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## Architecture's Direct Impact

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How valuable is architecture? The effects of the 2008 recession, namely sustained unemployment in the profession still lingering around 13.9%,<sup>1</sup> have forced soul-searching within the discipline. Recent headlines in the *New York Times*: “Want a Job? Go to College, and Don’t Major in Architecture” lay bare the value proposition of the profession—the public doesn’t see one.<sup>2</sup>

We could chalk this up to the ill-conceived metrics of building based on what is cheapest and fastest, thereby relegating “good” designers to the pursuit of projects of financially indulgent clients where innovation and knowledge creation is still championed. However, when commissions for symbolic icons of luxury decline, designers are left hogtied, without the ability to assert a new relevance.

This frustration has manifested a growing movement to leverage the instrumentality of architecture to effect change and produce clear outcomes of social value—doing so will resultantly assure that design itself is not so easily value-engineered.

### **Design Is Never Neutral**

As Leon Krotke pointed out in the 1970s, architecture is never neutral, it either helps us or it hurts us. Stated another way, architecture is always political and always has some impact. We can do great damage as designers if we do not make an effort to commit to public well-being.

The past twenty years have generated an increasing recognition that this in-



*Hospital beds placed in the center of the room to allow views to the exterior*

strumentality exists, particularly in regards to the long-term impacts of infrastructure on the environment. Living sustainably within the means of the planet, lessening the consumption of renewable resources, and reducing negative human impacts on the earth's living systems have become fundamental goals of the building industry. We've recognized the warning signs, the harmful environmental impacts of not implementing sustainable development practices in design, and have responded with an augmented effort to negate these effects. Yet, while sustainability has made great inroads into

the marketplace, tracking the social and political implications of the built environment is at its infancy. Can we truly understand how lives are affected through a checklist alone, or would a greater scope of investigation, one that dives into metrics like health or resiliency offer greater opportunity to determine real and permanent outcomes of the design decisions we make?

To its own detriment, however, the profession has internalized this debate, limiting engagement with the public, while simultaneously diminishing the public's understanding of design's value

proposition. In order to change the demand curve, it is necessary to create not only a societal perception that architecture can, in fact, affect change, but that it can be one of the best ways of catalyzing it.

### **Improving Health through Design**

In 2005, a virulent strain of extremely drug-resistant tuberculosis (XDR-TB) broke out in Tugela Ferry, South Africa, infecting and subsequently killing 53 people in the community. Upon further study, it was discovered that two-thirds of those individuals had visited the Umsinga District's Church of Scotland

Hospital. Regardless of the ailment that had brought them there—a broken bone, a sick family member—it is most likely they contracted XDR-TB during their visit. Simply put, a visit to the hospital killed them. The opportunity for hospital-borne infection was apparent; hallways were tight and crowded, and effective ventilation was nonexistent.

Understanding tragedies such as this fueled Partners In Health to prioritize design and to rethink hospital layout. If design—or lack thereof—can stimulate contagion, then better design should promote health. Partners In Health started testing ideas of hallway-less facilities and exterior waiting areas as a way to use space to solve these issues. When given the chance to build a new facility, the Butaro Hospital in northern Rwanda, the tests became a thesis and hallways were eliminated entirely. Although modern hospital design leans towards complete environmental control, with inoperable windows and highly mechanized heating, ventilation, and cooling systems, the temperate Rwandan climate, paired with unreliable and expensive electricity supply, rendered passive systems more contextually responsive, as well as more dependable in achieving the air changes per hour recommended by the World Health Organization for infection control.

Additional systems including large-radius fans and ultraviolet germicidal irradiation (UVGI) light fixtures create a redundant, parallel system that even in the event of failure—be it electrical, mechanical, or cost—allow the building

to function effectively and keep the risk of transmission low. By necessity, Partners In Health reframed architecture as a generator of health outcomes. In the process of leveraging design, the organization has helped build a resilient hospital design archetype more appropriate for many contexts. A resilient building maximizes technological innovation while anticipating inevitable obstacles, be they human-derived or climatic.

#### **How We Can Leverage Design**

Health is a unique area to prove this architectural model: rethinking the way we build and how we design can produce direct outcomes on people's lives. Possible avenues to leverage abound; it's been known for centuries that the environment in which one heals significantly affects recovery rates. More recently, studies from the past 30 years led by environmental psychologist Roger Ulrich in the mid-1980s indicate that humans have a positive response to nature—also known as the biophilia hypothesis. Ulrich pinned the connection with architecture, comparing the recovery rates of patients staring at a blank wall to those with a window view. The patients with a view to nature experienced fewer post-operative complications, reduced recovery times, and lowered needs for painkillers, ultimately leading to a broader discussion about the connection between environment and healing.<sup>3</sup> Incorporating nature and gardens can lessen not only pain and stress, but also healthcare costs. Reducing medical expenditures has proven to be an operative model for architecturally-driven health outcomes.



## A Process for Designing Direct Outcomes

### Immersive Research

Many designs have been developed to solve the world's problems, yet too many fail because they are designed largely in isolation from the communities that they serve. Imported technologies and expertise, and inappropriate approaches can generate technocratic systems that limit local communities to seek outside expertise for maintenance.

Alternatively, immersive research piloted at the most preliminary stage of any project uncovers key questions and insights that can lead to more appropriate design. The exploration in the community and lives of the users illuminates a full range of their needs and concerns, from which diseases are most prevalent, to the potential staffing capacity of the facility, to how stigmatization may hinder treatment for patients with HIV. The trick is asking the right questions, seeking answers from the broadest and deepest range of stakeholders possible, and opening up to the myriad of health drivers that may be involved. Recognizing the most crucial problems does not limit the project's possibilities, but rather

applies interdisciplinary thinking to transform challenges into opportunities for greater growth and impact.

### Multi-Disciplinary Partnerships

Designers bring a unique approach to problem solving, one that can be characterized by surrounding the problem. This strategy is most effective when all of the stakeholders are at the table; the multi-disciplinary nature uncovers innovative methods to effect direct outcomes. Partnerships that cross sectors—public health, international policy, infectious disease, mobile telecommunications, and alternative energy engineering—bring a breadth of knowledge to the table that contributes to design from all angles.

### Impact Metric Tracking

The process for generating direct outcomes proves inadequate, however, if it ends when the design is finalized, when the construction is complete, or even at the ribbon-cutting on opening day. When design interventions have been implemented, the stage for improvement has been set; nevertheless, for designers to simply cross our fingers and hope that we have impacted lives overlooks the need to translate that hypothesis into an "outcome." Tracking impact is imperative; it is not only

necessary to validate strategies, but to power an iterative process that feeds innovation. Investigating outcomes through controlled studies in a variety of targeted metrics—from rates of disease transmission, to improvements in recovery times, and user satisfaction—can identify areas that design has been successful, as well as areas that need to be further refined.

This iteration, which is fueled by immersive research, spawned of multi-disciplinary expertise, and tested in the field, yields innovation. To change lives, to better health, to revolutionize care delivery, there exists a need to change the business-as-usual attitude in the design of these communities—a necessity to think beyond the status quo. What has been used for decades in U.S. facilities proves not necessarily appropriate or effective for those in Rwanda (nor, are we finding, necessarily appropriate for U.S. facilities either). Ideally we will begin rethinking the questions asked of us as designers, thereby challenging the tired methods of legacy systems. Via the incorporation of innovative design practices, we will raise expectations for healthy building strategies and better-designed health care. This strategy is one method to resist the increasing

public devaluation of architecture as necessary service.

### Leapfrogging

Developing nations are showing the world methods to execute this innovation. They hold the opportunity to replicate and scale sustainable practices of community development that have recently become more engendered as an afterthought to industrialization. Furthermore, emerging economies are frequently unburdened by the constraints of outdated and unnecessary regulations that have begun to slow innovation in the built environment of more developed economies. Unbound by conventional practice, these countries are leapfrogging legacy systems. They are free to pursue ideas that instead focus on the resultant design outcomes. African communities living without the infrastructure for landlines, for example, skipped straight to more efficient cellular. Beyond technology, systems in health care have made leaps; 96% of Rwandans hold health insurance—a level that the U.S. still remains far from reaching.

What cannot be forgotten—and what the developing world continues to demonstrate—is the potential architecture holds to influence positive de-







velopment techniques. By rethinking the business-as-usual processes, identifying the determinants, surrounding the problem, and calling together interdisciplinary expertise, architects have the power and responsibility to reconstruct the built environment so that the spaces in which we live generate vitality, improve our health, and ultimately better our lives. To take the next step, designers must take this localized process and reflect the learning more globally by stimulating the dialogue between both developed and emerging economies, and bringing to scale the proof of concept. They must develop national policy, leverage revised and more applicable building codes, and work on the educational resources to support change on a broader, more systemic scale. It is all too common that architects remove themselves (or have been removed) from these high-level conversations, failing to step up to a role that has the power to engender impact at a national or global level. Architecture can have a seat at the table, but it has to assert its own instrumentality to do so.

If architecture is instrumental, it also faces the responsibility defined by this value proposition. Architecture must better lives and it must be held accountable for its proposed improvements. The call for both beauty and direct social outcome is not simply a moral imperative, but one that drives development through economic *and* health improvements. Ultimately, to succeed in today's globalized market, impact must be accountable to the

triple bottom line—people, profits, planet—and the ability of the designer to amplify the client's core mission is essential to raising the valuation of our profession's service. Embedded in this reasoning we find an economic model that is mutually beneficial, as architecture is transformed from an application to a generator. Architecture is a process—one that can deliver direct health outcomes as detailed here—but can be extended, regardless of typology, to housing, education, and civic infrastructure in order to similarly build resilience, empowerment, and systemic change. This is the power of architecture.

### Notes

1. Whoriskey, Peter. "New study shows architecture, arts degrees yield highest unemployment." *The Washington Post*. 04 Jan. 2012. Washingtonpost.com. 29 Jan. 2013.
2. Rampell, Catherine. "Want a Job? Go to College, and Don't Major in Architecture." *The New York Times*. 05 Jan. 2012.
3. Mehaffy, Michael and Salingaros, Nikos. "Frontiers of Design Science: Biophilia." *Metropolis Magazine*. 29 Nov. 2011. Metropolis-Mag.com. 24 Jan. 2013.

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