Unveiling Neuro-Urbanism:

A new field, based in psychology and cognitive science, helps us better understand ourselves in the built environment

or

Why we need buildings to look at us

by Ann Sussman and Vernon Woodworth

The literature is clear that the primal human need to bond biologically for survival and psychologically for security in infant development establishes the structural basis for how people as adults then go on to connect to others and feel secure in their lives. What we do in this paper is extend this thinking to urbanism, or how people connect to architecture and buildings in their surroundings. In outlining this approach, which we call neuro-urbanism, we begin with the person, particularly our early infant attachment behavior, to provide the framework for understanding human responses to building facades and streetscapes.

We emphasize that we have an animal brain, one wired for attachment, and pre-set to look into another’s face. Our brains don’t change when we look at other objects. Like other mammals and primates, we find security through attachment to others. We use the mechanisms tailored for survival as a social species in the animal world when we look at inanimate things in the modern one. At some level we may tacitly recognize our need to personify things and how this helps us connect to them, people see faces in cars routinely, and talk about ‘the man-in-the-moon;’ our intention here is to secure this idea as the foundation for understanding people’s perception of architecture and urbanism, and for improving how we build new places for people in the future. Much as we need others to look at us to develop a sense of self and structure in our lives, we need to feel that buildings ‘look’ and ‘see’ us to establish the psychological structure that promotes feelings of security and belonging outside in our urban and suburban environments.

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While our perceptions are hard-wired for interaction and psychological growth, an appropriate environment is required for the requisite neural pathways to be activated. Winnicott rec-
ognized this necessity with his formulation of “good-enough mothering” as the required basis for healthy personality development. An essential aspect of good-enough mothering is the process of mirroring, whereby recognition, imitation, and interaction form the basis for developing the capacity for empathy, and relatedness. Without this capacity children feel lost, turning into adults consigned to a life of isolation, and internal fragmentation, with only the hope that effective therapy can bring them back in touch with themselves and others. Likewise, the built environment can open our hearts to a sense of delight and interaction, releasing a social energy that anthropologist Victor Turner called “communitas”, or it can cause our central nervous systems to shut down by activating different parts of the brain that evolved to react to stress and threats, putting us in ‘fight or flight’ mode.

Seeking to understand these differing responses to built environments, neuro-urbanism’s first principle sits squarely in neuroscience: how much of our brain’s activity is beyond our conscious control. We know now that some 95 percent of our mental actions remain outside of our awareness. When to take a breath, or where to look first, or how to place a foot forward, are all decisions our brain makes without any conscious effort on our part in most cases.

A second tenet of neuro-urbanism is the brain’s built-in dedication to pattern recognition and particularly its set-up for recognizing faces, as explained by the neuroscientist Kandel and others. Our brain’s focus is human-centric, particularly set up to see people. Kandel explains that “more of our brain is dedicated to facial recognition than the recognition of any other visual object,” (Kandel, 333). He further notes that half of our brain activity is, astonishingly, devoted to visual processing, far more than any other sense. (K, 238)

In neuro-urbanism, then, we describe people as ‘face-i-tects.’ We look through an evolutionary scrim that prioritizes the most important thing for an individual’s development and survival: other people, and especially, other faces. Our facial bias, and particularly its finely-honed ability to instantly read non-verbal emotional expression in another member has been noted since Darwin, in the 1870s, and remains a primary means for this interpersonal communication. Elaborated by many psychologist since then including Ekman (Emotions in the Human Face, 1972) and more recently Baron-Cohen (The Essential Difference, 2003), new research continues to expand the significance of unspoken communication via facial expression in all aspects of human behavior in surprising ways. Researchers at MIT and Carnegie Mellon, for instance, recently found that the top performing work groups asked to complete different tasks were consistently composed of members who earned the best scores on face-reading tests (Duhigg, 58-60). These individuals excelled at empathy, quickly reading and reflecting each others feelings and thinking, solving problems faster than other groups. One mechanism for this sophisticated face-reading ability, linked to our ability to intuit another’s feelings, has most recently been ascribed to mirror-neurons, cells specialized for attachment to the other which with no conscious input on our part reflect another’s behavior.

Looking at how our human brain is designed for social attachment, we can say that just as our evolution has prescribed our means of sophisticated interpersonal connection and how much
of it is visual - (and how we don’t connect through sonar like a bat, or smell like a bear, which can smell its mate a mile away) - it sets parameters for built environments where we feel at our best. Evolution determines the way we connect to people, which in turn lays the framework for our connection to places.

Just as “an appropriate environment, (including visual responsiveness) is required for the requisite neural pathways to be activated” in childhood to foster healthy development, so too do requisite neural pathways need to be activated to foster happy humans around buildings. And given the visual bias in our brain and the necessity to look into another’s face to be mirrored, so too we need built environments where we can subconsciously create visual bonds that do the same: make us feel ‘seen’ and ‘mirrored’. The ability to subconsciously attach creates the structure for moving forward in all aspects of our lives, among people or built things. With appropriate human connections and responses, we thrive; without them, we become disconnected, and feel scared, traumatized, even non-existent. “Deprived of face contact we are cast away, adrift from our deepest needs and sense of purpose in life,” the psychologist Levine writes.

When it comes to streetscapes then, we argue that buildings as well as houses need to provide a homologue for ‘face contact’ or we will feel ‘cast away’, like we’re in a place where we don’t belong and should not linger. Buildings replicate ‘face contact’ when their window arrangements and other elements suggest orderly rows of ‘eyes’ ready to see us, whether in the brown stones of old Boston or the palazzos along the Venetian canals. These structures promote feelings of connectedness, anticipating and filling our need to be seen and subconsciously attach no matter our language, culture, class, heritage or time. They invite us in, beckoning us to spend time in their vicinity, like a stand-in for the well-attuned mother. The process by which this takes place has been described as “regulation” of the central nervous system, a soothing experience learned in the primary care-taking relationship and replicated in subsequent ones. Modern plate-glass buildings cannot placate us; neither can buildings with other blank facades. Not providing the homologue for the face we require, they fail to trigger the internal response we need to feel at our best. Presented with the indifference of a curtain wall facade our central nervous systems becomes susceptible to dysregulation, expressed in the form of ‘fight or flight’, or shutting down. Taking in symmetrical eye-like windows, however, such as in the image of Palladio’s Villa Rotunda at the top of this article, and things shift. The building, a UNESCO World Heritage Site, invites you in, appears to anticipate your arrival, even delight in your existence. Great places do this, whether old world urban centers or small town traditional Main Streets; seeming to ‘see’ us, they activate the brain’s soothing pathways of regulation. They are successful and always will be because the exterior architecture mirrors and meshes with our internal brain architecture, keying into attachment and how requisite it is for survival.

Additionally, and in another remarkable example of our broad facial bias, our brain consistently and without conscious control on our part makes facial arrangements out of random details in inanimate objects, (such as seeing a ‘man-in-the-moon’), a phenomenon known as pareidolia. This overlooked phenomena in architectural analysis contributes to our experience of place
and can help to explain how different streetscapes change our mood, argue computer scientists such as Stephen Chalup. His computer simulation studies suggest that people effortlessly experience essential human expressions (happy, surprised, sad, angry, fearful, disgusted, neutral, contempt) looking at different arrangements of windows, door, roof lines and other elements in building elevations. Considered to carry a survival advantage in the wild, pareidolia thus influences our feelings in modern built environments too, subconsciously contributing to feelings of anxiety or its reverse, security and contentment.

In sum, neuro-urbanism’s analysis of urban form and functioning begins and ends with the person, considering early face-oriented bonding experiences with others as key to understanding human behavior everywhere. Equipped with a central nervous system always on the look out for danger, attachment structures our lives, whether between people or inanimate things. As we move forward with these new insights about ourselves, collaboration between the design professions and the fields of psychology and cognitive science holds out the hope of a new era of mutual edification, and a significant opportunity to produce a more engaging and satisfying built environment. Leveraging the power of interdisciplinary thinking, neuro-urbanism provides a framework for building better, more engaging places for all.

Sources:


