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# Crowdsourcing + Shared Architecture

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ABSTRACT - *This paper describes a participatory development strategy that leverages the cooperative nature of a sharing economy. Three case studies will be explored that provide unique strategies for empowering community. These crowdsourced projects pool resources and expertise in order to design and build projects that resist gentrification, stimulate investment, and build community. Residents utilize the participatory actions of establishing a pro forma, acquiring land, securing financing, selecting professional engineers and contractors, and ultimately constructing the project all as larger components of community building. The models of community development presented here offer an alternative to the traditional designer-client dichotomy and allow the once-clear boundary between architect and client to be redrawn. Also, by sharing resources, community members are able to become active participants in their built environment*

**Keywords:** community empowerment, housing, participatory design, self-developed architecture

Our forays into participatory design reveal the clear irony of the predominant architecture and interior design business model: designers are commissioned exclusively by those with privilege. The professional client, those funding projects in order to create a return on investment, ultimately pays design fees. Yet, a built environment that aspires to empower communities must operate within a framework that recognizes that only those affected by an environment have any right to its determination.

Participatory development strategies are employed to both empower a community by giving it a voice through architecture (process), and also by delivering a built environment that reflects the values and mores of that community (product). Too often the discourse of architectural agency centers on the former while the latter is subordinated or removed from the discussion altogether, as if architecture's metrics can only reside within the realm of methodology or solely within the realm of the visual. Architects struggle immensely with this duality, often believing that participatory design that aspires to operate in a way that might be categorized as emancipatory cannot possibly yield the same level of design quality afforded projects that are not shackled by the marginalization of "design by committee." As Peter Blundell Jones, Doina Petrescu, and Jeremy Till express:

> It is too easy to dismiss some of these aesthetics as "crude" or "dirty," because that simply reinforces the presumed superiority of the standard architectural categories of refined and clean. Instead, we should recognize the products of participation have their own value system that stands alongside that of conventional architecture - and that this value system is perhaps more relevant and appropriate to the democratic transformation of the built environment.[1]

Milestones in participatory design such as Lucien Kroll's Louvain University Medical Dorm (1969) or Ralph Erskine's Byker Housing (1980) do tend to have a nonhierarchical organization that one could argue elevates the individual and provides various if somewhat disjointed ways of living. Put another way, they are messy. An alternative view exists. Thomas Dutton writes:

> Issues of agency, process, and social action are not antithetical to beauty and good form. Often social responsibility is equated with designing for the lowest common denominator, appealing to mass interest unreflectively, without theory. As such, social responsibility is positioned against beauty and aesthetics as the negative other, a hindrance to be avoided because it compromises formal interest and investigation. This need not be the case, as richer form can come through social responsibility.[2]

Of course, the suspicion of participatory design is not solely tied to aesthetics alone. Giancarlo de Carlo theorized that the profession is threatened by participation because the privileges of specialization are destroyed. Perhaps more insightful, given this venue, he asserted that academia rejects it because it "nullifies all the schemes on which teaching and research are based." [3]

Architectural education tends to validate idealized form-making through the absence of a user. Yes, the student-tutor relationship simulates

architect-user engagement, however, the significance placed on disciplinary-coded drawings and language perpetuates the notion that the expert knowledge of the designer is certainly privileged over the tacit knowledge of the user. It negates the design process as a two-way negotiation and would threaten what we believe sets us apart.

## A PROBLEM-POSING ARCHITECTURE

In attempting to bring theoretical underpinnings to our participatory design work, one can examine the increasing number of architects that are finding ways to break free of a practice dependent upon clients paying for professional services.[4] A new "entrepreneurial" model of practice may loosen the constraints of designers who are torn between the need to operate within a viable business model and the desire to bring design engagement to traditionally underserved neighborhoods. Entrepreneurship is a process by which individuals pursue opportunities without regard to the resources they currently control.[5] The entrepreneurial architect, then, is one who is able to identify opportunities for change in our communities and independently takes constructive action.

The de-coupling, or at least re-framing of the client role that may free the design professional from responding solely to the needs of paying clients, redraws boundaries that may allow us to address more complex challenges: climate change, crumbling infrastructure, lack of access to clean drinking water, food insecurity, disaster response, refugee shelter in areas of conflict, homelessness. Solutions to these and other challenges are rooted in the design and stewardship of the built environment. In an age of open-source architecture, crowdsourced information, and global interconnectedness, today's designer has never been better equipped to meet these challenges head-on.

It may be important to point out our understanding of the term "crowdsourced" as distinct from "participatory design." The former implies that the project benefited from obtaining services, ideas, and/or funding from a large group of people while the latter suggests engagement in a more passive, yet potentially empowering, two-way communicatory design process. The result of these distinct yet intertwined methodologies yields what could be referred to as a "shared project," or the redistribution of assets through the design of the built environment.

The relatively small urban interventions explored here serve as demonstrated attempts to transition residents from passive bystanders that are acted upon to active participants in the shared process of community redevelopment. In this case, it is the professional knowledge surrounding real estate development and valuation that allows for this transition to active participant. Brazilian educational theorist Paulo Freire's "banking" concept of empowerment is relevant to this point. His analogy contends that in the

traditional educational model, the teacher “deposits” knowledge into the student as if the student were an empty container. The passive learner is acted upon and the potentially emancipatory process of gaining knowledge (and therefore power) is negated by being reduced to a one-way mechanical transaction.[6]

Applying this “banking” analogy to architectural production reinforces the expert-layperson relationship. Freire wrote:

> The more students work at storing deposits entrusted to them, the less they develop the critical consciousness which would result from their intervention in the world as transformers of that world. The more they completely accept the passive role imposed on them, the more they tend simply to adapt to the world as it is and to the fragmented view of reality deposited in them.[7]

He rejects this banking model in favor or what he refers to as a “problem-posing” model of education that holds participatory dialogue as indispensable.[8]

Stakeholders sharing in the visioning process for community redevelopment projects has long been held as a requirement of any sensitive revitalization effort. How can stakeholders be elevated from peripheral players to decision-makers that may be able to invest (even modestly) in a community’s transformation and thus directly benefit from shared investment efforts? This mode of shared participation transcends the monetary transaction. The willingness to invest in one’s own neighborhood reflects a willingness to invest in oneself and the belief that these actions can allow one to act strategically and critically to restructure a world one cannot wholly remake.[9]

## SHARING ECONOMIES: CURTIS PARK INVESTORS GROUP I

The authors’ firm, “in situ DESIGN,” was contacted by a group of neighbors living in the historic Curtis Park neighborhood of Denver, Colorado. A short walk from Denver’s Central Business District, Curtis Park is one of the oldest neighborhoods in the city. It once contained the main thoroughfare connecting downtown to the since-relocated Stapleton Airport. Believing that this neighborhood would one day be the primary connector to the airport, city planners rezoned blocks of turn-of-the-century Victorian mansions, Italianate rowhomes, and quaint Queen Anne bungalows to a high to medium density commercial zone district. Two decades later, the explosion of growth south of the city and the relocation of the airport left a tree-lined walkable neighborhood largely intact but with inappropriate zoning.

As increasing vibrancy and walkability began to transition Curtis Park into a desirable location ripe for redevelopment, outside developers began building

what has since become referred to as “slot-homes.” [10] These are side-by-side row homes that maximize allowable density by configuring the units perpendicular to the street. The result is typically a bare wall presented to the street with any opportunity for a residential porch or stoop buried deep within the block. When neighbors learned of a developer’s plan to construct such a sixteen-unit project on an empty lot between two historic homes, they began exploring opportunities that would allow them to tie up the land.

An initial group of eight families, all living within a few blocks of the property, formed a Limited Liability Company called Curtis Park Investors Group (CPIG) and purchased the lot for $40,000. The group then began recruiting other interested parties within the neighborhood. They set out to construct a viable real estate development while protecting the neighborhood’s historic character. As the venture gained momentum, town hall-style design workshops were held to manage the project. The resident group was from a diverse range of economic backgrounds that included such professions as a city planner, a teacher, an historian, a lawyer, and several residents who worked in the construction trades. They were brought together by concerns for the future of their neighborhood. A true example of crowdsourcing, these long-time neighborhood residents put their own homes up for collateral in order to secure a construction loan of $1 million. This group of twenty-three neighbors recognized the power that came with organizing politically (Fig. 1).

“in situ DESIGN” worked with CPIG over the following months to develop a four-unit townhouse project that would be called Champa Terrace. The

Figure 1. Champa Terrace (Denver CO, USA) groundbreaking.

solution maximizes the allowable site build-out while blending into a block of historic homes (Fig. 2). Design features that enhance the residential character include front doors that all face the street, front porches that provide a pedestrian scale, and exposed steel columns that accent the porches and hint at modern interiors. The units have been designed to cluster service functions (powder, closet, laundry, stairs) along interior demising walls providing sound insulation that is essential to multi-family dwelling while maximizing the perimeter walls for large double-hung windows that have been selected to match historic windows throughout the neighborhood.

Large skylights centered above custom steel staircases cap double-height spaces. Fitted with cable-rails and Alderwood treads, these stairs are the focus of the central space. Roof decks provide views that reveal the downtown skyline and the Rocky Mountain Front Range beyond. The rails surrounding the roof decks are set back from the cornice and provide a modern interpretation of the mansard roof form common in the neighborhood.

The project sold out within six weeks of the completion of construction and investors realized an approximately 65% return on investment. This type of infill project is likely to raise property values. However, a key distinction from typical gentrifying developments where all return on investment leaves the neighborhood, this framework allows all profit to stay within a few

Figure 2. Champa Terrace exterior.

blocks of the project. The process also resists gentrification by consciously weighing profit against affordability and setting up a structure in which investors are driven solely by return on investment but also on community cohesion.

SHARING ECONOMIES: CURTIS PARK INVESTORS GROUP II

Champa Terrace was lauded in the local press for its proactive approach to community development. Feeling enfranchised and seeing the opportunity to replicate this development model, the group looked into rolling its returns into a second project. They investigated a vacant lot on an important corner that anchors an historic district. As additional neighbors became interested in joining the investment group, they realized they would need to establish a more sophisticated investment structure. A second LLC was established (CPIG II) that included both guarantors and non-guarantors of the loan. Within this framework, forty-two neighbors co-signed a construction loan.

This second self-development model is called Merchants Row Brownstones. This $2.5 million multifamily housing development is modeled after a rowhome prototype common to the neighborhood. Sensitive of context, the group prioritized the relationship of form, mass, and scale to the surrounding buildings (Fig. 3). Raised entry stoops all face the street with glass canopies that mimic the cable-stayed canopy of the adjacent 1890s structures. The entry stoop elevation is set at 5’4” [162,5 cm]

Figure 3. Merchants Row Brownstones (Denver CO, USA) exterior during the day (left) and at night (right).

allowing for inhabitants to engage the passerby at the sidewalk while maintaining a comfortable separation between the public and private realms (Fig. 4). As the section illustrates, this strategy does not allow for the ceiling height required for a garage and thus units step up around a three-story lightwell that allows daylight to penetrate deep into the units (Figs. 4-right, 5). This alleviates the challenge of letting light into long interior units where side windows are typically not possible.

While the land cost drove the development, it was important to the group that the project be configured in such a way that it could resist the homogenizing mechanisms of gentrification. Walk-out basements labeled as “flex-space” on city permit drawings sidestep parking requirements and provide a potential home office or live-work scenario. They are also easily configured into an

Figure 4. Merchants Row Brownstones, 26th Street, exterior (left) and interior lightwell (right).

Figure 5. Merchants Row Brownstones, section.

affordable rental unit or granny flat. It was also important to the group that critical design concepts not be compromised by what they felt to be misguided zoning regulations or design guidelines. The carefully labeled “flex-space” is a case in point.
Another procedural nuance that offered some resistance to the regulation of the built environment and was critical to the project’s success was the categorization of the units as “attached-single-family.” Not only did this reduce professional liability associated with condominium developments but it also allowed the group to avoid the creation of a homeowner’s association. One requirement of this classification is that each unit must maintain its own lateral bracing; that is, should one unit’s lateral bracing be compromised, adjacent units must maintain their own lateral stability. This is made visible in the design by exposing the steel cross bracing in the three-story lightwells (Fig. 6).

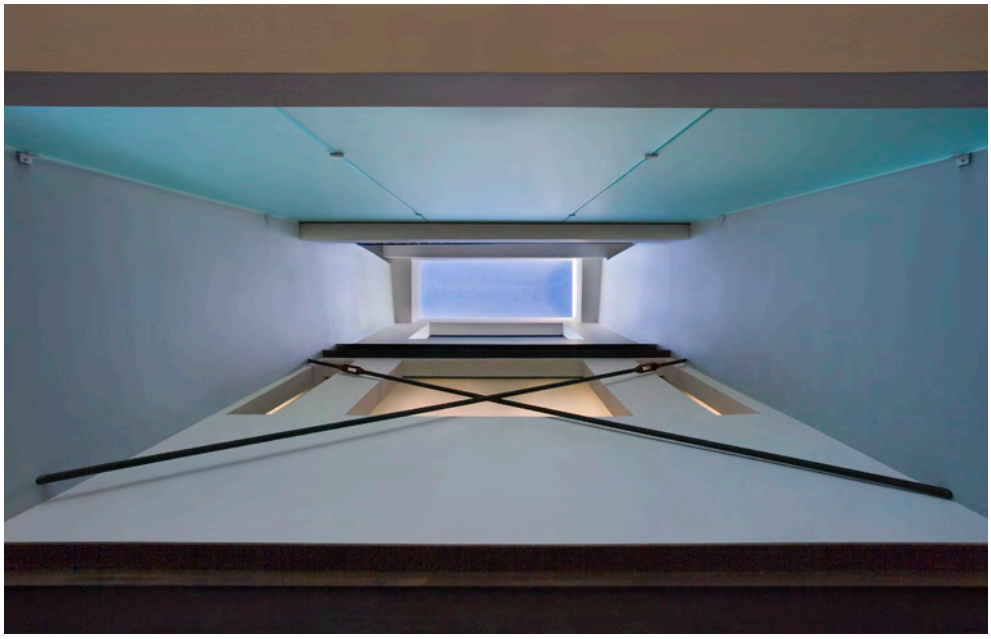

Figure 6. Merchants Row Brownstones, cross-bracing.

Also, the primary feature of the exterior is a reinterpretation of the historic bay: a three-story mullion-less curtainwall. These not only allow daylight to penetrate deep into the units, they also represent metaphorically the visual connection to openness and transparency. Despite historic district design guidelines that require punched windows in a solid field, the group was able to convince the design review board, Denver’s Landmark Commission, that the pattern of frosted and clear glass configured in the proportions of window openings in the neighborhood met the intent of the guidelines. Stepped out from the façade, side windows at the bay frame views to downtown while translucent bays glow to activate the street with vitality at night. Convincing the group to challenge the literal reading of the historic

district design guidelines was no small accomplishment given that many of the investors have an affinity for historic preservation that borders on militant.

Also significant in swaying the design board's ruling was the fact that many of the investor-residents had been involved with establishing the historic district. The glass bays also reflect a certain do-it-yourself ingenuity. The components are all off-the-shelf and designed by the structural engineer (Fig. 7).[11] The risk in configuring such an assembly with no clear warranty and the lack of clarity in assigning responsibility for resistance to moisture intrusion would cause most developers to pull back. The neighborhood group, perhaps naively, greeted this calculated risk with enthusiasm.

This project, like the earlier example, sold out soon after the completion of construction. The pride the group took in witnessing a cultural enterprise emerge from their shared ideas and resources was evident. Open house events and tours were more of a neighborhood celebration than marketing event and inexplicably extended even after all the units were sold. Guarantor investors received a preferred return as the project closed out and non-guarantors received their proceeds soon after. Several investors, in various structures and configurations, continue to roll over development proceeds into neighborhood investments of various scales.

## SHARING ECONOMIES: KANSAS CITY SALES TAX

The authors are currently engaged in a self-development project in Kansas City, Missouri that has the potential to demonstrate a city-wide strategy for the revitalization of underserved communities through the notion of shared economy. In April of 2017, Kansas City voters were asked to approve a one-eighth-cent sales tax to spur economic development in the city's most blighted neighborhoods. Spearheaded by the Urban Summit, partner nonprofits and area churches led the charge to have the initiative placed on the city ballot.[12] The initiative would also compete with three general obligation bond questions that supported infrastructure improvements. The initiative thus brought considerable opposition from Mayor Sly James' office who feared voters would reject pleas for funding parts of the city where they do not live and jeopardizing all four tax questions.[13]

The Central City Economic Development Sales Tax is to be in place for ten years and provides a projected revenue of $8.6 to 10 million each year. This citywide tax would only be utilized in an area bounded by Ninth Street to the north, Gregory Boulevard to the south, the Paseo to the west and Indiana Avenue to the east. Essentially, Kansas City's traditionally most underserved neighborhoods. An appointed board made up of designees of such entities as the Mayor's office, the school board, city council, etc. will oversee the distribution of the tax revenues. The authors, with affiliated faculty from the Kansas City Design Center (KCDC), engaged citizenry

from within this established boundary in order to respond to the city's Request for Proposals.

A sales tax is often hurtful to the poor,[14] however, rather than reinvesting the tax revenue in neighborhoods that are well-positioned, the revenue from this initiative will be limited to an area identified with high crime, unemployment, dilapidated housing stock, and a lack of development. Leaders of the initiative cited two reasons why this tax makes sense:

1. When a city's core is healthy, the entire city is healthy;
2. Residents of these neighborhoods have consistently supported similar tax initiatives that funded major projects outside the core, including a $1billion airport improvement project.[15]

The vote was telling. Most neighborhoods voted in favor of the tax despite the reality that it would not directly affect them.[16]

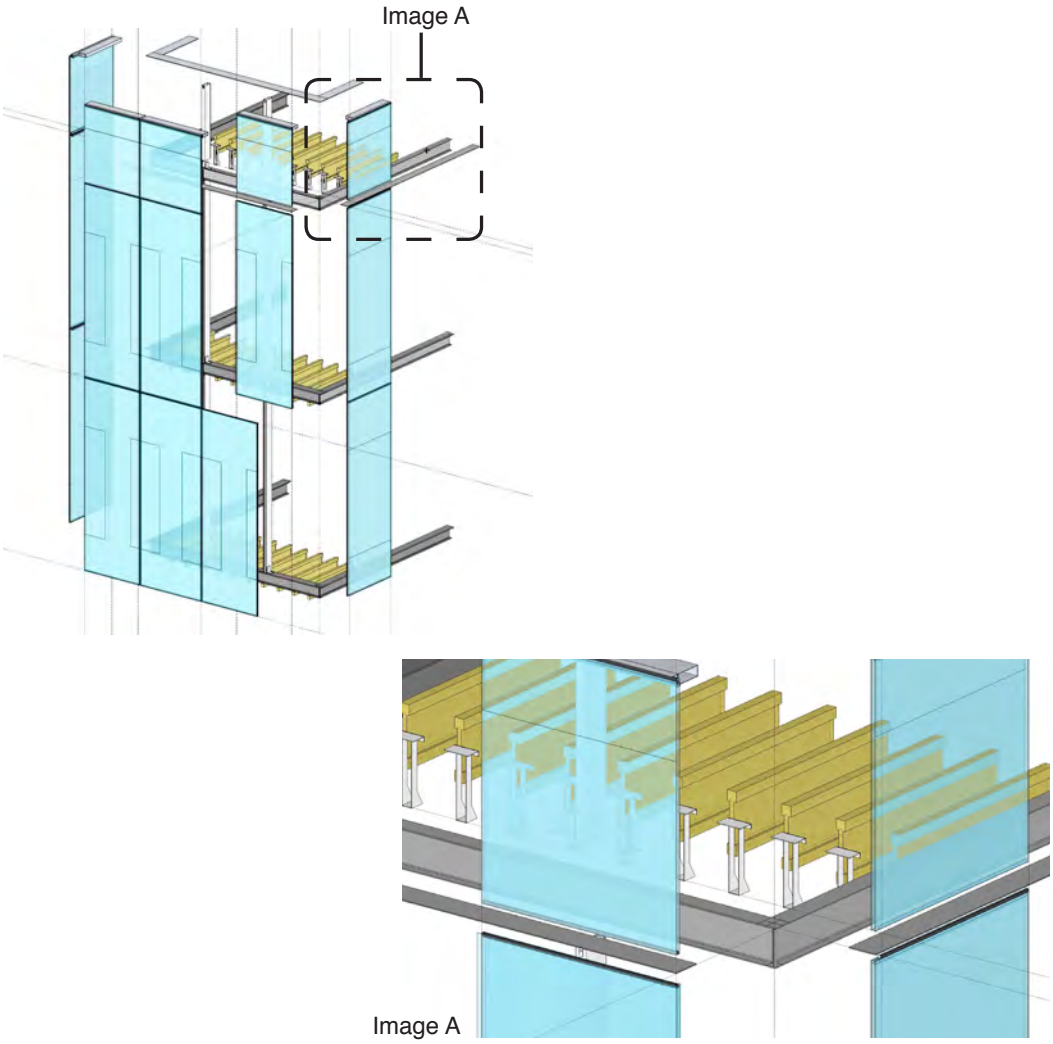


Figure 7. Merchants Row Brownstones, glass bay diagram.

## A PROPOSAL: NEIGHBORHOOD PROSPECTS

The first iteration of a response to the city's Request for Proposals process has been completed. The proposed self-development project is for a six-unit townhome project priced in the range of $170,000. Various solutions have been tested to arrive at a viable development model. Schematic financial analysis utilized construction costs provided by a local contractor. Single-family homes were estimated to cost in the range of $140/sq. ft. [$1.507/m$^2$], while the efficiencies of a multifamily structure brought the cost down to about $110/sq. ft. [$1.184 m$^2$]. All proposed options were market-driven and assumed at least 10% profit. This resulted in the required sales price for single-family homes to be approximately $330,000 while townhomes would need to yield a sales price of $170,000.

This difference is significant. Not only is a home price above $300,000 not compatible with comparable prices in the neighborhood, homes in this price range would almost exclusively be marketed to buyers from outside the community. Units for sale at $170,000 could serve home buyers with a desire to remain in the community. It is estimated such units would yield monthly payments of $750 to $850. This is well within the range of apartment rental rates within the neighborhood. The goal of creating affordable housing is elusive in a neighborhood that has suffered disinvestment that has resulted in depressed property values. Typically, affordable housing can be defined as being able to attain housing at no more than 30% of one's income. Using this standard, a two-income family earning the Area Median Income of $22,000 could comfortably maintain these anticipated mortgage payments.

As of press time, the Central City Economic Development Sales Tax Board had not yet selected finalist respondents to their Request for Proposals. However, it is necessary to delve deeper into the specifics of this self-development proposal here. The multifamily project outlined in our submittal is a six-unit townhouse project. The parcels that make up our proposed site are controlled by the city and thus we assume land acquisition will be accomplished at nearly zero cost. Six units at approximately 900 to 1,200 sq. ft. [83,6 to 111,5 m$^2$] and a projected construction cost of $110/sq. ft. [$1.184/m$^2$] equate to a hard construction cost of $660,000. Soft costs, contingency, and financing bring total development costs to $855,549. We have suggested an equity requirement of $163,273 to be split, with half of the amount being contributed from the tax fund and the remaining half being achieved with resident investment. Thus, our request to the city is for $81,000 in funding.

Assuming twenty investors, this scheme results in residents being able to participate in real estate development within their own neighborhood for approximately a $4,000 buy-in. At a sales cost of $170,000 and a profit of 12%, each investor will receive a $1,081 payout per share.

## CONCLUSION

The notion of the "shared project" is an exciting one, not only because it implies inclusive participatory input from those affected by a development project but also because it implies that participants have an opportunity to share in the increased value that is brought to their neighborhoods by real estate development. The value created by architectural production has been one of the most stable and well-performing strategies for growing wealth. Yet, participation in real estate development is an impossibility for the vast majority of the population. Through entrepreneurial design thinking, architects have the potential to ease the barriers to such community investment opportunities and share in the transformative act of building community.

Although the scale of the community interventions shared here are small, these buildings remain as clear territorial demarcations of community empowerment. Participants move through and away from these experiences forever changed from passive occupants of a built environment to citizens armed with the knowledge and resources to act upon the world.

### Notes

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