2022 Accomplishments

BUSH FOUNDATION - ECOSYSTEM GRANT

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* 2022 MDC Ecosystem Fellow (for BIPOC student at the University of Minnesota - College of Design)

** MDC staff, researchers, and/or affiliates who received Ecosystem Grant funds

2022 MDC Ecosystem Fellows: Long Au, Javkhlan "Java" Nyamjav, Jingyuan "Jeff" Yao, and Yuechen "Stella" Zhang with MDC Staff.

Front Cover: Images from **Superblocks**, a study done by Joseph Hang and Javkhlan "Java" Nyamjav, converting downtown Minneapolis into superblocks that would greatly increase the amount of space in the public realm for pedestrian-oriented activities related to food, entertainment, and physical exercise.

SUMMARY

The Minnesota Design Center (MDC) is grateful for the support of the Bush Foundation, enabling us to hire a diversity of students and support a diversity of staff and affiliates to do community engaged work in under-served neighborhoods, districts, and cities. This report summarizes the work that we have done with Bush Foundation funding, with a few of the projects highlighted in greater depth. All of our work is focused on reducing disparities be it between the white community and communities of color, between urban and rural communities, or between advantaged and disadvantaged families.

The MDC has also taken seriously the goals of the Bush Ecosystem Grant program to "create the environment for organizations and leaders to solve problems and make the region better for everyone."With that in mind we have launched our third non-profit, made at least partly possible with funding from the Bush Foundation. Last year, we helped launch two non-profits focused on providing extremely affordable housing for people experiencing chronic homelessness and both efforts – Settled and Envision Community – have thrived, with Settled having completed its first settlement completed in partnership with Mosaic Community Church in St. Paul and with Envision Community having received external funding for the community engaged work necessary prior to the installation of the first Envision project in Minneapolis.

This year, we helped launch a third non-profit, Smart North, which addresses the digital inequity that the pandemic revealed, with too many people, especially in under-served urban and rural communities, lacking the technology and access to the Internet necessary in order to participate in school or in the economy. Smart North, with help from our Bush-Foundation-supported students and staff, has installed a tech hub with wrap around services for youth in Minneapolis's Sabathani Center. The new organization is in the process of doing the same in partnership with Essentia Health and the Leech Lake Band, in an Essentia facility in Deer River.

All of the work cited below seeks to advance the purpose of the Ecosystem Grant program: spreading great ideas, building capacity, and growing leadership networks. Little of this would have happened without the support of the Bush Foundation, and we are grateful for your support.

FULLY FUNDED

2022 MDC Ecosystem Fellows
The MDC Ecosystem Fellowship was established in 2021 to support, introduce, mentor, and connect Black Indigenbous People of Colors (BIPOC) students at the College of Design to local BIPOC Architects/Designers and projects. Ecosystem Fellows have worked on several local projects focusing on neighborhood/community improvements, Social Justice, and sustainable/equitiable planning.

Spring 2022
Long Au, Javkhlan "Java" Nyamjav, Jason Xiong, and Yuechen "Stella" Zhang

Summer 2022
Rutuja Malpure and Jingyuan "Jeff" Yao

Fall 2022
Ebtehal Bahnasy, Mia Miao, Nardos Tamirat Shitta, and Yaqi "Julie" Zhu

Childcare Co-Design Project
While everyone is doing their best to address the challenges posed by COVID-19, the response has been siloed, incomplete and confusing for the average Minnesota family. One of the most critical challenges facing us today, and in our recovery, is how to ensure a safe and reliable childcare experience for our providers, children and families. We know that even with the best of intentions, large-scale policies, practices or tools intended to address COVID-related challenges can be unhelpful or even detrimental to those doing the daily on-the-groundwork of childcare. Our hope is to take a different approach, one that starts with childcare providers at the center to drive supportive and practical solutions to COVID-related challenges within weeks, not months or years. We are working with 6 childcare sites across Minnesota. Funding is for Jess Roberts to facilitate this process, supporting the development and scaling of solutions and communicating outcomes and broader opportunities for civic co-design across the state of Minnesota. This was supplemental funding for existing funding and partnerships with Minnovation, Department of Health, Management and Budget and the MN Chief Information Officer. *(Jess Roberts)*

Envision Community: Community-led Research to Change Neighborhood Biases and Stereotypes
Envision Community will build an intentional community in Minnapolis for people experiencing homelessness. Envision is unique because the housing is not only for people experiencing homelessness but it is also led by people with lived experience of homelessness. Envision is made up of 20 collaborative organizations working to support Envision's leaders as they create this new type of community in Minneapolis. The Minnesota Design Center (MDC) is one of the founding members of the Envision Community Collaborative and MDC's support has contributed greatly to the success of Envision Community. Envision Community is at a critical point in its history: the collaborative is working to acquire land, and as a result, we are reaching out to the surrounding neighbors of potential sites where Envision could be located. The group is also connecting with community leaders in those areas to seek their feedback and support. Our leaders with lived experience of homelessness have never done this work before, and they need tools to understand the communtiy's feedback; while at the same time, our future neighbors need to hear responses from our leaders with lived experience of homelessness that breakdown deep-seeded biases and stereotypes against the homeless community. This project is groundbreaking and truly needed because it develops a process for our leaders with lived experience of homelessness – with the support of professional research staff- to systematically analyze the reaction of potential neighbors to our leaders' proposal to move into their neighborhood. This project seeks to create accurate counter-narratives that people with lived experience homelessness

can use to engage potential neighbors and reverse their deep-seated biases. Financial support is for the research team members with lived experience of homelessness and neighbor participation on the research team. *(William Walsh)*

Root District Design Assistance
The Minnesota Design Center has provided community design support since 2017, focusing first on the Glenwood Corridor, then the Farmers Market – Royalston Station, now branded ROOT DISTRICT. Over this time, the impact has been a heightened design for equity perspective and the engagement of diverse points of view in establishing community investment priorities and equitable wealth distribution. Funding was used to 1. Lead the Root District Community Engagement Task Force, which is charged to refine the community engagement process that has been created by the leadership roundtable and to facilitate the process as fitting to the arc of outreach; 2. Support Professor Fernando Burga's Spring Semester Humphry School Site Planning class dealing with Root District development and equity framework; and 3. Collaborate with the 2021 MDC IGC Root District submittal and lead an equitable geodesign for the ROOT District to identify priority consensus prototypes, projects and policies. *(Timothy Griffin)*

Solar Commons + Project Toolkit Prototype
(See pages 8 - 9, Jonee Brigham , Kathryn Milun, and Doug Thompson)

West Bank Business Association - 427 Cedar Avenue (Dania Hall) + 1808 & 1810 5th Street
(See pages 10 -11, Research, Design, and Support)

PARTIALLY FUNDED

846s.org - Community Mental Health Clinic
We used funds from the Ecosystem Grant to support one of our affiliates, Remi Douah, in his efforts to seek additional funding for his human-centered design work related to the mental health of youth in underserved communities in Minneapolis, especially in and around George Floyd Square. As a result of our funding, Remi was able to secure a sizable grant from Hennepin County in support of Remi's non-profit organization – 846s.org – which has set up an office in Sabathani Center to provide mental health services for the youth in that community. The Bush Foundation funding helped grow and spread a powerful idea that many others have now embraced. *(Remi Douah)*

Future Streets: Autonomous Vehicle Ready Streets
(See pages 12 - 13, Research, Design, and Support)

GoMARTI Mobility Hubs
GoMARTI Mobility Hubs is a project, partly funded by the Minnesota Department of Transportation, that involves establishing mobility hubs in a pilot project in Grand Rapids, Minnesota. The Bush-funded students working on that project have done background research and will help us do the community engagement needed to insure that these hubs meet the community's requirements and expectations. This work looks at reducing disparities by providing access, information, and data that can help underserved populations access the Internet and realize opportunities. *(Thomas Fisher, Joseph Hang, Long Au, Ebtehal Bahnasy, Jakob Mahla, and Yuechen "Stella" Zhang, Research, Design, and Support)*

Human-centered Community Design
We have used Bush Foundation funding to partly support the work of one of our affiliates who use human-centered design methods to address some of the most difficult challenges facing communities. Jess Roberts has used human-centered design methods in working with communities to find more creative solutions to the childcare crisis in Greater Minnesota. He has also been part of a team that also includes Emily Stover and Megan Voorhees to develop a human-centered design certificate program in our College of Continuing and Professional Studies, to expand the capacity of communities and organizations to do this work themselves. *(Jess Roberts)*

International Geodesign Collaboration - Root District (Minneapolis) and Design for Community Regeneration (Warren)
(See pages 14 - 15, *Research, Facilitation, and Support)*

Legacy Mapping
The MDC staff went through all of the planning documents of the three levels of government and put all of their projects on the same map, which is the first time that anyone can remember this having been done. We highlighted overlaps and adjacencies and presented those opportunities to the two dozen staff members and government leaders in the room, who then went through every project and verbally conveyed which were priority projects and which were not. Everyone involved in the several hour meeting said that it was one of the most productive gatherings they've been in, and all three governments agreed that they would come of an MDC convening every year to compare their capital improvement priorities and to coordinate their efforts. The MDC will continue to update the map to ensure that the most current work is available, and to expand the map to include the entire city and potentially the entire county. *(Joseph Hang and Long Au, Research and Support)*

Sustainable Development Goals (SDG) and Comprehensive Planning
The MDC's Bush-Foundation-supported students, with the guidance of Joseph Hang, have begun a research project related to the UN's Sustainable Development Goals (SDGs). Over the summer we looked at the ways in which the architectural and urban design communities, globally, have incorporated one or more of the SDGs into their work, providing a very specific, visual reference for each goal. This Fall, a new group of Bush-Foundation-supported students have begun a related research project, looking at how the SDGs relate to the Comprehensive Plans of the cities of Minneapolis and St. Paul, with the goal of seeing how the SDGs might help comp plans be more effective and how the comp plans might help the SDGs be more specific and actionable. *(Thomas Fisher, Joseph Hang, Ursula Lang, Long Au, Rutuja Malpure, Mia Miao, Jingyuan "Jeff" Yao, and Yaqi "Julie" Zhu, Research and Support)*

Post-Pandemic Environment
(See pages 16 - 17, Research, Design, and Support)

SOLAR COMMONS + PROJECT TOOLKIT PROTOTYPE

Funding from the Ecosystem Grant partly funded the work of two MDC affiliates to develop community wealth-building tools to advance economic mobility and strengthen citizen participation, especially in under-served, BIPOC communities, through an emerging mode of community activity called "commoning." Commoning does not preclude private charity nor displace the dollars that governments already distribute to low-income communities. Commoning simply lets low-income communities and historically disadvantaged groups capture their own share of common wealth, with legal tools that allow communities to plan both short term and intergenerationally how to use their common wealth to produce common goods, usable in their local neighborhoods.

This funding helped create those legal tools, with the goal of enabling under-served communities to own and share their common assets equitably and transparently and to create a process for inclusive, transparent, accountable governance. We designed legal documents that are executable and shareable as legal templates, enabling the trust ownership of assets that benefit low-income and BIPOC communities. The pilot project - the Northland Solar Commons - involves the neighboring communities of Virginia, Mt. Iron and the Bois Forte Ojibwe Reservation.

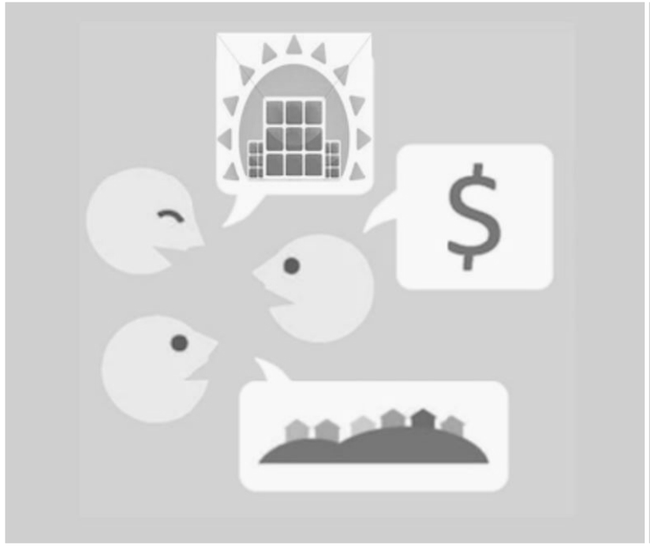
The funded team worked with community partners on the Iron Range to build a 500kW "Solar Commons" that would gather the sun's common wealth with solar panels and feed that clean, solar electricity into a manufacturing plant (Heliene, Inc.) in Mt Iron. Acting as a good corporate neighbor, Heliene would see monetary savings on his company's meter and, directed by a Solar Commons Donation Agreement, pass those savings (minus any costs) along to the Northland Solar Commons Trust for a period of twenty years. The trust funds, approximately $70,000 a year, would be managed according to a Solar Commons trust agreement, a legal tool that would be written by our legal team with community members from Bois Forte Food Sovereignty Group (BFFSG) and members of the Iron Range Sustainable Partnerships (IRSP), a local 501c3 nonprofit.

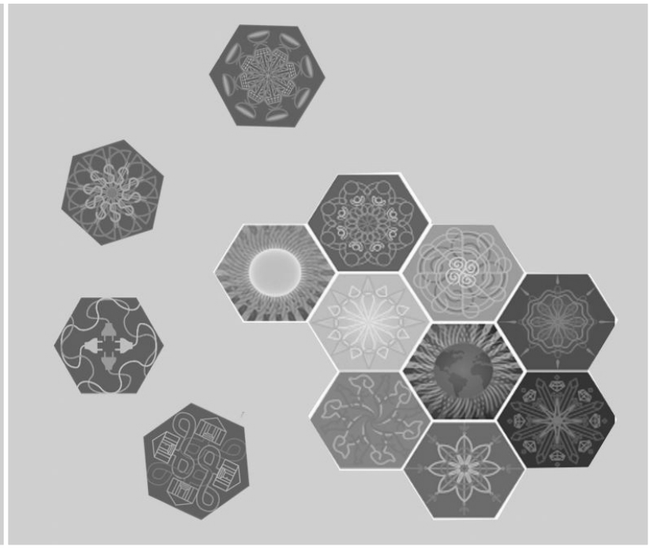
BFFSG and IRSP envision their Solar Commons common wealth enabling the expansion and indigenization of a local food systems' project called the "Rutabaga Project" by adding a "community kitchen." "Community kitchens" are infrastructures for commoning in their own right. They are community-shared assets owned in such a way that community members can easily and inexpensively access them to add value—economic and educational—to handcrafted, foraged, or agricultural goods. For community members using their own labor to gather their share of nature's gifts, community kitchens—commercial kitchens and associated food preparation sites—are an essential common good. Community kitchens are also a vehicle for community education and empowerment. In Minnesota, the Indigenous Food Lab, uses a "community kitchen" model to educate and train Native American communities "to reintegrate Native Foods and Indigenous focused education into tribal communities across North America…envision[ing] a future of developing and supporting multiple tribally operated kitchens bringing cultural and nutritional revitalization across North America."

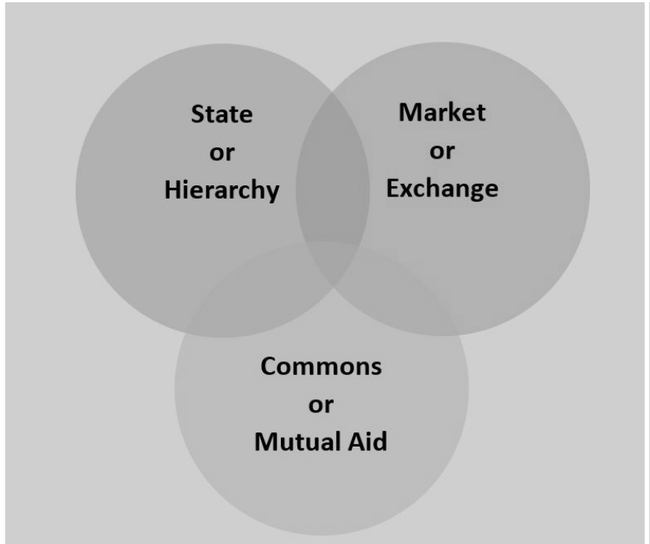
As community partners and legal researchers seek capital funding this year to build the solar array, community partners could also get started on the beneficiary project by hiring for one year, an indigenous food systems coordinator from Bois Forte and, starting with a pop-up, mobile community kitchen, begin delivering an education curriculum—with initial assistance from the Indigenous Food Lab starting in 2021. Minnesota's first Solar Commons would prepare the groundwork for the Solar Commons trust ownership model's success. Legal researchers could begin crafting the trust agreement governance with the beneficiaries

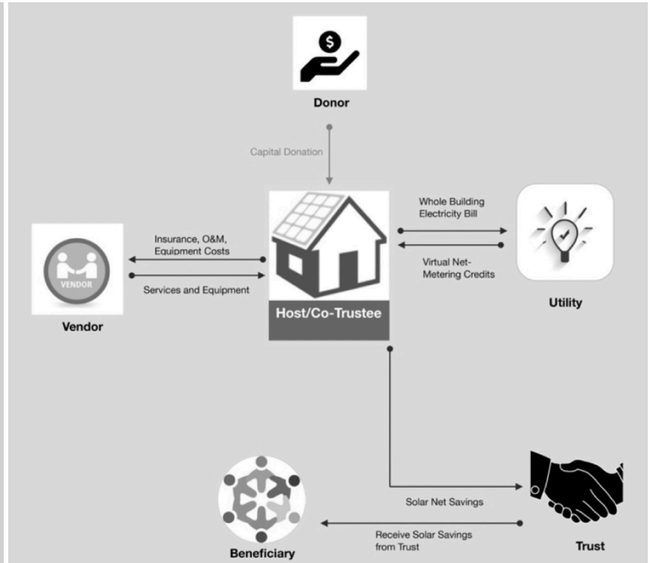
The Northland Solar Commons Trust Agreement used design principles of commoning and integrate indigenous values and ancestral land rights into the governance document. As such, it will be a model for communities throughout the state who seek to capture and share a local source of common wealth and govern the use of that wealth through rules they write themselves. In the case of the Bois Forte and Virginia Iron Range communities, the legal team will work with tribal elders and community partners to ensure that their vision/intention is written into the Solar Commons Community Trust agreement and carried out over twenty years by the trustees.

With the implementation of this prototype, we hope to create a toolkit and infrastructure to scale the Solar Commons Model, which will be made free. We will work with community partners to co-create new tools that ensure social equity (shareable legal templates, standards that describe the activities of "solar commoning" for low-income community benefit, trust protector functions that help iterate Solar Commons as a recognizable, robust institution for the commons sector); transparent local governance of common wealth assets (digital platforms that make the Solar Commons Trust Fund and its local management visible and accountable to the community); sustainable local economies (outlines of twenty-year business plans that include eco-entrepreneurial skill-building and other common wealth maximizing strategies). *(Jonee Brigham, Kathryn Milu, and Doug Thompson)*









Project Toolkit Prototype: 1) Legal/ Trust, 2) Digital Dashboard, 3) Public Art as Equitable Title, 4) Game, and 5) Standards for Governance for **Solar Commons.**

WEST BANK BUSINESS ASSOCIATION - 427 CEDAR AVENUE (DANIA HALL) + 1808 & 1810 5TH STREET

The MDC was asked by the West Bank Business Association (WBBA) to help the diverse community along Cedar Avenue in the Cedar-Riverside neighborhood of Minneapolis envision possibilities for the city owned site of the former Dania Hall, which burned down over a decade ago and which left a large hole in that important commercial corridor. While the MDC does not compete with private design and planning firms, we took on this project because the community felt the need to understand their options before commissioning a private firm to do more detailed planning and design.

We worked primarily with the Executive Director of the WBBA, K.J. Starr as well as a local non-profit developer, Beth Pfeifer of Assembly, to assess the community's needs and to understand the financial part of the development. A MDC design team led by Joseph Hang, working with our Bush-Foundation-supported graduate student, Jeff Yao, developed three options for the site, as well as different configurations of program elements in the building.

The community expressed an interest in having a different kind of retail on the first floor, with smaller market stalls that local businesses could rent out on an as-needed basis for as long as necessary. The Cedar Avenue commercial corridor lacks that type of retail and the market-stall idea can help small businesses in the neighborhood who do not have the capital to invest in traditional retail space.

The community also wanted more affordable housing, especially for large families, as well as live-work housing that would enable people to produce goods in their living spaces in ways that conventional apartments do not allow. Finally the community wanted a gather space akin to the hall that used to exist in Dania Hall, with a flexible floor plan that would allow for a variety of events – from lectures to weddings to dances.

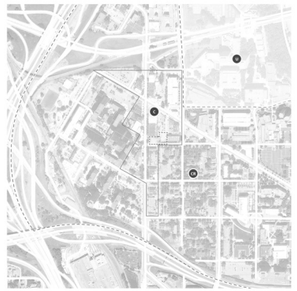
The MDC developed three schemes. The first focused on just the footprint of the former Dania Hall, and it showed that it would be a challenge to meet all of the needs of the community in a structure that small. That scheme also made it hard to have anything but a very narrow pedestrian connection through the block.

The second scheme looked at pushing the first floor back to create a wider and partly covered pedestrian route through the block, but that also proved inadequate in terms of the internal programmatic needs of the building. Both of those schemes left out the city owned parcel right behind the Dania Hall site, currently used for parking.

That led to a third scheme, which envisioned a narrower building on the Dania Hall site, which provided a much wider pedestrian path through the block, and the construction of an affordable housing block on current parking lot, with underground parking below. That larger footprint accommodated all of the needs of the community, although it added considerable cost to the development.

The project currently remains in review by the community, since our developer partner showed the size of the financial gap that would exist in the project if it went forward and what funding options exist to close that gap. It is our hope that this project move forward, given the clear needs that the community has and the clear opportunity that new development would bring to the Cedar-Riverside neighborhood. (*Thomas Fisher, Joseph Hang, and Jingyuan "Jeff" Yao, Research, Design, and Support)*

Drawings from **West Bank Business Association - 427 Cedar Avenue (Dania Hall) + 1808 & 1810 5th Street** were done by Joseph Hang and Jingyuan "Jeff" Yao supported, in full, by Bush Foundation Ecosystem Grant funds.

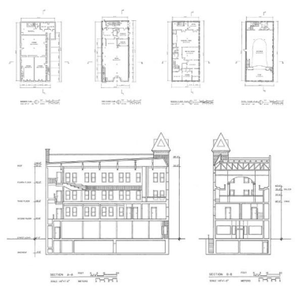


DANIA HALL//
SITE CONTEXT MAP

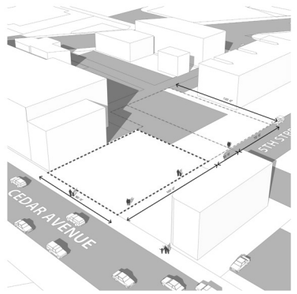
DANIA HALL//
TRANSIT NETWORK

DANIA HALL//
PEDESTRIAN NETWORK + PUBLIC REALM

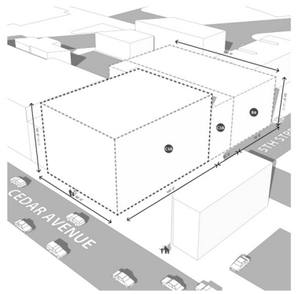
DANIA HALL//
HISTORIC PHOTOS



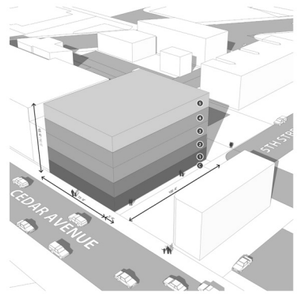
DANIA HALL//
HISTORIC PLANS



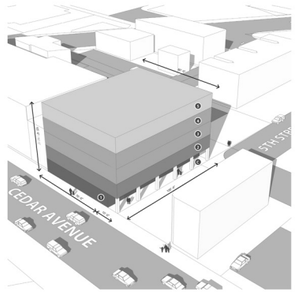
DANIA HALL//
SITE



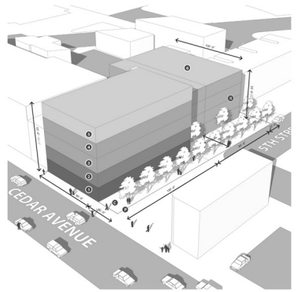
DANIA HALL//
ZONING + BUILDING HEIGHTS



DANIA HALL//
OPTION 1



DANIA HALL//
OPTION 2



DANIA HALL//
OPTION 3

BELL STREET PARK// SEATTLE, WA
CONNECTION, PEDESTRIAN, BIKE, PUBLIC REALM, SERVICE

HMONG VILLAGE//MINNEAPOLIS, MN
MIXED AND COMMERCIAL RETAIL

KINNING PARK COMPLEX//GLASGOW, UNITED KINGDOM
COMMUNITY EVENT

SIMPLY WORK 6.0//SHENZHEN, CHINA
SHARED OFFICE/CONFERENCE SPACE

ALL I OWN HOUSE//MADRID, SPAIN
LIVE/WORK SPACE

FUTURE STREETS: AUTONOMOUS VEHICLE READY STREETS

Bush Foundation Ecosystem Grant funds helped support the BIPOC team that worked on the preparation of drawings for a publication, *Future Streets*, that built upon research into the impact of autonomous vehicles on street infrastructure and the public realm that was funded by a three year, National Science Foundation grant to the University of Minnesota. The transformation of our streets with the coming of autonomous vehicle technology and mobility service models will affect every person in our communities, and it gives us an opportunity, especially with the anticipated investments of Federal dollars in infrastructure. We hope, through this work, to show what 21st century streets needs to be: greener, healthier, safer, and more accessible to a diversity of people using the public realm for a variety of purposes and modes of transportation.

A little more than hundred years ago, we took an animal out of our transportation system – horses – and replaced them with the much greater horsepower of automobiles and trucks, which were safer than dealing with horses, cheaper than stabling horses, and cleaner at least in terms of the pollution that horse manure created. A hundred years later, we are in the process of removing another animal from our transportation system – people – for much the same reason. Self-driving or autonomous vehicles (AV's) are safer, cheaper, and cleaner than driven cars and trucks and they will become a major part of how most of us move around in the next decade or two. While many people affirm their love of cars – as many people did their horses a hundred years ago – the fact that AV's are overwhelmingly safer, cheaper, and cleaner makes the economics of the autonomous vehicle, mobility service revolution in our transportation system unstoppable.

What changed in the early 20th century was not just the type of vehicles on our roads, but the nature of the roads themselves. As cities, suburbs, and small towns went from accommodating horses and horse-drawn vehicles to accommodating drivers and driven vehicles, roads went from having a primarily dirt and gravel surface to having a surface of pavers - cobbles or paving bricks - and eventually continuous pavement of concrete or asphalt. The hydrology of our road system also changed in the transition from horses to cars, as we went from pervious surfaces, with swales or ditches handling major rain events, to impervious surfaces, with curbs and gutters channeling stormwater to below-grade sewers and eventually to our waterways. AV's will involve an equally dramatic change in our roadway infrastructure. To handle the repetitive wear of precisely guided AV's, roads will need to have wear-resistant tracks or grade beams with high-strength concrete to ensure greater longevity. Those tracks, which accommodate the AV's tires, will constitute only about 10-33% of the road surface. The remainder of the road can then have a pervious surface, which in turn will allow stormwater to percolate into the road bed and recharge the aquifers below. This in turn will enable cities to abandon their expensive and environmentally damaging stormwater sewer system, a savings that can perhaps be used to help pay for AV infrastructure. For large storm events, former surface parking lots – many of which will no longer be needed as the demand for parking greatly diminishes in a mobility service future – can become constructed wetlands and retention ponds that can hold large amounts of rain water when necessary.

The full transition of our streets and roads from the accommodation of horses to cars took longer than the transition to the vehicles themselves: many rural areas still have dirt or gravel roads over one hundred years after the shift in our transportation system. The transition of our current road infrastructure to one that is AV-ready will likely take a long time to evolve as well. Which is why we need to begin now. The auto industry is moving rapidly to an AV-based, mobility service business model and once these vehicles become common, their negative impacts on our roads will quickly become apparent. With major investments in transportation-related infrastructure underway or about to begin in many nations around the world, we need to stop putting in 20th century streets, based on out-of-date assumptions about street design and vehicle needs, and start installing AV-ready streets in preparation for what is to come. (*Thomas Fisher, Joseph Hang, Chon Fai "Charlie" Kuok, and Javkhlan "Java" Nyamjav, Research, Design, and Support)*

Drawings from **Future Streets** were done by Joseph Hang, Chon Fai "Charlie" Kuok, and Javkhlan "Java" Nyamjav supported, in part, by Bush Foundation Ecosystem Grant funds.

INTERNATIONAL GEODESIGN CONFERENCE (IGC) - ROOT DISTRICT (MINNEAPOLIS) & DESIGN FOR COMMUNITY REGENERATION (WARREN)

The International Geodesign Collaboration (IGC) is a network of over 200 universities worldwide, collaborating on projects that address climate change and equity issues in their regions. The MDC Director, Tom Fisher, chairs the IGC's Leadership Group and the MDC's affiliates and Bush-supported students have engaged in two IGC projects this year and last: The Root District in Minneapolis and the Design 4 Community Regeneration project in Warren, Minnesota.

The Root District looked at what it look life if the Minneapolis 2040 Comprehensive Plan Goals were implemented in the former industrial area around the Farmer's Market, an area that will be transformed when the Royalston LRT Station in the middle of the Root District is completed. Working with a diverse group of stakeholders, including city officials, community leaders, and local businesses, we held workshops that explored what a more equitable and sustainable district at the edge of downtown Minneapolis could become.

We developed scenarios that envisioned the neighborhood in 2030 and in 2050, and considered: an early adopter scenario, in which the community recommendations were addressed immediately; a late adopter scenario, in which change comes more slowly until 2030 and then social and environmental pressures force change up to 2050; and a non-adopter scenario, in which resistance to all change occurs and the district gets built out in less optimal ways. We also looked at the impact that a massive planting of trees would have on the extreme heat island effect that currently exists in the mostly paved district.

The consensus plan that emerged from these community conversations envisioned a district that would become a food destination that reflected the cultural and culinary diversity of the city and the region. To achieve that, the community design teams proposed offering the ground floor of buildings as space for entrepreneurial start-up business, related to food and other factors such as human and environmental health. The consensus plan also portrayed a district in which there would be a diversity of housing options, green space for entertainment, and a connection across the highway to link to the food desert that exists in the neighborhoods there.

In Warren, Minnesota, the staff, affiliates, and students of the MDC, with the help of Bush Foundation funds, engaged that rural community in a thought-experiment as part of this year's IGC project. We asked: what would it require to take the City of Warren and the land within its six-mile-square township "off the grid" in terms of its food production, energy generation, and carbon sequestration. We involved a diverse group of stakeholders from Warren and across the region and helped them go through a Geodesign process, in which one group looked at this issue at the scale of the city and another, at the scale of the township.

What we realized is that there is currently enough water in the Snake River to meet the needs of the 1,600-person community. The amount of land needed to generate enough wind and solar power to meet the needs of the community was also less than we anticipated. Growing enough food to meet the caloric needs of the community and growing enough biomass to absorb the carbon pollution of the community presented the greatest challenge in terms of land area. We showed, however, that all of that was possible when dealing with a population of 1,600 people within a 100 hectare township. While the City of Warren is too small in its land area to go off the grid, the Township of Warren is almost perfectly sized for that community to do so.

The value of that project lay in its replicability in an era of rapidly advancing climate change. The township system, which harkens back to the Jeffersonian land survey of the 18th century, has land units at the right size to enable small rural communities of about 1,600 people to become much more self-sufficient, resilient, and resource efficient. With the right public policies and economic incentives in place, "off the grid" townships could become a possibility across the United States and serve as a model for how rural communities might lead the world toward a more sustainable and equitable future. (*Thomas Fisher, Joseph Hang, Chon Fai "Charlie" Kuok, and Jason Xiong, Research, Design, and Support)*

Drawings from **IGC - Root District (MInneapolis)** were done by Joseph Hang, Chon Fai "Charlie" Kuok, and Jason Xiong and drawings from **IGC - Design for Community Regeneration (Warren)** were done by Joseph Hang supported, in part, by Bush Foundation Ecosystem Grant funds.

POST-PANDEMIC ENVIRONMENT

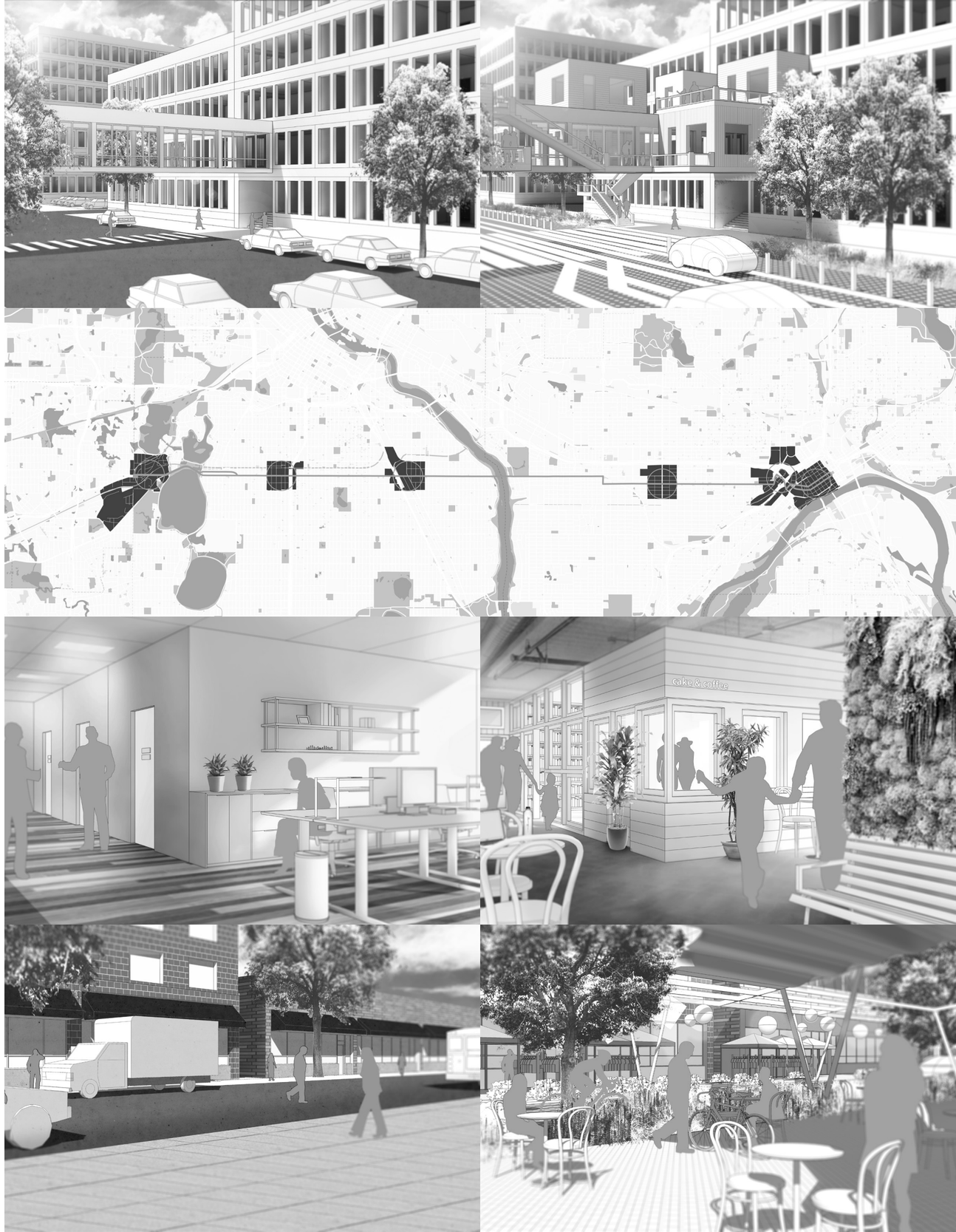
The MDC held a series of virtual community workshops in 2020 and 2021 to elicit ideas of community members, decision makers, and professionals about how office, commercial, and residential areas as well as housing, and transportation infrastructure may change in the wake of the COVID-19 pandemic, based on trends we can already see. This work was part of a larger research effort at the MDC looking at the pandemic's effect, which included a webinar series by the College of Design and a grand challenge course, podcast, blog, and book by the MDC director along with other colleagues at the University of Minnesota. This work focused on the Marshall and Lake Street corridor through diverse neighborhoods in the cities of St. Paul and Minneapolis. The workshops also sought out diverse voices and perspectives and tried to address the challenges of underserved communities, such as a lack of affordable housing, access to transportation, and jobs. The Bush Foundation funding supported the BIPOC students who researched background information, prepared the graphic material, facilitated the workshops, and generated the drawings that will be part of a publication, which will be completed by the end of 2021. The materials produced as a result of these workshops will be widely distributed via the MDC website as well as in the book A Post-Pandemic World, which will be published by Routledge in 2022.

It may be too early to know precisely how our use of space will change in the wake of the COVID-19 pandemic, but we can already see some of its impact, following a similar course to the previous pandemics. For example, mobile digital technology and the Internet existed prior to 2020, as did their use in enabling growing numbers of people to work from home, shop online, and learn at a distance. But the recent pandemic made that technology and those practices a dominant way in which many people worked, shopped, and learned during the pandemic. COVID-19, in other words, forced a rebalancing of the digital and physical environment in a matter of days or weeks, accelerating us rapidly into a future that otherwise might have taken years or even decades to evolve. Not everyone benefited from that acceleration. Less affluent families, unable to afford wide-bandwidth access to the Internet, and households in remote locations, where such connectivity is not even available, found it difficult to access classrooms, workplaces, or goods and services. We often see the gaps between urban and remote rural locations as somehow different from those that exist between the white population and communities of color in cities, but the inequities that arose during the COVID-19 pandemic showed how much those otherwise quite diverse communities, in very different locations, have in common. Pandemics do not just accelerate us into the future; they exacerbate inequalities and also highlight opportunities and potential alliances in the present.

Pandemics also give us greater choice in how to live our lives. Workers have already returned to offices, shoppers to stores, and students and teachers to classrooms, but the ability to telework, shop online, and distantly learn will, from now on, remain a viable, and for some, a more desirable option. Most of us – and rightfully, all of us – now have a choice in terms of what we do in physical or digital space. That presents a challenge – and an opportunity – for the built environment. Offices, stores, and schools as well as myriad other building types – factories, malls, theaters, stadiums, and the like –still have important roles to play, but owners of and tenants in those facilities will have to compete for our attention and our attendance, as we learned how to do almost everything remotely during the pandemic. Having the choice of whether or not to appear in person or via a digital platform means that those responsible for the built environment – from the owners of buildings to those who design, finance, construct and operate them – will have to think in terms of what physical space can do that the online world cannot, what interactions and experiences can only happen in person, and for what reasons. While pandemics affect the health of the human population in the short term, they affect the built environment for decades afterward. *(Thomas Fisher, Joseph Hang, Chon Fai "Charlie" Kuok, Javkhlan "Java" Nyamjav, Hoyoung Lee, Julia Luke, and Brian Smith, Research, Design, and Support)*

Drawings from **Post Pandemic Environment** were done by Joseph Hang, Chon Fai "Charlie" Kuok, Javkhlan "Java" Nyamjav, *Hoyoung Lee, Julia Luke, and Brian Smith* supported, in part, by Bush Foundation Ecosystem Grant funds.

Back Cover: Map from **Legacy Mapping**, done by Joseph Hang and Long Au.



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