

## Towards a Critical Neuroaesthetics

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### I. ABSTRACT

It could be asserted that, for all but the last century or so in the long history of the discipline, the singular role of architecture was to provide beauty and the primary task of the architect was the pursuit of it. To be sure, Vitruvius posited his definition of architecture ("A") as firmness (F) and commodity (C) in addition to beauty (or delight, D) ("A = F+C+D") and his formulation influenced generations. Succeeding commentators, however, narrowed the focus. John Ruskin, arguably the most influential critic of the 19th century, defined architecture precisely as those components of a building that were not necessary from a structural or programmatic perspective. A century later, the historian Nikolaus Pevsner set forth his famous assertion that "A bicycle shed is a building; Lincoln Cathedral is a piece of architecture." In attempting to differentiate architecture from mere "building", Pevsner determined that architecture's defining characteristic was, "A view to aesthetic appeal." And Robert Venturi explained the "problem" of modern architecture by perverting Vitruvius's definition thusly: "Firmness + Commodity = Delight."

If we accept the central role of beauty in architecture, we might also accept the proposition that the role of architectural criticism lies in ascertaining beauty. That is no easy task, however, and its elusiveness may explain the difficulty architectural criticism has had as a professional pursuit and as an agent of architectural development or public promotion.

Now, neurobiologists use neuroimaging techniques to identify brain regions associated with processing and judging beauty. The field of neuroaesthetics and cognitive electrophysiology using event-related brain potentials provides an overall view suggesting that aesthetic experience is a multilevel process that includes visceromotor and somatomotor responses, with that visual experience of art characterized by the activation of sensorimotor areas, emotional and reward-related centers. Seminal studies demonstrating the plasticity of behavioral and neural responses to beauty after perceptual and motor training suggest important questions regarding the relationship between embodiment and aesthetics that are particularly important to the art of architecture, in which people move through space to experience design. As we learn about the distinct processes in the brain that are engaged, we can increasingly relate neural form to reveal the brain's function in aesthetic judgments of delight.

This movement in science offers interesting possibilities in a refreshed role for architectural criticism, incorporating an understanding of the brain's response to beauty. Can we create an evidence-based process leading inexorably to beautiful buildings? This illustrated presentation will explore neuroaesthetics while examining the challenges of defining beauty in architecture. It will interweave research from neural science revealing principles of sensation, perception, and emotion with criticism in its many guises (description, rhetoric, rhapsody, etc.) to offer a new view of architectural criticism as "critical neuroaesthetics" and suggest a place for architectural criticism, reconceived.

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**Eve Edelstein**, Fellow of the American Academy of Audiology, is Research Director of the Human Experience (HxLab), and the BioAcoustic Neuro Group (BANG) of the Gadget Lab at Perkins+Will. Dr. Edelstein is faculty and participates with the Center for Healthy Environments at the NewSchool of Architecture and Design in San Diego, and leads the Design Health CoLab, part of the AIA Design + Health Research Consortium. Eve worked with ANFA and NSAD to develop the Neuroscience for Architecture curriculum. With the University of California, San Diego she created novel virtual visual and sonic simulations that synchronously measure the consequence of design on EEG and human outcomes. Eve's neurophysiological research and clinical practice applied novel intracellular, in-vivo, and clinical electrophysiologic techniques to diagnostic assessment of auditory and vestibular disorders of central and peripheral origin in adults and children. With degrees in neuroscience (Ph.D. Institute for Neurology, University College London), Anthropology (UC Berkeley) and Architecture (NewSchool of Architecture and Design), Eve now translates clinical and neuroscientific research into brain-based principles for design in all building types and scales, from rooms to regions, and including workplace, healthcare, educational, science and technology facilities.