Four days of intense intellectual exchange laced with hugs, laughs, handshakes, and lots of catching up. The excitement of the EDRA annual conference is hard to beat: reconnecting with old friends amidst all the new faces of environment-behavior scholars and practitioners from around the world. EDRA Connections is envisioned as the means to continue those dialogues and debates, a vehicle for unraveling the ideas and thoughts shared at the conference and beyond. In this issue, we are focusing on furthering discourses from both Issue #3 and EDRA45NewOrleans. Issue #3 asked EDRA members to respond to the question of what issue(s) should drive environment-behavior research in the next decade. The goal was to explore how EDRA could maintain its influential position while addressing complex contemporary and emerging challenges. EDRA45NewOrleans’ theme “Building with Change” challenged participants to rethink strategies, methodologies, theoretical frameworks, and approaches to changing environmental, societal, economic, and political systems. Four authors’ thoughts chart a trajectory as to what could define environment-behavior research in the future:

- Saif Haq elaborates on David Seamon’s question of whether virtual reality will be able to simulate ‘real reality’ entirely. He delves deeper into how and when virtual reality can be used as a tool in environment-behavior research.
- Laura Lawson builds on Roberta Feldman’s position that design research and practice can contribute to solving community needs, particularly those of underserved populations. Drawing from examples of community-university partnerships, Lawson charts what it takes for such collaborations to flourish.
- Fang Xu expands on the EDRA45 track, “Dwelling with Change.” He argues about the need for holistic understandings to help architects engage what he calls a shifting professionalism that centers on the user.
- Cherif Amor reminisces about EDRA45 in anticipation of EDRA46 and its theme, “brainSTORM: Dynamic Intersections of Environment-Behavior and Neuroscience.” Amor positions these emerging opportunities for interdisciplinary collaborations as avenues for strengthening environment-behavior’s scientific side.

Make sure you are positioned to be part of future dialogues: EDRA46LosAngeles takes place May 27-30, 2015, and while the deadline to submit oral/paper presentations has passed, poster presentations are due November 24. Visit www.edra.org/edra46losangeles for more information on how to submit. EDRA Connections also has an open call for articles. We invite you to send 1000-word essays to me at thadjiya@umn.edu. You can explore questions around scholarship, pedagogy, practice, or engagement, or review books and other relevant publications. Ground these short pieces in theory and interdisciplinary discourse and use APA referencing. More information on submission requirements can be found at edra.org. We look forward to hearing your thoughts.

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Simulating ‘Real Reality’: Are We There Yet?

BY SAIF HAQ

At the end of a short article describing the concept of ‘life world’, Professor Seamon posed a question. “Will virtual reality eventually be able to stimulate ‘real reality’ entirely?” (Seamon, 2013). Being a phenomenologist concerned with ‘grounding’ of humans to particular places, his concern is justified. However, Dr. Seamon’s question does not stem from an anticipated loss of a discipline; rather, it focuses on the possibilities of ‘new realities’ that are opening up. In this sense, it is not ‘concern’ but ‘anticipation’. However, while we have not reached the position of simulating ‘real reality’ entirely, Virtual Reality (VR) has developed tremendously. In this paper, I would like to set a somber tone and comment on the perceived relationship between VR and the concerns of environment behavior (EB) research.

First, what is a VR from the point of view of the EB researcher? It is a digital ‘make-believe’ world inside which a person can move and interact with various objects and/or with computer or other participant controlled ‘avatars’. It is composed of interactive computer simulations that sense a participant’s position and actions, and replace or augment the simulation in real time to one or more senses, giving the feeling of being mentally immersed in the simulation (Sherman & Craig, 2003). The concept of ‘presence’ is a good way to explain VR. It is the experience of an environment that comes from perception as mediated by both automatic and controlled mental processes (Gibson, 1979). Since VR includes simultaneous presence in both a real and a virtual environment, some authors have used the term ‘telepresence’ (Steuer, 1992).

From a human factors point of view, a certain ‘suspension of belief’ has to accompany VR use. At this point in time, most VR systems stimulate experiences of vision, sound, and motion, and respond to a few haptic inputs. Electronic games would be the obvious example. Additionally, many theme parks and theatres have ‘expanded’ VRs where vibrating seats, strobes lights, water drops, air pressure, smoke, heat, smell, etc. are introduced to create a richer ‘presence/telepresence’.

It is important to consider four elements regarding VRs. They are: (1) Virtual World, (2) Immersion, (3) Interactivity, and (4) Sensory Feedback (Sherman & Craig, 2003). All of these require appropriate software and hardware. The Virtual World is the three dimensional ‘make believe’ reality in which a subject is in. How realistic it is depends on both the processing power of the computer, ability of the software, and the display media. Immersion refers to a number of things. Essentially, it is making the ‘make-believe’ believable. Contemporary hardware systems include ‘CAVE’ (where four, five or six of the walls of a room-sized cube (see Figure 1), wrap-around screens (2-D or 3-D), head mounted displays (HMD)/Heads up Displays (HUD), etc. New developments, such as Google Glass and Metapro’s SpaceGlasses, hold immense promise in this category and in the field of augmented reality. Pixel resolution, color balance, size and extent of the display are important considerations, as are human physical and mental factors such as peripheral vision and suspension of belief.

As software and computing power are becoming more and more sophisticated, bigger and more detailed virtual worlds are being modelled and a greater number of instantaneous interactivities are being included. Similarly, improved hardware is taking immersion to the level of an alternate reality (unfortunately realistic interaction with avatars still remains in the movies). Most important, the third and fourth elements, interactivity and sensory feedback, are closely related. Interactivity is the extent to which users can participate in modifying the form and content of the VR in real time. In other words, it is how an individual interacts with elements within the VR. Usual hardware includes 3-D glasses or head mounted/heads up displays that also respond to head turns; unidirectional or omnidirectional treadmills that respond to a ‘walking motion’, haptic gloves that respond to actions of touching or picking up objects, etc. Sensory Feedback refers to the ability of the computer to understand the physical movements of an immersed individual and change the display so that the movement and its effect are simulated. For example, if a person moves forward, then certain objects should become larger, viewing angles of others will change and so on. The person is not moving, but will appear that s/he is moving. VR also includes other forms of feedback (such as auditory and haptic). For example, in a VR operating room, the surgeon’s scalpel movement on a virtual patient may produce feedback in the form of resistance and pressure.

IT SEEMS THAT WHEN RESEARCH QUERIES THE RICHNESS AND MULTIPICITY OF THE ENVIRONMENT, WHEN SUBJECTS RESPOND FROM ‘A HEIGHTENED RECEPITIVITY OF ALL THEIR SENSES’, THEN A RICH ENVIRONMENT IS NEEDED.

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As software and computing power are becoming more and more sophisticated, bigger and more detailed virtual worlds are being modelled and a greater number of instantaneous interactivities are being included. Similarly, improved hardware is taking immersion to the level of an alternate reality (unfortunately realistic interaction with avatars still remains in the movies). Most important,
these systems are becoming more affordable and more developer friendly. What do all these mean for research, especially EB research?

IMPLICATIONS FOR EB RESEARCH

EB research, like any other, has associated questions of internal and external validity. While laboratory experiments provide precise controls, they are usually associated with issues of generalizability. On the other hand, research done in real settings suffers from questions regarding extraneous factors. Ideally, VR can address these. Developments in VR technologies are making it easier to create environments in which subjects may be immersed to a high degree. They can do different tasks within the VR and these tasks can be easily documented and measured for later analysis. Also, in VRs each variable of the environment can be precisely controlled and systematically added or taken away according to the needs of the experiment.

In a similar manner, confounding human factors can also be controlled. Interactivity in a VR can be modelled after a similar physical activity in a real situation or with other appropriate gestures. For example, a person can use a treadmill to simulate forward movement or use a joystick. Controlling the speed will be different and so will the cognitive processes involved. We can control fatigue in one case and enhance embodied cognition in the other. The research question will indicate which variables are being explored and which are being controlled and the VR will be developed and hardware selected accordingly. Another advantage is that individuals with special needs, such as wheelchair users, can also be included as experimental subjects.

Cost is always a big factor in setting up experiments; especially when dealing with the real world. Can you imagine constructing an entire building or an entire city in which subjects carry out experimental tasks? This is easy and cost effective in VR. Initially, it required a very large investment, but this is changing rapidly. Equipment is getting smaller (think Google glasses, wearable technology, etc.), and software are becoming user-friendly. Also, the new generation of researchers are much more tech savvy. As costs come down, experimentation will become cheaper and more subjects may be included to increase statistical power.

As VRs have developed, so have the techniques of data collection. Behavior inside VRs can now be measured by the software itself. For example, walking traces, eye movements, gait, and gestures can now be directly measured by the computer and made available digitally and in an appropriately tabulated form for analysis (see Figure 2). Additionally, since the subject is in a controlled ‘environment’, we can simultaneously collect physiological data (such as heartbeat and temperature) as necessary.

The opportunities tied to VR are tremendous and call for interdisciplinary collaborations. Data regarding human behavior and preferences is important to the development of VRs and feedback from the EB community would be invaluable to computer scientists. While we have seen successful collaborations between computer engineers, cognitive scientists, and human factor experts, I am not aware of any conference that systematically unites computer scientists with EB researchers.

Finally, let me conclude this piece by expanding on the last point made, and coming back full circle to the question of simulating ‘real reality’ entirely. Computer scientists are on the quest for the absolute perfect VR where it would be no different than all aspects of the real world. But for research, is it necessary? For an answer, the research question vis-à-vis immersion and interactivity should be considered. After a meta-analysis of 11 studies, covering 152 environments and over 2,400 respondents, Arthur Stamps (1990, p. 911) found that “the combined correlation between preferences obtained ‘in-situ’ and preferences obtained through photographic simulation was 0.86” (p<.001). Thus he accepted that “color photographs were valid facsimiles for actual environments for the purpose of
predicting visual preferences” (Stamps, 1993, p. 118). In my own work, I have compared wayfinding and cognitive mapping in real environments with those done inside a very simple VR constructed in a one-to-one scale where all aspects of the environment were controlled (Haq, Hill, et al., 2005). When layout was hypothesized as a predictor, then results in the two settings were very similar. Therefore, even a basic VR with limited immersion can be a valid research tool (see Figure 3).

In parallel, we can also ask elaborate questions and employ qualitative research. The need for VR will be different in such cases. In one instance, Trent, Neumann, and Kvashny (1987) have shown that while slides and views of actual settings produced similar results in closed-ended questionnaires (quantitative research), open ended questions had significantly more descriptions of the ephemeral aspects of the real scenes (qualitative research). It seems that when research queries the richness and multiplicity of the environment, when subjects respond from ‘a heightened receptivity of all their senses’, then a rich environment is needed. Since we do not yet have the capabilities of simulating such ‘real realities’ entirely, nor have we developed appropriate ‘suspension of belief’, such (qualitative) research is perhaps difficult with existing VRs.

References:

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Responding to the question, “What should drive environment-behavior research in the next decade?” Roberta M. Feldman wrote a compelling and reflective piece about Public Interest Design. As co-founder of City Design Center, the outreach program for architecture and urban planning at the University of Illinois, Chicago, Feldman's career provides many illustrations of research and design to assist underserved communities. When asked to respond to her piece, I decided to continue the discussion of community-based design, particularly in the context of community-university partnerships. As a fundamental component to environment-behavior research, this forum for teaching and scholarship enables the study of place-based design and planning, the role of partnerships and networks, community development strategies, engaged design pedagogy, and much more.

Community-based design builds on traditions of advocacy planning and participatory design and plays a pivotal role in community-university partnerships (Bell, 2004; Hester, 1990). It often manifests in professional design and planning curricula as a service-learning or engaged studio teaching, another aspect of scholarship and scholarly presentations and publications. As faculty participant and two years as director of the University of Illinois East St. Louis Action Research Project (ESLARP), which has engaged many faculty and hundreds of students during its 24 year tenure. Initiated in 1987 through the influence of an East St. Louis' state representative to link the resources of the university with the poorest city in the state, ESLARP evolved into participatory action research through the commitment and engagement of Ken Reardon (planning), Brian Orland (landscape architecture), Michael Andrejasich (architecture), and many others. ESLARP's mission statement reads, “ESLARP establishes and nurtures mutually enhancing partnerships between community-based organizations in distressed urban areas, and students, staff, and faculty at the University of Illinois and on other campuses. Through these innovative partnerships, ESLARP promotes the revitalization of distressed areas as well as advances the University's research, teaching, and service missions.” ESLARP provided the organizational capacity – staff, offices, and travel funds – to enable engaged research and courses as well as a community of supportive peers committed to the effort.

When I came to the University of Illinois as an assistant professor, ESLARP became a key venue for my teaching and scholarly development. With its resident-identified and a record of successful endeavors, ESLARP had the community’s trust that faculty and students would focus on the issues most important to the community and help develop strategies that were appropriate and implementable. My scholarship on user-initiated space - parks and community gardens initiated or re-developed by residents to address local needs and often with limited public agency support - evolved out of a series of projects working with resident organizations on neighborhood open space (Lawson, 2005, 2007; Lawson & Sorensen, 2010). Every spring, my students and I worked with residents on parks, community gardens, school gardens, and neighborhood open space projects involved multiple studio iterations. Students might have been involved with documenting conditions, facilitating discussions of potential use and programming, developing design alternatives, or implementing strategies in light of few obvious resources. The overall experience provided useful processes and products for the community partners as well as rich studio opportunities, multiple student theses, and scholarly presentations and publications.

Acknowledging the many learning goals associated with engaged studio teaching, another aspect of scholarship continued on p. 6.
involved students’ professional and cross-cultural learning. In the environmental design disciplines, course learning objectives often align with professional skill development and accreditation standards. Applied, “real world” studio projects provide an opportunity to reveal the importance of local knowledge and to teach skills appropriate for participatory processes that inform place- and people-appropriate design (Lawson, 2005). Given that many of the students (future professionals) have limited experience working with people who are racially, ethnically, or economically different from themselves, another aspect of pedagogical research was evaluation of students’ cross-cultural competency and development of studio teaching strategies to address racism and structural inequality (Lawson, et al, 2011).

Lessons learned from ESLARP continue to shape my academic work and my role as Chair of the Department of Landscape Architecture at Rutgers University. My ability to progress as a scholar and to meet the expectations of promotion and tenure are indebted to the support I received from ESLARP faculty, students, and especially staff. Not only did ESLARP’s structure release me from essential organizational aspects of engagement – assistance in grant-writing and management, arranging transportation and fieldwork visits, organizing meetings, and producing reports – but it also provided encouraging colleagues who assisted in my intellectual development and expanded my scholarly networks. In addition, I received support from my department through reliable studio teaching assignments that allowed me to commit to long-term projects and to assess student learning outcomes from my studio courses over time.

Now, in my capacity as Chair of a department, I realize that my intention to build scholarly and pedagogical strength in the area of community-engaged design and planning requires steady attention to individual faculty development as teachers and scholars as well as institutional support for sustained partnerships. Individual faculty engaged in this work carry the responsibility of serving community needs, teaching responsibly, and creating a body of scholarship that advances this field. Respecting the work involved, the department and college have an opportunity, if not a responsibility, to expand the individual faculty member’s organizational capacity so that he or she can focus on the key issues of communication with partners, teaching, research, and scholarly production. Acknowledging that community organizations may struggle with complex and evolving issues that require time and additional expertise beyond the capacity of a single faculty member, departments and colleges can assist in enabling interdisciplinary collaborations and long-term partnerships with community organizations. Colleges can go one step further to support scholarly discourse (i.e. symposia, conferences) and development of both public reports and scholarly publications.

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During the same outreach in which students presented design ideas, they also helped to improve accessibility by removing weeds from the park’s sidewalk. Photography by Laura Lawson, 2009.
Community-based Design and the Engaged Studio

Our dedication to community-engaged design is best expressed through our department-wide response to Super Storm Sandy. In 2013, the Rutgers Department of Landscape Architecture devoted all advanced design studios to working with various communities impacted by the storm and struggling to evaluate rebuilding alternatives. Studio instructors developed proposals based on the needs of community organizations or municipal partners, creating a class syllabus that reflected learning objectives as well as deliverables that would assist the community partner. The department coordinated presentations by expert scientists who provided background on hurricanes and sea-level rise and supported multiple field trips to various sites of study. At the final review, students presented to fellow students, scientific experts, policy makers, and community residents. Faculty members continue to share lessons learned from this experience through conference presentations, departmental publications, and videos.

My experiences lead me to consider community-based design as a rich field for the study of environment and behavior and a fruitful expression of EDRA’s mission. Blurring the lines between scholarship, teaching, and service, community-based design and planning can provide a satisfying academic career that engages a complex theoretical frame while also being grounded in applicable results. Out of the evolving relationships and projects, the environment-behavior scholar or practitioner (and some of us are both) develops an expanded set of skills and may find himself or herself forging ahead on promising alternative career trajectories in advocacy and public interest areas.

References:

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An ongoing business model transition toward what is called “experiential design” poses challenges not only for practicing architects, but also for researchers. With the objective and subjective elements of design increasingly incorporated in a complete package, architects shall refresh some espoused beliefs to integrate “what architecture is” with “what architecture does.” EDRA members can help facilitate such a mindset shift by promoting holistic person-environment research, a more systematic perspective that was indicated in the EDRA45 track, “Dwelling with Change.” In this essay, I extend this argument by sharing why holistic understandings would be necessary to help architects engage the shifting professionalism. I also discuss the implications of adopting holism in research.

ARCHITECTS’ PROFESSIONAL ETHOS AND PERSON ENVIRONMENT DUALISM

Since the 1980s, an epochal restructuring of the political economy along with a far-reaching reconfiguration of social-cultural values have significantly transformed the professional climate of architecture (e.g. Harvey, 1989; Knox, 1993). The age is here that mass customization, niche marketing, and branding hold sway in many businesses. The prevailing market forces are consumer-oriented, valuing individual identity, multiplicity, and ephemerality (see Naisbitt & Aburdene, 1990) (Figure 1). Contemporary architectural practice is, as Anna Klingmann speculated, more seen as a catalyst to induce marketable user experiences, the focus of which is migrating from the “perfection of the object” to the “transformation of the subject” (2007, p. 9), to “designing architecture as a user-oriented experience—one that connects to the user’s economic, cultural, and social environment” (2007, p. 328).

These massive changes herald a new architecture that enfranchises the user. The basic disciplinary ethos of architecture however, have yet to undergo fundamental adaptations. The ideological legacy of modernism continues to influence contemporary architects’ approach to design. The utopian massive social transformation through design may be discarded, but the confidence remains that certain built forms can help achieve social goals. The search for “pure” or “timeless” architecture may appear unpopular, but the obsession never wanes with architecture as an “art object” that features inherent merits. These beliefs obviously hinder architects from embracing the emerging, user-oriented professionalism. Underpinning these beliefs is a dualistic interpretation of person-environment relationships, which typically phrases users and the built environment as discrete categories and sometimes implies uncritical causal relations between the two. For some architects, person-environment dualism fuels a false hope that space alone can significantly cultivate human behaviors and experiences. For others, dualism qualifies the “essence” of the form, enticing them to disregard the user and enshrine what can often be self-referential formal aesthetics in design. Either way, many architects continue to secure an elitist position in asymmetric politics, an inherited moral authority forged by the masters of the Modern Movement.

THE CASE FOR HOLISM

As the market now expects architects to engage the user in more balanced power relations, architecture shall update the professional ethos tainted by dualism. This process can be advanced if more environmental design researchers endorse person-environment holism in research and join a broader intellectual context where a paradigmatic turn toward holistic understandings has unfolded across disciplinary lines. The shift was initiated in nature sciences that departed from the Newtonian, “clockwork” worldview—a singular, predictable universe that runs on invariant laws associating discrete objects independent of the observing subject (Dolnick, 2011). The post-Newtonian worldview, substantiated by chaos theory and quantum dynamics, sees a “fuzzy,” unpredictable universe characterized by entangled observed and observer. For instance, Alfred Whitehead described complex systems featuring significant interdependence that cannot be illustrated as distinct substances with fixed relations (2004). Henry Stapp proposed that the observer’s mind can be considered an integral part of basic physical systems (2009). In social science and humanities, Michel Foucault theorized the contingent qualities of “reality” as a by-product of socially constructed “discourse” (Foucault & Rabinow, 1984).

Some EDRA members, including phenomenologists (e.g. David Seaman and Anne Buttimer) and environmental psychologists (e.g. Irwin Altman and Barbara Rogoff) have also advocated for a holistic, relational framework of person-environment relationships, where people and the built environment are not conceived separate entities, but relationally defined facets of one and the same person-
environment system. Yet, questions remain around how to practice research framed by holism:

1. What shall be the unit of analysis and how to investigate? Classic environment-behavior explorations are usually variable-directed, focusing on distinct aspects of the person-environment system and the isolated relations among them. If the holistic framework necessitates the observation of complete and meaningful systems, how should one identify the basic unit of analysis? If research should be case-directed, how to decide the boundary of cases?

2. How can one conceptualize the role of the user and the built environment in a person-environment system? Recognizing people and the environment as ecologically intertwined invites the knotting problem of identifying their roles. There have been some theoretical treatments that highlighted users’ intentionality in shaping their own environmental experiences (Cupers, 2013; Hill, 2003), whereby users make diverse transactions with the same physical environment to scaffold different lifeworlds and derive distinct experiences (Figure 2). Yet can one say users actually “design” their built environment by using it? Can we still study the experiential significance of a given space if it is dynamically defined by the user and how?

3. What shall be the quality standards of environmental design research? As conventional research values such as universality, predictability, and objectivity may be substituted by contingency, emergence, and relationality, how should one assess the overall trustworthiness of an empirical study? How can case-specific findings be integrated into a theory that is confirmable and conveys transferable knowledge?

Over 24 years ago, Kevin Lynch lamented that urban design still “aims to make an object … according to the will of a gifted professional” while “true city design—dealing directly with the ongoing sensed environment of the city, in collaboration with the people who sense it—hardly exists today” (1990, p. 254). With the advent of user-oriented design, many architects would share Lynch’s concern. As leading environment-behavior researchers, EDRA members bear the responsibility to inspire designers in the 21st century with more sophisticated understandings of complex person-environment phenomena, helping them conceive user experiences and formal solutions in conjunction with each other. There are surely doubts, disconnections, and debates, but the prospect of better understood architectural experiences and more integrated research and practice is truly tantalizing.

References:

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Figure 2. Storefront for Art and Architecture facade renovation project (1992-1993) designed by Steven Holl and Vito Acconci. The introduction of interlocking and pivoting SupraboardTM fragments allows users to transform the meanings of the facade by positioning the fragments to serve as windows or doors. Image retrieved August 27, 2014 from: http://www.stevenholl.com/project-detail.php?id=24.
As my colleagues, Kristi Cheramie and Jeffrey Carney, the co-editors of EDRA45 Conference Proceedings, indicated in their introductory statement, “Building with Change”—the conference theme—brought the focus to new research methods and design strategies for the human habitation of our dynamic environment. Holistically, this year’s conference revolved around a plethora of environment-related presentations/research projects, such as wayfinding, privacy, perception, cognition, safety, preferences, and their behavioral consequences, including a multitude of applications—residential, commercial, healthcare, hospitality, and retail.

Nonetheless, this year’s conference theme “Building with Change” brought to the forefront innovative sessions bridging the gap between architecture, design, art, and neuroscience. Presentations, such as the “Use of Neuroscience in Design: A Comparative Analysis of Neural and Behavioral Data”; “Neuro-Sensitive Living Environments for Adults with Autism Spectrum Disorders”; “Do Curves Matter? An fMRI-Based Examination”; and “Neuroanatomy of Restoration: An fMRI Study of the Locations of Restorative Processes” generated unique and fresh effervescent Functional Magnetic Resonance Imaging (fMRI) neural data. These neural data (neural maps and neural composites—see Figure 1) are a result of the interaction of space users with their respective environments. For the first time since the advent of the fMRI technology, the architecture and design communities are able to decipher precisely which areas of the brain—frontal lobe, parietal lobe, occipital lobe, cerebellum, and temporal lobe—and their associated functions (pleasure, happiness, arousal, stress, etc.) are activated when experiencing the indoor and outdoor built environments.

This is signaling a new paradigm shift moving from Environment-Behavior (EB) to Environment Behavior and Neuroscience (EBN), adding conspicuously to the existing body of knowledge, underscoring a palpable “progress.”

In academia, this is well celebrated since one of the mechanisms through which we measure excellence is progress. Thomas Kuhn’s *The Structure of Scientific Revolutions* (1996), one of the most influential works of philosophy of science noted that the primary thesis of all theories of knowledge is progress. Researchers in history of science postulate that scientific progress is bound to “hard sciences;” math, physics, and chemistry; but not “soft sciences” or sciences that are devoid of any precision and dependability, as Kuhn (1996) portrays it. This assumption took the central stage of all debates within scientific communities, but in vain. This can be explained by the semantic dichotomy between hard and soft sciences relative to the concept of “progress.” Hard sciences rest on the assumption that progress can be exclusively achieved through the falsification of old paradigms, i.e., science grows through the nullification of old theories with the support of hard facts. In soft sciences, progress finds impetus in the conventionalist theory; i.e., the recognition that false assumptions may have true consequences and false theories may have great predictive power. This means that even false theories are not rejected or falsified. The question is, in architecture, design, and allied disciplines are we progressing or not? Are we adding to the body of knowledge, or are we just doing “pseudo-science”? For instance, are we generating solid physiological evidence that will inform the future of our built environments—architecture, interior design, and allied disciplines, or are we just adding assumptions to the existing body of knowledge?

**DESIGN BETWEEN ELITISM, BEHAVIORISM, AND NEUROSCIENCE**

Precedents indicate that the built environments that we design and in which we live, work, and entertain have been designed among others with subjective design orientations, (see elitist approach) or designed with environment behavior orientations. Classically, designers/architects, leaning on their artistic and formal personal preferences, are seen as the sole decision makers on how the built environment ought to be. This is what some called “environmental determinism,” which grew out of the work of a number of scholars at the end of the 19th and beginning of the 20th century. This tendency remained a potent idea throughout the early twentieth century, perpetuated in different concepts, such as Le Corbusier’s Radiant City and Ebenezer Howard’s Garden City.

Earlier rational theories at the mid-nineteenth century by theorists such as Viollet Le Duc suggested that the built environment is an instrumental tool in people’s behavior change (Curtis, 1987; Lang, 1987; Frampton, 1992). They held that a wide range of human behavior is directly and entirely determined by the environmental conditions within which the behavior occurs. Their idealism suggested that better physical environment will continue on p. 11

Figure 1: Neural map composite from a functional Magnetic Resonance Imaging experiment—Impacts of Fluorescent Correlated Color Temperature on Cognition for ADHD Subjects (Source: Author).
improve people’s social behavior and thereby, the physical environment was seen as the principal instrument of social reform. This tendency remained a potent idea throughout centuries, perpetuated in different concepts, and sustained up to modern and contemporary times in works such as Le Corbusier’s Villa Savoye (Modernism) in Poissy; Peter Eisenman’s House VI (Post Modernism) in Connecticut; Frank Gehry’s Guggenheim Museum (Deconstructivism) in Bilbao, and others. The tenets and adherents of this tendency were labeled as the “elitists.”

In reaction to the elitist approach, it is important to note that since the middle of the 20th century, an interdisciplinary environment behavior movement emerged, represented in sociology by Walter Firey; in geography by John Kirtland Wright; in psychology by Edward Tolman; in urban planning by Kevin Lynch; in urbanism by Claude Levi-Strauss and his students; and in anthropology by Amos Rapoport (Moore, 1987; Stokols, D. & Altman, I. 1987; Bechtel, Arzah, & Arzah, 2002). Later on, in the 1980’s, another emerging body of translational environmental behavior research was established (Ulrich, 1999; Marcus & Barnes, 1999) facilitating the design of well-informed built environments.

Most of these theories might be synthesized in the formula suggested by Kurt Lewin in 1951 (cited in Porteous, 1977), which reads: B = f (P, E) where the letter B stands for behavior that is a function of the person (P) and his/her environment (E). While the contribution of the environment-behavior paradigm has, conspicuously, advanced the body of knowledge in architecture, design, and allied disciplines, environment-behavior research findings started to generate controversial and debatable redundant data, signaling the necessity of a research breakthrough.

FROM "PSEUDO" SCIENCE TO SCIENCE: ARE WE ADDING TO THE BODY OF KNOWLEDGE?

Adding innovatively to environment behavior orientations, emerging neuroscience research shows that environment-related activities such as wayfinding, perception, cognitive mapping and their behavioral consequences—anxiety, stress, happiness, arousal—are reflected in our brains’ neural structures and electro-chemical processes (Zeisel, 2006; Eberhard, 2007; Swanson, 2011; Mallgrave, 2011). These findings proffer solid physiological data that pave the way for further research that may decipher the correlation between design/architecture and the brain/neural activity. I do assume that the use of neuroscience in architecture, design, and allied disciplines will bring about major collaboration efforts between academia, industry, practitioners, and other stakeholders. There is no doubt that the provision of hard data will permit architecture and design disciplines to move from basic research to the domain of translational research.

The built environments in which we live, work, and play have been designed with an emphasis on subjective aesthetic inclinations or on environmental behavioral sciences (i.e., theories of perception, cognition, privacy, wayfinding, etc). While these aesthetic and environmental behavior theories provided design solutions that rest on interpretation of externalized data (behavioral surveys), the neuroscience paradigm will provide design solutions that rest on internalized neural data. The neuroscience paradigm will thereby facilitate the provision of why people behave in certain ways when interacting with the built environment.

As the neuroscience paradigm continues to gain momentum, EDRA has full-heartedly embarked on providing the necessary platform to engage its membership into embracing the present effervescent paradigm. The adoption of EDRA46’s conference theme “brainSTORM: Dynamic Environment-Behavior and Neuroscience” is an illustration of the preeminenence of neuroscience for architecture and design disciplines, but also underscores EDRA’s support and alignment with emerging trends.

References:

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In this section, you’ll find news from EDRA Headquarters, including conference and awards information, membership updates, and more. Please email headquarters@edra.org with any questions you have regarding the information below.

EDRA46LOSANGELES
Amidst the forever stimulating landscapes of Los Angeles, opportunities to link EDRA’s legacy of environment-behavior research with the nation’s leading neuroscience institutions and scholars abound. Taking advantage of this, EDRA’s 2015 conference, “brainSTORM: Dynamic Interactions of Environment-Behavior and Neuroscience” will have a specific thematic track on neuroscience that informs the relationships between environment and behavior. We invite you to be part of a generative and stimulating exchange in a city where environments, on screen and off, are legend. Poster and EDRAShorts proposals are being accepted through November 24.

A limited number of conference scholarships in the form of reduced or complimentary conference registration and/or travel reimbursement for EDRA46LosAngeles are available for current EDRA student members. Students may apply online at www.edra.org/edra46losangeles now through December 15.

FALL SYMPOSIUM CALL FOR PROPOSALS
In 2013, EDRA celebrated our inaugural Translational Research Symposium highlighting the very timely and critical focus of “Landscape of Accountable Care: How a Patient Focus is Changing the Industry.” A call to submit proposals for the 2015 symposium is out, aiming to solicit participation and consider areas of interest and impact from the environment-behavior community. We invite you to develop the upcoming symposium theme, plan of action, and steward it to fruition. This is an excellent opportunity to connect with practitioners, policy makers, clients, community leaders, and put design research into action.

All proposals must be submitted to EDRA Headquarters via email at headquarters@edra.org. The deadline to submit a proposal is October 15, 2014. Complete details and topic suggestions can be found by visiting http://www.edra.org/sites/default/files/pdfs/EDRA_Symposia_Guidelines_FINAL.pdf.

EDRA CORE
EDRA is pleased to announce the development of the Certificate of Research Excellence (CORE), which recognizes rigorous, valuable and impactful research that promotes best practice in environmental design. EDRA CORE’s unique evaluation framework aims to:
• Identify practice-based environmental design research that is not only rigorous, but also offers measurable value, meets industry challenges, and advances design thinking;
• Recognize the importance of research in practice;
• Provide a compass to guide designers, researchers, organizations, and manufacturers; and
• Builds on EDRA’s tradition of inquiry, reflection, and collaboration and its commitment to innovation.

The Certificate of Research Excellence will be awarded to research projects that meet the CORE criteria, based on the review of a cross-disciplinary team of academic researchers, practice-based researchers, designers, and industry thought leaders. We encourage you to review our application brochure. EDRA will begin accepting applications October 1, 2014, and projects will be recognized at the 2015 EDRA conference. Applications will only be accepted between October 1 - November 14.