

SPRING BOOKS



MARTIN O'NEILL

PSYCHOLOGY

The aesthetic brain

Simon Mawer relishes a masterful mix of neuroscience and art that focuses on the early twentieth century.

This is a big book — in size, scope and ambition. Eric Kandel sets out to explore the effect of art not just on the human mind but, in the true spirit of the twenty-first century, on the machinery of the brain itself: the neural mechanisms that give us the phenomena that we describe as feeling and self-awareness. Who better as a guide to this science than Kandel, who won the 2000 Nobel Prize in Physiology or Medicine for his work on the physiological basis of memory?

To bring this vast project into the compass of a single book, Kandel confines his analysis to his native city — the Vienna that he was forced to flee with his family as a child just before the Second World War. (The city has since made overtures to attract him back, if only as an honoured visitor.)

Kandel has further tilted the playing field in his own favour because, although *The Age*

of Insight bills itself as a *Quest to Understand the Unconscious in Art, Mind, and Brain*, it is really an attempt to analyse the psychological effects of figurative art, particularly portraiture. Abstract art gets little or no mention. You may come away from *The Age of Insight* with some idea of why you are moved by the paintings of, say, Lucian Freud; but you will learn little about why you are gripped by a Jackson Pollock.

Nevertheless, this is an impressive work. Kandel considers Gustav Klimt, Egon Schiele and Oskar Kokoschka — three of the great artists of the modern era, at work in Vienna at the start of the twentieth century, when

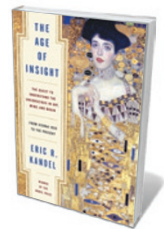
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For more on Eric Kandel's life, see: go.nature.com/lux11a

Sigmund Freud was undertaking his revolutionary investigation of the unconscious. Kandel makes of the

artists a springboard for a comprehensive review of the neurobiology behind perception and art appreciation.

Noting the “remarkable similarity between [Sigmund] Freud’s ability to use language to probe the unconscious and the ability of the modernist painters to depict it”, Kandel moves from Klimt’s highly decorative and often overwrought portraits of society women to the weightier aspects of his art. These resonate with Freud’s work — from erotic drawings to memento mori. Here we have the twin pillars of Freudian theory: Eros, the life force, and Thanatos, the death drive.

From Klimt it is a natural step to the art of his protégé Schiele, a wayward genius in the true twentieth-century mould, in whose work Kandel finds “a pictorial version of Freud’s *Interpretation of Dreams*”. The third of the trio, the expressionist Kokoschka, is perhaps



The Age of Insight: The Quest to Understand the Unconscious in Art, Mind, and Brain, from Vienna 1900 to the Present
ERIC KANDEL
Random House: 2012.
656 pp. \$40, £25.04

more interesting because he is less obvious. What concerns Kandell is how this artist conveys, and the audience reads, emotion in the human face. Kandell explores what the observer brings to the feast — the “beholder’s share” achieved through top-down processing that depends on memory and experience — and how innate processes in the brain filter incoming information from the “bottom up”. He suggests how artists may unconsciously exploit these brain functions, for example by using colour to convey emotions in portraiture.

Throughout, Kandell combines a professional knowledge of brain scans with a firm grasp of the ideas of another Viennese exile, the art historian Ernst Gombrich, whose seminal 1960 work *Art and Illusion* examined the mechanics of the artistic response. One might say that Kandell has taken up Gombrich’s torch, moving from the psychology of perception to the actual mechanics of it.

Kandell understands, and explains, how the observer brings a lifetime of experience to the simple act of looking at a painting; how “mirror neurons” elicit empathy in the brain; how “we are not only inspired and seduced by art, but also mystified, startled, frightened, and even repulsed by it”. And he knows where, in the brain’s 1.5 kilograms of fat and water, all these responses are located. It is quite a ride, and a beautifully scenic one with extensive, excellent and apposite illustrations.

Some of his arguments might be seen as contentious. Can our ideal of beauty really be hard-wired so that it has “varied surprisingly little from century to century or one culture to another”? (Has Kandell compared a seventeenth-century Rubens nude with 1960s Twiggy?) And is there really an adaptive advantage in our appreciation of art, or is it nothing more than a quirky by-product of a complex, self-conscious mind? But by and large, you go along with Kandell, because he simply knows so much.

Yet he would be the first to agree that this area of neuroscience is in its infancy. Marrying the sciences and humanities is a worthwhile undertaking, but Kandell admits what any serious observer of art will feel — that even when you have explained every neuron, every synapse, every glimmer in the amygdala or flicker in the prefrontal cortex, you still won’t have explained what it is actually like to stand in front of a Klimt or Kokoschka and feel the thrill. That is to do with consciousness, or what Kandell calls introspective experience: “a phenomenon not readily accessible to objective scientific enquiry”. I suspect that, even with the best neurobiology in the world, we will never be able to understand that. ■

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OCEANOGRAPHY

Ultra marine

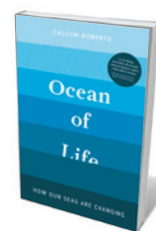
Stephen R. Palumbi finds both stark warnings and buoyant optimism in an encyclopaedic take on the state of the oceans.

The floating head of Prince Charles, 5 metres tall, chided us about global overfishing. On a February morning in Singapore, at the World Oceans Summit, Charles’s video highlighted a sobering fact: in the past decade, marine scientists have uncovered a growing list of serious problems that face the world’s oceans. In *Ocean of Life*, Callum Roberts charts these troubled waters.

Roberts, a marine conservation biologist, dives beneath the often deceptively calm surface of our planet’s great oceans to discover the agents of change, where they come from and the nature of their impact — as well as a range of pragmatic solutions. It is a story told with both scientific accuracy and narrative skill.

Roberts pulls no punches. In chapter after chapter of this encyclopaedic treatment, he summarizes the current scientific knowledge about crucial troubles facing the seas, almost all driven by humans. Pollution, acidification, shifting species ranges, the ‘decapitation’ of the marine food chain through over-exploitation of tuna and other predatory fish, invasions of species from other oceans, sedimentation, habitat destruction and more are laid out.

Overfishing is a much-documented issue, on which Roberts has focused his research career. More than one billion people depend on the ocean for food — and some can get animal protein only from the tiny fish left after decades of overfishing. The story of their unmet need is written here. Roberts gives us detailed personal tales, too, about the decline and fall of small fisheries such as the Firth of Clyde in Scotland; bigger-picture accounts look at why the British trawling fleet returns five times



Ocean of Life: How Our Seas Are Changing
CALLUM ROBERTS
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fewer fish now than it did 75 years ago. This steady rain of sobering news is neither exaggerated nor minimized, and Roberts’s clear, well-written accounts give us access to vast amounts of scientific information about ocean declines. Even in the realm of ocean conservation, scientists tend to specialize, and I know of no other volume that treats such divergent ocean issues as overfishing, decreasing pH, plastic pollution and biogeographic shifts with this much accuracy and acumen.

As a balance to the bad news, each chapter is edged with fascinating details about the life of the sea, such as how currents move through the deep oceans and what problems are caused by invasive marine species. Roberts’s exuberance about the ocean bubbles to the surface: he delights in the historical context of how people have used the oceans. Even when he is describing the dire

collapse of the tuna catch in the Mediterranean Sea, a historical description of garum (the infamous fermented fish sauce that was crucial to ancient Roman cuisine) creeps in.

Roberts deftly interweaves ocean facts with conversational whimsies, such as the only aphorism that Oscar Wilde got really wrong (“Nothing succeeds like excess”). And he occasionally offers a passage right from the heart; for instance, when he describes a squid’s responses to a human encounter as “written on their skin in quick-fire color changes that pulse and

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