More than Just Looking Good: Toward an Evidence-Based Design Practice in Affordable Housing

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The problem is not so much what we don't know; it's what we think we know that just ain't so.
(Attributed to Mark Twain)

In today's political and economic climate, providing more affordable housing often means building at higher densities and incorporating a broader mix of resident incomes and generations, resulting in more financially feasible projects. In facing NIMBYism, architects design the massing, layout, and façade of such housing to be more accepting to the higher economic context of the neighborhood. But when asked how design can enhance the economic and social performance of affordable housing, architects may resort to hunches or dated generalizations. As Mark Twain suggests, relying on the certainty of our anecdotes may come back to haunt us—and the residents for whom we build.

As the conference conveners maintain: "Affordable housing design practice (with notable exceptions) has changed very little and has not kept up with advancements in building technologies, materials science, environmental design research, and other factors which affect affordable housing. Architects do not have access to reliable information about successful models and approaches to affordable housing and strategies for comprehensive approaches to community design, and there are limited ways for experienced practitioners to share their methodologies and hard-won experiences in the field…. Those charged with managing funding, policy, or development have even less access to information on design."

There is no established agenda for organizing, disseminating, and advancing the state of knowledge of how good design is best employed to create long-term economic and social value in affordable housing. There are examples of "best practices"—but with little empirical evidence or explanation of what makes them "best" or who sets the criteria for defining and measuring "success" (if such even exists). With an amalgamation of design practices and housing examples that seem to work well, the Affordable Housing Design Advisor reflects accumulated tacit knowledge of professionals. But assessment of the return on investment (ROI) of such practices—in health, social and human capital, usability, stress, etc.—is not broached. Then there are those countless research articles with relevance to affordable housing policy and design but usually only accessible and comprehensible to those willing to cull though countless academic journals. To date, there are only isolated efforts to synthesize, evaluate, organize, and present this massive information in a wide-spread, useful manner for and with practitioners.
To set a direction for ACSA's initiative to redefine and reposition affordable housing in practice and education, this paper advocates a professional approach toward the production and preservation of affordable housing that incorporates evidence-based design practice in fostering healthy, livable environments that reflect long-term economic and social value, for residents and the communities in which they live. Evidence-based design practices within the healthcare industry have made significant strides in the last decade, developing and implementing strategies for successfully bridging research and design practices, and resulting in better informed design decisions that ultimately affect the health of patients and staff. To what extent could similar evidence-based efforts be situated within the affordable housing design practice? How might this best be implemented? And what benefits and costs would practitioners, residents, and communities derive from such?

This paper speaks to these questions by first briefly profiling the evidence-based practice of healthcare design, and deriving a general framework for the development of such evidence-based practice within the affordable housing arena. It then describes two initiatives at Arizona State University's Stardust Center for Affordable Homes and the Family that reflect components of this evidence-based design orientation. And it concludes by recommending further efforts to foster an evidence-seeking design culture within affordable housing design practice.

WHAT IS EVIDENCE-BASED DESIGN PRACTICE?

Evidence-based medicine emerged as a movement in the mid-1990s, spearheaded by the York-based Cochrane Centre, to bring a more scientific approach to seemingly random differences in surgical techniques and clinical practice in hospitals. Today, the evidenced-based medicine movement has evolved into a more inclusive evidence-based health practice, involving health and behavioral health, social work, even child welfare services.[1] Evidence-based health practice means integrating the best available clinical evidence from systematic research with individual clinical expertise. Expertise is reflected in many ways, but especially in more effective and efficient diagnosis and in the more thoughtful identification and compassionate use of individual patients' predicaments, situations, and preferences in making clinical decisions about their care. Indeed it is such expertise that determines whether the external evidence should be applied to the individual patient at all and if so how it should be integrated into a clinical decision.[2]

Similarly, an evidence-based design practice would involve designers working with clients to make decisions based on the best information available from research and project evaluations. The practitioners' critical thinking, experience, and creativity would continue to play a central role in the design process since the solution must be targeted to the specifics of client, program, and site, and within contexts of continuous flux, such as changing demographic, economic, cultural, technological, and political conditions.

But the wholesale transfer of this model into design practice is a complicated matter. The processes that operate on communities, households, and organizations—occupants of the built landscape—are more complex and less understood than those that operate within the human body. And rigorous, controlled experiments, considered hallmarks of quality research, are much more difficult to conduct in the designed and lived landscape than in controlled medical experiments. Clearly evidence-based design operates within architectural practice when we consider designing for the operational viability and safety outcomes of particular structures, materials, and environmental systems. "Evidence" is portrayed in codes and specifications, resulting from systematic research and evaluation. But when addressing the more human dimensions of our design decisions—economic, social, behavioral, emotive, health—evidence is usually sporadic, sometimes idiosyncratic, and at times completely neglected. But this may be changing. Designers and researchers within the healthcare industry are promoting evidence-based design practice and are convincing healthcare administrators to invest the time and money to build better buildings.[3]

A leading proponent of evidence-based practice, architect Kirk Hamilton details four levels of such a practice, each level representing an increasingly rigorous level of commitment and methods of using research on behalf of clients (see Image 1).[4] At level one, practitioners familiarize themselves with the research literature of the field and try to incorporate relevant evidence into their work. Level-two practitioners hypothesize the expected outcomes of design interventions and subsequently measure the results. At level three, they begin to share their results publicly in the trade and popular press. And level-four practitioners perform the same tasks as those at the other levels but also publish in quality journals that are peer reviewed. They may also collaborate with social scientists in academic settings who contribute to the formal literature.

Hamilton also warns of "level-zero practitioners"—those who acknowledge that there is research that demonstrates that the designed environment has an effect on people. But they cut corners. They take a single research article or conference presentation, make a personal interpretation that fits their design bias, and claim the subsequent design is evidence-based. They rarely read the original research, do not understand how to draw valid inferences from narrow and precise studies, and misapply important principles.

There is also an implicit assumption in Hamilton's model that the most basic activity—reading the material to stay current on emerging research—is the easiest. But actually it can be the most challenging for many practitioners whether they are designers, policymakers, developers, or others involved in day-to-day placemaking. Research can offer complex and sometimes contradictory insights, demanding comparison, criticism, evaluative judgment, and synthesis beyond simply reading a series of articles. Hamilton suggests that "the dark side" of this trend is the appearance of practitioners who would like to be associated with evidence-based design but who do not do the hard work required to become current.

Thus an evidence-based design practice is one that is a team practice. It has to be—one can hardly keep abreast of new research developments. Even within medicine, a profession with a strong research foundation, clinicians face difficulties in keeping abreast of all the medical advances reported in primary journals. For example, one study showed that to keep up to date with the reading for general medicine would require examining 19 articles per day, 365 days per year. Yet British medical consultants claim that the time available for such reading is well under an hour a week.[5] There are almost endless sources of potentially useful information, and there is a need to reach valid conclusions about the design implications of highly specialized and narrow studies.

Yet given these complexities, collaborative efforts within the healthcare design profession and industry are promising. The AIA College of Fellows awarded its 2005 Latrobe Fellowship of $100,000 to Chong Partners Architecture, Kaiser Permanente, and the University of California at Berkeley for a research study that incorporates techniques from psychology, sociology, and neuroscience. The research involves a collaboration of architect, client, and university to determine how hospital design affects the recovery and healing for people of different cultures. It combines traditional research with new applications to develop a model that architects and designers can apply to address cultural diversity in the design of any public building.

	ACTIVITY	LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4
Interpret the Evidence	Read material to stay current on emerging research.	★	★	★	★
	Use critical thinking to interpret implications of research on current project.	★	★	★	★
	Collect success stories and historical data on completed projects.	★	★	★	★
Hypothesize and Measure	Perform applied research as a practitioner on real projects.		★	★	★
	Hypothesize intended results of design interventions.		★	★	★
	Measure the results associated with design interventions.		★	★	★
Share Results Publicly	Report unbiased project results in the public arena, writing and speaking.			★	★
	Perform independent 3rd-party postoccupancy evaluations.			★	★
	Improve understanding of research methods through advanced education.			★	★
Meet Academic Standards	Collaborate with credible academic researchers and social scientists.				★
	Publish research results in peer-reviewed journals.				★
	Write academic thesis or dissertation on evidence-based design topic.				★

1. Four Levels of Evidence-Based Design Practice, Proposal by Kirk Hamilton [19]

Another important collaborative example is the Pebbles Project under the auspices of The Center for Health Design.[6] This project, which is now five years old, provides researched and documented examples of healthcare facilities whose design has made a difference in the quality of care and financial performance of the institution. Currently there are 37 active provider partners and three corporate partners. Each partner pays an annual fee of $30,000 for a three-year membership. In return, they receive prompt access to research information and expertise to questions they have. Twice a year the partners meet with the Center's board and research committee, and other industry experts who offer learning opportunities. High-level consulting and technical assistance to facilitate the partner's research is also provided, as well as a proprietary research design methodology template. Most partners are healthcare facilities with one or more facilities being designed or extensively renovated.

Undertaken thoughtfully, evidence-based design practice allows the client and architect to capitalize on the return on investment, not simply financially but socially, environmentally, and healthful as well.

COULD IT OPERATE IN AFFORDABLE HOUSING PRACTICE?

It is perhaps not surprising that evidence-based design has found a foothold in the healthcare design profession. Members of the healthcare industry—whether medical administrators, hospitals, physicians, etc.—have historically held scientific results to be the basis of decision-making. They also work within established industry borders: health facilities, for the most part, are institutionally based.

This is a different animal from the housing industry. The latter is rarely institutional (prisons being one exception). Desired outcomes are less agreed upon, more diffuse, and sometimes minimally measurable. The historical base of the industry is geared toward profit making and efficient, expedient construction rather than the care mission that underlies the healthcare industry. Evidence-based design appeals to the scientific minds of physicians and other clinicians who are trying to practice on the basis of medical evidence. This may be a harder sell among housing developers and others in the housing industry. But evidence-based design also appeals to business-minded administrative leaders. It offers them the prospect of reduced costs and improved organizational performance, and can provide justification for some of the costly decisions made on their building projects.

Within housing and community design, the transferability of the evidence-based design approach is also exacerbated by context. Every city is different, and every community and neighborhood within a city is different. As Stoner and Stutz note, while each individual differs in some way from all others, the vital systems of all humans—respiratory, circulatory, digestive—are laid out similarly and work in the same way.[7]

But there are clearly lessons to learn and strategies to adapt. A glance at the healthcare facilities of the Pebbles' partners demonstrates that evidence-based design does not result in some type of monolithic or standardized design. Second, as demonstrated in Hamilton's model (Image 1), there are numerous ways to practice evidence-based design, depending on context, stage of development, resources, and other factors. Third, as in most industries, return on investment is foremost in the minds of these healthcare CEOs, and to date practitioners have been able to convince these CEOs not only of the health and social value of the design decisions, but the business case as well.

Fourth, social, behavioral, and health outcomes can be meaningfully measured—the "measured outcomes" that investors and CEOs like to see. Critics often point out the difficulty of measuring outcomes that are often subjective intangibles like "satisfaction," "preference," and the like. In the Fannie Mae Foundation–supported Campaign for Excellence in Affordable Housing Design, four noble yet vague outcomes are claimed: adds assets to a community; improves quality of life; integrates communities; and creates long-term value.[8] To a researcher, these are too broad to reliably measure and validate. To an investor or developer, they are unconvincing in such immeasurable form. But in recent years housing researchers have been moving toward tangible measures that are particularly salient to health outcomes and highly relevant social and behavioral outcomes, such as educational performance, stress, or parenting behaviors. For example, in a longitudinal study of housing affordability (in cost, not design, terms), housing policy researchers Joseph Harkness and Sandra Newman at Johns Hopkins University have identified outcomes that reflect the Campaign's goals but in a more tangible, measurable, and potentially convincing fashion: modeling how housing costs impact nutrition, residential mobility, parental stress, which in turn impacts parenting/nurturing, which results in specific health outcomes and cognitive development of children.[9] While this study focuses on housing affordability, it is not a stretch to see how design factors—for example, size and layout of the dwelling unit and residential development; nature, layout and amount of common interior pathways and corridors; the degree of segregation or integration of affordable, moderate and market-rate units in a mixed-income development—might result in similar health and social outcomes. And in recent years a number of behavioral economists have targeted their research to demonstrate how health and human capital outcomes can be translated into convincing ROI arguments (e.g., see Nobel Laureate James Heckman's compelling economic models and ROI arguments for investing in early childhood learning).[10]

To date, evidence-based design has not reached the affordable housing field. This is not for lack of research or housing/design researchers. Rather research is often conveyed in journal articles and reports that are written for researchers, not for designers. And architects have little time to "translate" these or to stay abreast of current research. Further, finding germane research may require one to cull through several databases and irrelevant articles. While many affordable housing developers and designers wish to make informed decisions based on valid, relevant evidence, they may be stymied in their efforts to

find synthesized, well-grounded, and concise accounts that are targeted to issues and questions of their concern. There are good, solid "databases" of housing-relevant research reports: examples include KnowledgePlex, and those within HUD's Office of Policy Development and Research (e.g., PATH, Regulatory Barriers Clearinghouse). Yet these databases consist of reports, with minimal attempt at synthesis and briefing of research across research studies.

Further complicating the matter is the complexity and non-institutional nature of the affordable housing design practice (AHDP), that is all those participating in the design and development of affordable housing whether they be in the architect's or developer's office, the State House or White House, the planning board or the community meeting. Three main constituents are major players in the design/development process: architects and builders; policymakers and public officials; housing developers, residents, and neighbors. Different constituents are confronted with different dimensions of affordable housing dilemmas; and an evidence-based AHDP must strive to address this diversity.

Yet, there are some challenges all these constituents face in implementing evidence-based affordable housing design. All operate in arenas where time is tight and responses must be quick; so research spread must accommodate these parameters. For an architect, for example, dissemination must be shaped to address pressing questions a practitioner faces during a project. For a non-profit developer, answers might be sought when she is confronted by a neighborhood group that contends the development will result in a drop in surrounding property values. Planners and government staff officials may have more luxury of time when establishing or revising long-term policy and regulations; but even among these constituents, succinct, visual, compelling, and pointed evidence is useful when trying to expeditiously convey the importance of the policy development to harried elected officials. Today, with electronic resources much more accessible and user friendly, research evidence can be expressed and transmitted in visual and concise formats that can be retrieved quickly. Admittedly, there are those who still prefer and gain enormously from face-to-face dialogue in identifying and assessing research evidence for a project. Again, with telecommunications, opportunities for this are more available than even a decade ago.

In any case, research spread—that is, how research information is disseminated and digested—is critical to understand. But such challenges are being confronted and strategies invented within the healthcare design practice. The ADHP could build on these (see Image 2).

HOW WOULD WE PROCEED?

Once convinced of its value, how could we foster an evidence-seeking design culture within the ADHP? First, such a cultural change must strive to value outcomes beyond structural quality and financial feasibility (as essential as these are), to also encompass outcomes central to long-term economic and social value of the residents and community, such as: safety and security, health and resilience; social and human capital, social interaction and privacy, livability and utility, and economic betterment of household and neighborhood (or asset-building).

Challenges In Implementing Evidence-Based Affordable Housing Practice

Challenge	Solution
The size and complexity of the research	Translational research and research synthesis undertaken by design, social, behavioral economic, and/or policy researchers
Difficulties in developing evidence based practice	Produce guidelines, workshops, and process case studies for how to develop evidence based practice Develop incentives to encourage effective EBP Show success stories of such implementation
Stunted spread (i.e. poor access to evidence when needed)	Produce structures – electronic, printed, and face-to-face or phone visits -- so that guidelines/information can be accessed at strategic points of the pre-design, programming and design process
Organizational barriers to implementation	Develop more effective strategies to encourage clients/residents to insist on EBP With behavioral economists, establish return on investment figures for completed projects using evidence-based design

2. Challenges in Implementing Evidence-Based Affordable Housing Design Practice

In practice questions are posed, answers are sought (or guessed), generally targeted to a project in progress. A survey of architects found that the manner in which they most "learned" or accessed research was through vendors—getting answers to specific questions they had on a particular project.[11] An evidence-seeking design culture in ADHP would continuously pose design questions central to long-term social and economic concerns. The nature of questions posed will differ by ADHP constituents (although some overlap). But "the posing of the questions" can be the basis for organizing an evidence-based process. (Indeed, posing of the question is the first step in the research process!)

The Stardust Center for Affordable Homes and the Family is a newly created community design and research center at Arizona State University whose mission is to serve the needs of organizations, neighborhoods, and professionals for quality homes and vibrant, sustainable communities. The Stardust Center provides research, educational outreach, advocacy and design innovation services for developers and builders, city councils and elected officials, planning commissioners, lenders and donors, service agencies and service providers, American Indian tribes, and neighborhood groups seeking to preserve or enhance the social, cultural, and environmental quality of a community. Currently the Center is developing an accessible web-based strategy to help foster evidence-based design among stakeholders involved in affordable housing and mixed-income developments. The aim is to organize existing research information and produce new research in a manner that is accessible, useful, and sufficiently flexible to incorporate various practice contexts (e.g., local planning boards, com-

munity development corporations). Efforts to simplify do not mean efforts to be simplistic—but rather developing innovative, relevant, and useful methods to convey complex, seemingly contradictory, research information in a manner that is comprehensible, in which practitioners can build on and incorporate.

Spread of research evidence is not the end product. It is left to the expertise and judgment of practitioners to determine the extent to which the stringency and amount of research evidence plays a role in design decisions. For example, in those situations where physical and mental health is paramount, or where a prototype is being developed for future large-scale development, research evidence may play a more prominent role.

In evaluating the strength of evidence, various strategies have been tried in evidence-based healthcare design. Most use a star system—whether derived from Christopher Alexander's rating system in Pattern Language, or simply cultural tendencies of rating movies, restaurants, and the like.[12] In any case, a method for not simply summarizing research findings but also designating the strength of evidence produces more useful, informed guides for making decisions.

The remainder of this paper describes in-progress efforts at the ASU Stardust Center that illustrate two strategies for fostering evidence-based design. These two efforts reflect Hamilton's first level of evidence-based practice—of developing strategies for collecting, evaluating, synthesizing, and spreading (i.e., disseminating) research evidence in a manner that can be used by practitioners. The dissemination of information reflects quick-response spread, in part capitalizing on online resources. The two developments are (a) translational research, and (b) evidence-based best practices.

Translational Research

Research is often conveyed in journal articles and reports that are written for researchers, not for public officials, architects or housing developers. Practitioners have little time to "translate" these, or to stay abreast of current research. Further, finding research targeted to a specific issue may not be easy, requiring one to cull through several databases and irrelevant articles. Sometimes reports may be driven from a particular point of view, even neglecting to address all sides of an issue or evaluating the rigor and applicability of the research. While many developers, public officials, and others wish to make informed decisions based on valid, relevant evidence, they may be hindered in their efforts to find synthesized, well-grounded, and concise reports that are targeted to issues of their concern.

Translational research is becoming more prominent in many scientific fields, but especially in healthcare and health policy arenas. In medical parlance, translational research is the process of applying research-generated insights and discoveries to the treatment or prevention of human disease. In other words, translational research is the bridge between research studies and day-to-day applications.

One type of bridge being developed is Research Synthesis. Both the Robert Woods Johnson Foundation (RWJF) and the National Institutes of Health have major initiatives in research synthesis. For example, RWJF is producing concise briefs and reports that translate research findings on perennial health policy questions. The project pairs researchers with policy analysts to produce these synthesis reports and briefs. Short, skimmable, and policy-focused, the synthesis projects are structured around policy questions, rather than research issues; they distill and weigh the strength of research evidence in rigorous and objective manners; and they underscore the policy implications of findings.

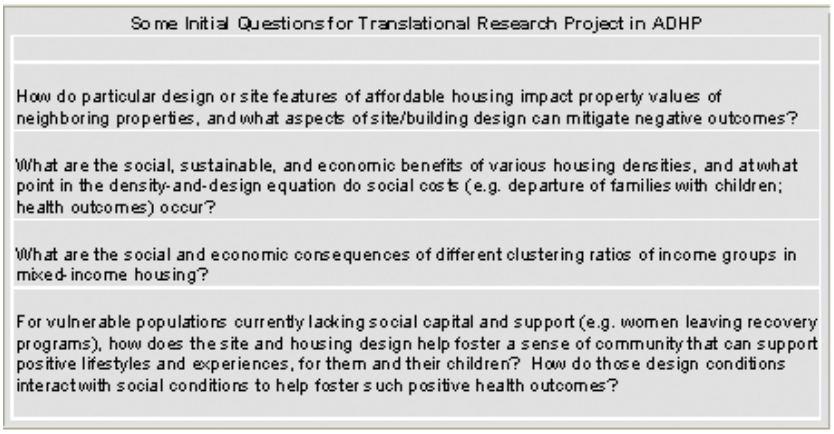
The Stardust Center has begun a similar process of translational research to result in both concise, germane briefs that synthesize and translate research findings on critical housing issues pertaining to affordable housing, and FAQ-oriented summary statements. By weighing the strength of evidence and synthesizing those research findings that are valid and reliable, these briefs provide affordable housing design practitioners with convincing, dependable information and new perspectives to inform policy, design, and development decisions. Similar to the RWJF process in determining the issues to be covered in these briefs (see Image 3), a panel of public officials, architects, developers, service providers, health practitioners, and others involved in the housing/community development process will identify those salient and critical issues and questions pertinent to the design and development of affordable housing.[13]

It is important that this be an inclusive group. For example, a county public health official approached me a few months ago to inquire how affordable housing and community design factors might affect prenatal care among women in low-income neighborhoods. This was an issue I had never considered before, but one she invited me to pursue with her public health colleagues. Those outside the direct circle of housing design and production can also provide insight into important dimensions that need to be addressed within our designed

3. Steps in the Research Synthesis Project, Robert Woods Johnson Foundation [20]

communities. Some issues that have been brought to the Center's attention already by those in the community include (see Image 4):

A methodology has been developed, based on the RWJF process, to derive, validate and produce these evidence-based briefs and FAQ statements. After soliciting and identifying topics, research studies are identified; these are then analyzed and critiqued. Valid and promising findings are synthesized, and briefs are developed. From those briefs, FAQ statements are developed. A panel of experts reviews the briefs and FAQs. Once corrected, the briefs and FAQs will be available on the Center's Web page. This Web resource is currently being developed, with an expected online inauguration of October 2006.



4. Some Initial AHDP Questions for Translational Research Project

Evidence-Based Best Practices

The term "best practice" is used so pervasively today that it seems little more than a reflection of the Lake Wobegan community—strong, good looking and above average. From an evidence-based standpoint, the "practice" of best practices is fraught with ambiguity, since in many instances the benchmarking is vague or unknown, and empirical investigation minimal or even absent. There are exceptions, of course, such as the well-documented Rudy Bruner Awards Program and the Business Week/Architectural Record Awards (e.g., the latter has the client articulate their objectives, and awards are given to the client/architect team based on the extent to which the design and constructed building best achieves those objectives).

One advancement would be to encourage case-study research within ADHP. Within evaluation and applied research disciplines, case-study research is a well-respected domain of research methodologies.[14] The American Institute of Architects has developed a case study starter kit, but its focus is on the processes of design development; no delineation is given to evaluating outcomes of a development. Sponsored by the Landscape Architecture Foundation, Mark Francis's efforts in developing a case study methodology for landscape architecture is exemplary in the design professions.[15] As he contends "case studies often serve to make concrete what are often generalizations or purely anecdotal information about projects and processes" (15). In short, "[a] case study is a well-documented and systematic examination of the process, decision-making and outcomes of a project, which is undertaken for the purpose of informing future practices, policy, theory, and/or education" (16). In advocating empirical and critical analysis as well as the use of systematic methodology for case studies, Francis has provided a framework and format that case-study research could follow. He contends that case studies are a useful way for practitioners to evaluate the success and failure of projects, although few practitioners routinely do this. Yet, designers and public officials continuously point to precedents and best practices. If case-study research could be "simplified" to a more evidence-based best practice, than practitioners could build on existing cases by understanding aspects of a project unique to a given context while gleaning principles useful in similar projects. Francis's own monograph of Village Homes in Davis, California, encompasses more than a decade of study, a number of surveys, and post–occupancy evaluations, and brings a critical, long-standing lens to this exemplary and early sustainable housing development.[16]

Case studies are one venue for building an evidence-seeking design culture, albeit a time-consuming one (although such are good candidates for graduate students' theses and dissertations). Another approach is not to replace the best practices nomenclature but to build upon it, by advocating and advancing a process whereby best practices are identified and publicized based on evidence that substantiates their claims. Most instances of "best practices" reflect an all-or-none approach: a project or practice receives that label or does not. However, evidence-based best practices could be identified and judged by the quality of the evidence provided in supporting the program's objectives or social/economic goals. Adapting the three-part best practice typology developed by the Institute of Medicine (IOM), we might consider establishing a range of best practices:[17]

> *Evidence-based best practice: exemplary affordable housing policy, program, or design whose outcomes are supported by comprehensive, valid and compelling research evidence (e.g., post–occupancy evaluation; use of evidence-based guidelines or programming) that substantiates how design reflects/fosters positive social, sustainable, and economic outcomes;*
>
> *Emerging best practices: affordable housing policy, program, or design that shows potential but whose outcomes are only modestly documented by research;*
>
> *Promising practices: affordable housing policy, program or design that has not yet been documented but is identified as promising by experts in demonstrating potential positive outcomes.*

Following a pattern established by Business Week/Architectural Record, in the submission narratives practitioners would describe how

their designs respond to the needs of residents or the community at large, and provide concrete data on how the design facilitated better outcomes according to a variety of criteria, some mentioned previously. Panels of judges assess submissions according to the above criteria.

CONCLUSIONS

Today's evidence-based design practice recalls efforts of the 1970s and 1980s to integrate research and design.[18] Those efforts, which continue today, have now taken on new maturity within the healthcare design field, in part because of the growing sophistication and maturity of the research as well as an informed clientele seeking substantive evidence for decision making that will produce better building outcomes.

The proposals presented here for enhancing an evidence-seeking design culture within ADHP are only a small start. Evidence-based design practices can and should be much more encompassing than these two that the Stardust Center is embarking on. These two represent unidirectional strategies that a practitioner uses in conjunction with other strategies and in the context of political and economic realities. Multidirectional strategies are necessary as well, and will only further embed this process within the culture of ADHP. Collaboration and dialogue among Pebbles Project partners and research experts as they develop their projects, for example, are invaluable forms of tacit knowledge building and action.

What I have tried to demonstrate in this paper is that in, ACSA's effort to redefine and reposition affordable housing design in practice and education, we have much to learn from fellow design communities. Adapting the strategies of the healthcare design practice can enhance and capitalize on an approach that values sustained social and health outcomes as a foundation for designing better homes for all households. The Pebbles Project is aptly named—throw a pebble into the lake and watch the ripples ensue outward—a ripple that perhaps does not stay within the healthcare design industry, but across the spectrum of design education and practice as well.

BIO

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ENDNOTES

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