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Dotte Agency: A Participatory Design Model for Community Health

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ABSTRACT - *As community activists resist racial injustice, food insecurity, and infrastructural delinquency, many groups are attempting to articulate the voice of the citizen. It is within this landscape that architects have historically struggled to find common ground to afford democratic access for citizens to engage in discussions about the future of their city. Based upon surrogate models of other professions, there has emerged a proactive movement towards Social Impact Design. Like many urban core areas, our community faces a health epidemic compounded by poverty. In response to requests for collaboration, and through cross-disciplinary academic partnerships in both public health and social welfare, we have begun to leverage design advocacy to improve health outcomes. This has evolved into an alternative model of practice that advances public design through interdisciplinary, adaptive and incremental spatial agency. It is a sustainable practice that fosters conversations and supports events originating from within the community. Our approach seeks to scaffold an infrastructure of public health through methods of participatory design and advocacy. Through new forms of design intelligence and collaborative design tools, our critical spatial practice demonstrates new ways for how architectural design can be relevant to society.*

Keywords: social impact design, public architecture, community engagement, participatory, design, critical spatial practice

Organized in late 2014, Dotte Agency originally intended to serve as a loose affiliation of architecture studio collaborations between three

professors and their students within the School of Architecture at the University of Kansas (KU). Since then, it has evolved into an informal community-outreach extension for students and faculty at KU to provide multi-disciplinary design services to local non-profit organizations, community leaders, and city agencies to address the health disparities present within underserved and culturally diverse neighborhoods of the urban core of Wyandotte County, Kansas. As a result of multiple joint projects in various urban spaces over the last few years, the collaborative work has provided both students and community participants with a holistic rethinking of how design can be deployed to serve the needs of everyday people. Learning through participatory practices, Dotte Agency has built trust with partners to foster a collaborative environment that engages neighborhoods seeking to restore their built environment to better promote and improve access to essential resources. The work emerges from dialogues between students, residents, and community organizations, and is supported through cross-disciplinary collaborations, including the fields of public health, community development, public administration, business, and design. This dual-approach — leveraging community health resources to support a design practice — translates the tacit knowledge of participating residents into shared visual representations, leading towards installed elements that build upon the best available evidence for increasing access to public health. Guided by this process of iterative collaboration, Dotte Agency has refined participatory methods and tools to allow for design-thinking skills to critically address health disparities, while offering students an opportunity to propose and build work more relevant to the needs of society.

This shift towards utilizing innovative design methods to mediate adaptive design problems is not typically found within architectural practice. The role of the traditional architect or architectural firm is to serve their client, and to deliver a distinct building that responds exclusively to their client's needs. This framework has become the accepted standard due to its potential efficiency and profitability for architects and clients alike, but it does so with tools and methods that have been demonstrated to be effective in solving primarily technical design challenges. However, the established architectural process has shown limited capacity to address the adaptive challenges made manifest in the built environment today (lack of social cohesion, issues of safety and crime, poverty, gentrification, environmental injustice, climate change, etc.). Instead, the production of any individual building asks the architect to balance their available time, access to capital, and personal aspirations in pursuit of an aesthetically pleasing design in service to the individual or organization that has provided them the means with which to do so. Given these constraints, conventional architectural practice thus rarely seeks to directly empower individuals or support a community's efforts to strategically re-invest in neglected neighborhoods as their primary design goals. Capitalism, and to a lesser extent bureaucracy, has made these notions of designing for greater social equity difficult for

practicing architects to even begin to address while balancing their own investment in any given project. That is not to say, however, that models for how architects can respond to adaptive challenges in society do not already exist.

Within academia, a new generation of socially-engaged students have begun to respond to adaptive challenges through unique collaborations that collectively appeal towards broad notions of "the common good." Likewise, students within schools of architecture across the country are finding potential clients through university-initiated service-learning partnerships, allowing for students to meet directly with community stakeholders and work collectively on problems that otherwise are not addressed through typical architectural practice. By inviting architectural students to engage with real people, participatory methods of design become a critical component in navigating the complex relationships between students and the diversity of residents, stakeholders, and authorities in any given community. These scenarios often encounter adaptive challenges because the available technical answers have been unable to solve the problem. It is in these educational opportunities that design skills can foster meaningful participation through active listening, working reflexively, iterating quickly, and producing collective social spaces. By learning to address adaptive problems at a foundational level, the current generation of architecture students may soon represent the next paradigm shift in architecture: Design that seeks to address “why” and “who” we build for, as much as “how” and “what” is built.

ORIGINS OF COMMUNITY DESIGN

Dotte Agency is certainly not unique in its attempt to develop a design practice grounded in theories of community, social justice, and reflexivity. In fact, the history of social impact design practices is rich with examples of pioneering architects that have successfully navigated academia, non-profit, and private practice to enrich the field of community design. Rather, Dotte Agency may be seen as an attempt to further continue the lineage of architectural collaboratives finding sustainable models of community-based design practice.
In the 1960s, the Civil Rights Era coincided with the first community design center in Harlem. At the 1968 American Institute of Architects (AIA) Convention in Portland, Oregon, Whitney M. Young, Jr. — outspoken civil rights activist and head of the Urban League at the time — gave a keynote address that challenged the status quo among the architecture profession on issues of social responsibility and diversity within the profession. "[As] a profession, you are not a profession that has distinguished itself by your social and civic contributions to the cause of civil rights, and I am sure this has not come to you as any shock. You are most distinguished by your thunderous silence and your complete irrelevance.”[1] Young challenged the profession to re-examine the policies that have shaped,

and continue to shape, our cities. “We are going to have to have people as committed to doing the right thing, to inclusiveness, as we have in the past to exclusiveness.” [2] Following this motivating speech, the AIA initiated a Minority Disadvantaged Scholarship, established the National Organization Minority Architects (NOMA) and created other initiatives that began to highlight the struggles to find common ground in order to engage in discussions about the future of the city.

A decade later, established in 1977, in order to meet the needs to provide access to design, the Association of Community Design (ACD) was created “to offer design and planning services aimed” to enable the poor to define and implement their own planning goals." [3] This network of individuals, organizations and institutions initiated their charge under traditional pro bono practice models, where brand identity, mission, and goals were made available to serve a community group, most commonly in association with universities.
In the 1990s, several important initiatives were created to broaden the approach of design for social impact and reach a wider audience. Design Corps was founded by Bryan Bell “to provide the benefits of architecture to those traditionally unserved by the profession.” [4] Auburn University’s Rural Studio Design/Build Program, co-founded by Samuel Mockbee and D.K. Ruth, was created in a remote location to engage an underserved population in one of the most impoverished counties in the country. Students and faculty were immersed in the rural poverty found within Hale County, Alabama, and through participation alongside residents they influenced a new generation of empathetic designers.

In 1994, the Detroit Collaborative Design Center, at the University of Detroit Mercy, was founded by Dan Pitera to “foster university and community collaborations and partnerships that create inspired and sustainable neighborhoods and spaces for all people.” [5] Rather than focusing on traditional architecture and community design practices, they worked at multiple scales to address Detroit’s numerous challenges. At the same time, Ernest Boyer and Lee Mitgang, through the Carnegie Foundation for the Advancement of Teaching, influenced academics and practitioners with their book, *Building Community: A New Future for Architecture Education & Practice* (1996), with a chapter titled “Service to the Nation,” which introduced the concept of service-learning and community outreach as an integral element of a relevant architecture curriculum: “The profession could be powerfully beneficial at a time when the lives of families and entire communities have grown increasingly fragmented, when cities are in an era of decline and decay rather than limitless growth, and when the value of beauty in daily life is often belittled.” [6] Since its publication, architecture accrediting bodies have set criteria for assessing architecture degree programs for the purposes of professional licensure, although the exact nature and scope of the criteria dedicated to community-based learning remains vague.

In 1999, Architecture for Humanity (AFH) was co-founded by Kate Stohr and Cameron Sinclair to initially focus on architectural solutions to humanitarian crises. Their work documented their methods, and together they published *Design Like You Give a Damn* (2006), enlightening readers on the challenges of design globally. AFH's stated mission was to leverage professional design to build "a more sustainable future." Through a robust network of thousands of volunteers, their global chapters continue to provide design and construction services, despite the closing of its primary chapter in 2015.
Over the last fifty years, many other community design firms have contributed to the field of design serving the public good. Most emerged through university initiatives, while others were supported by foundations and nonprofit organizations.[7] These initiatives provide evidence of a commitment to examine both local and global issues to ensure that new forms of practice, service and products are created in attempts to involve citizen participants as collaborators and co-creators. While these efforts are the product of individual designers and academic courses, most are the result of interdisciplinary teams comprised of designers and technical specialists working alongside partner communities. This has served to challenge the assumed limits of pro bono design typically held by traditional architectural practice. Instead, collaborative designers have begun to assume an ethos of social responsibility and deployed their design skills with a high degree of innovation in areas outside their normal professional boundaries.

In acknowledging these preceding models of community design practice, and then seeking to integrate various aspects of them within Dotte Agency, we find ourselves exploring this new paradigm of user-based design as one rooted in issues of social justice. By offering design services to individuals and communities otherwise disconnected from the construction of the built environment within which they live, design provides advocacy for and agency to the social networks where adaptive problems are felt most severely. Issues of race, class, status, and poverty are grappled with over the course of each semester. However, we are finding that by aspiring towards notions of the common good (i.e. public health), our work and the work of our students have the capacity to invite participating residents to engage in dialogues and co-create visions that respond to the latent adaptive challenges waiting to be addressed in the built environment.

TOWARDS A PARADIGM OF ADAPTIVE DESIGN

Much of what we consider to be architecture today responds primarily to a client's specific needs. Clients often present architects with a site, a design challenge, and an aspiration to a specific architectural style. After engaging with the client, the traditional course is for the architect to begin making pre-design decisions about site orientation, aesthetics, and scale. The process then moves from schematic and conceptual designs to more

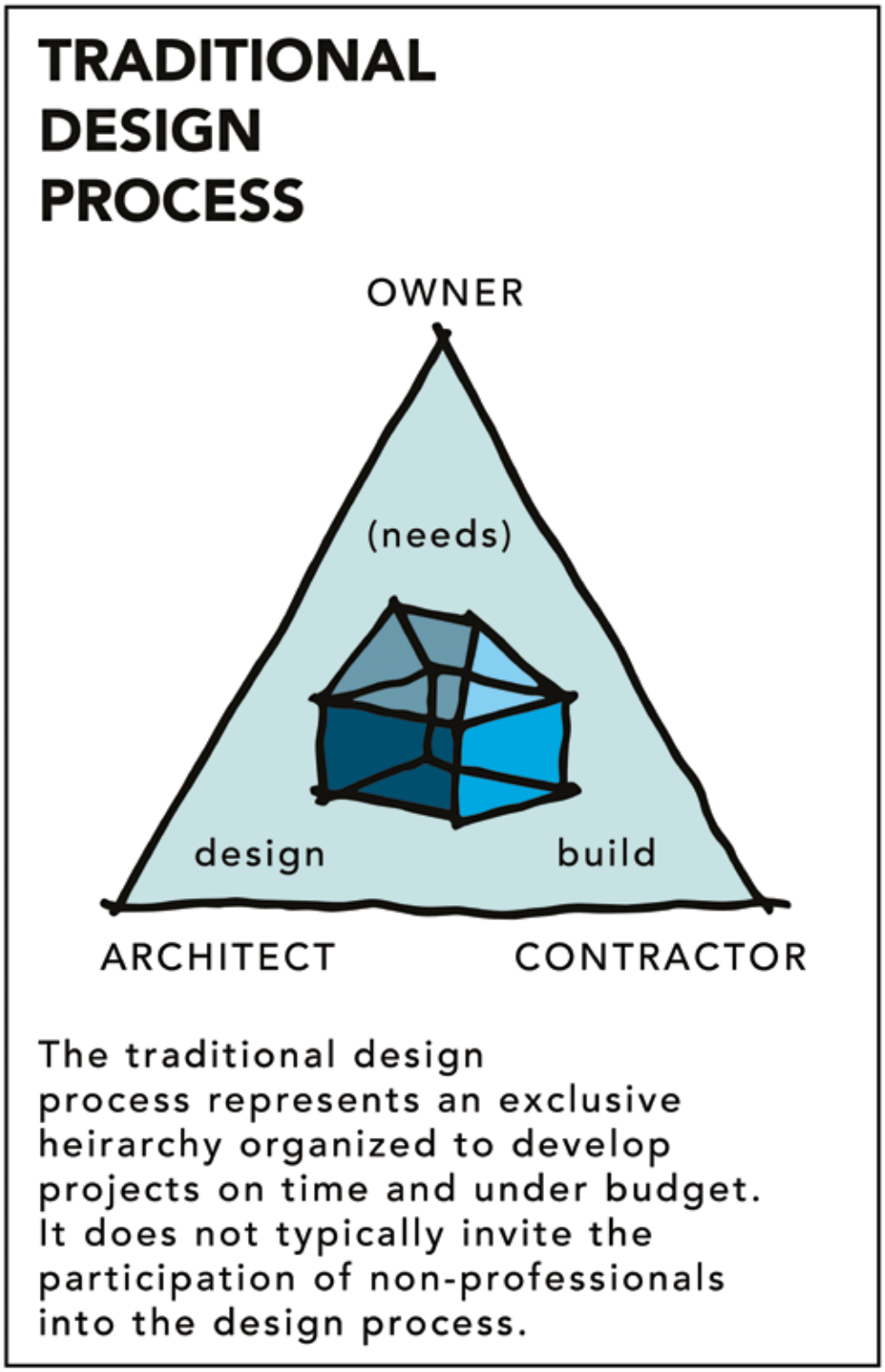

Figure 1. Traditional design process.

developed designs, ultimately resulting in a set of construction documents that serve as a contract between the owner, architect, and general contractor (Fig. 1). This relationship is largely governed by the AIA, which

has set up legal documents intended to help the architect manage the expectations, risks, and liability of the architect in their contracts dealing with owners and contractors.
In his 1969 lecture and subsequent essay "Architecture's Public," Giancarlo De Carlo challenged this version of standardized architecture as one that subjected itself to the whims of the privileged elite, arguing that "the architect became a representative of the class in power." [8] In his essay, De Carlo questioned architecture's credibility and its capacity to maintain a sense of "public," often to the detriment of ordinary people. He suggested that architecture's "credibility disappeared when Modern Architecture chose the same public as academic or business architecture; that is when it took an elite position on the side of the client rather than on the side of the user." [9] Instead, De Carlo argued for a process that required collective participation to introduce a plurality of objectives and actions. He proposed that design be used to identify with the needs of the user, where architecture does not plan "for" them, but rather plans "with" them. To De Carlo, this approach could be liberating and democratic for architects, "stimulating a multiple and continuous participation." [10]

The difficulty in transposing this notion of participatory design towards traditional architectural practice is that existing processes have evolved over time to be inherently technical; architects move along the prescribed path to navigate their available time, budget, and design intent. While an architect's response to design challenges may be adaptive as it relates to form-making, a framework that is client-centered nonetheless prevents greater consideration of the needs and desires of a community. It is in this sense that De Carlo's assertion rings true: Architects became preoccupied with "working on 'how' without rigorous control of 'why' inevitably [excluding] reality from the planning process." [11] Modern Architecture's promise of liberation through design neglected to respond to the very same rigid socio-economic systems that provided them with the resources to produce space, thereby limiting their capacity to respond to adaptive problems. In so doing, Modern Architecture presented little change except for its aesthetics.
Today, as social impact design moves towards a more adaptive design paradigm that concerns itself with issues of social justice, there remains a lack of appropriate processes and frameworks to move through on the path towards a substantial resolution of a given design challenge. The basic progression of schematic design, design development, construction documents, and contract administration is not formatted properly to deal with more ambiguous design challenges such as building coalitions, advocating for social equity, and responding to the needs of the community. For this reason, many architects that engage in social impact design as professionals or as part of a firm are often limited in their ability to be effective advocates. Rather than meeting communities where they are, architects often attempt to frame their relationship through standard contracts and agreements, budgeting their time with communities in need of social impact design services as they would with a client. The use of

memorandums of understanding (MOUs), in place of standard architect/client contracts amongst architectural design firms engaged in social impact design, suggests that architects are attempting to respond to the need to provide clarity and establish boundaries to their design services. This well-intentioned evolution of an architect's role and responsibility is still nonetheless limited by a paradigm that is client-centered, and therefore unable to adapt to design challenges where the community is the client, and the design services rendered are for the common good.

In response to the limitations presented by taking a client-centered approach, human-centered design principles have emerged out of the Stanford D-School and IDEO. In their "Human Centered Design Toolkit", IDEO defines their approach as being focused squarely on the needs of people. Their process asks designers to listen to those needs, co-create proposals that have a positive impact within a community, and then deliver a completed proposal to the community's stakeholders. By framing their design solutions through the lenses of "desirability," "feasibility," and "viability," IDEO provides social impact designers an alternative model of practice, one that is more suitable to navigating adaptive design challenges. This filter allows for a more flexible approach than the traditional architectural model, where the desire of the community is given primary consideration, while issues such as whether it can be built efficiently help to guide the process towards a final design solution.
A major challenge for conventional architectural firms attempting to be hyper-responsive to the desires of the community is that traditional funding sources rarely budget for sufficient engagement work within communities. The financial incentive to keep projects on time and under budget leads to a reduction in time spent by architects on design challenges that might be otherwise considered as too ambiguous or adaptive in nature. One alternative to this financial incentive structure is found in the "triple-bottom-line" approach, made popular in design circles through the work of Majora Carter, a community design activist. In her TED Talk on triple-bottom-line sustainability, she makes the case for architects to balance the roles that economic, environmental, and social factors play in determining the potential outcomes of a project. [12]
This mindset incorporates elements of social and environmental justice, acknowledging that communities of color in the United States are disproportionately at a higher risk for developing chronic diseases from exposure to environmental toxins and a lack of access to essential health services.

In an awareness of the impact that the environment has on all of us, in recent decades architects have begun to align their design processes with the United States Green Building Council (USGBC) and their Leadership in Energy & Environmental Design (LEED) standards. However, while this formal approach goes far in providing design guidance towards resolving technical design problems measured through environmental outcomes,

it has little to say in response to social impact outcomes. Furthermore, LEED is framed within the context of client-centered design, where new buildings are developed exclusively for the clients that can afford them. While reducing greenhouse gases and minimizing the carbon impact of new construction can be taken as a positive step towards addressing climate change, it does little to mitigate the alarming impact that polluted ecological systems are having on millions of people today.
By adopting a unifying view of human-centered and triple-bottom-line design principles, it becomes apparent that formal design hierarchies are ill-equipped to provide standardized solutions to these complex problems. More concerning, however, is that, even were architects able to solve these problems through technical processes alone, most individuals in society would nonetheless be unable to afford traditional architectural fees. In attempting to address adaptive design challenges, architects must not only respond to the needs of the community while balancing a project's social and environmental outcomes, they must also consider that they themselves must practice within a model of architectural practice that is economically sustainable.

One economically sustainable way for architects to align their objectives with that of the common good is in the healthcare setting. Historically, the relationship between health and architecture has typically been played out within hospitals:

> A lead architect says [that] the new hospital "embraces the idea that good architecture is an integral part of the healing process," creating "an environment that is cheerful, inspirational and intimate, despite its large size." He continues: "We've aimed to design an environment for people, not just machines"... Another lead architect says: "somehow the human scale should come in"; he sought to design a sense of "smallness" into the space... This discourse of a humanistic building was in keeping with various inspirational phrases used to describe the new space and the work it facilitated, epitomized by words of one of the hospital's senior administrators: "Our vision is to heal humankind, one patient at a time, by improving health, alleviating suffering and delivering acts of kindness." [13]

Emerging design firms such as MASS Design Group have been successful in incorporating better health outcomes as a means towards achieving greater social impact through design. While still framed within the client-centered approach, their work extends "beyond the building" to consider local community stakeholders. By inviting communities to be participants in the process of both a building's design and its construction, their success reflects how projects that improve health can be a viable path forward for architects wishing to integrate social impact design with architectural practice.

The most innovative path forward for social impact design and public health may be in the context of “community health design.” By identifying the common good as an appeal towards greater quality of life for disenfranchised members of a community, architects will find that there exists other organizations, institutions, and foundations that are motivated to find ways to improve health outcomes “upstream.” Enhancing preventive care by redesigning the built environment to improve health outcomes before patients need emergency health services is an inherently adaptive design challenge. By adopting a “social determinants of health” mindset, design skills that improve the built environment, to enhance access to spaces and support greater community health outcomes, become essential. A client-centered approach is anachronistic in this context; the client is replaced with the community, but communities do not act with a single voice. This is where technical design processes most commonly fail architects; they expect to operate within a traditional process that communities are unfamiliar with or unable to operate within. Leading a design process in pursuit of improving community health requires new methodologies for the successful production of collaborative space. By framing these new methodologies as adaptive design tools, architects can begin to make more meaningful progress towards resolving the complex challenges facing communities today (Fig. 2).

AN ADAPTIVE DESIGN FRAMEWORK FOR COMMUNITY HEALTH

The role of the architect serving as an intermediary between top-down authorities and bottom-up grassroots efforts is expressed by Jeremy Till, Nishat Awan, and Tatjana Schneider in their book *Spatial Agency: Other Ways of Doing Architecture* (2011). By operating as agents for spatial change, architects can thus define their role as one of mediator; probing, asking questions, bringing parties together, and finding agreeable solutions. By incorporating "spatial agency" as a framework for design advocacy, architects can develop tactics appropriate for bridging the gap between community stakeholders and decision-making authorities. The approach is a collaborative one in which agents act with, and on behalf of, others. This fosters interpersonal exchanges, which can trigger powerful new interpretations and translations of public space, allowing for "citizen experts" to provide the necessary context and awareness that more technical design practices typically fail to include in the design process. In a traditional sense, the role of the architect is to translate their vision and intent through drawings and other visual representations in a manner that makes sense to those fabricating a building. Likewise, architects advocating for better community health through a framework of spatial agency must also translate the needs of the community to those that have the authority and capacity to shape the built environment for public use. For that translation to occur, however, architects must first develop a shared vocabulary at both top-down and bottom-up levels of communication. Together, these frameworks provide a scaffolding upon

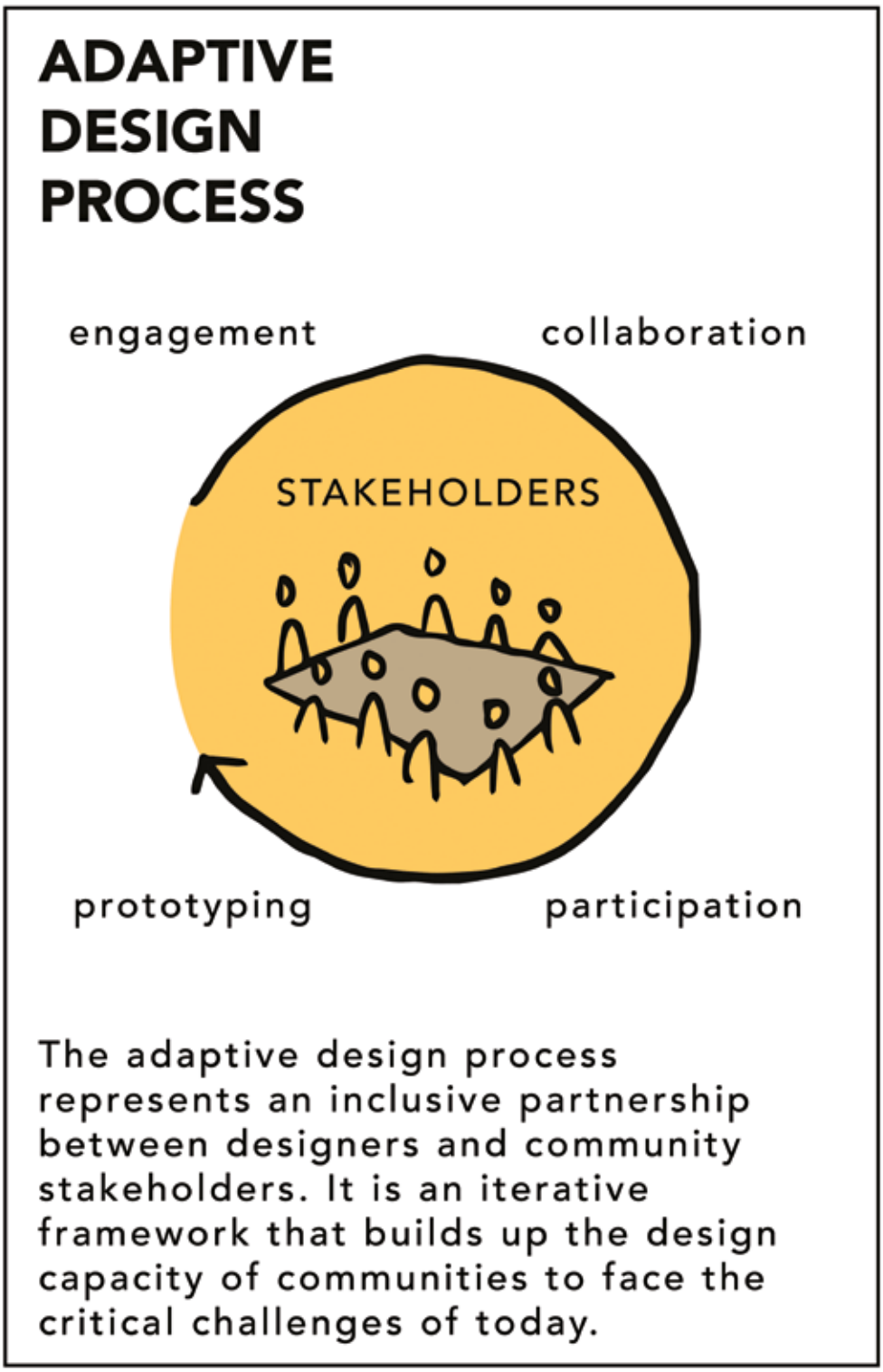

Figure 2. Adaptive design process.

which community health problems can be addressed through adaptive design, leading towards a design that advocates for greater community health outcomes (Fig. 3).

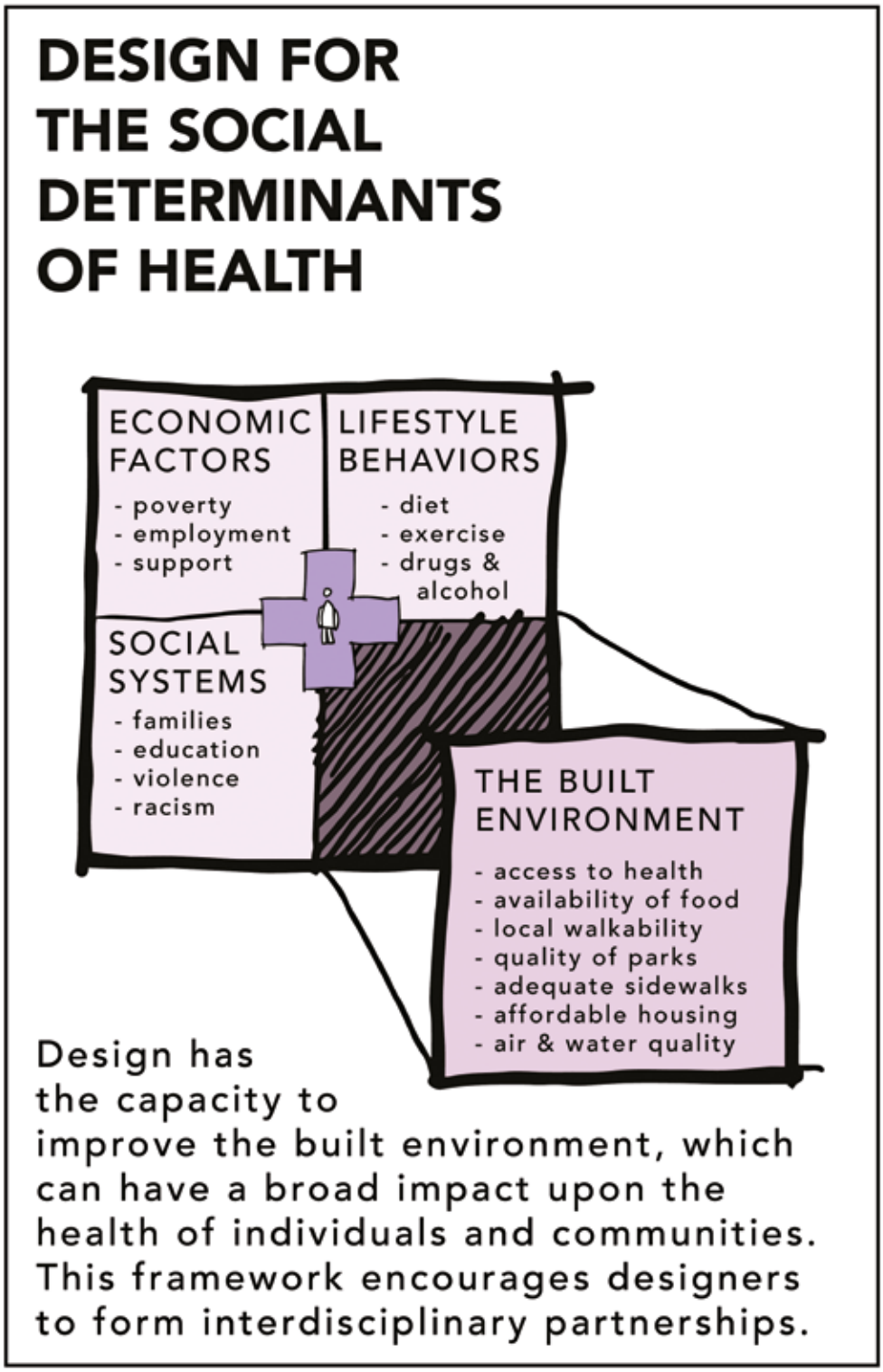

Figure 3: Design for the Social Determinants of Health.

With many years of education and training required to become a licensed professional, architects are generally qualified to speak to matters of design. Likewise, other professionals such as engineers, city managers,

urban planners, and elected officials are expected to have their own relevant expertise appropriate for their position. It is not necessary for architects to become masters of each independent discipline, only that they become fluent enough to have a conversation using a shared vocabulary. Certain fields, such as urban planning and community development, lend themselves well to this type of translational work, and are an easy entry into interdisciplinary collaborations. Other fields, such as public health, social work, and the nonprofit sector, may require a more in-depth understanding of the respective goals and motivations of each. Architects that desire to leverage their skills in social impact design to improve health outcomes should expect that they will likely be asked to understand the basic concepts of health access, chronic disease, and socioeconomics.

Many architecture firms today are finding that when their client is a civic entity (e.g. libraries, police departments, cities, etc.), community engagement is no longer an option, but a necessity. That engaging the community is now an essential component of responding to adaptive problems is a welcome development, but it comes with a caveat: not all engagement strategies are equal. In Sherry Arnstein's "A Ladder of Citizen Participation" (1969), she outlined the various forms of community engagement, and described participatory nature – or lack thereof – for each rung of the ladder. [14]
At the bottom of the ladder, Arnstein argued, was non-participatory methods, such as "Manipulation" and "Therapy." As you move up the ladder, token forms of participation provide community members limited involvement through "Informing," "Consultation," and "Placation." It is only at the highest rungs of the ladder that true citizen power is attained, through "Partnership," "Delegated Power," and "Citizen Control." Arnstein's levels of participation were written for urban planners in 1969 and she critiqued the Model Cities Program, where community groups were given limited authority in the planning process. [15] This chronology speaks to the need for translational interdisciplinary work, for, while urban planners were discovering that effective community engagement should operate as a partnership with the community at the minimum in the 1960s, public administrators continue to accept token methods of community engagement ("Informing" and "Consultation") as acceptable forms of community participation today. [16]
This has implications for architects operating within the traditional boundaries of engagement on behalf of civic institutions, where they may be either unaware or uninterested in pursuing more progressive forms of participatory engagement in the initial design phases of a project.
In seeking a common ground for responding to adaptive design challenges regarding public health, adopting a community health framework for effective community engagement is necessary. The Centers for Disease Control and Prevention (CDC) and the National Institutes for Health (NIH) commissioned a report on effective principles for community engagement. [17]
In it, nine principles for effective community engagement were laid out, including: building trust, partnering with the community, mobilizing the

community, being flexible, and engaging in a long-term commitment. [18] Used as a surrogate model for effective community engagement, architectural designers may find that the process laid out by the NIH and CDC mimics the adaptive design process, leaving room for effective participatory design to emerge (Fig. 4).

One of the primary challenges when working directly with communities at the grassroots level is how to cultivate a sense of trust with community partners. This process can be slow going for architects used to collaborating with other professionals within a client-centered framework. For architects engaging in new community collaborations, an effective first step towards building trust is being vulnerable to the context and stakeholders one encounters. In many communities that have been systematically neglected, the scarcity of resources in the community available to potential community partners can breed an initial mistrust of new partners that might be seen as a threat to existing funding sources or territorial relationships. Whenever an architect is interested in partnering with community groups, it is important to first recognize that the resources supporting the architect's efforts may be perceived as inaccessible to that community group. Explaining the circumstances and the intent of the partnership fosters greater transparency and goodwill, helping to establish a bond between architects and community groups.
A saying that is sometimes expressed in communities that are too often asked to be participants in community engagement exercises is that they have been "charretted to death." There can be a sense of burnout among community members when they are asked to continuously participate in engagement activities. This is often attributed to over-engagement, but it is also partly due to engagement that did not result in a tangible benefit or action for the community that was engaged. Building trust asks that not only are participants willing to meet the community where they are and listen to their needs, but also take responsibility for that engagement so that its effort is not wasted. For this reason, architects working on adaptive community health design problems should be upfront with community groups about the potential limits to their advocacy, while also appealing to authorities so that what is collected can be translated to decision-makers and top-down authorities.

In neighborhoods that have been systematically neglected, one consequence of there being decades of disinvestment is that traditional community organizational structures can fall apart (schools, churches, neighborhood associations, etc.). In their absence, residents that self-organize do so aware that there are limits to what they can achieve without appealing to support from local authorities. Due to their nature, however, many community groups that face similar community health concerns view themselves as isolated from each other, despite a relative proximity and similar demographics. Through community mobilization, residents that work together to tackle health disparities have the capacity

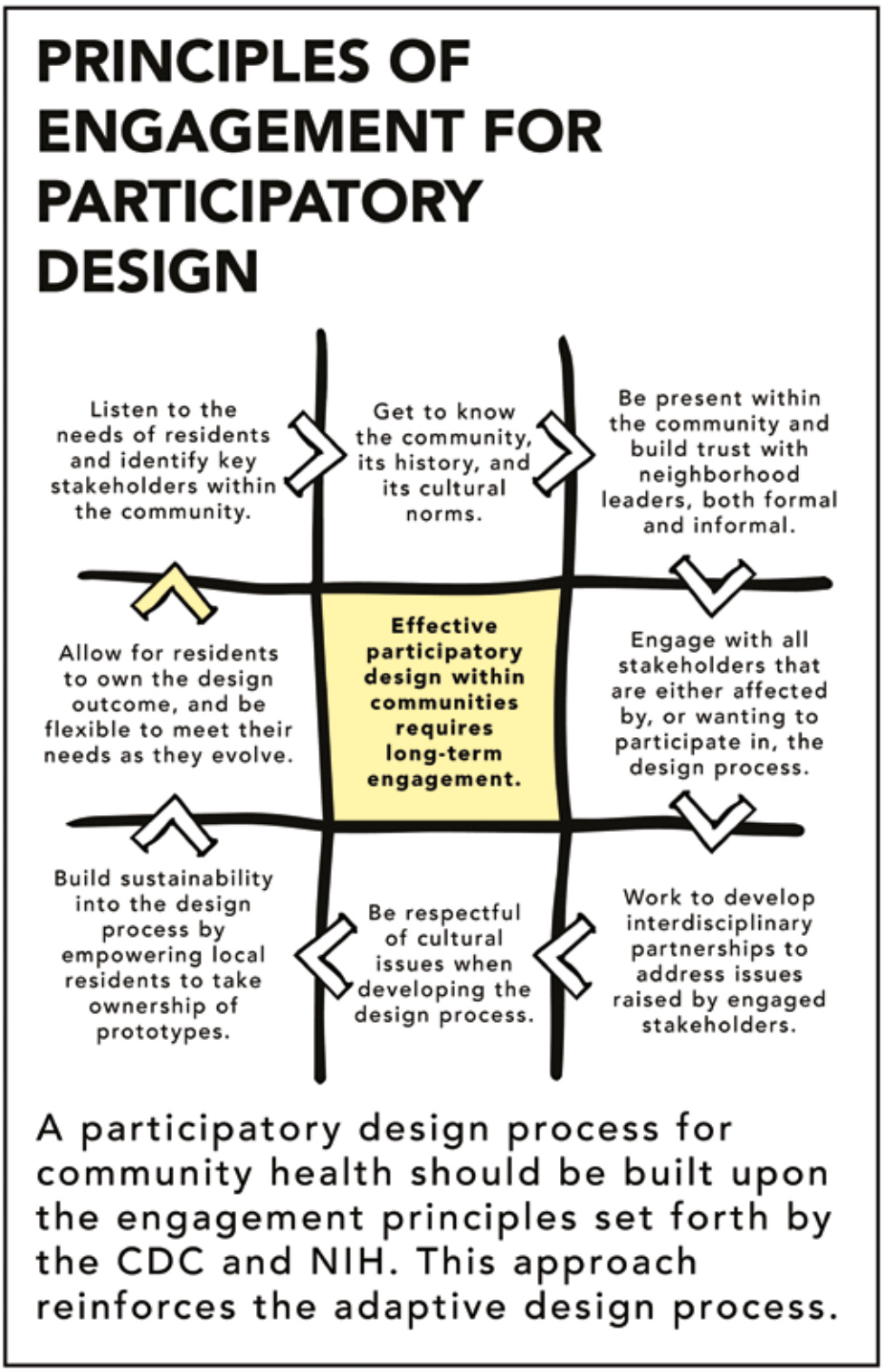

Figure 4. Principles of Engagement for Participatory Design.

to take ownership of neighborhood spaces and petition authorities to make changes to the built environment. By reframing the ownership of city-owned public spaces (parks, schools, playgrounds, trails, sidewalks,

streets, etc.) to what spaces can serve the greatest public good, asking residents to be involved in the restoration of public space through participatory design methods can equip residents with the tools and empower them with the visions needed to reshape their environments.

To encourage effective turnout for participation, often grassroots efforts are needed (petitions, fliers, door knocker campaigns, public rallies, etc.). Where design skills can directly play a critical role in framing the dialogue around public space is in the production of community maps, visual aids, and compelling narratives (Fig. 5). For architecture students, new design technologies can help to curate design aspirations from the community, translating their intent through visual media. Like traditional architectural practice, these methods of rapid representation and prototyping have been largely inaccessible to impoverished communities. However, when community advocates working in interdisciplinary partnerships can come together to present a cohesive vision for greater public health access in the built environment based upon community engagement and participatory design, this process can serve to reframe an affected community's relationship with local authorities that may have previously ignored them. Design that attempts to solve complex community health problems through adaptive design challenges authorities to respond, which helps to spark momentum towards a resolution.

PARTICIPATORY METHODS AS ADAPTIVE DESIGN

At its core, Dotte Agency's design and research agenda is to improve access to fresh food and physical activity for residents of Wyandotte County, Kansas. By listening to residents, hosting community engagement pop-ups, using participatory design methods, and student design/build fabrication, Dotte Agency serves to support the efforts of neighborhood business revitalization organizations, community development groups, and community health foundations. This effort has been developed to define an advocacy design process at three levels: first, identifying and framing health outcomes in collaboration with community partners; second, collecting and sharing stories with community partners to advocate their interests to decision-makers; and third, catalyzing public momentum behind community improvements while receiving feedback through rapid prototyping.

As architects work towards eliminating health disparities, they must explore how improving multi-modal means of transportation (sidewalks, bike trails, public transportation, ride-sharing, etc.) access to public parks, and access to fresh food venues are critical to improving health in the built environment. The roots of social and cultural problems are not easily revealed through individual "site visits" typical to architectural processes. Within communities, good health results from the interplay of many factors, of which only some are within an individual's control: "More than one-half of what determines a person's health outcomes

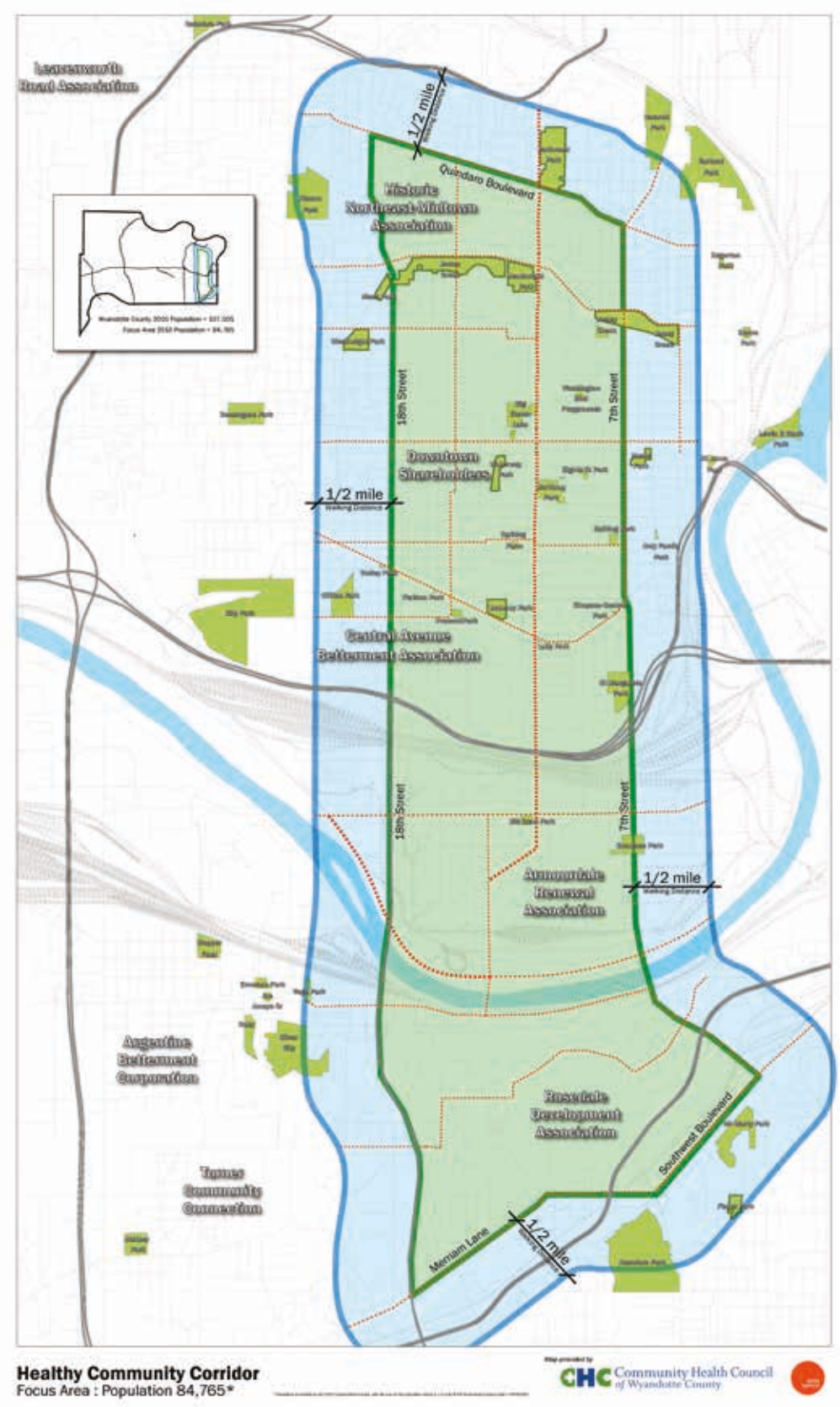

Figure 5. The Healthy Communities Corridor Map helps hold in one drawing a community-wide vision to improve access to parks.

results from influences in the social and built environments."[19] There is an uneven distribution of health outcomes across the country that can be demonstrated to a high degree between geographic overlap between poor health outcomes and neighborhoods with limited resources. In Wyandotte County, Kansas, a study by the Kirwan Institute of The Ohio State University found that the average life expectancy for urban residents was lower by as much as sixteen years when compared to their suburban and rural counterparts, only a few miles away.[20] By relating to public health disparities like this, we find ourselves responding to both environmental and social injustices embedded within the very bricks and mortar of a place.

Rather than responding to acute disease in the setting of an emergency room, adapting the built environment to support active, healthy lifestyles is a more efficient and equitable form of health care, and is at the heart of preventive medicine. To provide the best insight for how neglected public spaces can be improved, it is essential to invite resident input. This requires the designer to be regularly present in the built environment, rather than working remotely from an architecture studio or office. The role of the designer, beyond the process itself, is to develop the capacity of the resident and stakeholders to articulate the needs in a shared vision. At the same time, architects and designers can identify the underlying determinants of health through available census data and survey instruments that public health, behavioral scientists and civic partners regularly collect and share.[21] With rich data tied to specific places in the built environment, it is possible to find "hot spots" that are impacting neighborhoods and individual residents. Together, being present and leveraging shared public health resources, design can visualize evidence-based responses in the built environment that can lead to better health outcomes. As our work within Dotte Agency has evolved, it has become apparent that our design process is most useful when it is made visible early and often to all those individuals potentially impacted: residents, stakeholders, leaders, and policy-makers. By producing clear representations of adaptive challenges, participants are better able to determine their own contributions and limitations, which in turn provides the necessary iteration for the next phase of the design process. This process generates a "joint commitment," whereby each participant contributes to the collective body of understanding, while acknowledging the participation and contributions of others around the table (Fig. 6).

Through engagement events, participatory design in community spaces can shape advocacy and civic discourse to gain multiple perspectives on what spaces add value and what spaces can have the greatest potential impact (for better or worse). Through an iterative process, the direction becomes self-evident, discerning what public spaces have the potential for the greatest public impact, rallying the most interest and support to engage volunteers, and presenting a compelling vision to decision-makers

Figure 6. Shannon Criss works with Javin Martin and Terry Jackson, both “citizen experts” in bicycling, to collaborate on a composite map for transit access and advocacy.

to support publicly. This layered and long process has made it possible to identify the parks and networks of trails and sidewalks that gains local interest, as well as the political buy-in to identify which potential projects are most feasible. When it works best, participatory process can cut through siloed, institutionalized boundaries, connecting various neighborhoods in the name of the common good. Data that is made alive through visualizations such as maps can make explicit the social and economic determinants of health. There is catalytic power in a shared idea that can make tangible the desires of residents, attracting partners, resources, and momentum along the way towards new initiatives on behalf of the health of the community (Fig. 7).

For architects interested in engaging with communities, one method that has proven effective is the collecting and retelling of stories from residents within the community. It is in these stories that community members identify with and can find representation on the issues that they face. In recording stories of the community, the goal of architects should be to allow community members to reflect on their community’s strengths and weaknesses in their own words. Once shared with other members of the community, this process allows for a critical dialogue to emerge, which makes the act of storytelling a powerful participatory tool for community stakeholders. Additional methods can be coupled with community storytelling events, such as focus groups, participatory mapping, surveys, participatory budgeting, and other methods of design collaboration that build evidence towards community project (Fig. 8).

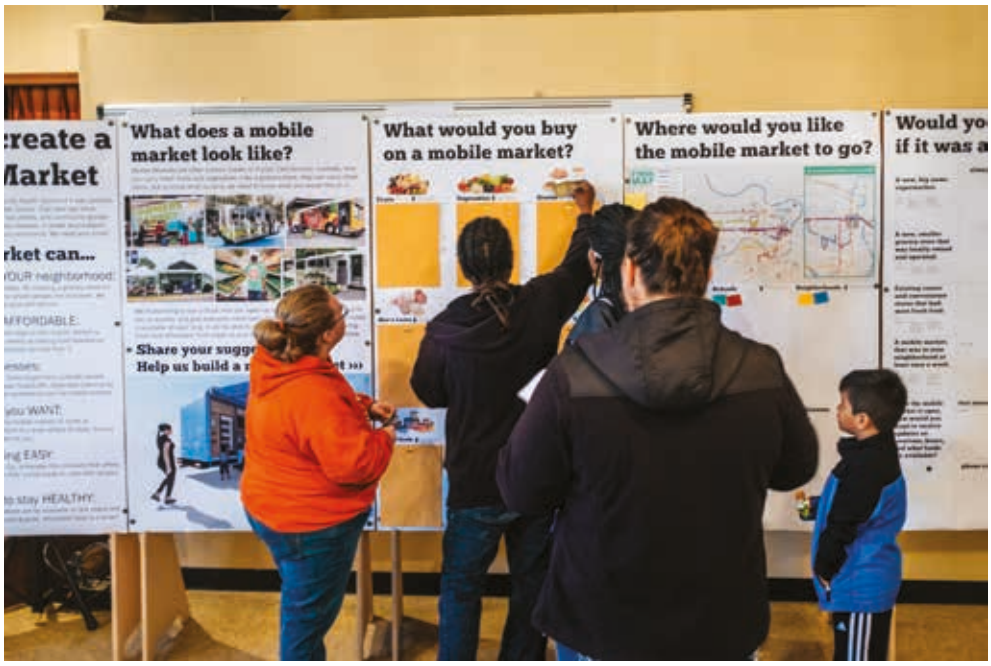

Figure 7. Wyandotte County, Kansas, residents participate in the programming of a Mobile Market to address issues of food access in their community.

Figure 8. A Community Film Workshop, hosted by a partnering organization, allowed for a shared dialogue around community advocacy and master planning representation to emerge.

Figure 9. Shannon Criss invites Broderick Crawford to share his experiences in Wyandotte County through the Photovoice method with KU Architecture and Public Health students.

Figure 10. First set of prototype exercise elements designed and tested by community partners at an event hosted by community partners.

Telling stories as a method can also be very effective in resolving the difficulties that many decision-makers face; despite compelling quantitative evidence, anecdotes are often more relatable and easier to articulate. By presenting compelling narratives in a visual format, the process of connecting community design proposals to what the community has expressed as a need or a desire in physical space becomes easier to achieve. Modern technology permits a wide array of digital photography and videography tools to record stories, however more participatory processes should be considered, such as the "photovoice" process described by Caroline Wang and Mary Ann Burris.[22] Photovoice was developed as a public health tool for communities to participate in identifying key public health concerns through their own photographs. The images can then be represented at a community forum, where participants can tell stories about what they responded to. This visual narrative can provide designers with insight into community health concerns, and allow for participants to see their own creativity be incorporated into the process of a design (Fig. 9).

Rapid prototyping is a process that blurs the lines between architecture and industrial design. However, with community feedback it can be a powerful participatory design process for residents, advocates, and designers to engage in. By transforming new ideas for public spaces into tangible elements, design prototypes formed through rapid iteration and dialogue are one of the best methods for building trust within communities. Taken as a form of spatial agency to address the public health needs of a community, it offers a fundable and fresh approach that does not typically emerge from traditional classrooms, offices, or board rooms. Evidence also backs this approach as an instructional tool, for both students and the community.[23] By approaching adaptive design problems with low-risk, low-investment solutions arrived at through a more inclusive process, the design process itself can allow for generative ideas to emerge and become available in visible ways through drawings, scaled models and material investigations (Fig. 10). The work relies upon the "citizen expert" exchanges, where through collaboration no one group leads nor limits the other. As prototypes develop, designers should continue to invite additional "experts" — both formal and informal — to propose ways of installing, programming, maintaining, and fostering built elements installed in public spaces. By working back and forth, within the constraints of the site, and working with those that will maintain the elements in the future, partnerships are formed. Trust is then built through the development of elements as progress is self-evident. By conceiving and describing them as prototypes — to the designers, partners, other community stakeholders, and residents — the process is more experimental and gains the advantage of responsive feedback for future prototypes and "final" elements.

CONCLUSION

The work of Dotte Agency attempts to encourage the capacity that architects and designers have in utilizing creative forms of participatory design, and leveraging it in new avenues of social impact for public health. It is an alternative approach that limits the common impulse of architects seeking to design a solution, but instead asks architects to first listen to communities and identify basic human needs that have been systematically neglected.

By listening to the experts in the community, design can propose small bets that can have a large impact, giving students and practitioners alike the ability to resolve adaptive design problems through thoughtful but site-specific and community-relevant design interventions. By coupling these interventions with performance measures and health outcomes in the built environment, we expect to see architecture's relevance to public health increase. This vision for user-based design that responds directly to public health concerns may guide architecture from what Giancarlo De Carlo referred to as its "congenital irresponsibility" towards a discipline that is both more compassionate and relevant.

For it to be sustainable, this process requires collaboration with various partners in a variety of fields to develop new perspectives and modes of evaluation. While this approach steps outside the norm of what is typically considered as "architecture," we believe it has the capacity to explore issues that are not easily solved, and expands upon notions of who to include at the table.

Perhaps, most critically, this process begins to address the question "Why do we build, and for whom?" We build to objectively improve the quality of life for those unable to otherwise benefit from design. To the latter question, "How and what do we build?," we build relationships through shared dialogues and stories to foster authentic and responsive designs.

Notes

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Credits

Figures 1, 2, 3, and 4: Diagrams by the Authors.
Figure 5: Image by Matt Kleinmann.
Figure 6: Photo by Matt Kleinmann.
Figure 7, 8, and 9: Photos by Matt Kleinmann.
Figure 10: Photo by Shannon Criss.

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