

The Age of Insight: The Quest to Understand the Unconscious in Art, Mind and Brain

By: Eric R. Kandel

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HEALING A SHATTERED WORLD: THE BRIDGE BETWEEN NEUROSCIENCE AND ART

Reviewed By:

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The art of every era serves a particular function and attempts to solve a particular problem. Artists of Ancient Egypt covered the walls of royal burial chambers with depictions of everything that the dead would need in the afterlife. They followed a set of rules that emphasized not how something looked from any one perspective, but rather what conveyed the clearest form of an object. Improvisation and creativity were not a part of ancient Egyptian art; the aim was to solve the problem of how to document the world so that everything in it could be identified. European Medieval artists created many works for display in churches. To the modern eye, the figures in these paintings— with their elongated limbs and giant eyes — look stiff and contrived. But the stories depicted there are clear. Anyone familiar with the Bible knows at a glance what is portrayed in an annunciation scene. Realism was not required; clarity was. For these artists, the aim was to depict religious scenes so that even illiterate worshipers could easily understand the teachings of Christianity. Everything else only distracted from that aim; elaborate background scenes and naturalistic details were often left by the wayside. Artists in turn-of-the-century Vienna had a very different set of problems before them. They no longer needed to paint portraits for posterity of rich and powerful families; photography now filled that role. The realism of photography surpassed what most artists could achieve, so artists began to explore new artistic territory.

In his new book, The Age of Insight, Dr. Eric Kandel formulates the problem the Viennese Expressionists were attempting to address. He tells us the cultural origins of this problem, and, utilizing his extensive knowledge of the science of the brain as well as his impressive grasp of art history and neuroaesthetics, he explores the unconscious processes of perception using the art of Modernist Vienna as a focal point around which to build a link between art and our current understanding of the operations of the brain. His thesis is that artists, as well as scientists and intellectuals working at the time of turn-of-the-century Vienna, were exploring the evidence of unconscious phenomena. Kandel's explicit goal is to demonstrate how our current knowledge of the science of the mind elucidates how we engage with art of twentieth century

Vienna; his implicit ambitions are to further Freud's abandoned effort to explain the mind in biological terms and to further the communication between disciplines as diverse as science and art.

Kandel was awarded a Nobel Prize in Physiology and Medicine in 2000 for his work on the molecular biology of memory. Perhaps less well known is that at the time of the Anschluss, Austria's annexation to Germany, he was forced to leave his birthplace, Vienna, at the age of nine. As he later became professionally successful, Kandel and his wife assembled an art collection that reflects their nostalgia for Vienna and for modernist fin-de-siècle Viennese art. He thus approaches his attempt to understand the human mind in biological terms using as illustration his beloved modernist portrait painters of late nineteenth/early twentieth century Vienna.

This sumptuous book with its beautifully reproduced works of art begins in an engaging fashion as Kandel describes the intellectual environment that gave rise to a common concern with unconscious processes. Lively exchanges occurred among scientific medicine, psychology, psychoanalysis, and art history within the Viennese community, notably in the Salon of Berta and Emil Zuckerkandl. Scientists, artists, and members of the literati began to explore how factors unseen and beneath the surface impacted what was perceived. Carl von Rokitansky, the dean of the Vienna School of Medicine, demonstrated how symptoms pointed to underlying disease. Sigmund Freud articulated his theory of the dynamic unconscious, publishing his, arguably, greatest work, The Interpretation of Dreams, in 1900. Arthur Schnitzler's interior monologues introduced readers to his characters' unconscious. And three portrait painters – Gustav Klimt, Egon Schiele, and Oskar Kokoschka – depicted an inner life of sexuality, aggression and anxiety.

The Age of Insight is divided into five parts. In Part One, Kandel explores Freud's biological model of the mind. Freud recognized that neurobiology was in its infancy and not yet up to the task of supporting a biological theory of the mind, but he expressed hope that one day the psychology of the mind and the biology of the brain might be unified. The notion that mental activity adheres to scientific laws remains among Freud's most original and influential ideas. Reading The Interpretation of Dreams, Kandel identifies in Freud's writings a coherent cognitive psychology based on the idea that all mental acts have a cause and an internal representation in the brain. Freud's enduring accomplishment was to take the concept of mind out of the realm of philosophy and make it a central concern of the science of psychology. In this work, Kandel updates Freud's 1895 Project for a Scientific Psychology.

Part One also discusses three exceptional artists of this era: Klimt, Schiele, and Kokoschka. Klimt was the first of the Austrian modernist painters

to depict female sexuality and aggression in a new way. Kandel deftly connects many underlying themes that emerge in his art. Klimt was a masterful painter of women, and many paintings reveal his models' rich inner lives, often with an emphasis on sexuality and sensuality. Just as Freud was elucidating a new understanding of our inner lives, revealing the unconscious and sexual libido, so Klimt was depicting the sexuality of the women he painted. Schiele and Kokoschka further explored sexuality as well as additional themes of anxiety and aggression. In depicting these themes with such candor, their paintings evoke a strong response in the viewer and bring into focus another concept that evolved with modern art—that of the “beholder’s share.” The art critics Ernst Kris and Ernst Gombrich developed this idea that the viewer of a work of art is an active participant, and that the viewer interprets an image based on their unique past experiences and current expectations. Gombrich called it the beholder’s share to emphasize that a work of art exists when an artist creates a work of art (the artist’s share) that is then seen and interpreted by a viewer (the beholder’s share). The beholder’s share is a straightforward idea — to quote Kandel, “art is not art without the direct involvement of the viewer,” but the elucidation of the idea brings together disparate disciplines including gestalt psychology, neuroscience, and art criticism.

The concept of beholder’s share is explored further in Part Two. Viewing the brain as a “creative machine,” Kandel makes a transition to illuminating the active processes and organization of perception. This focus on perception informs the title of this book. Much of The Age of Insight focuses on mechanisms of perception. The title of the book encapsulates a triple entendre (at least); it connects perception (sight), the unconscious world and the ordering of the human mind through its perceptual processes (inward sight or insight), and revelation (insight!). Now, 100 plus years after Freud rejected his own attempt to ground psychoanalysis in biology due to the limitations of neuroscience, we live in an age in which we can understand much of the human mind in biological terms.

In Part Three, the discussion of the neuroscience of perception begins with the biology of visual processing. Kandel introduces many of the basics of visual neuroscience: neuroanatomy, receptive fields, color vision, the center-surround organization of ganglion cells, orientation selective cells in the primary visual area of the cortex, and more. The science here focuses on low and intermediate level visual processing. This bottom-up processing is largely genetically determined and not altered by experience, in contrast with top-down processing that relies heavily on memories of previous experiences. This is not to say that this level of processing is simple, however. For example, Kandel explores the Rubin vase optical illusion in depth to explain how the brain distinguishes foreground from background, and how different areas of the visual

cortex are active depending on whether we see a vase or a face at any given moment.

The importance of the face in visual processing is of particular interest to Kandel. Faces are the most important category of object recognition because we use this information to recognize each other and to glean important social information. The visual cortex has multiple clusters of neurons (called face patches) that are dedicated to processing face information. These face patches each have specialized functions; one region is important for the emotional content of a face, another is involved in the working memory of faces, a third responds to faces seen in profile, and yet another patch responds to a person's identity independent of the viewing angle. Many of these face patches are connected to the amygdala, a brain region crucial for emotions, as well as many other brain regions, suggesting the privileged role of the face in visual information processing and in emotional cognition. The hands and body, too, are well represented in the cortex and convey important supplemental emotional information.

The face, hands and body are often the focus of the art of Klimt, Schiele, and Kokoschka. Kokoschka's portrait *Father Hirsch*, just one of Kandel's many examples, is particularly evocative; his teeth are bared, and he seems to grimace slightly. He looks away from the viewer, and the gnarled, red fingers of one hand are awkwardly stretched in front of him. The anger and tension in the painting are manifest throughout—in the face, the hands, and the colors. This portrait of a seated man elicits a strong emotional response in the viewer. Kandel walks us through much of the underlying neurobiology, both conscious and unconscious, behind the viewer's response to this painting and others by these three Viennese masters. Sometimes this walk can meander, sometimes it is a bit tedious, but ultimately it is worth the exertion.

Part Four presents the meatiest substance for psychoanalysts, for here Kandel illustrates the bottom-up mental processes and the top-down processes that contribute to theory of mind and empathy. In exploring the science of perception, empathy, emotion, and theory of mind, Kandel leads us into the psychoanalytic arena of intersubjectivity and encourages us to question what can happen when two people convene in the intimate engagement of the psychoanalytic consulting room. What is the interaction (dare we say synergism?) between two minds or two brains that opens up new ways of thinking and perceiving?

Psychoanalytic theorizing has traveled a long distance since Freud, in large measure facilitated by advances in neuroscience. In this section of the book, Kandel demonstrates how our brains are wired for social cognition. We are intersubjective even before birth. While the words "intersubjectivity" and

“intersubjective” never appear in Kandel’s text, the neuroscience he presents supports a notion that we are unconsciously wired to relate. It provides a link from Freud’s one-person psychology (and neuropsychology) to contemporary psychoanalytic models which recognize that not only does our unconscious dynamically affect our behavior and psychological organization, but that we are also unconsciously impacted by our patients. Kandel eloquently describes social cognition as one example of the top down processes that rely on the bottom up processes (such as the innate ability to assess other people’s motor intentions by specialized mirror neurons). Although his examples are formulated with respect to looking at art, the brain processes are not limited to viewing art and extend to more general activities of the human mind and its interest in other human beings.

Kandel argues that the brain’s capability for imitation and empathy gives both artist and beholder access to the private mental world of others. This, of course, applies to psychoanalysts as well, whose stock in trade revolves around empathy and their highly honed capacities to explore the mental worlds of others. Kandel explains how and why, when we match our breathing to that of our analytic patients lying on the couch, we create a window into what the patient is feeling but perhaps not expressing in words. If we follow what Kandel writes, we note that empathy involves top-down processes that interface with the automatic bottom-up processes and has elements of the creative processes that Kandel takes up in the final section.

In the final chapter of Part Five, Kandel advocates for “consilience” in his attempt to heal the rift artificially separating areas of knowledge. As with his discussion of the relationship between brain science and art, Kandel is advocating for the interplay between psychoanalysis and brain science. While the prodigious output from his laboratory at Columbia University continues, Kandel has become an ambassador, bridging the cognitive sciences, medicine, philosophy, and the humanities. Despite all this, Kandel remains extraordinarily modest, and he is generous in his citations. Beyond the wealth of knowledge presented in graspable form, this book is an invaluable resource for references in the fields of cognition, brain science, psychology, art, and art history. Born into a world in which even the most basic human perceptions were shattered, Kandel ushers his readers into an age in which disciplinary divisions can be relaxed in favor of a more collaborative vision. Our sight and insight have greater acuity thanks to Dr. Kandel.