

Gombrich's cosmos of thought: past and future

Review of:

Art and the Mind – Ernst H. Gombrich: Mit dem Steckenpferd unterwegs, edited by Sybille Moser-Ernst with editorial assistance by Ursula Marinelli, Göttingen, Germany: V& R unipress, 2018, 442 pp., 59 figures, \$69.00 hdbk, ISBN 9783847107941

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Ernst H. Gombrich (1909–2001) is widely and justly regarded as the most famous and influential art historian of the twentieth century. Over the course of a long and productive career, he garnered both popular acclaim and scholarly recognition. Uniquely among major art historians, Gombrich's influence may be greater outside his home domain than within it. The scope of these influences is the subject of the book under review here. It is the result of an academic conference held in Greifswald, Germany in 2009, in commemoration of Gombrich's one-hundredth birthday, which was organised by the book's editor, Sybille Moser-Ernst. By design it is non-hagiographical, and the contributions span a wide range of critical approaches and foci, commensurate with the range and depth of Gombrich's thinking.

Moser-Ernst, a former postdoctoral student of Gombrich at the Warburg Institute and now Professor of Art History at the University of Innsbruck, characterises the book's *raison d'être* thus:

The ambitious aim of this book is to explore Gombrich's intellectual legacy by analysing some of his concepts and insights in the context of *Image Science*. Its purpose is to assess Gombrich as an engine of change and innovation across disciplines. He introduced students in many fields to the complexities of the artist's mind and helped them realise the power of their own eyes and intellects. (14)

A tall order, complicated by the volatility of Gombrich's reputation, both in his lifetime and posthumously. One earlier complication was different audiences' mutually exclusive perceptions of him either as a Renaissance scholar or a populariser. Another was the waning of his intellectual influence in the 1980s, amidst a postmodernist vogue in art history – most prominently leveraged against him by Norman Bryson¹ – together with allied accusations of elitism, conservatism,

¹ Norman Bryson, *Vision and Painting: The Logic of the Gaze*, New Haven and London: Yale University Press, 1983.

and scientism. In recent years, Gombrich seems to have been rehabilitated, a process catalysed by developments like Bryson's recantation of his earlier views and the maturation of emerging domains like neuroaesthetics and neuroarthistory – the latter pioneered by Gombrich's former student John Onians.² These have reinforced the enduring quality of Gombrich's ideas, particularly in scientific domains that are often siloed off, two-cultures style, from mainstream art history. Such trends also represent an important thread of continuity from Gombrich's own engagement with the psychological science of his day. His questions have remained in circulation not because they are unanswerable, but because they are highly answerable – at least in the provisional, Popperian way that is characteristic of any well-formed scientific question. Besides well-formedness, Gombrich's inquiries have the added benefits of generativity and interdisciplinarity, two hallmarks of meaningful contributions to any intellectual discourse.

A fresh grappling with Gombrich's formidable ideas is the job of an impressive roster of contributors to the volume, most of whom can be comfortably categorized as art historians. They span three continents and include a number of top scholars in the field, among them some of Gombrich's former students. The year of the centennial conference, 2009, was an opportune moment for such a reassessment. A decade hence, the case is even more compelling, partly due to interim advances in psychological and neuroscience research on art. Moser-Ernst's notion of an 'Image Science' (or *Bildwissenschaft*), cited above though sadly not discussed at length at least within the English-language portions of the book, appears to be a provocative and timely concept that can serve to encapsulate many of these developments – of which, more below.

In general, the contributions to the book are enjoyable and thought-provoking. For the most part, they are clearly written, contain a fairly high idea density, and often add a personal dimension *vis-à-vis* each author's relation to Gombrich himself. Even readers steeped in the corpus of Gombrich's writings should find something new and enlightening here.

The language issue

The many positive aspects of the volume will form the bulk of this review, but first, a word about my circumscribed scope and, concomitantly, the book's most jarring drawback: its bifurcation into German-language and English-language passages. The two languages have comparable page counts, and for the most part, they are chapter-specific and interleaved into the book's larger structure. This review will focus exclusively on the English-language portions of the book. Pragmatically, this is due to my inadequate German, though happily, subjects making contact my own areas of expertise are contained within the English-language chapters. While an art

² John Onians, *Neuroarthistory: From Aristotle and Pliny to Baxandall and Zeki*, New Haven and London: Yale University Press, 2008.

historian audience may have competence in both languages, anyone lacking it is only getting part of the story (I assume).

This frustrating state of affairs is compounded by the fact that the introductory material to each of the book's six sections is presented in only one or the other language (three in German, then three in English), despite contributions in both languages to the first four sections. The book's final two parts – on 'Neuroarthistory and Neuroaesthetics' and 'Gombrich and China' – cover the last 90 or so pages of the book and are exclusively in English. A seemingly important general introductory chapter by Moser-Ernst, on 'Why read Gombrich now?' begins with two pages of English, but then switches to German for its remaining fifteen pages, without any transition, explanation, or summary. Without advocating an English-centric treatment, at the very least it would have been helpful to have the introductions to the six sections presented in both languages. This would not have required much additional effort, as all were authored by Moser-Ernst anyway, and they are typically structured as brief, nicely framed abstracts of all the contributions therein. Despite this criticism, even within the English-language chapters, there is much to enjoy and ponder.

The past: Gombrich and history

Many scholars have remarked that Gombrich's range of thought is uncannily difficult to grasp all at once. For instance, Richard Woodfield noted, 'It is remarkable that while Gombrich was consistently praised for his clarity and ease of access, very few scholars were capable of giving a coherent exposition of his ideas. Interpretations of what he said differed wildly.'³ Similarly, in earlier Gombrich *Festschrift*, David Freedberg remarked that 'For all their inconsistency – indeed, precisely *because* of it – Gombrich's works together constitute the most humane writings we have, even when inexplicit, on the subject of the relations between the modernist view of science and the history of art.'⁴

As a heuristic for organising this complexity, I shall treat the contributions to the volume in terms of their focus on the past versus on the future. Conveniently, this stratagem roughly corresponds to the sequence of topics as the book progresses from beginning to end.

The past-focused contributions document or elaborate upon historical aspects of Gombrich's activity – a valuable service in its own right and useful for a case-study understanding of his scholarly work, collaborations, and institutional milieu. The English-language chapters in the first three sections of the book – respectively titled 'Bild und forschendes Auge' (Image and the searching eye), 'Bild

³ Richard Woodfield, 'Ernst Gombrich: Iconology and the "linguistics of the image"', *Journal of Art Historiography*, 5, December 2011, 10.

⁴ David Freedberg, 'The failure of color', in John Onians, ed, *Sight and insight: Essays on art and culture in honour of E. H. Gombrich at 85*, London: Phaidon, 258.

und Kunst – Konzepte' (Image and art – Concepts), and 'Sind Bilder gefaerhlich?' (Are images dangerous?) – fall squarely within this category.

Several of the past-oriented contributions describe Gombrich's role at the helm of the Warburg Institute. For instance, a short chapter by Veronika Korbei, former archivist of Gombrich's papers at the Warburg, gives a descriptive overview of the 10,000 or so items comprising that catalogue, together with information about accessing the Gombrich Archive online. François Quiviger, a former fellow of the Warburg, provides a more critical appraisal of Gombrich's directorship, giving illuminating details about the operation of the Institute under Gombrich and afterwards. He argues that while Gombrich maintained and developed the main research tools of the Institute, he also limited the scope of art history to historical rather than philosophical or anthropological problems. Quiviger's contention that Gombrich's orientation was fundamentally antithetical to that of the Institute's founder is echoed in a chapter by eminent art historian David Freedberg, who also once worked with Gombrich at the Warburg. Freedberg sensitively discusses the complex relationship between the intellectual styles of Gombrich versus Aby Warburg, touching on an array of themes central to artistic production. These include making versus matching, the work of the hand, the nature of mimicry, plus embodiment and the biological and neural bases of art – the latter topics, ones to which Freedberg himself has materially contributed.⁵

Other contributions show Gombrich in a more collaborative light. A fascinating chapter by Moser-Ernst and Ursula Marinelli gives a valuable, step-by-step account of what is known of Gombrich's most regrettable unfinished project – the study of caricature undertaken with Ernst Kris in the mid-1930s – which provided the impetus for many of Gombrich's later scholarly adventures. Moser-Ernst and Marinelli provide a critical way of interpreting the past via a balanced appraisal of the artistic, scientific, and political aspects of the caricature project. As with Freedberg's themes, the ongoing scientific study of caricature, and its relation to phenomena like supernormal stimuli in biology,⁶ shows Gombrich's perspicacity in his choice of fertile research topics. A solo chapter by Moser-Ernst is a reprint and updating of an essay originally published in 1994, on paradigmatically Gombrichian themes of resemblance and metaphor in images and is especially notable for its postscript, which includes letters by Gombrich responding to the original essay. These provide a more intimate view of an often quite private intellectual heavyweight.

Throughout these chapters, points of continuity or conflict between Gombrich and others highlight the perennial relevance of his themes to students of

⁵ For example, David Freedberg and Vittorio Gallese, 'Motion, emotion and empathy in aesthetic experience', *Trends in Cognitive Sciences*, 11:5, 197-203.

⁶ See, for example, Edward O. Wilson, *Consilience: The unity of knowledge*, New York: Random House, 1998, and Vilayanur S. Ramachandran and William Hirstein, 'The science of art: A neurological theory of aesthetic experience', *Journal of Consciousness Studies*, 6: 6-7, 1999, 15-51.

human artistry, and they help to bring the story into the present. An especially interesting chapter by Partha Mitter, a scholar of Indian studies and an art historian with a strongly global bent, is a useful pivot to many present-day concerns. This is especially true given the current prominence of globalisation and the infusion of non-Western traditions into art historical narratives. Mitter discusses the 'paradox' of Gombrich, centred on the tensions and contradictions between feeling and reason in any art historical investigation, a dynamic he thinks is more broadly characteristic of Gombrich's century. Mitter's treatment of these matters is personal and perhaps deliberately provocative, as in his assertion that Gombrich was far closer to the radical ideas of postmodernists than is often appreciated – for instance, in emphasising culture over nature or dismissing Ruskin's innocent eye. Mitter's discussion of *Art and Illusion*⁷ includes some contemporary allusions to the scientific realm, as when he correctly remarks that 'Gombrich's intuitions have been generally vindicated by subsequent psychological research.' (327) Certainly, much work remains to be done to incorporate non-Western art into mainline art historical narratives, but Mitter counts Gombrich, despite his alleged Eurocentrism, as among those mid-century scholars who ultimately helped move this agenda forward by continually probing entrenched values. Mitter concludes, 'To me his questioning methodology will be his enduring legacy.' (329)

The future: Gombrich and science

Appraisals of Gombrich's legacy seem yoked to the general status of a scientific approach toward art, to a greater degree than for any other art historian. As noted earlier, a downswing in Gombrich's influence came hard on the heels of a postmodern rebellion against scientifically cherished ideas, and it is tempting to attribute the resurgence of his reputation to a rise in the visibility of overtly scientific approaches to art. The last two sections of the book, the focus here, involve the most avowedly scientific lines of research. I will frame the contributions to these last two sections in terms of their prospects for informing basic questions about art and its history.

Throughout his career, Gombrich's orientation, while not nominally 'scientific,' was unusually compatible with science in its search for fact and truth. (One need only recall his long friendship with Karl Popper on this point.) And yet, while it is hard to think of another humanistic scholar in any domain who exceeded Gombrich's influence on scientists, the situation is far from simple. Gombrich did not regard himself as a scientist. To the extent he adopted ideas from domains like perceptual psychology,⁸ he explicitly confirmed his amateur status. Indeed, Gombrich himself had a complex and sometimes ambivalent relation to scientific

⁷ Ernst H. Gombrich, *Art and illusion: A study in the psychology of pictorial representation*, Princeton, NJ: Princeton University Press, 1960.

⁸ Gombrich himself knew many prominent psychological and neuroscience researchers, including Colin Cherry, Wolfgang Köhler, Ulric Neisser, J. J. Gibson, and Semir Zeki.

approaches to the arts, which were always mediated by common sense and comprehensive historical accuracy.

Gombrich's relation to science is addressed most fully in the penultimate section of the book, which focuses on neuroaesthetics and neuroarthistory. Neuroaesthetics is a burgeoning and rapidly maturing domain that examines the neural basis of aesthetic experience.⁹ Neuroarthistory involves the application of neuroscience to understanding art historical questions.¹⁰ Fittingly, the first chapter in this section is by art historian John Onians, a former student of Gombrich and the founder of the discipline of neuroarthistory. Onians spends much of his chapter describing the implications of the prolonged debate between Gombrich and postmodernist figures like Norman Bryson and W. J. T. Mitchell, who raised objections to Gombrich's reliance on perceptual psychology and biology. Onians contends that Bryson's full-hearted conversion to neuroscience is emblematic of how some art historians have come to see the light and that Gombrich's prescient emphasis on biology allowed him to have the last laugh. He also asserts that Gombrich identified some of the universal mechanisms whose biological basis would later be identified by neuroscientists – including the origins of sympathetic magic, neural mirroring of actions, and the capacity of universal neural mechanisms to produce different expressions in different people.

The two other chapters in this section are more ambivalent about the benefits of a neuroscience approach to art. In one, Gombrich's relation to the work of painter Bridget Riley is described by Robert Kudielka, who has edited the five-volume catalogue of Riley's paintings. Anchored on a few exchanges between Gombrich and Riley, much of the chapter is an historical overview of the use of colour in Western painting, with occasional points of contact with the work of neuroscientist Semir Zeki, who coined the word 'neuroaesthetics.' The other chapter, artist and writer Julian Bell's essay on "A painter's approach to neuroaesthetics," is a more substantial critique of neuroaesthetics and neuroarthistory. Bell warns of their limited, fragile scope and of the dangers of treating art history as natural history, which demotes expressive or agent-centred accounts of art. Bell's defensive posture takes the form of a meta-critique of major works by Onians, Zeki, and art historian Barbara Stafford; often there are only incidental connections to Gombrich. Along the way, Bell also manages to bash the work of 'Darwinian computationalists' (373) like Steven Pinker,¹¹ and the application of evolutionary principles to artistic and aesthetic questions – evidence, I suppose, that the divide of C. P. Snow's 'two cultures' and Cartesian dualism does not die easily.

⁹ See, for example, Marcus T. Pearce, Dahlia W. Zaidel, Oshin Vartanian, Martin Skov, Helmut Leder, Anjan Chatterjee, and Marcos Nadal, 'Neuroaesthetics: The cognitive neuroscience of aesthetic experience', *Perspectives on Psychological Science*, 11:2, 2016, 265-279.

¹⁰ John Onians, *Neuroarthistory*, and *European Art: A Neuroarthistory*, New Haven and London: Yale University Press, 2016.

¹¹ See Steven Pinker, *How the mind works*, New York: Norton, 1997, and *The blank slate*, New York: Penguin, 2002.

For all my misgivings about his perspective, Bell does raise legitimate issues in how easily people are seduced by the notion that brain scans, as they say, don't lie. Even among scientists, this bias has led to a premature reductionism, which has emphasised low-level neural process and bypassed valuable methods and concepts from mid-level domains like cognitive psychology and evolutionary biology (more on this below). Such domains can play out in flexible, subtle, and informative ways, as Gombrich's own scholarship, which synthesised perceptual or biological principles with art historical evidence, abundantly shows.

A Popperian mode of inquiry is also demonstrated in the book's final section, 'Gombrich and China.' In one especially interesting chapter, art historian and philosopher David Carrier¹² inquires if and how Gombrich's theory of depiction can be tested in a literal-minded and more or less scientific way. Specifically, do the principles of making and matching apply to the enduring and sophisticated history of Chinese art, which developed independently of Europe?¹³ To simplify Carrier's conclusion: in China the role of illusionism was very different than in the West, being closely tied to concepts of truth, harmony, and other philosophical issues, making a clean cross-cultural comparison difficult. One plausible narrative of Chinese art involves development via making and matching (as in the West) which climaxed in the eleventh century; this was followed by the realisation that fully successful illusionism was impossible. Artists then turned to other goals, which, as it turns out, were very different than those of post-naturalist European artists: Carrier points out that there is absolutely no Chinese equivalent to the Western development of Cubism and abstract art in the last century. In sum, Carrier's informed and sensitive analysis – not only of Gombrich's tenets but of the historical details of Chinese painting and the sociological details of Chinese culture – is rewarding and can serve as a model for similar inquiries, which can be highly informative without being reductionist.

The book's final chapter, by art historian Yiqiang Cao, describes Gombrich's intellectual legacy in China. Cao reports that Gombrich's study of pictorial representation is an inspiring source for contemporary Chinese artists. Indeed, his intellectual legacy is helping to reshape the field of Chinese art history, and, through Cao himself, reform China's art education system. Several passages are worth quoting by way of establishing a few concluding synthetic points:

Gombrich complained that nowadays art historians talk about everything but art. In the eyes of Chinese artists, both traditionalists and modernists, he is one of those great scholars who not only teach them how to look at art historically and critically, but also really

¹² Disclaimer: Carrier taught me freshman Philosophy at Carnegie Mellon University many years ago.

¹³ For another application of this basic idea to contemporary computer graphics, see Aaron Kozbelt, 'Psychological implications of the history of realistic depiction: Ancient Greece, Renaissance Italy, and CGI', *Leonardo*, 39:2, April 2006, 139-144.

understand and appreciate the process of art-making. There is, indeed, something in him which he shares with the Chinese tradition. This is a subtle appreciation of art itself combined with an ability to convey the experience of what is difficult to explain in words. Gombrich was not manually talented... It was perhaps, his lack of manual skills that led him to admire so strongly the power of representation and expression in the visual arts, and to write about them so perceptively. (401)

and

When the Chinese modernists learned such concepts as “schema and correction”, or “trial and error”, or “making before matching”, they seemed to come to experience a revelation that image-making could be completely renewed. (401)

It is a splendid irony that Gombrich's allegedly conservative stance can continue to stimulate novel conceptualisations of art-making. Allied to the best ideas and methods of science, Gombrich's thinking continues to provide a path forward – or at least guardrails on such a path – for those of us interested in pursuing real answers to questions about the nature and history of art.

Beyond the book

The English-language contributions to Moser-Ernst's book nicely balance competing perspectives – humanistic versus scientific, specific cases versus general principles, critical versus commending, and so on – whose equipoise approaches the totality of Gombrich's thinking. Along these lines, one of Moser-Ernst's chapters begins, 'Gombrich's cosmos of thoughts embraced the fundamental question on visual arts and their perception, as well as the critical questioning of the construction of the various philosophies of history and art theories.' (273) The notion and ethos of cosmos,¹⁴ as utterly comprehensive in scope and partaking of the orderly character of nature, are thoroughly in Gombrich's spirit:

¹⁴ As a personal aside, the sense of 'cosmos' inherent in Gombrich's *Weltanschauung* involuntarily calls to my mind that seminal popularization of modern science, astronomer Carl Sagan's *Cosmos* (New York: Random House, 1980). Gombrich and Sagan were perhaps the most successful popularizers of art and science, respectively, in recent memory; they have certainly exerted unsurpassed influences on my own mindset. Interestingly, while operating in different intellectual spheres, the two clashed strongly at least once, over the utility of Sagan including a plaque depicting humans and other information aboard the interstellar-bound *Pioneer* spacecrafts. Gombrich's objections – rooted in the operation of sensory systems and processes of symbol decoding – and Sagan's rejoinders, mark a fascinating and almost unknown intellectual exchange. See Ernst H. Gombrich, *The Image*

If the mind is not a patchwork of individual sensations, neither is nature a chaos of random events. It offers us the experience of a multitude of interacting but ordered regularities . . . Without such an order man could not form expectations, could not plan, could not develop science and, maybe, not art either . . . Like a patient language teacher, nature familiarized the mind of man with recurrent processes in ever-changing modifications, establishing a communicable pattern of events which determined survival but always needed fresh attention.¹⁵

The commonsense rationality of Gombrich's worldview echoes scientific approaches to art that, unlike many accounts in Moser-Ernst's collection, need not solely address a neural level of analysis. In this concluding section of the review, I describe some alternative, mid-level lines of scientific research from domains like cognitive science and evolutionary biology, which can amplify now-familiar Gombrichian themes by providing complementary insights to those of more humanistic art history and more reductive neuroscience.

While such approaches are closest to my own professional orientation as a cognitive psychologist who studies creativity and cognition in the arts, this excursion off the standard path of art history and historiography may be justified by noting the relative neglect of such approaches in current discourse about art. As art historian James Elkins noted, 'The fields of cognitive psychology and neurophysiology have progressed rapidly in the last twenty years, but art historians have not been taking Gombrich's lead.'¹⁶ Onians, in his chapter, likewise underscores the usefulness of a Gombrichian naturalistic framework for unifying the study of the mind and culture.

One inroad here is provided on the book's very first page, where Leonie Gombrich recollects her grandfather reading her a description of ants scurrying about in apparently random toil, but through their efforts creating a giant anthill. In the context of the book, this is a metaphor for the multivalent inspirational stimulus

and the eye, Oxford, UK: Phaidon, 1982, 150-151, and Carl Sagan, *The cosmic connection: An extraterrestrial perspective*, Garden City, NY: Anchor Books, 1973, 27-28. The details of their disagreement, and implications for the prospects of art as a potentially universal form of communication (in quite literal cosmic terms), are unpacked in some detail by Aaron Kozbelt in 'Prospects for a literally universal science of aesthetics and creativity', *International Journal of Creativity and Problem Solving*, 25:1, 2015, 21-34, and 'Tensions in naturalistic, evolutionary explanations of aesthetic reception and production', *New Ideas in Psychology*, 47, 2017, 113-120.

¹⁵ Ernst H. Gombrich, *Tributes: Interpreters of our cultural tradition*, Oxford, UK: Phaidon, 1984, 76-77.

¹⁶ James Elkins, 'Ten reasons why E. H. Gombrich is not connected to art history', *Human Affairs*, 19:3, 2009, 307.

of Gombrich's scholarship on the contributors. But in the context of this review, it echoes a parable by Nobel laureate Herbert Simon, one of the founders of cognitive science. Simon wondered about the origins of the apparent complexity of an ant's behaviour as it walks on a sandy beach.¹⁷ Provocatively, he argued that this complexity does *not* come from inside the ant: the internal rules guiding the ant's behaviour are likely simple – after all, it's just an ant. Rather, the complexity arises because of the complexity of its environment. Simon's larger gambit – and that of much contemporary scientific psychology – is that people are not so different from ants. The complexity of human behaviour is due to the rich interpersonal and socio-cultural contexts in which we operate; the basic rules of the mind are, at root, fairly simple.¹⁸

Candidate 'rules' or processes guiding human aesthetic behaviour have started to become commonplace in views of art that are rooted in general psychobiological principles¹⁹ or in biological accounts detailing the evolved structure of the artistic mind.²⁰ Such accounts attempt to answer fundamental questions, like how we are to account for the universal human proclivity for image-making, the particular forms that that activity takes, how meaning is derived from that activity, and how this practice varies trans-historically or cross-culturally. Such questions were central to Gombrich's intellectual program, and they are amenable to testing through a psychobiological framework via proposed mechanisms like Darwinian natural selection²¹ or sexual selection,²² or a view whereby human artistry is a byproduct of other direct adaptations.²³ Such accounts are not immune

¹⁷ Herbert A. Simon, *The sciences of the artificial* (2nd ed), Cambridge, MA: MIT Press, 1981, 63-66.

¹⁸ Note, however, that common underlying 'rules' need not produce uniformity of behavior – a point made clear in Simon's emphasis on the complexity of the environment (including not only natural and informational factors, but interpersonal and socio-cultural factors as well). Some recent accounts of neuroaesthetics have explicitly emphasized the naturalness of aesthetic variability – see, for instance, a recent paper by Marcos Nadal and Anjan Chatterjee, 'Neuroaesthetics and art's diversity and universality', *WIREs Cognitive Science*, 2018. doi: 10.1002/wcs.1487

¹⁹ A classic treatment is Daniel E. Berlyne, *Aesthetics and psychobiology*, New York: Appleton-Century-Crofts, 1971; see also Ramachandran and Hirstein, 'Science of art.'

²⁰ See Pinker, *The blank slate* (especially 400-420); Wilson, *Consilience* (especially 229-259); Ellen Dissanayake, 'What art is and what art does: An overview of contemporary evolutionary hypotheses', in Colin Martindale, Paul Locher, and Vladimir M. Petrov (eds), *Evolutionary and neurocognitive approaches the aesthetics, creativity and the arts*, Amityville, NY: Baywood, 2007, 1-14; Mark Turner (ed), *The artful mind: Cognitive science and the riddle of human creativity*, Oxford and New York: Oxford University Press, 2006.

²¹ See Gordon H. Orians, *Snakes, sunrises, and Shakespeare: How evolution shapes our loves and fears*, Chicago and London: University of Chicago Press, 2014.

²² See Dennis Dutton, *The art instinct*, New York: Basic Books, 2009; Geoffrey Miller, *The mating mind*, New York: Anchor Books, 2000.

²³ See Steven Pinker, *How the mind works; The blank slate*.

to criticism.²⁴ Indeed, they may lamely equate aesthetic response with mere mild positive affect; sometimes their reductionistic emphasis seems best geared to address popular art forms; they do not provide a rigorous account of transcendent works or their historical context; and so on.

And yet, allied with complementary art historical expertise, psychobiologically-informed methods and lines of inquiry provide a basis for understanding many aspects of human artistry. For instance, Nicolas J. Bullot and Rolf Reber²⁵ introduced a psycho-historical framework for understanding aesthetic appreciation, arguing that a science of art appreciation must investigate how viewers process causal and historical information to classify and explain their psychological responses to art. Productive schematic knowledge of the type emphasised by Gombrich in *Art and Illusion* is a natural counterpart to this view.²⁶ The details of such themes have also been amplified in a growing body of psychological research on how the visual perception abilities of trained artists may differ from those of non-artists.²⁷ Such developments may be folded into a larger interdisciplinary enterprise of *Aesthetic Science*,²⁸ with roots in cognitive science and incipient connections to Moser-Ernst's notion of an *Image Science* mentioned above.

Such inquiries need not operate only at the level of individual persons; they can extend to broader trans-historical and cross-cultural questions as well. Along these lines, in his chapter, David Carrier asks, 'Does the development of art also reveal universal laws? That question remains still to be answered.' (396) However, abundant evidence in the tradition of quantitative archival and historiometric research, pioneered by figures like Dean Keith Simonton, Charles Murray, and Colin Martindale, has already provided many answers to trans-historical questions about the fine arts.²⁹ Indeed, Martindale's seminal research on systematic, pervasive

²⁴ See Julian Bell's chapter in the book reviewed here, or Matthew Rampley, *The seductions of Darwin: Art, evolution, neuroscience*, University Park, PA: Pennsylvania State University Press, 2017.

²⁵ Nicolas J. Bullot and Rolf Reber, 'The artful mind meets art history: Toward a psycho-historical framework for the science of art appreciation', *Behavioral and Brain Sciences*, 36:2, April 2013, 123-137.

²⁶ Aaron Kozbelt and Justin Ostrofsky, 'Extending the psycho-historical framework to understand artistic production', *Behavioral and Brain Sciences*, 36:2, April 2013, 148-149.

²⁷ Aaron Kozbelt and Justin Ostrofsky, 'Expertise in drawing', in K. Anders Ericsson, Robert H. Hoffman, Aaron Kozbelt, and A. Mark Williams (eds), *The Cambridge handbook of expertise and expert performance* (2nd ed), Cambridge and New York: Cambridge University Press, 2018, 576-596.

²⁸ Arthur P. Shimamura and Stephen E. Palmer (eds), *Aesthetic science: Connecting minds, brains, and experience*, Oxford and New York: Oxford University Press, 2012.

²⁹ See Dean Keith Simonton, *Psychology, science, and history*, New Haven and London: Yale University Press, 1990; Charles Murray, *Human accomplishment*, New York: Harper Collins, 2003; Colin Martindale, *The clockwork muse: The predictability of artistic change*, New York: Basic Books, 1990.

patterns of stylistic change in the arts³⁰ is one of the most stunning contributions ever made to the study of creativity, though it is inexplicably neglected these days, even among psychologists.³¹

I believe that exposure to the virtues of such research traditions in psychology (that is, not just neuroscience) would serve art historians well, despite likely controversy and parochial resistance. Gombrich's own relation to research in this vein – with its historically decontextualised data and potential easy slide into facile, *Zeitgeist*-style non-explanations – would probably have been very ambivalent.³² As he wrote,

But if I hold that the subjective response must be and remain at the heart of the humanist enterprise, why do I also sympathise with the search for objective criteria, including, if it must be, those established by computers? The answer is, of course, that subjectivity does not mean that anything goes...Just as science can eliminate a wrong explanation, a false hypothesis, so the disciplined humanist can rule out a false reading, a misunderstanding.³³

Even so, Gombrich's writings foreshadow many of Martindale's conclusions,³⁴ and they share commensurate reactions to recent developments in the arts. Compare Gombrich:

We need not describe in detail how the regressive phenomenon in defying taboos escalated in the course of the century, in the movements of *l'art brut* or in certain "happenings." In what I have called the 'formative document' of modern art, Zola wrote that "art is a human secretion." He would have been surprised to see his metaphor taken literally in an exhibition of canned excrement displaced as *Merde d'artiste*.³⁵

with Martindale:

The high arts were defined in a way that guaranteed that they would evolve in a specific way and die in a specific way. It is time that aestheticians and critics accept what could be called the tragic end of

³⁰ Martindale, *The clockwork muse*.

³¹ See Aaron Kozbelt, 'Neuroaesthetics: The state of the domain in 2017', *Evolutionary Studies in Imaginative Culture*, 1:1, 2017, 181-192.

³² I have not been able to find citations of the work of Simonton, Murray, or Martindale in Gombrich's oeuvre.

³³ Ernst H. Gombrich, *Tributes*, 17.

³⁴ See, for instance, Ernst H. Gombrich, *Topics of our time*, Oxford: Phaidon, 1991, 181.

³⁵ Ernst H. Gombrich, *The preference for the primitive*, Oxford: Phaidon, 2002, 268.

art. It is better to do so than to continue with the hypocritical belief that things such as contemporary "happenings" have the slightest thing to do with art.³⁶

Martindale's pessimistic appraisal of the future of art was rooted in a theory of creativity prioritising novelty above all else. His perspective may be contrasted with Gombrich's more even-handed conception of creativity, which is found in scattered form throughout his writings, and which has been discussed in detail elsewhere.³⁷ A more optimistic appraisal of the future of art emphasises criteria for creativity besides novelty, such as value, excellence, or adaptive solutions to problems. These were central concerns of Gombrich, but their integration into broader thinking about art remains elusive. Gombrich's value-laden, rational view of creativity not only presents a more optimistic outlook than that of Martindale, but it also opens up research avenues that are highly generative, and in ways that are quintessentially human.

Sound scholarship from many domains, found in abundance in Moser-Ernst's book and more fully integrated into something resembling her conception of an Image Science, would be the ultimate monument to the scope and power of Gombrich's ideas – a fitting continuation of his ever-questioning methodology and the set of humanistic cultural values he always championed.

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³⁶ Colin Martindale, 'The evolution and end of art as Hegelian tragedy', *Empirical Studies of the Arts*, 27:2, 139.

³⁷ See Aaron Kozbelt, 'E. H. Gombrich on creativity: A cognitive-historical case study', *Creativity Research Journal*, 20:1, 2008, 93-104; 'Gombrich, Galenson, and beyond: Integrating case study and typological frameworks in the study of creative individuals', *Empirical Studies of the Arts*, 26:1, 2008, 51-68; 'The evolution of evolvability, applied to human creativity', *International Journal of Creativity and Problem Solving*, 19:1, 2009, 101-121.

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Gombrich's cosmos of thought: past and future

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