

# Using Neuroscience and Experiential Anatomy in Architectural Design: Recent findings regarding organic and rational drawing

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## I. ABSTRACT

This research demonstrates that architects and other designers can use experiential understanding of the brain deliberately to influence the characteristics of their drawings and design products. The human brain has three levels: the brainstem and cerebellum control involuntary activities such as respiration and organ function; the limbic (mammalian) system processes emotions and memories; and the neocortex plans and performs higher cognitive functions. Architectural sociologists Galen Cranz and Leonardo Chiesi, building on insights from medical researcher Jader Tolja and founder of Body-Mind Centering Bonnie Bainbridge Cohen, have tested the idea that the brainstem and limbic system can be activated through experiential anatomy to stimulate a distinct type of creativity in drawing and design (Cranz and Chiesi, 2014). Drawings produced after stimulating the neocortex with simple arithmetic, and those produced after stimulating subcortical parts of the brain (the brainstem and limbic system via the kidney) evidenced theoretically predicted differences in drawing qualities. Small, straight, two-dimensional drawings morphed into large, curvilinear, three-dimensional drawings of the same objects. The earlier study with a sample of 200 in seven trials used drawings of handles and lamps, but architects wanted to know if the differences would hold at the building and urban scales. Accordingly, following the same research design, this replication study compares and contrasts sets of drawings of buildings and urban squares produced by 30 subjects in two trials.

The drawings are coded by independent researchers (Rushton and Rosen) for line quality (curved or straight), size (smaller or larger image), and three-dimensionality (shading, perspective), and number of depictions of nature (birds, trees, flowers, sun, water). The same differences are observed at the architectural scale as at the product scale.

“Experiential anatomy,” somatics, and neuroscience have direct implications for teaching architectural design, and for promoting creativity in general. Further, this research on the power of accessing organs through somatic experience gives new meaning to the term “organic” architectur. If consciousness can influence design, the design of an object, room, or place may also affect users’ consciousness. This is probably assumed by designers, and neurological evidence is a welcome confirmation. Finally, this research suggests that creating with the subcortical brain may facilitate relational or ecological thinking by instigating deepened relationships between practitioners, their bodies, and their surroundings. Using all levels of consciousness in drawing and design offers new potential to forge ecologically sustainable connections between humans, nature, and our future built environments.

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## 3. AUTHOR BIOS

**Dr. Galen Cranz**, Professor of Architecture at UC Berkeley, is a sociologist, designer, and certified teacher of the Alexander Technique (a system of body-mind postural education). She studies the social-cultural components of environmental design, including how the body meets the environment, a new subject she has called Body Conscious Design. She provided a critique of the practice of chair sitting from a somatic point of view in The Chair: Rethinking Culture, Body and Design. She also studies post-occupancy effects of designs on users, the role of urban parks, and taste as a communication process in design.

**Chelsea Rushton** holds an MFA in Visual Art and 500-hour level certification as a yoga teacher. She is the designer and instructor of Art of the Soul: Creative Process as Spiritual Practice, a special topics combined lecture, seminar, and studio course offered at the University of Calgary. Her creative research focuses on the intersections of art, ritual, and spirituality, and the potential of art practice to document and facilitate personal and collective growth and evolution. Her meditative practices hold as a primary goal the experience and alignment of the physical and energetic aspects of the self.

**Emily Rosen** is an MS candidate in Architecture: Body Conscious Design at UC Berkeley. She holds a BA in Art and Design from Bennington College and has worked as an artist in the mediums of video performance and installation. She is a student of the Alexander Technique, and her academic research focuses on physiological and socio-cultural relationships to the built environment, gestural interfaces, and body-awareness practices.