it is by the social environment that sustains the convention. For Bryson, an image could not resemble reality independently of the collective in which it was created, because that reality itself is socially constructed. At the same time, he rejects any possibility of discussing human mental states (e.g. the way perceptions occurring in the mind of a painter are transferred on the canvas), on the basis of the behaviourist argument that only external behaviour can be studied.⁴⁸ We are thus left without any reality outside human beings or mental processes in them. One is almost tempted to make the same complaint as Professor Volland to Marxist *apparatchiks* in Michael Bulgakov's *Master and Margarita*: whatever one asks about, the response is 'there isn't any'.⁴⁹ However, since 'social character' or 'historical character' do imply the

⁴⁷Bryson directly says that '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.' (13) and 'The structures proposed by the sociology of knowledge construct reality *in toto*: there is no other Reality to be expressed beyond the reality the social process constructs.' (33) But this is not an accurate representation of the views of Peter L. Berger and Thomas Luckmann, whose book he cites (*The Social Construction of Reality*, New York: Anchor Books, 1966.) What they say is that 'It will be enough, for our purposes, to define 'reality' as a quality appertaining to phenomena that we recognize as having a being independent of our own volition (we cannot 'wish them away'), and to define 'knowledge' as the certainty that phenomena are real and that they possess specific characteristics.' (1) The sociology of knowledge, as they describe it, is concerned with the analysis of the social construction of beliefs about reality. 'It is our contention, then, that the sociology of knowledge must concern itself with whatever passes as 'knowledge' in a society, regardless of the ultimate validity or invalidity (by whatever criteria) of such 'knowledge'.' (3)

⁴⁸'My belief in successful act of recognition does not entail a journey into the hinterland of the other's subjectivity, but rather observation of the viewer's recognition-behaviour, and indeed both his and my observation ... have reference only to the socially constructed codes of recognition.' (39) Bryson also argued that congruence between an image and a mental event as the criterion for recognition would be unacceptable in sign-systems other than painting. In mathematics, the 'test of whether or not I have understood the formula would not consist in examination of my private mental spaces...but in seeing if I can place the formula in the general context of my knowledge of mathematical techniques, in my ability to carry out related calculations; in short in my executive use of the formula.' (42) He cites Wittgenstein's *Investigations* (paragraphs 189-190) to support this view, but the argument is not unproblematic. In his article "Concepts: a Potboiler" Jerry Fodor thus presented, as an argument against such behaviourist understanding of mathematics, a counterexample in which two persons are given the same sets of drawings and one of them is asked to separate triangles while the other is asked to separate trilaterals from the pile. Their sorting behaviour is going to be the same, but we can nevertheless say that they were operating with different mathematical concepts.

⁴⁹'...что же это у вас, чего нихватишься, ничего нет!', Михаил Булгаков (Mihail Bulgakov), *Мастер и Маргарита* (*Master and Margarita*) Moscow: Азбука Классика, 2004, 45. What Gombrich thought about such ontologies we can gather from his description of Krieger's position in 'Representation and Misrepresentation': 'There are few safer gambits in that game [of campus ideologies] than the assertion that

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existence of Society, Bryson's ontological minimalism does allow for the existence of collectives. In other words, whatever individuals see or think, this derives from their membership in a given collective and the same applies to the act of seeing or thinking. The existence of these reality-generating collectives needs to be taken as a matter of faith. Bryson's objections to Gombrich thus ultimately pertain to the kind of metaphysics a historiography should postulate. For Gombrich there is a reality independent of individuals, individuals make groups, interact with each other within groups and this leads to the accumulation of knowledge. For Bryson, there are only groups; reality, individuals and their knowledge are derivatives from these collective entities. Starting from this assumption, Bryson reproaches Gombrich for postulating a viewer as changeless as the anatomy of vision, which, in his view, dehistoricizes the relationship between the viewer and painting. (xiii) A 'dehistoricized relationship', for Bryson, one can infer, is the one that is not fully derivable from and reducible to an individual's membership in a group; a history writing is properly historical only if it reduces the individual to a member of a collective. The (individualist) history of the development of artistic skills, from Cimabue to Giotto, from Apollodorus to Zeuxis, Bryson admits, 'possess a historically changing object of enquiry' but 'history is the dimension it exactly negates.' (3) It assumes that 'the world ... exists *out there*, ... and all the image is required to do is approximate as closely as possible the appearances of that plenary origin' which is what painters strive to achieve. (4) 'History has place in the account, but only as a superficially changing spectacle whose alteration does not affect the underlying and immutable substrate.' (10) Rather, 'the real ought to be understood ... as a production brought about by human activity working within specific cultural constraints. Cultural production and reproduction concern ... the underlying foundation which any given society proposes and assumes as its Reality.' Once again, saying that the individualist account of history is 'superficial' and that reality is a cultural product, requires collectivist metaphysics as a starting position.

A metaphysical position is as good as it is useful within a certain theoretical framework. Bryson's actually works too well. If it is said that the totality of the contents of one's perception derives from one's membership in a collective, it is important to ask how we know about the existence of these collectives—and the answer has to be, from perception. For instance, my perception derives from the culture I belong to, without any other interaction with reality; all aspects of reality that I could possibly perceive are themselves structured by my cognition according to the worldview of my culture. But then, how do I know that there are such forces as cultures, or other cognition-structuring collectives? The answer has to be, again, because of my membership in such a collective, i.e. culture. Whatever one asks about, the 'social character' of human cognition explains

one does not believe what everybody else believes. Hence the prestige that attaches to startling, 'revolutionary', or 'ground-breaking' theories, quite regardless of the evidence that is offered in their support.' (200)

everything, because it is defined as the source of everything. As early as 1938 Panofsky grasped that and described how collectivist metaphysics and the related individualism-collectivism debate are mere repetitions of positions in the older theological dispute about free will between Luther and Erasmus.⁵⁰ Phrases such as ‘social character’ or ‘cultural context’ thus become modern equivalents of ‘predestination’ that early Protestant theologians such as Luther or Calvin talked about. Erasmus defended the free will and universal rationality of human subjects; Luther argued that all human cognition and decisions were predetermined by God. Panofsky noted the equivalence of this latter view with modern collectivisms, in which ‘Society’ (‘culture’, ‘historical context’ and so on), like *Deus* in Luther’s *De servo arbitrio*, becomes the source of reality, individual thoughts and actions. It makes no sense to say that the Deity of Protestant theologians is understood to be transcendent while Society consists of human beings that belong to this world—because social constructivists are saying precisely that individual humans and the world (reality) derive from Society, that both reality and the understanding of Society as composed of individuals are *social* constructs. The various names of collective entities are then modern ways of referring to the One from Whom everything derives.

Parte ove non è che luca

The debate about the nature of images is consequently a ramification of the old theological debate about free will. Bryson’s great contribution was that he articulated the collectivist critique of Gombrich in a radical form that made this obvious. If human cognition (including perception and reasoning) is always predetermined by God (also known as Society, Culture, Historical Context and so on in respective monotheistic theologies) and since human beings base their decisions on reasoning and knowledge, whereby the latter largely derives from perception, human beings from this point of view certainly cannot be said to be acting freely. When Panofsky defined humanist historiography as characterized by the assumptions of free will and the universal rationality of human subjects, he made an immensely important point: if there is no universal human nature in matters of cognition, if all human thinking is predestined by membership in various groups, and in no way shared independently of membership in various groups, then it certainly makes no sense to talk about humanism, since there is nothing the phrase ‘human species’ could be referring to. In his response to Gombrich Murrey Krieger wrote about ‘skeptical humanism’, which he identified with ‘anthropological pluralism’ which is opposed to the assumption of transcultural reality and according to which different cultures have different visual realities.⁵¹ But it remains unclear to what extent individuals who, because of their membership in different collectives (‘cultures’) perceive and think so differently that they live in different

⁵⁰ Erwin Panofsky, ‘Humanist Art History...’. See also Mitrović, ‘Humanist Art History’.

⁵¹ Murrey Krieger, ‘Optics and Aesthetic Perception: A Rebuttal’, *Critical Inquiry*, 11: 3, March 1985, 502-508, see 506 for the criticism of Gombrich for not embracing ‘anthropological pluralism’ and 504 for assuming transcultural reality.

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realities, still belong to the same species.

It is in this wider context that we have to understand Gombrich's discussion of perspective. His contention with collectivists received its most significant articulation in relation to perspective. If vision is predetermined by our conceptual knowledge, it may seem unclear how it can be at the same time determined by the laws of perspective. Once the shape of an object and the position of a viewer are defined, perspectival laws determine the way the object is seen with no regard for the observer's conceptual framework and knowledge about the object. This seems to leave no possibility for any contribution from what we know about things to the way they are perceived—regardless of whether one conceives of the cognitive subject's knowledge and conceptual framework individualistically (as resulting from previous experience and communication with other individuals) or collectivistically, as it results of his or her membership in a group. More radically, from the point of view of Bryson-style collectivist anti-realism, reality itself, together with the laws of geometry, is a social construct, and seeing in perspective must be a social convention anyhow.

Famously, the idea that seeing in perspective is a cultural product was promoted by the young Panofsky in his 1924 essay *Die Perspektive als symbolische Form*—though by the 1960s, when *Art and Illusion* came out, Panofsky's thesis had lost much of its credibility.⁵² Panofsky argued that perspective defines the geometrical construction of drawings on a flat surface—and that it is thus inapplicable to the image on the retina, whose surface is curved. Since flat-plane perspective is standard in modern visual communication, Panofsky inferred that seeing in perspective is a result of cultural conventions that developed in the early Renaissance and were accompanied by the development of perspective as a system of visual communication. However, he overlooked that perspective had nothing to do with the retinal image.⁵³ Geometrical construction of a perspectival drawing produces the same drawing as the one that would be created if one drew on a glass plane placed between the eye and the objects perceived, the contours of the objects seen through the glass. Perspective thus understood is a solution of a geometrical problem pertaining to the intersection of light rays and a glass plane; it is ultimately irrelevant what happens in the eye and in the brain.

In his *Languages of Art* (11) Goodman readapts this latter argument for his conventionalist purposes.⁵⁴ The argument assumes that a picture drawn in correct

⁵²Erwin Panofsky, *Die Perspektive als symbolische Form* in Fritz Saxl, ed., *Vorträge der Bibliothek Warburg 1924-1925*, Leipzig and Berlin 1927. Cited according to the reprint in Erwin Panofsky, *Deutschsprachige Aufsätze*, Karen Michels and Martin Warnke, eds., Berlin, Akademie Verlag 1998, vol. 2, 664-757.

⁵³For this argument, see Genesis Ten Doesschate, *Perspective, Fundamentals, Controversials*, History Nieuwkoop: B de Graaf, 1964, 46-56, esp. 49 and also Maurice Henri Léonard Pirenne, *Optics, Painting & Photography*, Cambridge: Cambridge University Press 1970, 148-149.

⁵⁴ It should be mentioned that his remaining arguments (10-19) against perspective are wrong. Goodman thus states that 'a picture is to be viewed face on at a distance of six feet while the cathedral represented has to be looked at from, say, an angle of 45° to its façade and at a distance of two hundred feet.' (13) thus overlooking that a perspectival drawing replicates an imaginary drawing drawn on a glass plane between the eye and the building, whereby the glass plane is placed under the same conditions under which the

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perspective will, under specified conditions, deliver to the eye an identical bundle of light rays as the one delivered by the object itself. Matching is thus purely objective,

perspectival drawing is seen—i.e. the distance must be the same (which eliminates the problem of scale) and ‘face on’ (i.e. orthogonally). Goodman actually included a drawing in his chapter that clearly shows his failure to understand that the imaginary glass plane must be orthogonal on the direction of sight, the way it is the case with the plane of the picture. (18) Even worse, he seems to have ignored the principle that parallel lines appear parallel in a perspectival drawing in the case they are parallel to each other *and* the imaginary glass plane, so he states that ‘by the ‘laws of geometry’’ vertical poles should converge in a perspectival drawing the way it is the case with railroad tracks. (16) (If the poles and the imaginary glass plane are vertical, geometry shows that poles *cannot* be seen to converge.) Similarly, he argues that perspective requires a fixed eye (‘must be viewed through a peephole’ (12)) while ‘pictures are normally viewed...by a person free to walk about and move his eyes.’ (14) In fact, moderate departures from the intended eye position will result in moderately distorted perception of the spatial disposition of objects conveyed by the drawing—i.e. different from the disposition that the drawing was intended to convey. Remarkably, it has taken very long time until the weaknesses of his arguments were first explained by David Carrier (further elaborated in John Ward’s response to Carrier). David Carrier, ‘Perspective as a Convention: On the Views of Nelson Goodman and Ernst Gombrich’, *Leonardo*, 13: 4, Autumn 1980, 283-287. (See also the subsequent exchange, *Leonardo*, 14: 1, Winter 1981, 86-87. In fact, almost all errors in Goodman’s reasoning derived from a failure to understand the role of picture plane in the construction of perspective. David Topper in ‘On the Fidelity of Pictures: A Critique of Goodman’s Disjunction of Perspective and Realism’, *Philosophia*, 14: 1-2, 1984, 187-197 provided additional criticism of Goodman’s views, and noted that the perspectival section of Goodman’s book had not been sufficiently discussed by the numerous authors who discussed *Languages of Art*. (See especially note 2.) Subsequently, in another article, Topper criticised Goodman’s argument that poles should be painting as converging, but without naming its source. (‘Perspectives on perspective: Gombrich and his critics’, in Woodfield, *Gombrich*, 78-99, 85.) A good analysis of Goodman’s mistakes is in Michael Kubovy: *The Psychology of Perspective and Renaissance Art*, Cambridge: Cambridge University Press, 1986, 122-126.

Remarkably, no other reviewer—not even Arnheim, who was very critical of Goodman’s book—noticed before Carrier Goodman’s numerous errors pertaining to perspective. (Rudolf Arnheim, ‘Painted Skies and Unicorns *Languages of Art. An Approach to a Theory of Symbols* by Nelson Goodman’ *Science*, New Series, 16 4: 3880, May 9, 1969, 697-698.) Although reviewers failed to notice the errors in reasoning about perspective, the book nevertheless received much criticism—according to the philosopher B. C. O’Neill (‘*Languages of Art: An Approach to a Theory of Symbols* by Nelson Goodman’, *The Philosophical Quarterly*, 21: 85, October 1971, 361-372.) ‘The profusion of technical terms and definitions turn out to be difficult not because the subject is, but because some of the jargon is redundant...the standards of rigour and precision in the formulation of the definition and the use of the jargon are very low, and most of the definitions are artificial and unhelpful. The epigrammatic style and wise-cracking polemics cover the fact that Professor Goodman offers no argument at all for his major theses. The book contains one fruitful and interesting idea—that of density. Otherwise it is almost entirely worthless.’ (361) At the same time, for art the art historian Wolfgang M. Zucker (‘*Languages of Art, an Approach to a Theory of Symbols* by Nelson Goodman’, *The Art Bulletin*, 52: 2, June 1970, 223-224.) the book was too philosophically technical. See also Monroe C. Beardsley, ‘*Languages of Art: An Approach to a Theory of Symbols* by Nelson Goodman’, *Philosophy of Science*, 37: 3, September 1970, 458-463; Daniel Rigney, ‘*Languages of Art: An Approach to a Theory of Symbols* by Nelson Goodman’, *Contemporary Sociology*, 8: 2, March 1979, 319-320; Annette Barnes, ‘*Languages of Art: An Approach to a Theory of Symbols* by Nelson Goodman’ *Perspectives of New Music*, 9: 2, Spring-Summer 1971, 330-340; Christiana M. Smith, ‘Symbolic Systems, Cognitive Efficacy, and Aesthetic Education. *Languages of Art: An Approach to a Theory of Symbols* by Nelson Goodman’, *Journal of Aesthetic Education*, 3: 4, October 1969, 123-136; Nicholas Wolterstorff, ‘*Languages of Art*’, *The Journal of Aesthetics and Art Criticism*, 34: 4, Summer 1976, 491-496; Michael Thompson, ‘*Languages of Art: An Approach to a Theory of Symbols* by Nelson Goodman; *Laws of Form* by C. Spencer Brown’, *Leonardo*, 7: 2, Spring 1974, 175-176.

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measurable by instruments. The identity of light ray patterns is then taken to result in an identity of appearance. But, Goodman points out, the rays yielded by the picture match not only those yielded by the object from a given distance and angle but also those yielded by any multitude of other objects from other distances and angles. He concludes that the identity of light patterns, like resemblance of other kinds, is insufficient condition for representation and infers that seeing in perspective is a social convention.⁵⁵ In a radical form, this argument would imply that a drawing that reproduces the perceived shape of an object is as conventional as the words of any language. Gombrich's reaction is not hard to imagine: he reports with bemusement a conference in which Marx Wartofsky drew a dog, wrote 'dog' below and argued that both the drawing and the word are conventions.⁵⁶

The debate about the conventionality of perspective was additionally complicated by a body of psychological research about constancy.⁵⁷ Constancy is the awareness of the real size and colour of objects that affects or is reported to affect our phenomenal experience. As a person approaches me, his apparent image may seem to grow a number of times, yet I do not come to believe that he has grown in size. In the 1930s Robert Thouless tested the human perception of constancies by showing a tilted circle to subjects and asking them to draw or select from a catalogue the shape they have perceived.⁵⁸ Typically, subjects chose (drew) ellipses, but thicker and closer to a circle than the laws of perspective suggested that they saw them. Subsequently, other psychologists demonstrated that subjects reported seeing ellipses closer to what they should have perceived according to the laws of perspective once the cues that provided the awareness of the original shape of the object seen (circle) have been eliminated.⁵⁹ In

⁵⁵In 'Image and Code' Gombrich cited a letter from Goodman in which the latter seems to retract (partly) his radical conventionalism, but he still says 'I cannot believe that the standard rules of perspective embody the one native and easiest way of achieving and reading a realistic depiction.' 'Image and Code. Scope and Limits of Conventionalism in Pictorial Representation', first published in Wendy Steiner, ed., *Image and Code*, University of Michigan 1981, 11-42. Cited according to the version in Gombrich, *The Image and the Eye*, 278-297, 284.

⁵⁶ Gombrich, 'Image and Code', 284.

⁵⁷For an extensive survey of later studies on constancies, see Dejan Todorović, 'Constancies and Illusions in Visual Perception', *Psihologija*, 35: 3-4, 2002, 125-207.

⁵⁸Robert Thouless, 'Phenomenal regression to the real object', *British Journal of Psychology*, 21: 4, April 1931, 339-359. For Gombrich's comments on Thouless, see his articles 'The 'What' and the 'How': Perspective Representation and the Phenomenal World', R. Rudner and I. Scheffler, eds, *Logic and Art: Essays in Honor of Nelson Goodman*, 1972, 129-49 and 'Illusion and Art', in Richard Gregory and Ernst Gombrich eds., *Illusion in Nature and Art*, London: Duckworth 1973.

⁵⁹J. Langdon, 'The Perception of a Changing Shape', *Quarterly Journal of Experimental Psychology*, 3: 4, 1951, 157-165 demonstrated that shape constancy will not be present when almost all supplementary textural and space cues of depth vision have been removed. Alberta S. Gilinsky, 'The Effect of Attitude upon the Perception of Size', *The American Journal of Psychology*, 68: 2 (1955) 173-192 summarized the same phenomenon by saying that in the absence of other indicators of distance, the size of the retinal image necessarily determines our perceptions of two dimensions, width and height. As increasing sensory data are made available, perceived sensory size comes to depend less on retinal size and more on object-size. (173) H. Leibowitz and L. E. Bourne, 'Time and Intensity as Determinants of Perceived Shape', *Journal of Experimental Psychology*, 51: 4, 1956, 277-281 examined the effect of the duration of exposure on the perception of

the 1970s, Wartofsky proposed a radical conventionalist interpretation of these experiments.⁶⁰ In Wartofsky's view, people actually perceive things as they are—circles, for instance—but then, when they need to communicate their visual perceptions, they switch to our social convention of visual communication, which is perspective, and report that they have seen an ellipse.

In order to assert that human visual experience is organized according to the laws of perspective, Gombrich endeavoured to explain away constancies by describing ways in which artists and psychologists 'break' them. When discussing the above example of a person approaching us, Gombrich admits that we do not register the changes in perception and the person's image remains relatively constant.⁶¹ However, painters 'break' constancies by measuring the apparent size of an object against the brush; he observes that a novice who tries this technique for the first time is in for surprises.⁶² Gombrich insists that it would be wrong to infer from this surprise that the methods the novice is taught are mere conventions, 'a fortuitous code that differs from the way we 'really' see the world'.⁶³ Such arguments 'fail to take into account that we know very well when a picture looks 'right'. A picture painted according to the laws of perspective will generally evoke instant and effortless recognition. It will do so to such an extent that it will in fact restore the feeling of reality, including—and this is most important—the constancies.' (19) Constancies, according to Gombrich, derive from the perspectival nature of our vision and do not contradict it. His most explicit statement on constancies is in *The Preference for the Primitive*, where he discusses a floor painted in perspective by Vermeer.⁶⁴ Psychology teaches, he observes, that if asked, we would all

constancies. They found that short exposures to light (e.g. 0.1 sec) destroy constancies and produce matches which are in good agreement with the retinal image.

⁶⁰Marx W. Wartofsky, 'Pictures' and 'Rules of Representation: The Virtues of Constancy and Fidelity put in Perspective', in Wartofsky, *Models*, 211-230.

⁶¹ Ernst Gombrich, 'Visual discovery through art' in Gombrich, *The Image and the Eye*, 11-39, 18-19.

⁶² Gombrich, 'Visual discovery', 19, 34. Gombrich's 'breaking of constancies' is equivalent to what psychologists describe as the perception of the visual angle. See for instance Maurice Hershenson, *Visual Space Perception. A Primer*, Cambridge Mass.: The MIT Press, 1999, 116-118. Among psychologists who were active at the time, similar views to Gombrich's were expressed by Irvin Rock, 'In Defence of Unconscious Inference' in William Epstein, ed., *Stability and Constancy in visual perception: mechanisms and processes* New York: John Wiley and Sons, 1977, 321-372. Rock observes that the 'visual angle is by no means a fact without representation in consciousness' (340) and that while a circle perceived at an angle 'may in one respect be said to continue to look circular, its retinal image is not without some perceptual representation' (342). 'The point is that we would be seriously distorting the phenomenal facts if we chose to speak *only* of the constancy aspects of perception.' (347) Similarly in their article Irvin Rock and William McDermott, 'The perception of visual angle', *Acta Psychologica*, 22, 1964, 119-134, argued that differences in visual angle are detectable and are not completely lost to experience. Quite in line to what Gombrich argued, they say that the perception of visual artists shows that the perception of the visual angle is possible: 'it has long been admitted that some individuals—e.g. artists—are rather good at capturing the retinal-image aspect of a stimulus situation. How can they capture it if it isn't there in the first place, so to speak?' (132) See also Todorović, 'Constancies', 132, for a discussion of the distinction between proximal and distal perception.

⁶³ Gombrich, 'Visual discovery', 19.

⁶⁴One 'would have seen' that 'tiles are of equal scale even though they diminish in apparent size as they recede in the background. ... We have learnt from the psychology of perception that, if asked, we would all

underrate the degree to which tiles appear to diminish. Had the floor however not been drawn according to the laws of perspective, it would fail to look like a floor paved with tiles of identical size. Gombrich concludes that in order to achieve the desired effect, a mimetic artist must ignore his visual experience in favour of a geometrical construction based on the laws of optics.

Gombrich, perspective and light

Kristóf Nyíri has described the gradual articulation of Gombrich's views on perspective during the 1970s.⁶⁵ Already in *Art and Illusion* (247) Gombrich had criticized the cultural-constructivist views on perspective expressed by Herbert Read. He also insisted on the 'effortless recognition' which is characteristic of seeing perspectival representations.⁶⁶ In response to conventionalist views on realism in painting, he regularly invoked examples from the animal world—that young fishes can be deceived by two dots which they take for mother's eyes;⁶⁷ that the evolution of various animals resulted in a bodily shape which is likely to confuse potential predators (butterflies with eyes painted on wings)⁶⁸; that decoy ducks are intended to secure certain types of attention from other creatures.⁶⁹ Perspective from Gombrich's point of view is not a representational skill that most cultures failed to develop, but rather a result of transgression from more widespread, conceptually-orientated representation practices. In his 1951 essay 'Meditations on a Hobby Horse' he argued that all image making is rooted in the creation of substitutes, which are then accompanied by the expectation that the essential aspects of the thing represented need to be depicted.⁷⁰ Transgression from a conceptual style occurs only with the understanding that a representation can be a record of visual experience and need not be a substitute, need not show all the characteristics deemed essential—when it becomes, for instance, acceptable that the representation of a man on a Greek vase need not show both feet. Similarly, in 'Visual Discovery through Art', Gombrich pointed out that naturalistic representation 'presupposes a shift in the beholder's expectations and demands. The public asks the artist to present the sacred as it might have looked to an

underrate the degree to which they appear to diminish.' 'We are free to say that we do not see a tiled floor as it must be drawn in perspective, but it remains also true that if it is not so drawn it fails to look like a level floor paved with tiles of identical size. To come to the last point: what mimetic artist must learn is not to concentrate on how he sees the world, but to ignore his visual experience in favour of a geometrical construction based on the laws of optics which tell us that light rays are propagated in straight lines and will result in an orthogonal projection on our retinas.' Ernst Gombrich, *The Preference for the Primitive*, New York: Phaidon, 2002, 277.

⁶⁵ Kristóf Nyíri, 'Gombrich on Image and Time', *Journal of Art Historiography*, 1, 2009.

⁶⁶ Gombrich, 'Visual Discovery', 20.

⁶⁷ Ernst Gombrich, 'Meditations on a Hobby Horse and the Roots of Artistic Form', Ernst Gombrich, *Meditations on a Hobby Horse and Other Essays on the Theory of Art*, London and New York: Phaidon 1963, 1-11, 6.

⁶⁸ Gombrich, 'Visual Discovery', 24.

⁶⁹ Gombrich, 'Image and Code', 286.

⁷⁰ Gombrich, 'Meditations on a Hobby Horse', 8-9.

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eye-witness.’⁷¹ In the case of the Renaissance, naturalistic representation in his view grew out of dissatisfaction with depictions that were not mere assemblages of symbols.⁷²

In order to sustain these claims, Gombrich needed both to explain the compatibility of perspective with his claim that there is no innocent eye, and to refute the view that perspective is not the organizing principle of human visuality. In what follows I will attempt to show that he presented a cogent and coherent response to these problems; I will leave aside the discussion of the compatibility of his views with the results of later psychological research. Gombrich’s answer to the criticism that perspective is incompatible with the view that there is no innocent eye is actually an elaboration of the argument that we have seen Goodman used *against* perspective. The response relies on the fact that it is impossible to infer the actual shapes and distances of objects from a single perspectival drawing;⁷³ there is always an infinite number of spatial configurations that will result in the same image.⁷⁴ We are rarely aware of the simple fact that perspectival drawings can be read in a number of different ways.⁷⁵ Only by moving from one spot to another and by relying on the parallax, can we become aware of the real shapes of objects.⁷⁶ Without this, in order to know what we actually see, e.g. in a perspectival drawing, we need to invoke our available conceptual knowledge. Experiments by Adalbert Ames provided Gombrich with an important example. Ames constructed a box containing a criss-cross of wires, arranged following the rules of perception so that they project the image of a chair when seen from one point.⁷⁷ On the one hand, these constructions confirm that our visual experience is organized according to perspectival principles: the disposition of wires was calculated according to perspectival laws so that they gave the impression of a chair, when perceived from a specific point in space. On the other, while perspective organizes elements of human visual experience, it is underdetermined. In order to comprehend the perspectival image we need to interpret it in the context of our conceptual framework. Perspectival organization of visual experience is thus not contradictory to the claim that there is no innocent eye.

It is important to differentiate between the form in which light rays reach the retina and the image that we actually see. A perspectival drawing replicates the light patterns that reach our eyes: as we have seen in the discussion of Panofsky’s views on perspective, this is a geometrical problem independent of the functioning of our perceptual apparatus. The fact that light rays reach our eyes in a form that can be

⁷¹ Gombrich, ‘Visual Discovery’, 21.

⁷² Ernst Gombrich ‘Mirror and Map: Theories of Pictorial Representation’, in Gombrich, *The Image and the Eye*, 172-214, 189.

⁷³ Ernst Gombrich, ‘Standards of Truth’ in Gombrich, *Image and the Eye*, 244-277, 248; Ernst Gombrich, ‘The ‘What’ and the ‘How’: Perspective Representation and the Phenomenal World’ in R. Rudner and I. Scheffler, eds, *Logic and Art: Essays in Honor of Nelson Goodman*, 1972, 129-49; Gombrich, ‘Western Art and the Perception of Space’, *Space in European Art*, Council of Europe Exhibition, Japan, 1987, 5-12.

⁷⁴ Gombrich, ‘Mirror and the Map’, 191.

⁷⁵ Gombrich: Response to Kenneth Adams, *Discovery*, July, 1962.

⁷⁶ Gombrich, ‘Mirror and the Map’, 200.

⁷⁷ Gombrich, ‘Mirror and the Map’, 192.

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replicated by perspectival drawing, does not mean that we see *in perspective*, that our *visual experience* follows the laws of perspective. Perception (visual experience) is not the same as the peripheral stimulation of the retina.⁷⁸ Gombrich is careful to warn against conflating the two, against postulating a 'fixed correlation'⁷⁹ between the optical world and our visual experience.⁸⁰ The 'eye-witness principle', as he defines it, states that a drawing should record what an eye-witness could see from a given point; the artist must not include anything that the eye-witness could not see from a given point at a particular moment.⁸¹ This consequently leads Gombrich to emphasize *occlusion* as the principle both on which perspective works and according to which human visual experience is organized.⁸² Gombrich himself describes his experiments with a little box containing three schematic trees that appear as one when seen from a specific viewing point, although they differ in size and, when it comes to the middle one, in shape and orientation.⁸³ Occlusion is an objective fact uniformly registered by human perception and replicated in human visual experience. The prototype for his experiment with trees were once again Adalbert Ames' experiments. If human visual experience were not organized according to the principles of perspective and occlusion, which Ames used to calculate the disposition of wires, we would not be perceiving a chair through the peephole: some wires would overlap, they would be too short or extend too much and disturb the image. The important point, explained in Appendix Two, is that once we consistently assume that a thing which is behind another non-transparent thing (in a straight line) is invisible in our visual experience, we unavoidably finish with a visual experience organized according to the laws of perspective. If our visual experience (and not merely the peripheral stimulation of the retina) were not organized according to the laws of perspective, occlusion would not be perceived according to the geometry of

⁷⁸ See Thouless, 'Phenomenal regression', 340.

⁷⁹The phrase 'fixed correlation' needs to be handled carefully. On one possible interpretation of the phrase, denying 'fixed correlation' between the received light patterns and our visual experience, would divorce our perception from the world. In that case, Bryson or Goodman-style anti-realism would be hard to avoid. For a moment, in 'Mirror and Map' Gombrich almost sounds as suggesting that our visual experience is independent of the light rays our eyes receive: modern text books on psychology explain, he says, state that 'There is the influence of past experience and of expectations, the variables of interest, 'mental set' and alertness, not to speak of variations in the observer's physiological equipment and in the adjustment of the perceptual system to changing conditions.' (177) But he avoids radical anti-realism by invoking Popper's views about the similarity of the reaction of an organism to external stimuli and a scientist's evaluation of observational evidence, based on refutations of mistaken hypotheses. There is a real world out there, that is not a mere social construct and we test our perception against our observational evidence.

⁸⁰ Gombrich, 'Mirror and the Map', 177.

⁸¹ Gombrich, 'Standards of Truth', 252, 256 and 'Image and Code', 282.

⁸² Gombrich, 'What and How'. As David Topper stated: 'The fact that we cannot look round a corner became one of the foundations of Gombrich's subsequent defence of perspective', David Topper, 'Perspectives on perspective: Gombrich and his critics', in Richard Woodfield, ed., *Gombrich on Art and Psychology*, Manchester: Manchester University Press, 1996, 78-99, 82. Or, as Richard Woodfield put it 'If the world actually did look like cubist painting, we would have enormous difficulty in getting around it, and if the world looked as if it was depicted in twelfth-century pictures, archers would have no difficulty in shooting their prey around corners.' ('Introduction' in Woodfield, ed., *Art and Psychology*, 1-27, 14)

⁸³ Gombrich, 'Mirror and Map', 202.

light.

The principle of occlusion at the same time answers Wartofsky-style arguments about constancy. If we perceived a tilted circle indeed as a circle and not as an ellipse, then a circle next to it would not be perceivable at all: it would be obscured.⁸⁴ Whatever culture or group one belongs to, one cannot see around the corner — Gombrich's response to collectivist-constructivists thus ultimately pertains to the nature of light. A visual experience that would enable one to see things from more than one side at the same time is simply impossible. Physical laws would not allow it. One may try to argue that physical laws are themselves cultural constructs, but to make the claim credible one would also have to describe (and presumably be able to share and convey in a visual form) the visual experience of these different cultures, that is independent of the physical nature of light as we understand it: members of such cultures, can, presumably, see both sides of the moon at the same time, because in their culture the light does not travel in straight lines. It is not hard to imagine that there could exist cultural constructivists who actually believe this, or at least who would say that they do, in order to enhance their careers (as it would have, in the 1990s). To convince the rest of us, however, they would have to show, what visual experience that derives from such an alternative physics of light would be like. They are thus in the same position as Benjamin Whorf, who described in English the conceptual framework of the Hopi Indians which, he argued, cannot be articulated in English. In the meantime, it is safe to assume that physical laws are culture-independent facts and a fact, to cite Professor Voland once again, is the most stubborn thing in the world.⁸⁵

Epilogue

Gombrich's debates with his critics about the nature of human visuality and the status of perspective derived from different metaphysical assumptions regarding the nature of reality and the relationship between the individual and community. Partly under Popper's influence, and partly because he took the latest psychological research very seriously, Gombrich endorsed the view that there is no innocent eye, but he never accepted the collectivist interpretation of this view that came to dominate the humanities during the 1960s. Repeated with blind obstinacy, together with slogans such as 'Everything is text' or 'Death of the author', the claim that 'There is no innocent eye' remained a central dogma of collectivist and anti-realist metaphysics for decades. Gombrich defended the traditional views on perspective and realist painting and argued successfully for a coherent alternative to the collectivist understanding of human visuality even in the period when such positions became highly unpopular. This is, one should not forget, normally called intellectual integrity. It is also the most important lesson Gombrich can teach us. For social constructivists, intellectual integrity is impossible, while talking about it is yet another rhetorical strategy. If reasoning is

⁸⁴In other words, the principle of occlusion defines the perception of the visual angle. See above, note 62.

⁸⁵'А факт — самая упрямая в мире вещь.' Bulgakov, *Master and Margarita*, 283.

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exclusively a result of membership in a collective, a person cannot possibly be reasoning accurately when reasoning differently from the majority of the group; it is impossible to be right about reality while disagreeing with the collective, because it is the collective that constructs reality. In other words, reality is purely an abuse of statistics. The good news—and what we learn from Gombrich's example—is that they are wrong and that intellectual integrity is possible. A human being is more than a mere product of times and environment.

Appendix One

Gombrich's understanding of the phrase 'there is no innocent eye'

In this section I survey those of Gombrich's statements which clarify what he meant by the phrase 'there is no innocent eye' (*the Thesis*, from now on) as well as those by Popper and Goodman that offer further explanation of Gombrich's views.

In *Art and Illusion* Gombrich came closest to a theoretical articulation of *the Thesis* in the section that followed his account of the view that sensations of colour are merely a result of stimulation of the retina; that our eyes first receive certain sensations and only then does our mental apparatus process and interpret these sensations in accordance with our previous knowledge and experience. (297) Gombrich argues that 'we must doubt all the more whether such an achievement of innocent passivity is at all possible to the human mind.' (297) 'The innocent eye is a myth. ... seeing is never just registering.' (298) 'All thinking is sorting, classifying. All perceiving relates to expectations and therefore to comparisons.' (301) Since he claims that seeing is *never* registering and since *all* perceiving relates to expectations and comparisons, we can infer that *the Thesis* is meant to pertain to *all* acts of perception.

The claim that 'all perceiving relates to expectations and ... comparisons' goes hand-in-hand with the rejection of the 'innocent passivity' of sense organs. In *Art and Illusion* Gombrich explains that differentiating between sensation (understood as 'mere registering of 'stimuli') and the mental act of perception 'belongs to nineteenth century psychology'. (15) Through the book Gombrich regularly points out that his views are in accordance with the latest scientific psychology of his time. 'The [old] stimulus school of psychology and the phenomenologists talked as if the 'appearance' of the disk, the stimulus pattern, were the only thing really 'experienced' while all the rest was inference, interpretation.' (260) This is however, 'untrue of our actual experience. Perception as such, as has been said, has a subject-object character. To see is to see 'something out there'.' (260)

Karl Popper, Gombrich reports, dubbed the idea that 'sense impressions' come first and are subsequently elaborated, distorted or generalized, 'the bucket theory of the mind'. (28) Such a position conceives of mind as a repository in which 'sense data' are deposited and subsequently processed. About a decade after the publication of *Art and Illusion*, in his *Objective Knowledge*, Popper described the 'bucket theory of knowledge' as the view of the mind as a bucket which is originally more or less empty. Material enters into this 'bucket' through the senses, accumulates and becomes digested.⁸⁶ (60-61) The idea is that 'there is immediate or direct knowledge; that is, the pure, unadulterated elements of information which have got into us and are still undigested'. (62) In Popper's case, the rejection of the 'bucket theory' has to do with his rejection of the early twentieth century theories of sense-data as the irreducible kernel of certainty in human

⁸⁶Karl R. Popper, *Objective Knowledge, An Evolutionary Approach*, Oxford: Clarendon 1972, 61-62 and 341-346.

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perception.⁸⁷ In his view, sense-data conceived of as untheoretical items of information simply do not exist; we *always* operate with theories, some of which are even incorporated in our physiology. Sense organs developed in order to adjust ourselves to the external world. They are themselves comparable to theories. A scientific theory is an *organ* we develop outside our skin, while an organ is a theory we develop inside our skin. Observation can never be liberated from the theoretical elements of interpretation. In *Art and Illusion* Gombrich similarly argued that while every visual stimulus possesses infinite richness and ambiguity, such a pure but ambiguous, visual stimulus is never seen. (236) There is no 'innocent eye', the way 'there is no reality without interpretation'. (363)

In his 1973 essay 'Illusion in Art' Gombrich imported Popper's epistemological reasoning into the psychology of perception. (33) He insisted that it made no sense to discuss 'a separation between what is 'given' — the so-called sense data — and what is merely imagined. ... memory is involved in almost all perception, for except under highly unusual conditions, we do not simply see but recognize what we see.' (25) Since no perceptual process is inherently infallible, 'We should not speak of re-cognition, but of classification in terms influenced by previous experience, in other words of interpretation.'

The same view is attributed to Gombrich in Nelson Goodman's *Languages of Art*—an account Gombrich certainly knew well and did not object to. According to Goodman, Gombrich's view (which Goodman also endorses) was that reception and interpretation are inseparable and interdependent operations. (9) It is not possible to separate that which the senses receive and its processing. (9) The eye 'selects, rejects, organizes, discriminates, associates, classifies, analyzes, constructs'. (6-7) 'A picture never merely represents x, but rather represents x as a man or represents x to be a mountain, or represents *the fact that x is a melon*.' (9) Goodman himself endorsed this view and years later, in his *Ways of Worldmaking*, he rejected the 'talk about unstructured content or an unconceptualized given...we can have words without a world but not a world without words or other symbols'.⁸⁸

We can thus be certain about three aspects of *the Thesis* implied by Gombrich, Goodman and possibly Popper. First, *the Thesis* includes a universal claim on all human perception. Without this claim on universality, it would boil down to the platitude that *some* of our perceptions are *sometimes* affected by our expectations. Second, *the Thesis* implies a full rejection of *the Counter-thesis*—i.e. the idea that our perceptions or sensations *precede* our interpretation of them. Third, every perception (sensation) is (includes) an act of interpretation or classification of that which is perceived. The proponents of the *Thesis* thus assert that perception is always accompanied by some other mental process; the word 'classification' seems to be the best suited general term to

⁸⁷Karl R. Popper, 'Is there an epistemological problem of perception', in Imre Lakatos and Alan Musgrave eds, *Problems in the Philosophy of Science. Proceedings of the International Colloquium in the Philosophy of Science*, London 1965, vol. 3, Amsterdam: North-Holland Publishing Company, 1968, 163-164.

⁸⁸ Nelson Goodman, *Ways of Worldmaking*, Hassocks: The Harvester Press, 1978, 6.

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cover all the processes they mention (or it is necessary in order to perform them). For instance, in order to interpret something in a certain way one needs to classify it as something that is to be interpreted that way; the activities that the eye performs according to the Goodman's list ('selects, rejects, organizes, discriminates, associates, classifies, analyzes, constructs') are equivalent to or cannot be performed without classification. A good way to summarize the *Thesis* could be thus to say that *no X can be perceived without being simultaneously (or previously) classified as X*.⁸⁹ Gombrich thus explicitly says that 'To perceive is to categorize, or classify',⁹⁰ and that

We cannot see any configuration neat, as it were, because the tablet on which the senses write their messages has certain inbuilt properties. Far from leaving the arriving stimuli intact, it puts them into pre-arranged slots.⁹¹

It is important to ask whether these statements about the inseparability of perception from classification are compatible with Gombrich's view that visual experience is organized according to the principles of perspective. Does his discussion of the way artists and psychologists 'beak' constancies imply that by doing this they reach the primary level of elementary sensations—an assumption that he dismissed when he criticized the 'old stimulus school of psychology' which separated the perceived pattern and interpretation? The sections I have managed to collect from his writings do not allow for such criticism, partly because the terms 'classification' and 'perception' remain vague. For instance, perceiving lines in perspective means classifying them according to the pattern of light rays that they reflect and that reach our eyes.

⁸⁹I am not sure whether this formulation covers everything that Gombrich and other proponents of the *Thesis* meant when they advocated it, but this interpretation follows from the material I have managed to consult and the textual analysis presented here. It certainly covers the positions they invoked in their arguments. The *Thesis* may have also meant some other things, but I have not managed to reconstruct these other meanings.

⁹⁰ Gombrich, 'Image and Code' 286.

⁹¹ See the 'Introduction' in Gombrich *The Sense of Order*, 4.

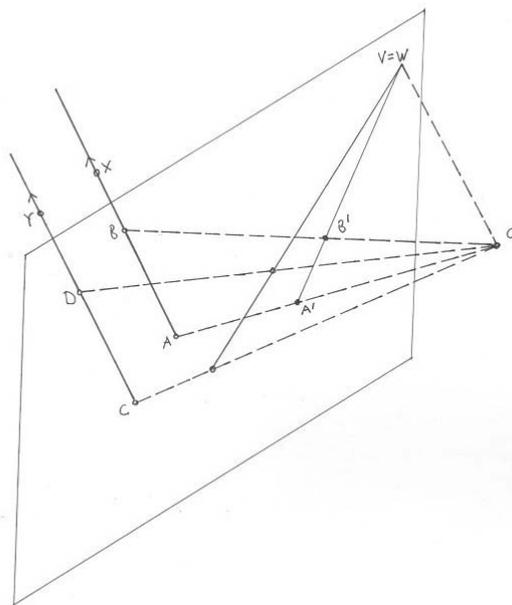
Appendix Two

Gombrich on seeing in perspective

Gombrich's tendency to avoid general statements and to present his views through examples makes him occasionally a difficult author to follow. This difficulty has particularly marred the reception of his views on perspective, since many of his readers lacked the technical understanding of the discipline necessary in order to appreciate fully the significance of his insights and responses to the critics. In this section I present an analysis of Gombrich's views that combines his various statements and examples in a form that should be accessible to readers with no previous geometrical training in perspective.

The starting point should be Gombrich's *principle of occlusion*: it means the same as and describes a manifestation of the fact that light travels in straight lines. If light did not travel in straight lines, then occlusion would occur differently than we perceive it, and if we perceived occlusion differently, that would mean that light did not travel in straight lines.

It is important to bear in mind that once it has been accepted that light travels in straight lines, the geometrical laws of perspective mathematically follow. Consider a typical situation that is depicted in most introductory chapters of books on perspective. [Fig. 2] O is the position of the eye and there is a line AB which is seen through a glass panel as the line A'B'. The points A' and B' are the intersections of lines OA and OB with the glass plane; any point X on the line AB has its picture X' on the intersection of OX and the glass plane. Now imagine that the point X moves along the extension of AB behind the point B, and its new positions are X₁, X₂, X₃, ...etc. Then the pictures of these points on the glass plane will be the points X₁', X₂', X₃', ...etc. But note that the further X travels from B, the more parallel OX becomes to the line defined by the points A and B, along which X travels. Finally, when X reaches infinity, the line OX will be parallel with the line defined by the points A and B. In other words, the picture of X on the glass plane, when it reaches infinity along the line defined by AB, will be the point of intersection of the plane and the line from O that is parallel with the line defined by the points A and B. Let us name 'V' the point of intersection of the glass plane and the line that connects O with X



infinitely far away from B.

Let there be also a line CD that is parallel with AB. Then the pictures of the points C and D on the glass plane will be the points of intersection of the glass plane with lines OC and OD. Similarly, for any point Y along the line defined by CD, the point of intersection of the line OY with the glass plane will be its picture on the plane. Once again, if Y travels behind D to infinity, the line OY will gradually become more and more parallel to the line defined by the points C and D. Ultimately, when Y reaches infinity, OY will be parallel with the line CD; let us call its point of intersection with the plane W. But we have said that the lines defined by points AB and CD are parallel and there can be only one line through O parallel with these two parallel lines. If this is so, then OX and OY must be one line when X and Y reach infinity. Since a single line can intersect a given plane only at one point, then V must be the same point as W. It is the *vanishing point* for all the lines in the glass plane that are the pictures of lines parallel with AB and CD.

The general principle is thus that *any set of parallel lines appears to vanish in the direction of a line that goes through the eye and is parallel to these given lines*. Because light rays are straight, there are no lines that can be seen that do not conform to these rules of perspective thus defined. If we drew on the glass plane what we see through it, the vanishing point of the pictures of a set of parallel lines would be the intersection of the plane with the line that goes through the eye and is parallel to the pictured lines. But if we want to discuss the way lines perceived in our visual experience and not merely how they are pictured, it is important to relativist the idea that perspective has to be a picture on a flat plane, or a plane at all. One should rather operate with the concept of a *perspectival representation*. A *perspectival representation* requires no plane. Vanishing points appear in *perspectival drawings* because we perceive parallel lines intersecting at one point in infinity, *not* because and only when we represent them on a flat plane. Imagine that there is no glass plane in the above geometrical explanation. Then, as the points X and Y reach infinity, they are both seen at the infinite end of the line that departs from the eye (O) and is parallel with AB and CD. Railway tracks appear to meet in infinity, even if we do not draw them or look through a glass plane. This means that a *perspectival representation* need not be a drawing, on either a flat or a curved plane. A *perspectival representation* of any object can be any disposition of objects that would deliver to the eye, when seen from at least one point in space, an identical disposition of light rays to the object it is representing. Because of the fact that light rays travel in straight lines, parallel lines in such representations will appear to meet in infinity. Ames' chair is a perfect example of such a representation: a criss-cross of wires that, seen from a specific point in space, yields the same bundle of light rays that a chair would give. Seen from another point in space, it is but a criss-cross of wires—and from whatever point in space we may observe the criss-cross, if any two parallel lines that belong to the criss-cross are extended to infinity, they will converge at a single point. *Perspectival images* are just two-dimensional members of a wider family.

All this pertains to the light that reaches the retina, the geometry of its peripheral

stimulation. But human beings have two retinas while they see only one image of the world around them. The peripheral stimulation of the retina must undergo substantial processing to yield the image of things that we see—and the question is, is that image itself organized according to the laws of perspective? Gombrich's answer was positive.

Since we cannot look into people's heads in order to check what they actually see, answering this question obviously requires some cunning. Reporting is going to be a problem.⁹² If visual processing works the same way for all humans, a person who wants to report to me what he or she sees would actually draw a perspective for me, so that I can see the same disposition of light patterns. But this does not tell me what the image he or she sees is like. Reporting in words is only going to further complicate matters: when a person says that he or she sees a chair, he or she is actually saying that the disposition of light patterns in the image he or she sees suggests that he or she should subsume the object from which this light originates under the concept that is expressed in English using the word 'chair'. This is an account of the conceptualization of visual experience, and does not describe what it is like. Finally, there is the debate about the constancies, the phenomenon that humans perceive or report to perceive shapes much closer to the real form of objects than what vision in perspective would allow.⁹³

The 1930s experiments by Robert Thouless (discussed in the main text) illustrate well these problems with reporting. Thouless asked his subjects to draw on the side, or find in a catalogue, the ellipse that they thought equaled the tilted circle they perceived. This process implied looking at a tilted circle and then, finding or drawing, on the basis of one's (short-term) memory the proper ellipse. Tests of this kind do not measure the extent to which subjects *see* tilted circles as ellipses according to the laws of perspective, but what they *state* (say or draw) they *remember* having seen. What they state (depict) is easily affected by what they believe they have seen. A similar problem applies to Jerome Bruner's and Cecil Goodman's famous 1947 experiments in which they established that when ten-years-old children are asked to *state from memory* the size of various USA coins they make systematic error in judgment, correlated to their social background. Bruner and Goodman actually identified this error as *perceptual*.⁹⁴ Gombrich himself discussed the fact that painting from nature unavoidably relies on short-term memory and cited Winston Churchill's statements to the same effect.⁹⁵

Constancies of this kind thus pertain to that what is *reported* to have been seen,

⁹²It is generally recognized that the formulation of the question presented to the subjects—whether their responses are supposed to pertain to the visual angle or objective size of the object—produces different results in experiments about constancies. See for instance Gilinsky, 'The Effect of Attitude'.

⁹³For an up-to-date summary of discussions about constancy, see Todorović, 'Constancies' and Hatfield, *Perception and Cognition*, 178-211.

⁹⁴Bruner and Goodman, 'Value and Need'. They actually describe that they asked their subjects to state the size of coins both from memory and when coins were present. However, it is not clear whether the subjects were able to operate the device used to define the size of a coin while, at the same time, looking at the coins and directly comparing their response with the size they perceived. If this was not the case, and the subjects had e.g. to move their head in order to compare the coin with the opening in the device, then they certainly had to rely on their memory in this case too.

⁹⁵Gombrich, 'Visual Discovery', 18.

but it is doubtful that they can be taken as arguments of in favour of the view that visual experience itself is affected by memory in a way that would prevent its organization according to the principles of perspective.⁹⁶ To establish this, reporting about visual experience would need to be done in a way that would prevent any interference of memory. A way to achieve this would be to ask subjects to actually draw on a glass plane that what is seen through it, thus eliminating any interference of conceptual knowledge. Gombrich repeatedly returns to experiments of this kind, especially in his discussion of constancies, in order to point out how different the image of that which is really seen is from one's expectations. Drawing on a glass plane the image that is seen through it reproduces the visual experience in a way as independent of our beliefs and expectations as possible. Even optical illusions are eliminated: Fraser's spiral, for instance, indeed becomes a set of concentric circles if we put transparent paper over it and trace it. It makes no sense to say that what we draw is not what we perceive, because we would not be able to draw it in the first place; but drawings of this kind are quite likely to produce surprising results.

The question, however, is whether the images drawn on a piece of glass, by following the lines of objects seen through it, will actually follow the laws of perspective. And this is where Gombrich's argument about occlusion arrives with its full force. If our visual experience did not follow the principles of perspective, then occlusion as we perceive it in our visual experience would not correspond to the occlusion of objects as defined by the geometry of light. If our visual experience violated the principle of occlusion, we should be able to see, on the basis of our conceptual knowledge, parts of objects from which no light reaches our eyes, while parts of objects from which enough light reaches our eyes would not be seen. Gombrich's experiment with the occlusion of three trees placed in a line shows that occlusion in human visual experience follows the laws of the geometry of light; and if this is so, then it must follow the laws of perspective as well.

Alternative theories of human visual experience often fail to take account of the phenomenon of occlusion. Gombrich's argument is that if our visual experience replicates the occlusion of objects in the physical world, then it must be organized according to the standard laws of perspective. Consider, for instance, Robert Hansen's attempt to replace standard with curvilinear perspective.⁹⁷ Hansen argued that in our visual experience, straight lines are not represented by straight lines (as standard perspectival representation would require) but as hyperbolic curves. This would mean that if I were to look at a straight line AB through a glass plane and draw what I see, I would draw a hyperbolic curve. But imagine also drawing, on this glass plane, another line, along the intersection of the straight lines that connect my eye with AB. Let us darken both lines drawn on the plane so that no light can pass through them. The

⁹⁶ I.e. that the visual angle itself is not perceived. See note 65.

⁹⁷ Robert Hansen, 'This Curving World: Hyperbolic Linear Perspective', *The Journal of Aesthetics and Art Criticism*, 32: 3, Winter 1973, 147-161. I am assuming that Hansen is discussing visual experience and not the representation of objects.

question is, which line occludes my view of AB? If the answer were the hyperbolic curve, then light could not be travelling along straight paths. Similarly, it is interesting to think whether this kind of reasoning presents a valid argument in the context of more recent studies of human visual space. Answering this question would require an extensive study. In Gary Hatfield's view, for instance, our visual space is contracted but preserves direction.⁹⁸ But Hatfield does not explain how occlusion would function in such a space—and the contraction of space means that it may have to work in a way that contradicts the geometry of light. Theories of visual space are a fast growing field of research. While the evaluation of Gombrich's position from the point of view of the subsequent research on human visuality is not the topic of this paper, one can note that whatever road researchers take, if their theories do not explain the phenomenon of occlusion, this will certainly affect their credibility.

Branko Mitrović received doctorates in architectural history and philosophy. He is the author (or co-author/co-editor) of four books on Renaissance architectural history and has been the recipient of the Humboldt Research Award as well as fellowships from the Harvard University, Canadian Centre for Architecture, Humboldt Foundation, National Gallery of Art and Clark Art Institute.

Branko Mitrović
Unitec-Architecture
Carrington Rd. Mt. Albert
Auckland, New Zealand

brankomitrovic@hotmail.com
bmitrovic@unitec.ac.nz

Captions

Fig. 1: Fraser Spiral.

Source: http://commons.wikimedia.org/wiki/File:Fraser_spiral.svg

Fig. 2: Construction of vanishing points.

Source: Author's drawing.

⁹⁸ Hatfield, *Perception and Cognition*, 178-211.