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I am proud to introduce this edition of FOCUS, the Journal of the City & Regional Planning Department. Thank you to the editor, Dr. Vicente del Rio, and the contributors to this edition. In Cal Poly CRP our primary mission is educating the next generation of planners but we also see an important role in sharing with a broader audience what we have learned and what we do. We encourage you to share your story writing an article or essay for the next issue.

Starting in the Spring of 2020 we spent four straight quarters in 100% virtual teaching mode due to the COVID-19 pandemic. As I noted last year, our biggest challenge was how to run our community-based studios since we had to do everything virtually and could not physically visit our communities and sites. Our second biggest challenge was providing students with access to some of the more advanced software we use such as ArcGIS and AutoCAD since we could not use our computer lab. Despite the challenge, we believe we were able to adapt and continue to deliver a high-quality planning education.

This Fall we returned to in-person education under a rigorous COVID protocol including mandatory vaccinations, daily screening, and indoor masking. Although we had adapted well through our virtual teaching, I think it was nearly unanimous among the faculty and students that in-person education is superior. In the last decade, there has been significant attention to the potential to move to most or all virtual instruction as the future of the university. Here at Cal Poly, I think we have settled that question. We value in-person, learn-by-doing education.

This is not to say that we didn't learn some things. We are using the lessons we have learned in using Zoom, online course management, asynchronous approaches and tools, web-based software, and a variety of other virtual tools to increase the flexibility and access that virtual instruction can offer. We will be offering a limited number of courses in the future in all or mostly virtual mode to benefit student access and to allow us to increase our pool of expert lecturers beyond San Luis Obispo. We will also be using some of these tools in regular face-to-face classes to increase communication, interaction, and convenience. We have been reflecting on our experience and reacting critically and pragmatically to modernize our approach to teaching planning. Moreover, we recognize that planning practice has adopted many of these tools and techniques and that the future of the workplace will include more virtual approaches. Our students will be well-prepared for the changing workplace.

Another big issue for Cal Poly—as you may have heard—is that we will be moving to semesters. I'll leave the explanation of "why" to CSU Chancellor Castro and Cal Poly President Armstrong. In CRP we are choosing to look at this as an opportunity to enhance our curriculum, increase enrollment, and increase the diversity of our students. We will be launching a multi-year effort to review and enhance our curriculum and we will be reaching out to alumni to contribute insights and ideas about how to best educate the next generation of planners. Stay tuned, there will be more details to come.

Each year in FOCUS, I present several priorities for CRP that I want to share. I want to reiterate the ones I suggested last year since COVID interrupted some of our ability to accomplish these. First, we are continuing our campaign to raise $75,000 to support the CRP Cal Poly Scholars Program. We are over halfway there so thank you to those that have contributed. This program provides a scholarship and support services to first-generation students (i.e., first in their family to go to college). In CRP we believe that everyone who wants to be a planner should not be held back because of their financial situation. Cal Poly is matching donations one-to-one, thus doubling your impact. You can donate at the following link by choosing CRP Cal Poly Scholars for your gift: https://planning.calpoly.edu/support-city-regional-planning

Second, we want to increase enrollment in our undergraduate and graduate programs and increase the diversity of students. We ask you to spread the word to young people about careers in planning. Consider giving a talk (in-person or virtual) at your local high school, community college, or university about the importance of planning for society and the impact they can have on creating great communities for everyone.

With the return to in-person education this year there is a renewed spirit of possibility on the Cal Poly campus. We hope all of our alumni, friends, supporters, and donors, are doing well and we encourage you to stay connected to Cal Poly. Go Mustangs!

Michael R. Boswell, Ph.D., AICP
Department Head & Professor
City & Regional Planning

This FOCUS helps us celebrate a return to some degree of normalcy after a two-years pandemic that has affected us as individuals and left deep scars in our social and public lives. I can only see two silver linings from these difficult times. Firstly, the pandemic exposed the limitations of our academic models relying on face-to-face teaching, over-the-board techniques, and traditional field and community survey approaches. Secondly, it helped expose the persisting social inequalities in both the Global north and south, and the need to revisit the origins of our profession to recuperate the profound relationships between public health, planning, and design. FOCUS hopes that, in moving forward, more professional and academic research and projects following these lines will be developed, debated, and critically assessed.

Besides the impacts of the pandemic, this year the planning community was saddened by the passing of Kenneth (Ken) Topping, an esteemed colleague who taught and conducted cutting-edge research in CRP for several years. In his eulogy, former department head and co-researcher, William Siembieda reminds us that Ken was a leader in environmental planning and pioneered concepts such as sustainability and resilience before they were on the profession's radar, and how he became an internationally renowned expert in hazard mitigation and disaster recovery planning. Ken will be missed by all of us and by the planning profession that he helped reshape.

The Special Events section includes professor Henry Sanoff's online talk to CRP students when he presented his philosophy and methods for engaging the community in planning and design projects. Professor Sanoff, a founder of the Environmental Design Research Association (EDRA), is an acclaimed author with several books in many languages and an internationally recognized expert in participatory methods.

Recognizing the importance of the outdoors as a learning environment, in his blind-reviewed article Amir Hajrasouliha discusses his research project on the students' environmental preferences for outdoor study spaces in Cal Poly's campus. A survey of students' behaviors and preferences in three of his undergraduate classes revealed the characteristics of the most preferred outdoor spaces for advanced academic uses such as teaching, experimenting, and group studying. Hajrasouliha's findings should encourage campus designers to evaluate their public spaces as the first step in a decision-making process towards transforming the campus for more active uses.

Opening the Essays section, Simone Neiva and Roberto Righi discuss how culture is deeply ingrained in design and place-making in Japan. Our Cartesian sense of order does not suffice to understand the organic, complex, architectural and urban structures of Japan, and to grasp the value of voids, depth, harmony, intervals, fragmentation, and open order.

Understanding the Japanese culture of place can help us enrich our own urban experience. William Riggs follows with an impassionate call for a resilient 'nourished' urbanism recognizing the importance of sustainable agriculture, the critical nature of water, and food systems that are comprehensively integrated to planning and design, from land use to transportation to urban form and aesthetics. In the section last essay, David Vetter discusses Rio de Janeiro's State Government ambitious development plan for the city's metropolitan region and how value capture instruments can help close the financial gap for implementation by capturing the real estate value generated by the public and private investments generated by the plan.

Starting off the Faculty and Student Work section, Professor Hemalata Dandekar uses her experience in writing a book on Indian cuisine as a platform to discuss connections between food systems, traditional and family-oriented practices of cooking and eating, and sustainability. Senior Sharon Ng discusses the impacts of the internet, connectivity, and the smart city paradigm to the planning and design discourse, and the need to evaluate their implications for livability and social relations. Senior Zach Noyes writes about his participation in the 2021 Solar Decathlon, a student competition hosted by the US Department of Energy challenging student interdisciplinary teams to design a building project with net-zero energy consumption. Vicente del Rio contributes with a photographic essay on the importance of learning to observe the city and its design.

The Spotlight section opens with a pager on CiRPAC—City and Regional Planning Department's Advisory Council—who advises the department on the needs of the profession, assists in meeting its advancement goals, and promotes the interests and activities of alumni. For Conversations with Alumni, FOCUS interviewed three recent graduates about successful trajectories: Brenton Gibbons (BSCRP, 2013), Michael Austin (BSCRP, 2007), and Tom Van Pelt (MCRP, 2014). The Spotlight section closes with Learning from California and brief blurbs on all the studio projects from the past academic year.

Finally, throughout this issue of FOCUS, several Cartoon Corners will make you smile at their authors' smart graphic interpretation of important planning and urban design issues. We include work by Eduardo (Dede) Rocha and Tarcisio Bahia, our long-time contributors, Eduardo Brajzek, founder of Urban Sketchers Brazil, and a historical cartoon by French artist Albert Robida.

Please enjoy FOCUS and consider contributing to our next issue with articles for blind review, professional essays, critical assessments of plans and projects, or, if you are a Cal Poly CRP alumni, a personal account of your professional trajectory.

Vicente del Rio, PhD
Professor Emeritus, CRP Department, Cal Poly
Founder and managing editor, FOCUS

Find Your Niche, Be Strategic, Go for It!

Alex Hinds
Former lecturer, City and Regional
Planning Department, Cal Poly.

After being hammered by the Great Recession, COVID-19, a destabilized climate, wildfires, floods, racial and socioeconomic inequities, and potential insurrection, the field for planners, community development specialists and design professionals has expanded to reflect new realities. As emerging professionals, you will be far less tethered to a binary choice of working as a public sector arbiter of often outdated rules - or working for the private sector largely following an outmoded playbook. It is time to continue changing the plans, rules, and our behaviors to be smarter, fairer, and better. That requires retooling to address the compelling issues of the day, tracking what is working or not, and adapting accordingly. Despite very unfortunate circumstances noted above, there have also been many promising adaptations, such as such as enabling more outdoor eating activities and increased acceptance of working from home offices over the Internet for those fortunate enough to do so. Soft skills such as active listening, conflict resolution, and cross-cultural empathy are also increasingly recognized as essential skills to reach out and engage with each other thru an equity-oriented lens.

Nonetheless, carefully consider various internships and whether you will be best suited to work in the public, private, or non-profit sectors. Are you looking to land a behind the scene, steady career with a good pension? Do you trust a mostly market-driven, non-profit, or regulatory approach? Are you hell-bent on changing the rules from the inside, like me? No right answer and they are likely all very demanding.

It's been around 20+ years since I served as SLO County's Director of Planning and Building and worked part-time as a CRP planning instructor. Although I was not a student at Cal Poly like most of you, I benefitted immensely from *a learning by doing experience* working there and only reluctantly moved away to take on new challenges and opportunities elsewhere. I worked closely with Ken Schwartz, former Dean of the College of Architecture & Environmental Design when he served on the SLO County Planning Commission. I also worked with Professor Bill Siembieda, former CRP Department Head; and Professor Emeritus Vicente del Rio, who each generously served as my unofficial, much appreciated, international planning gurus.

A big career break for me occurred during the Spring of 1990, after stumbling upon San Luis Obispo's awesome Thursday evening farmer's market. Higuera Street was closed to cars and hopping - abuzz with people buying, and selling local food and produce, listening to live music, and hawking their varied beliefs. All occurring a short walk away from SLO County's Planning and Building Department offices. Hmm, what a cool place, I thought. And a few months later—following former Planning and Building Director and esteemed Cal Poly instructor Paul Crawford's decision to go into private consulting—I'm driving down from Lake County in my Nissan pickup truck to begin work as SLO County's new Director of Planning and Building.

But landing and succeeding at a dream job doesn't just happen automatically. I suggest researching the issues and local expectations of a position and place BEFORE applying for the job. And try to avoid obsessively writing long, wordy cover letters and cookie-cutter resumes. Much better to reorganize your cover letter and resume to focus on showcasing your ability to do the work and achieve the outcomes they are seeking. As the first job out of school is often the hardest to land, you may need to be somewhat flexible on the location and position. Still, your Cal Poly pedigree will open many doors.

Alex Hinds is the International Co-Director for APA California – Northern Section. He previously co-founded and worked for the Center for Sustainable Communities at Sonoma State University (SSU) and was a planning lecturer at SSU and Cal Poly, SLO. From 1984 to 2008, he served successively as Planning Director for Lake County, Planning and Building Director for San Luis Obispo County, and Community Development Agency Director for Marin County. Alex is best known for leading the award-winning 2007 Marin Countywide Plan update and its trendsetting sustainability and climate implementation programs.

Time flies by at the pace of a stallion herd, and meanwhile, I have morphed from a young buck planner/advocate into something akin to a reduced, reused, and recycled silverback planning elder. Hopefully, some of the observations and lessons I learned along the way will prove helpful as you get ready to find your niche among the challenges and opportunities that await you.

Other career advice for young planners:

- Play to your strengths. Where appropriate, volunteer to work above your pay grade.

- Planning and community development is a team sport. Be respectful to all, and generous with praise.

- Strive to innovatively address compelling issues and desirable outcomes.

- Keep current with science as we transition away from fossil fuels. Update policies, codes, and programs accordingly.

- Pursue awards that showcase your (and your team's) best work. It helps inform the profession.

- Maintain your credibility and encourage widespread public participation by mindfully reaching out and listening to people who tend to be underrepresented.

- Purposeful international travel and collaboration accelerate learning and innovation; consider going when safe to do so.

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Kenneth (Ken) Topping

F.A.I.C.P.
Lecturer, City and Regional Planning (2007-2019)
1935-2021

A true California planning pioneer

Ken Topping, who softly showed us how to do planning, passed away on March 5, 2021. He was 85. Along with embracing a deeply humane vision for a better future, possessing a kind soul, and exceptional tolerance and patience, Ken was a true planning pioneer. He was a leader in environmental planning, in developing and promoting sustainability, and in resilience planning years before they were on most planners' radars.

Stemming from his 1980's seismic work with the State of CA, Ken believed that disasters caused by hazards destroyed resources; thus, making communities less sustainable or even unsustainable. At heart, he was a resource conservationist, using the planning tools of engagement and dialogue to bring people closer recognize the power of mitigation in risk reduction. Ken also believed that technology should inform public decision makers and professional staff in understanding risk and in using this information to make safer land use decisions. Since the early 1980s, he advocated the use of GIS in the planning process and, as Los Angele's planning director, he introduced the work of ESRI in GIS land data bases, which he followed up in his work for Marikina City in the Philippines, where he showed the first full scale use of GIS to guide municipal hazard risk reduction decision making.
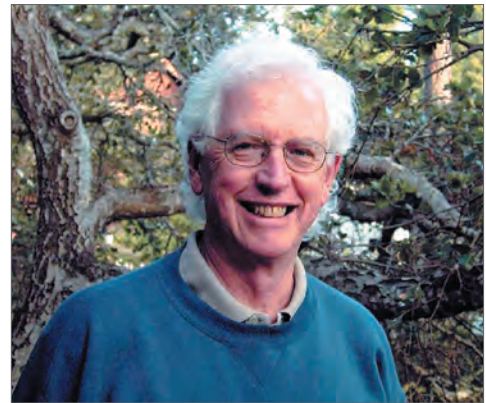
Ken lived the first five years of his life in Himeji, Japan, where his father was a Baptist missionary. Just before World War II broke out, his family moved to the San Francisco Bay Area, and he spent the rest of his life in California. Ken attended the University of Redlands and started his remarkable career as a planner by jointing the LA County in 1957. After 16 years, he moved to San Bernardino County where, from 1973 to 1986, he occupied leading positions including planning director, when he created one of the country's first wildfire mitigation programs and an overlay zone on 19,000 square miles of desert land for future regional conservation. In 1986 Ken was appointed Director of City Planning for Los Angeles, where he was influential in projects such as the Getty Museum (built at the site formerly occupied by a dump and early example of brownfield restoration planning), the Hollywood Community Plan, the Metro Red Line subway to Universal City, and the city's first zoning update using GIS and expanding its use as data collection and information sharing tool. From 1997 to 2001, Ken was the General Manager for the Cambria Community Services District. More recently, he was an exceptional Chairman of the Planning Commissioner for San Luis Obispo County (2011-2016) where his environmental vision led to the approval of large solar farms and his risk reduction perspective led to the denial of a large project by the oil industry.

While he directed the largest of California planning agencies, one project in the small hamlet of Cambia, CA exemplifies how Ken "did planning." The Fiscalini Ranch Preserve, a 430 acre ocean bluff park looks like an open space project; but it is more. It is a pre-disaster mitigation project, an evacuation system, a water supply project, a civic conservation project at the community level, and a shared governance endeavor for the people of Cambria, who own and manage it. Originally a private ranch bordering the ocean, the property was purchased by a coalition of local people. The Cambria Community Services District became the property owner and the Friends of the Fiscalini Ranch Preserve became the holder of a

permanent conservation easement and will care for this public open space. It is one of the most unique passive use community parks in California. It was Ken's vision, continuous work behind the scene, and ability to work with diverse interest groups that made this project happen.

While still in San Bernardino County, it was Ken's concern for the seismic hazards posed by the San Andreas and other active faults that set him on his pioneering role in disaster prevention and resilience. In the 1980s, Ken was one of a few planners in California developing methods for pre-disaster planning for post-disaster recovery. He served as the Governor's appointee to the California Mining and Geology Board, chaired the Recovery Advisory Committee of the Governor's Task Force on Earthquake Preparedness, and was a member of the Seismic Safety Element and Hazard Mitigation Policy Committees of the California Seismic Safety Commission. As the City of Los Angeles Planning Director of City Planning, he coordinated the preparation of a city-wide pre-disaster Recovery and Reconstruction Plan which he continued to help with even after leaving the city. After the 1994 Northridge Earthquake, it became the first time that a recovery plan was ready for use immediately following a major disaster. At the same time, Ken was a consultant to the City of Oakland on recovery after the 1991 Oakland Hills (Tunnel) Firestorm, for which he developed the financing scheme for post-disaster risk reduction that led to the creation of the Wildfire Prevention Assessment District.

At the national level, Ken was a leading consultant to FEMA and an advisor to the post-Katrina recovery effort, the Unified New Orleans Plan. He helped APA's efforts to better prepare planners for post-disaster recovery roles helping to create and lead numerous hazard mitigation and disaster recovery planning training sessions often in conjunction with state and national conferences. He was a lead author in three major APA publications funded by FEMA. The first, in 1998, was the report Planning for Post-Disaster Recovery and Reconstruction (1998), APA's first-ever effort of such kind which included a model for a post-disaster recovery city ordinance developed by Ken. He also co-authored Hazard Mitigation: Integrating Best Practices into Planning (FEMA-APA, 2010) and Planning for Post-Disaster Recovery: Next Generation (FEMA-APA, 2014). Ken's many planning contributions and achievements were highlighted in the 2019 California APA conference in Santa Barbara through a session entitled "At the Forefront: Work of a Resilience Planning Pioneer". He also received an outstanding service award from the Southern California Emergency Services Association (SCESA) and was inducted, as a member of the first class, in the College of Fellows (FAICP) of the American Institute of Certified Planners in 2000.

Ken was also a mentor to many leading US hazards practitioners and academics. After the M 6.9 earthquake struck the City of Kobe Japan, on January 17, 1995 – and coincidentally on the one-year anniversary of the Los Angeles Northridge earthquake, Ken was already advising the City of Kobe and Hyogo Prefecture on recovery and rebuilding as well as the California Governor's Office of Emergency Services on one of the first-ever, large-scale post-disaster uses of GIS to support response, recovery and mitigation decisions after Northridge. As a senior advisor to the Earthquake Disaster Mitigation Center in Kobe he was instrumental in making GIS the medium to understand flooding and earthquake risks and to formulate mitigation actions through scenarios for avoidance and increased protection. Ken urged Rob Olshansky, a planning professor at the University of Illinois, and Laurie Johnson, a hazard risk analyst from the Bay Area, to pursue an NSF-grant from the National Science Foundation for a comparative study of long-term community recovery in LA and Kobe. This work established a long term working relationships with Japan. Here we see again that Ken acted as a thought-leader, innovator, and collaborative idea generator, creating teams to advance the areas of recovery management and hazard risk reduction. He continued to collaborate on these issues for many years, spending two years as a Visiting Professor at the Disaster Prevention Research Institute in Kyoto University (2002-2004).

Ken Topping was involved with Cal Poly's CRP department for almost 20 years, beginning in the Spring of 2000 when he came present to students on planning practice and merging challenges in CA. He had just been inducted into the American Institute of Certified Planners (AICP) College of Fellows (FAICP). Ken then participated in a CRP sponsored symposium on flood disaster recovery in Central America and, in 2005, he helped organize and get funds for CRP's Urban Disaster Risk Reduction and Regeneration Planning Symposium. Attracting leading academics and public agency officials from Japan, Philippines, Costa Rica, and the US, this symposium led to the California Office of Emergency Services to invite a CRP team, led by Ken, to prepare the State's Hazard Mitigation Plans in 2007, 2010, 2013, and 2018. Embracing climate adaptation, social vulnerability, and integration of the safety element into general plans, this work shaped California's planning practice with regard to hazard resilience and became a national model. In 2012 Ken participated in the CRP team who prepared the State of California Climate Adaptation Planning Guide for local climate action plans.

Ken Topping with Michael Boswell and William Siembieda at Cal Poly in 2007, during the preparation of the California State Hazard Mitigation Plan.

In the CRP department he nurtured, influenced and mentored faculty and students; whoever he worked with benefited from the experience. From 2007 to 2019, Ken taught part-time at Cal Poly and introduced new interdisciplinary classes on hazard mitigation planning and design. He was influential in having CRP faculty, Bill Siembieda and Adrienne Greve receive visiting research professorships at Kyoto University in Japan. These efforts and Ken's leadership supported the growing recognition of Cal Poly's planning program as a place where cutting edge practice was occurring.

These efforts and Ken's leadership supported the growing recognition of Cal Poly's planning program as a place where cutting edge practice was occurring. In the CRP department he nurtured, influenced and mentored faculty and students; whoever he worked with benefited from the experience. He was influential in having CRP faculty Bill Siembieda and Adrienne Greve receive visiting research professorships at Kyoto University in Japan.

For all projects, Ken would always knew how to form teams to push the work forward, using their expertise to get the job done. Involving people in the work at hand, be it protecting the environment, lowering risk, or explaining policy options for atmospheric river events, was a mark of the way he engaged in practice. Indeed, Ken could hear the messages of different people and was able to fashion ways to promote an inclusive dialogue. His bridge building skills are best exemplified by the State Hazard Mitigation Team, the collective cross cutting entity of state agencies that pursued the goal of "integration of effect", a key building block for the nationally recognized State Hazard Mitigation Plan. For Ken Worman, retired CA State hazard mitigation officer, Ken knew how to bridge the gap between planners, emergency managers, and natural resource managers. Alex Hinds, former planning director of three different CA counties (Lake, San Luis Obispo, and Marin) noted that Ken had "emotional intelligence," knowing how to facilitate the bridge building necessary to achieve implementation of planning projects.. Jim Schwab, former head of the zoning digest journal and many Planning Advisory Service Reports (PAS) at the APA, said that Ken was a "softly persuasive planning pioneer."

The way Ken did planning was special. His consistent voice, mostly behind the scenes, the application of emotional intelligence, the use of climate science to inform the hazard's community, and the vision of safer cities through applying climate science are practice lessons for all of us.

Ken believed disasters destroyed resources, making communities less sustainable or even unsustainable. He was a resource conversationist at heart Throughout his career he held a vision of preserving and protecting resources, and believed that government had a role in making this vision a reality.

Ken will be dearly missed by all who knew him, and by all touched by his planning work.

William Siembieda, PhD.
*AICP, Professor Emeritus,
Department Head, 12/1997 to 9/2009,
City & Regional Planning, Cal Poly.*

The Persistence of Nature

by Eduardo Bajzek

Eduardo is an architect who has worked for 20 years as an educator and a celebrated illustrator in Brazil. He received an award from the American Society of Architectural Illustrators, constantly leads international workshops, and was one of the founders of Urban Sketchers Brazil. Eduardo recently published the second revised edition of his best-selling book Techniques for Free-Hand Illustration: From the Built Environment to Townscape *(in Portuguese; Sao Paulo: Editora Olhares, 2019).*

See Eduardo Bajzek's work at http://ebbilustracoes.blogspot.com/

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Special Events

CRP Special Online Presentations, Winter 2021
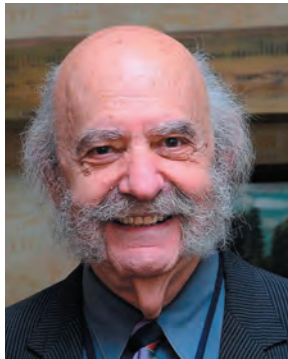# Democratic Planning and Design

Henry Sanoff
Architect and Professor Emeritus, College of Design, North Carolina State University.

In this online presentation to CRP students, professor Henry Sanoff talked about his work philosophy and methods for involving the community in planning and design projects. Professor Sanoff is a founder of the Environmental Design Research Association (EDRA) and an internationally recognized expert in participatory methods. He has authored numerous articles, research reports, plans, and books, including Democratic Design, Community Participation Methods in Design and Planning, *and* Visual Research Methods in Design, *several of which were translated into other languages including Spanish, Japanese, Korean and Russian.*

About 50 years ago, I started a community design program at North Carolina State University's School of Design that was basically a design studio or laboratory. It ran for about 35 years and had over 200 projects completed, mostly by students. Last year we had a 50-year reunion to celebrate, but one of the interesting things about the work that we were doing is that we started with a project for a small town, became very successful, and started getting many requests from around the state.

As we had to give ourselves a name and I had just arrived from Berkeley, based on my previous work there I proposed using the term "community design". The students said, "Oh, no, we can't use the word 'design' because nobody knows what that means". I responded "well, you know, a lot of the things that we're doing is planning." And they said "Oh, no, you can't even use that word, because it means 'social controls', and people here don't like that." So, I decided to talk about community development because, basically, that's what we were doing and it was a key theme in the university: in social sciences, in political science, everybody was talking about it. Consequently, when I named the group Community Development Group, everybody in the university was able to connect. They said "Oh, this is what designers do." Well, not really, but this is what I do, and I'm a designer.

Editor's note: This presentation (January 28, 2021) was transcribed by Melanie Woo. It has been edited and adapted for FOCUS with the speaker's approval.

Over the years, what I do has been referred to as action planning, advocacy planning, community design, community participation, democratic design, design activism, and participatory design. Somehow I had to keep changing the titles of what I do because these words collect baggage every 10 years or so.

Participatory design and participatory planning were terms used for a certain time but then they became too politically charged and universities don't like to get involved in those issues. Action planning is a concept that is used predominantly in England. Community design, I have used a lot in Japan where there is a lot of young people who are interested in working in community projects and call themselves community designers, but they are not professionally trained architects or planners, they're just interested in community design. Most recently, there has been more discussion about civic engagement, service learning, and public interest design. Initially, when we talked about participation we were talking about action, about change. And, increasingly, as communities begin to absorb the whole idea of participation being a good thing, they tend to refer to it as civic engagement or public interest, which is a kind of form of tokenism, and the classic way in which it has played out in cities is as public hearings, which is their answer to participation.

But over the years, I felt different concepts were appropriate (Figure 1). In the last 10 years, I wrote a book called *Democratic Design* because at that time everybody was talking about democracy and I thought it was a way of keying in design and

Action Planning
Advocacy Planning
Community Design
Community Participation
Democratic Design
Design Activism
Participatory Design

Civic Engagement
Service Learning
Public Interest Design

Figure 1: Terms used over the years to refer to a democratic public engagement in planning and design.

planning. In a recent book, I dedicated a chapter to political theory and discussed the difference between representative design or representative participation and participatory design and planning. The first is typical of what we do in the United States: we elect or appoint somebody to represent our viewpoint in decision-making. The second, participatory design and planning, is very different because people who are affected by the design decisions are involved in the process of making those decisions. So, there is an interesting distinction from a point of view of democracy, of why participation is more relevant in the concept of democratic design.

Democratic Planning and Design

Now I would like to talk about the strategy and techniques that I teach to my students and that I have used myself in several projects in different parts of the world. I call this strategy Design Games because they are basically a simulation of a

Figure 2: Community members engaged in a design game during a participatory design process.

real-world event. But if I start referring to them as simulations nobody would really understand what we are talking about. On the other hand, the word simulation reveal a classic elitist approach and I think that, recently, planners have been notoriously elitists by referring to it as a charrette process.

As a matter of fact, the American Planning Association just published a book on how to do conduct a charrette process. A lot of people talk about having done a charrette without really understanding what it means, and I think that if you have to define it, it's a terrible mistake. I use the word games because it implies fun and, inherent in games, are strategies. This was the title of my first book *Design Games: Tools for Community Participation,* published in 1975 (Image 2). It has been used in different parts of the world in different ways. The Japanese version is in its third printing, the Spanish version was published last year, and the Polish and Korean versions are also out there.

Next, I will show you a couple of my projects. What I have been doing over the years is to go back to projects I had done 20 or 30 years before to see what resulted from such projects. Especially if you're involved in planning, it sometimes takes many years before anything is realized. It was particularly important for me to find out how effective the techniques had been. What happened in these communities after we finished the projects? What did they do next as a result of the work?

Selma, North Carolina

I will start with a 1982 project in Selma, North Carolina (not to be confused with Selma, Alabama), a small town about 30 minutes away from the university campus in Raleigh. Typically, I have two or three graduate students working on a project, never the entire class. For this project, I had an architect, two landscape architects, and an industrial designer.

At that time, like many small towns in the United States for a number of different reasons, Selma's downtown was dying and the buildings had a 60% vacancy rate. The local newspaper published a special supplement on we produced, summarizing all the work we had done and encouraging the community to get involved in the process.

What was particularly interesting about the time after the Second World war is that all the factories that produced weapons and war-related products began to convert towards building materials and products. The most common were canopies and porcelain panels. And the view after the war was "let's look ahead, not back" which meant that many small towns, including Selma, would cover up the old facades with porcelain enamel. Also, salesmen traveling around the United States convinced local shopkeepers to install metal awnings to

protect shoppers from the rain. As a result, storefronts became dark, dim, really unattractive (Figure 3). At the same time, most of the small towns encouraged suburban development and shopping centers what helped to kill the old downtowns. This also happened in Selma.

What was clear from the start is that, as no small-town development can compete with shopping malls, towns have to develop a special identity. We wanted to start from an understanding of Selma's positive features, an approach now called "asset-based community development". As we walked through the town we realized that the canopies and enamel panels were covering many beautiful historical buildings, including the original city hall which was over 200 years old and people did not even know it existed or where it was.

Before any meetings with residents and local groups, we wanted to have people rediscover their town. We started by promoting a walking tour through the local newspaper which was very helpful. We published an article with a map with particular points where we wanted people to look and identify some of these features in their town. The newspaper continued to cover our work, announcing public meetings and encouraging people to participate. Newspapers are very important for our type of work as they have been in all the projects that I have done over the years.

The Railroad Festival

Selma was born as a "railroad town" and its Mitchener Station, built-in 1855, is the oldest surviving train station in North Carolina. So, we decided to have a railroad festival where we would begin to alert some of the local people to some of the features of the town (Figure 4). It was a good way to have Black and White people come together, because, you know, this is the South and quite often there's a tendency not to recognize the value of all people in the town.

We developed a "town twister" game for teenagers as a way of getting them to identify, through a base map, what kinds of activities might occur in the town, and where they might be located (Figure 5). Some of you may have played a twister game as a youngster; it is fun!

Meanwhile, we asked young children to do drawings of the things they would like to see in the town and where (Figure 6). However, one thing we realized over the years is that, particularly for very young children, what happened during the last hour is going to influence what they draw. As this was a Sunday afternoon and all the children had just come from church, a lot of them drew churches. We found a similar situation in a kindergarten where we asked what they wanted in their playground and a lot of them said they wanted a

Figure 3: Selma's main street when we started our project in 1982.

Figure 4: A band during the Railroad Festival.

Figure 5: The "town twister" game for teenagers during the festival.

Figure 6: The children were asked to draw what they would like to see in Selma and where.

Figure 7: Strip photographs of the downtown blocks.

treehouse. That was kind of curious because there were very few trees around. Well, the teacher told us that just before we came in, a forest ranger had been there and he had talked about treehouses, so it lingered in their memory.

We also took strip photographs of the downtown; a small downtown of two or three blocks (Figure 7). Clearly, these are artificial as you don't see the town this way, but it was important for people to take a careful look at the streetscape and this is the

Figure 8: Pairs of opposite adjectives about three design ideas for a building.

easiest way to do it. At that time —forty years ago, there wasn't the technology that exists today and, to come up with these strip photographs, we had to set the camera on a tripod on top of a flatbed truck and drive down the street so that the photos could be taken from a constant position and wouldn't get too distorted.

Workshop One

In the first public workshop participants talked about some of the positive features and the things they would like to see changed. For instance, there was a vacant three-story building —the tallest and largest in town— that the owner wanted to tear down. Our strategy was not to necessarily demonstrate why it shouldn't be torn down but to use a technique where we had the community focus on this particular building. We generated a set of hypothetical design alternatives, some of which made absolutely no sense, and asked people to respond to each through a set of polar opposite adjectives (possible X impossible; distinctive X ordinary; public X private; like X dislike; etc.) and in the process of doing it, they were talking about the fact that this was an important building that they really did not want to change (Figure 8). In the discussion, it quickly became very clear that once this building was torn down, the lot would become a vacant piece of land or a parking area.

One of the issues of concern to most of the folks were the canopies and, certainly, the porcelain enamel that was covering some of the buildings. A few years before this project, in 1975, we had celebrated the United States' 200th anniversary what made people all over the country look back to history. In Selma and other small towns, people started to look for the older buildings and they couldn't find them, because they were all covered up. So, there was a period when the porcelain enamel was being peeled off these old buildings. We did a set of drawings showing how the city could partner with local

merchants by providing a steel frame for local merchants to extend a canopy to their shops if they wanted it (Figure 9). The idea was to explore simple renovation alternatives to what there was now if all the metal panels were peeled away and the original historical facades were revealed.

But perhaps the most important thing was for the town to establish identity. In one of the public meetings, several community members indicated that they sold antiques in their homes. Somebody suggested, "why don't we create an antique center?" And everybody said, "well, why not?" The idea was to put the vacant buildings for sale so that some of the people who already were selling antiques would buy portions of the buildings. Image 9 shows three buildings that had the interiors torn down and adapted by the owner as one big building selling antiques with the original facades preserved.

Project Results

In the past 40 years, Selma has become one of the most significant antique centers on the East Coast. When buses go from New York to Florida, or Washington to Florida, they typically will stop for an hour or more in Selma so that people can buy antiques. And the antique dealers are very clever because they sell small things such as ashtrays, little cups, and saucers. After all, they know that when people are traveling on a bus, they have limited carry-on space and cannot buying big things. The shops keep a lot of these things that people can fit in their suitcases. Figure10 shows a view of the main street where the old original City Hall building can be seen now. Financially, the town has been very successful with several antique shops, boutiques and restaurants, and a zero-vacancy rate. Selma is a great example of how the community, by establishing some kind of identity that is relative to who they are, can help to revitalize the town. There are dozens of examples like this now but I thought this was interesting because it was one of the earliest and most successful.

Owensboro, Kentuky

About twenty years ago, riverfront development became very popular in the United States, as well as in the world. Figure 11 shows Owensboro, a town with less than 100,000 residents on a very large waterfront on the Ohio River in Kentucky. This is a very unique town because the majority of the people that live there were born there. At the time the waterfront was virtually unused but the mayor noticed that Lexington and other cities on the Ohio River were getting Federal money for waterfront development, and found that it is a really good tourist attraction. He decided that Owensboro should have a waterfront development project and suggested it to the community. As he was very socially concerned, he said "What

Figure 9: Existing and proposed ideas for part of a block.

Figure 10: Renovated buildings along Selma's main street.

Figure 11: Owensboro, a city on the Ohio river waterfont.

we'll do is hire a landscape architect to develop a plan, and then we'll invite people in the community to comment."

There was a private foundation in Owensboro that basically focused on community issues, most of them were health-related, and somehow, they didn't believe that what the mayor proposed was really an effective approach. After an internet search, they found several landscapes and planning firms that specialized in waterfront development and charged $10,000 for one or two workshops depending on the size of the community. But they still didn't feel that that was the best strategy and came across a book that I had written, *Community Participation Methods in Design Planning*, took a look at it and asked if I would come and talk to them about riverfront planning.

Interestingly enough, along the main street just a block from the river, the historic buildings were well preserved. While most small towns were covering the facade of old buildings as such as we just saw in Selma, because nobody ever came to this town there was no need to cover anything with those enamel panels. The historical architecture was mostly intact and the streetscape was quite attractive.

The first strategy was to get everybody in the town involved in the participatory process. Besides the need for public-private partnership, local people had to be motivated to participate and to identify what kinds of activities they felt were important. For the first step, I met with school teachers: there was a community college, a high school, and a couple of public schools. The idea was to bring all the heads of the schools together and talk about how to involve the students in the waterfront project. This was a fantastic meeting because the school heads and teachers loved it, and we had entire classes, from kindergarten to high school classes, going out to the waterfront to test the water, enjoy the place, and develop ideas.

An interesting thing about getting young people being involved was that kindergarten kids were working with high school kids as part of the same teams. It was great, and they enjoyed doing two and three-dimensional models. Figure 13 shows the waterfront development models and ideas by the older as well as the younger kids at display later during the community workshop (Figure 13).

But I wanted to attract more people to talk about the waterfront and what it could become. So, I wrote in the local newspaper that we were planning a workshop but, as I knew that a lot of people would not attend a workshop and I wanted to give everybody a chance to talk about what kinds of activities could go on, we conducted several focus groups meetings around town always announced by articles in the newspaper.

We did one big workshop at the local arts center by the

Figure 13: Ideas from the kindergarten and school kids on display.

riverfront. All the students' work was displayed there and one hundred twenty-five people attended, including a couple of state legislators, the mayor and a retired mayor, older and younger people, and most of the people who came were the shakers and movers of the town. We divided the participants into small groups of five people each so that everybody had an equal chance to participate (Figure 14). We would like to have taken everybody on a walking tour of the waterfront but, since it was a 2.5-hour session, I started with a slide show so that everybody could recall the character of the waterfront.

As a result of the articles and the discussions with the focus groups, we had been able to identify a series of possible objectives for the waterfront development. They were not necessarily unusual or different, but they had been identified

Figure 14: The community workshop at the local arts center.

by local people. Figure 15 shows a form we put together listing all those objectives plus a couple of blank ones. The riverfront was subdivided into three very distinct parts and the small groups were asked to identify the three objectives that they thought were most important and which activities would correspond to those objectives for each part of the waterfront.

The groups also were given maps where they had to annotate their ideas and place symbols for the location of the different activities they proposed. Each group presented their ideas, that were not dissimilar but everybody was able to participate (Figure 150. We found out that the three most important objectives for this area were to attract people and investment, create a visually pleasing order to the riverfront, and develop an arts and entertainment district. And the activities proposed were arts and crafts, retail, restaurant, park, and riverwalk. Now, these are not necessarily unusual kinds of activities but we find that if the community identifies them, they have a sense of ownership over them and in how they can be included in the project.

Figure 16 shows the final concept proposal for the whole waterfront area. The symbols correspond to each of the different activities that could occur. A couple of my Ph.D. students were helping me and put the proposals by the different groups together. At that time, the Community Development Group had been discontinued but I had started a Ph.D. program in Community and Environmental Design. Although there are no studios associated with the Ph.D. program, the students who work with me may get involved in my ongoing projects so that they get some experience in community workshops.

Several years after the workshop, we began to see a lot of activity going on along the Owensboro waterfront. The town used local funds, received some federal money, hired a planning and landscape architecture firm, and developed the ideas that resulted from our workshops. In a period of 10 to 15

Figure 14: The form for one of the sub-areas, where participants and groups would identify preferred objectives and major activites.

Figure 15: A group presenting ideas at the community workshop.

Figure 16: The final concept plan combining all ideas for the riverfront with stickers representing functions and activities.

Figure 17: Owensboro's revitalized riverfront.

years, the entire town was rejuvenated (Figure 17). My part of the project, basically, was three visits to the town, so it was a good investment for them.

Nanao, Japan

My book *Design Games* was translated into Japanese, and it became very successful. One of the reasons is because the Japanese like playing games; it's part of the culture. And I was invited there to provide training sessions for two or three years because they realized that the concept of the game and the way it is organized in planning and design is different from the games people normally play. Because the games that I develop run in stages, people can make individual decisions, then they move to make small and then large group decisions without voting but through reaching consensus. And the basic rule is that everybody has to make an individual decision and then discuss it.

In Asian culture, age is very important and, typically, people wait for the elders, no matter what their background is. If they are older nobody in the group says anything until the elders speak. While doing the workshops I knew that but, as I was observing the different groups coming together, I noticed that some of the younger people weren't speaking. And some of these younger people were even ranked at high administration or governmental levels. Afterward, they told me that it was really difficult and it would take them 15 minutes or more before they felt comfortable to engage directly and speak to the whole group. This was important because it represented

a very dramatic cultural shift. Nowadays, virtually every small town going through changes in Japan refers to this process as the design games approach. My book was published by one of the best publishers in Japan and became a bestseller.

One of my early projects in Japan, from 1996, was in a small coastal town called Nanao that needed a recreation area. There wasn't enough land and they wanted to fill in part of the local river and use that for recreation. The mayor had mentioned that, for the past two years, the planners and architects of the local planning authority made several design proposals for what could happen in this area after it was filled in. All of them were rejected by the town. A kind of grassroots group was formed, composed of some public officials and residents, who asked me if I could come and help them.

However, I have a rule —actually established by my wife some years ago—that when I travel abroad, the maximum amount of time that I can be away is five days. That would allow two days for travel and three days for work. So, I had to develop a strategy for doing workshops and solve a problem in three days. After a while, I got pretty good at it. In the projects that I have done, the first thing I requested was that there would be two workshops, to schedule them to make sure people would be available and to make sure that young people were. Even if I had no idea what the workshops were going to be, that was a basic rule. Then, the clients and I would usually spend time talking about why young people should get involved because, as you know, it's the empty vessel syndrome: "they're young, what do they know?". To what I insisted: "well, that's the rule: we've got to do it".

Workshop Preparation

On the first day in Nanao my strategy was to have a couple of boats filled with young people and take them on a river ride so they could get a sense of the perimeter and size of the area that would be filled in. Interestingly, about forty people that heard about this project showed up. Some of them were like community design groupies; they had done projects in their town and they wanted to see how this project was going to work out. I suggested that nobody should just watch and that everybody should get involved. So, in three days I had to keep forty people busy, local people and those who came from other towns, working together.

In organizing the first workshop, I established two strategies to be carried out by two different groups. Some of them were residents, some of them came from different parts of Japan. I didn't know who was what, but they would do all the writing in Japanese and translate some of it into English so I knew what they were saying. One group was to brainstorm

all possible objectives for the recreation area, the different activities that could occur as well as the size of these activities based on the size of the population. Another group developed graphic symbols the size of a postage stamp for every single activity (Figure 19). Depending on the activity, each stamp would represent certain square footage. For instance, the basic symbol for an activity corresponded to 100 square feet, if the activity would take 1,000 square feet there would be 10 of those symbols to represent it. A big table was developed showing every one of the activities, their corresponding symbol, the square footage dedicated to it, and the number of stamps to represent it; it could be a fishing area, a zoo, tent camping, gardening, or playground.

We also developed a base map showing the perimeter of the river area to be in filled. And I spoke specifically to the young people to explain in detail what their responsibility was going to be, how they were going to work, and how much time it was going to take.

Workshop

The community workshop was held on a Sunday morning, in the shopping center adjacent to where the infill area would be located. In the US we would never be able to do this on a Sunday because it is a kind of a sacred day in many small towns. There were about 80 participants who we asked to get organized in groups of about five and sit around tables. Some of these groups are self-selected and we didn't want to interfere with that, but we did want some of the young people to work together if they felt comfortable. Each group had to go through identifying the objectives, the activities, and then locate the activity stamps on the base map. They did all that based on the work we had prepared beforehand.

A fundamental concept behind this gaming exercise is "trade-offs", something very difficult to define. But what it means is that when people are sitting around a plan, after they have identified all the activities that they thought were important, and they don't all fit in the available site, they will have to make trade-offs. They have to decide which activities are most important and, in the process of doing this, they develop some of the most sophisticated planning concepts. We had young people were working together and there was also a group of women who also did a three-dimensional model (Figures 20 and 21). After a while, every group presented their work.

This whole process took about two and a half hours. We took a break for lunch and, in the afternoon, we met at the local museum for a larger community gathering attended by 400 people interested in what was happening. I first described the goal of the workshop and its process, and each group presented their idea (Figure 22).

Figure 18: A group brainstorming all the possible objectives for the recreation area.

Figure 19: Developing graphic symbols for every activity.
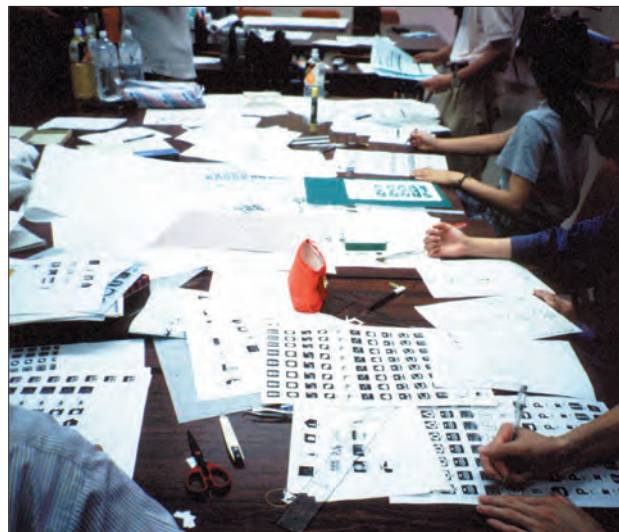
Figure 20: The group of youngsters during the workshop.

Figure 21: This group had only women and produced a 3D model.

Figure 22: The concepts by the different groups being presented.

Figure 23, 24 & 25: The final combined concept and the built project.

Particularly interesting was a group of 11- or 12-year-old boys that, as they were describing their concept, said: "Well, this green area is where our fathers could sit and drink beer." That was absolutely great. And the Mayor then realized, "Oh my god, none of the men would ever say that. Only young people who are totally uninhibited would say what they mean." There and then, the mayor realized how important it is to have young people involved in planning processes.

Workshop Summary

The group came together and summarized all the work that had been done. It was not a very complicated problem, mind you (Figure 23). We met with the mayor, and then he said: "Oh my god, this is what the planners have been presenting over and over again for two years." But he also realized, that this concept
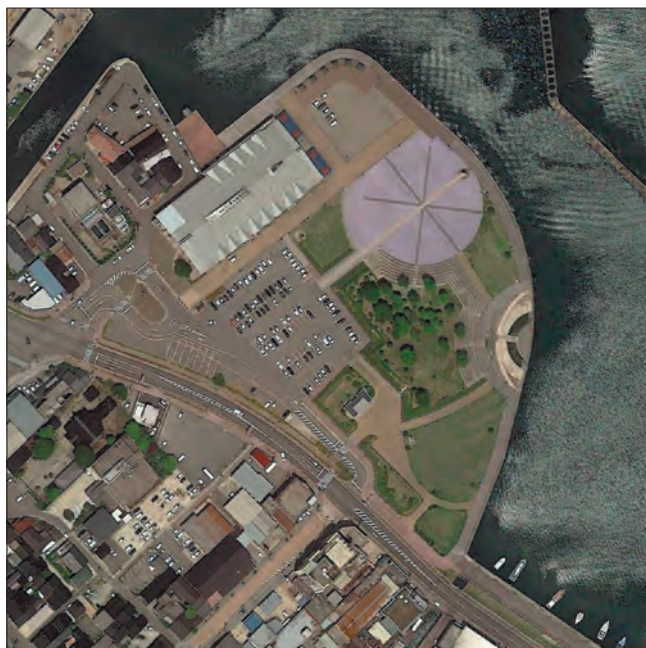
now came from the residents: they understood it, they were part of the process, and they had ownership of the idea. The mayor decided to implement the idea, developed the project, had it built, and proved to be very successful (Figure 24 & 25).

Vologda, Russia

The last project I will present was for the city of Vologda, Russia. That's the city where Ivan the Terrible came from and, several hundred years ago, it was supposed to be the capital of Russia. But I think that because Ivan was so terrible, they decided to have the capital in Moscow. Nonetheless, the Mayor of Vologda, who had been in power for seven years, had invited me. Note that the Mayors in European countries are very powerful, not like in the United States.

This mayor was fantastic; he had read virtually half of what I had written and he talked about participation as if he really understood it and was actively involved in it. He established two social planning events over two years, and the idea was to have all of the government people (and in Russia, virtually, almost everybody works for the government!) involved in planning to come together and listen to me and the young people who I had been mentoring there talk about participation. During these two years I traveled there twice to speak about social planning and the techniques that could be used, and I conducted workshops with fairly high-level Russian administrators.

The people who were actually responsible for alerting the mayor to my existence were Nadezda Snigireva, a young woman architect, and her husband, a management scientist. She had read everything that I published, became a very strong advocate of participatory design, and convinced the mayor to invite me to visit Russia. She has been very active and presented my work to various government groups and universities as an example of the type of work that needs to happen in Russia. Nadezda was also responsible for translating my book *Democratic Design* for the Russian edition. In my second year there they held a book signing and about 150 people came from all over Russia, which was kind of surprising.

Interestingly enough, architectural education in Russia is controlled by a national government organization that includes about 75 schools of architecture. They had identified seven books that all the academics and students should read, and my book was one of them. Participatory design became an enormous success, attracting people's involvement and making them excited. This is because nobody had ever asked local communities to participate in deciding for anything larger than their own backyard. Now there are participatory design workshops all over Russia.

Eleven years ago Nadezda formed Project Group 8, an activist design collective based in Vologda, and now they have over 100 projects in Russia. They also founded the Russian Participation Design Network. One of the most interesting type of projects that they been involved with is the transformation of public spaces in large high-rise housing blocks that the government built all over Russia. Usually the areas around these blocks are just vacant or occupied by large parking lots, and nobody had thought about outdoor recreation, despite the weather. Nadezda and her team have been working with leaders and organizing community members to begin talking and planning for these outdoor spaces (Figure 26).

In Kazan, a city in the republic of Tarstarstan, for instance, the White Flowers Boulevard was planned by Project Group 8 involving the residents and city staff in 2018. The streets were redesigned and a large private car lot was replaced by a beautiful park featuring a pavillion, playgrounds, and seating, and hundreds of mature trees were planted (Figure 27 & 28). For all this hard work, in 2020 Nadezda received the Young Leader Award from the World Urban Parks organization.

Mind you that these are people who rent as in Russia ownership doesn't really exist to a great extent. This level of participation is usually very difficult to obtain in such cases because renters don't feel a sense of ownership. But in Russia people don't own and they live in the same rented apartment for their entire life, so there is a stronger commitment, a stronger sense of ownership for the area around their blocks.

The participatory approach in Kazan inspired the republic of Tatarstan's Public Space Development Program that has now transformed dozens of public spaces all over the country in collaboration with the residents. In a recent article, the

Figure 26: One of the community workshops conducted by Nadezda.

Figure 27 & 28: The White Flowers Boulevard park in Kazan, was planned by Project Group 8 through a participatory approach involving architects, city officials and residents.

Bloomberg City Lab pointed out that the transformation of public spaces in Tatarstan is a revolution with American roots due to my work and the participatory design approach.[1]

Final Remarks

These are the projects I wanted to show you today to help me stress the importance of a participatory, democratic approach in planning and design. By getting people involved you not only reach better solutions to people's real needs, but through the process, you provide them with a sense of ownership and make them proud of the place they helped produce. This type of approach is getting more and more popular, as illustrated by a new book edited by Marta Dodig and Linda Groat, Games in Architecture and Urban Planning, that includes twenty case studies from different parts of the world.

To finalize, I wanted to share with you a curious recent finding. I found that IKEA, in their name catalog, uses the phrase "Democratic Design" as their philosophy and part of their story: a design for people. So I guess that being co-opted is not a bad thing if it's IKEA that's doing it!

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[1] Editor's note: see "A Park-Building Revolution in a Russian City" by Alex Ulam for the Bloomberg City Lab at https://www.bloomberg.com/news/articles/2021-09-13/the-public-space-revolution-transforming-a-russian-city?sref=0IejgNtz (September 21, 2021).

And yet another conference on Climate Change...

by Tarcisio Bahia de Andrade

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FOCUS 18

Blind-Reviewed

Environmental Preferences for Outdoor Study Spaces on Campus:

Using a Decision Tree Approach in a Visual Preference Survey

Amir Hajrasouliha

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In this paper, Hajrasouliha discusses his study of Cal Poly students' preferences in using the campus outdoor spaces as study areas. An online survey in three different classes (an online and a face-to-face course during the academic year, an online course during the summer) before the COVID-19 pandemic, allowed the gathering of data on students' behavior and environmental preferences including a Visual Preference Study. The study concludes by identifying the most important environmental and physical factors for students when selecting outdoor spaces for studying and learning.

Often in planning for an educational institution, whether it is an elementary school or a research university, the idea of the outdoors as a learning environment is largely overlooked. Outdoor spaces on campuses are mainly designed for recess and play, while indoor spaces are planned for focus and learning. Yet, a shift in modern planning of educational institutions is beginning to emerge, wherein the utilization of outdoor space is gaining momentum. School gardens, outdoor amphitheaters, and places to display work are beginning to fill outdoor spaces, expanding the classroom to constitute outdoor space in addition to indoor.

The physical design of space creates a successful learning environment by having: 1) features in the physical environment that encourages learning and development; and 2) features that promote the acquisition of skills that in turn foster learning and development (Banning & Strange, 2001). There are various ways in which outdoor studying can benefit the average college student.

One argument in favor of outdoor learning environments is that being outdoors for recreational and academic purposes can reduce stress, increase concentration, and promote a healthy and active lifestyle (Tutors, 2016). Another argument is that they can ease the financial and administrative strain on University officials (Wilson & Hajrasouliha, 2019). Facilities have become so expensive to build that, if there is ever an opportunity to create an outdoor venue, administrators are more on board with it than they were 10 to 15 years ago (Kollie, 2015). An additional reason for outdoor learning environments gaining in popularity is that they enhance campus aesthetics and increase initial attraction to a university by prospective students (Chapman, 2006). Although most of the existing studies indicate that outdoor learning areas should be implemented, there is not much empirical research on how to implement them, and how to ensure their success.

On the other hand, the development of online and virtual teaching and learning environments to augment formal face-to-face environments raises questions about the way the new communication and information (CIT) technologies are being incorporated into the on-campus environment. The COVID-19 pandemic has both challenged and clarified the significance of physical campus in the college experience. More importantly, this development defines the meaning of the on-campus student learning experience. The new CITs require institutions, teachers, and researchers to reconsider the relationship of the physical setting to the student learning experience (Dalton et al., 2018) and online classes were on the rise even before the pandemic. However, does that mean that no physical study areas are needed on campus to support these courses? What if the campuses were to create supportive outdoor learning areas specifically for online or hybrid learning that can motivate students to spend more time on campus, or study for their online courses in-between their face-to-face classes? The effectiveness of such proposals is unexplored and needs to be investigated by addressing students' study behaviors and their preferences.

The focus of the research project was on the environmental preferences of Cal Poly students in using outdoor spaces on campus as study areas. Although, as discussed in the literature review section, the concept of outdoor learning spaces includes

both teaching and learning activities this study focused on individual learning activities, such as studying for a course. As the class format can influence their use as study areas on campus, student participants were selected from three class types to better represent a variety of class formats: 1) students of an online course during an academic year, who were physically present on campus for taking other classes; 2) students of an online summer course, who mostly had no other class in that quarter, and therefore had less reason to visit the campus; 3) students of a face-to-face class on campus. The survey with all three classes was conducted before the COVID-19 pandemic. We understand that this type of study is the first step in visioning outdoor areas for more advanced academic uses such as teaching, experimenting, and group studying.

Literature review

In the 'Hierarchy of Learning Environment Purposes,' Banning and Strange (2001) outline three complementary learning tiers that are essential in generating successful learning environments in any context, including outdoor spaces. These tiers and their goals are ranked in order as follows:

Tier 1: Safety and Inclusion: Promoting the sense of security and belonging.

Tier 2: Involvement: Invoking a desire in the student to interact with the space, to participate in discussions and activities.

Tier 3: Community: Experience of full membership in the learning setting.

Rickinson et al. (2004) highlight the need for outdoor learning to be carefully planned and executed and integrated with classroom teaching. Taking students out of the classroom to an outdoor location transfers their learning to a physical space that is materially different from the classroom environment: a novel learning space (Peacock & Pratt, 2011). Learning spaces are associated with practices, norms of behavior, objectives, and goals for learning (Peacock & Pratt, 2011) so that new learning spaces provide different contexts and environments for students' learning.

Peacock and Pratt (2011) argue that learning spaces are associated with particular teaching professionals. Each has their particular community of practice (Wenger, 1998) that shapes how they interact with students and their expectations of students' behavior. As students move from one learning space to another, they cross-cultural borders, moving from one set of practices, norms, and expectations to another (Aikenhead, 1996; Wenger, 1998). The impact of the 'novelty space' may be considered from several perspectives. Outdoor learning environments are less structured and formal than

classroom environments, allowing more physical mobility, and they also expand the physical space around students. Greater physical activity has been shown to have an impact on students' educational attainment (Ahamed et al., 2007; Trudeau & Shepherd, 2008).

Peacock and Pratt (2011) identify macro and micro contexts of learning spaces. The macro context refers to the physical layout of structures, such as buildings, whereas the micro context consists of spatial physical arrangements within the macro contexts: the physical layout of chairs, tables, and pathways for movement, presence of adults, size of teaching group, the ability to engage in a smaller group discussion or 1:1 questioning, the balance between student-initiated and teacher-initiated learning, objects available to support teaching, and background noise and activities that may cause distractions.

While outdoor learning has many benefits, it may also present some problems. The layout and organization of spaces can affect the amount of time students spend on different tasks and therefore the way they focus. For example, Peacock (2011) studied, if the entrance, spaces to be used, toilets, and lunch spaces are widely separated, long periods of 'dead time' can elapse for groups to move from one space to another during their day. At one venue, almost half the school's time at the center was lost in this way. Peacock (2011) suggests several possible reasons why it might be quite difficult, particularly for young people, to learn the specific outcomes identified as objectives in outdoor spaces:

• The structure and design of layouts and buildings can often distract learners from focusing on explicit learning objectives.

• Learners' culturally influenced perceptions of the environment, history, etc. and the perceived significance of artifacts within these contexts (e.g. the idea that 'plants are boring')

• The affordances and constraints of physical arrangements, social groupings, accessibility, and localized distractions—what we have termed 'micro-contexts

Jamieson et al. (2000) offered a set of principles to help inform the design and implementation of built environments for universities: design space for multiple uses concurrently and consecutively; design to maximize the inherent flexibility within each space; design to make use of verticals dimension in facilities; design to integrate previously discrete campus functions; design features and functions to maximize teacher and student control; design to maximize the alignment of different curricula activities; and design to maximize student access, use and ownership of the learning environment.

Design can influence certain behaviors through environmental cues (Banning & Strange, 2001). For example, a public plaza with tables and chairs encourages people to sit, relax, eat lunch or read a book. A plaza with no sitting and no shade may signal that we are not invited to stay but must just pass through. A space with limited seating and tables and little shading cannot fully support activities such as studying and group discussions. These characteristics of space are referred to as cues, subtle elements within an environment that invoke certain behaviors (Lang, 2005). Educational cues in the physical environment can be used to increase the probability of the desired outcome. For example, small amphitheaters with a platform stage on campus can send a cue that the space is available for cultural events, organized student activities, and teaching opportunities.

In sum, the literature suggests three types of attributes that influence the use of campus open spaces as study spaces: the macro-context, the micro-context, and distracting elements. The attributes at the macro-context investigated in this study were: distance to college, distance to food, view, and background environment. At the micro-context the attributes were: greenness, access to an electrical outlet, sense of enclosure, shade, seating. The distracting elements were the level of noise and crowdedness.

Methodology

Data on students' study behavior and preferences were gathered through an online survey through a non-probability sampling method. The survey was distributed among the students of three undergraduate classes taught by the author at Cal Poly in 2019 during the last week of classes. Two classes were from the same general education course (Digital Cities) in an online format; one during a spring quarter (110 students, 100 acceptable responses) and the other during a summer quarter (45 students, 40 acceptable responses). The third was a class from the CRP course Population and Housing Application offered in a traditional face-to-face mode in the fall quarter (45 students, 41 acceptable responses). Overall, 191 students responded to the survey. Although the sampling was not random (convenience sample), to some extent the respondents represented all colleges in the university: 27.6% were from the College of Architecture and Environmental Design, 23.4% from the College of Liberal Arts, 17.7% were from the College of Agriculture, Food and Environmental Sciences, 15.6% were from the College of Business, 12.8% from the College of Science and Mathematics, and 2.9% from the College of Engineering.

The survey had four sections. The first included demographic questions such as gender and college. The second section included questions about study behavior and the respondent's general attitude toward studying in an outdoor area on campus. Questions with a 5-item Likert scale from "never" (1) to "always" (5) such as "How often do you study for this class while you are physically present on campus (except your dorm if you live on campus)?", "How often do you use an open space on campus to study for this class? For example, sitting on a lawn or an outside chair/bench on campus"; and a 5-item Likert scale from "Strongly disagree" (1) to "Strongly agree" (5) for statements such as: "Lack of adequate study spaces on campus prevent me from studying on campus", "More outdoor spaces that are suitable for learning are needed on campus". In addition, the students were asked to rank their favorite place to study for that course. The options were: home, on-campus coffee shop, off-campus coffee shop, campus library, inside other buildings in the campus, including your college or student union, an outdoor space on campus.

The third part of the survey asked respondents about their environmental preferences for outdoor spaces on campus. The questions were discrete choice models, or qualitative choice models, in which respondents had to select between two or more discrete alternatives such as studying in an outdoor space with an electrical outlet but without adequate greenery, or studying in an outdoor space with a beautiful landscape but without an electrical outlet. The attributes tested included the level of noise, crowdedness, distance to college, distance to food, greenness, access to an electrical outlet, sense of enclosure and shade, view, and seating.

The last part of the survey was a Visual Preference Survey (VPS), a type of study that helps the public and decision-makers envision design alternatives in ways that words cannot. There are various methods of VPS which usually involve 50 to 100 participants in evaluating scenes (Ewing, 2001). Depending on the method, the participants' preference for an image can be interpreted differently and can be tailored to the study's main focus. In the next section, various VPS methods are reviewed to better explain the method adopted for this research project.

Visual Preference Surveys

The most common measuring tool for Visual Preference Surveys is the Likert scale, which is "a set of balanced bipolar response categories indicating varying levels of agreement or disagreement" (Lavrakas (a), 2008). Typically used with five categories, this is the most popular method of measuring preferences and appear in many studies (Najd et al., 2015; Ewing, 2001; Kaplan et al., 2006; Tveit, 2009; Wherrett, 2000; Zheng et al., 2011). Another popular measuring tool is the semantical differential scale, generally designed to assign a positive attitude or opinion to the left and a negative counterpart to the right (Lavrakas (b), 2008). The semantic differential can be combined with a five-point Likert scale, as

Ewing (2001) did in his study by assigning a specific question to the scale rather than just measuring a general preference. Ewing's study focused on the preference of bus stop designs through a question of how likely the respondent was to wait at a given bus stop (Ewing, 2001). This can also be used to evaluate the positive or negative effect of perceived landscape features such as sky, sea, hill, etc., or used to rank a set of images on a panel (Arriaza et al., 2004; Kaplan et al., 2006).

Asking respondents to write why they chose an image from a paired set in a VSP allows the researcher to further understand how they are perceived by the respondents (Ewing, 2001). Alternatively, respondents can be asked to describe the images being evaluated, so that the noteworthy features noticed by respondents can be evaluated (Deghati et al., 2015).

The way that the images are presented to respondents will depend on the purpose of the study. . Comparing images to each other to find a direct preference has a different effect than asking the respondents to score the images individually. For example, the participant can be presented with sets of paired images, be asked to choose the image they prefer, and then answer questions about the selected image to see why the preferred image was chosen (Ewing, 2001). Participants can also be asked to examine multiple images at a time and to score them at the same time what allows the viewer to compare the images to one another and then make their preference scoring choices (Arriaza et al., 2004; Kaplan et al., 2006; Wherrett, 2000). Images shown to participants can be repeated so that each image is compared to the others multiple times so that the preference for that image against many other types of images can be gauged (Zheng et al., 2011).

The order in which the images are shown is also critical. Showing images in either a fixed or randomized order affects how they are perceived and is integral to answering the study focus. Using a fixed order of images for the survey makes sure that every respondent is viewing the same images in the same order, avoiding any potential bias between surveyed groups or members (Najd et al., 2015, Tveit, 2009; Wherrett, 2000). If the images have been previously categorized, and are shown through fixed categories, the respondents can consider this fixed categorization when determining their preference (Kaplan et al., 2006). However, the images can be shown in randomized paired sets to avoid the possibility of surveyor bias (Ewing, 2001). This can also be done by randomizing the assignment of images when presenting multiple images on slides (Arriaza et al., 2004). Comparing multiple images on slides to previous images can also be randomized by randomly picking the images to be compared either manually or digitally (Zheng et al., 2011). Randomized pairing has also the advantage that more images can be compared to each other

in the total sample.

Although it is not common, visual preference surveys can be conducted in the decision tree format. Hronopoulos (2009) describes a decision tree surveying method as a way to narrow down a person's preference using images. At the first question, the respondent is presented with a set of images, each displaying a different version of a certain attribute. After a selection is made, a new set is presented displaying different versions of a new attribute but also including the preferential attribute chosen from the first set of images. This continues until all attributes have been reviewed by the respondent. However, this type of procedure may not represent the respondent's true preference since, after answering a few questions, the responder is unable to see what any of the other choices might be. The biggest advantage of this method is to reduce the number of questions while testing a variety of attributes in the images.

Among all options for the VSP section discussed above, the decision tree format was selected for one main reason: more environmental attributes could be compared with a smaller number of questions. In other words, the respondent preference can get narrowed down to a specific space type with fewer questions.

Figure 1 shows the structure of the VPS in this research project. Each of the four attributes of background, seating, canopy, and gathering, gets 3 different values. The combination of these attributes creates (3^4=) 81 different space-types. The hierarchical structure of the VPS allows respondents to select the level 1 attribute (background) before selecting the level 2 attribute (seating). In this way, respondents answer four questions and, in each question, they compare only three images. That is a convenient and fast way of identifying the preferred space type out of 81 options. The disadvantage of this method is that respondents do not compare the space types randomly. That may contribute to a bias toward higher-level attributes. For that reason, it makes more sense to rank the four attributes based on their relative importance in the decision-making process of users. However, no study was found suggesting that certain attributes are more important than others. Therefore, the ranking of attributes was assigned based on the logic of macro-context elements, micro-context elements, and finally distracting elements.

81 collaged scenes of outdoor spaces on campus were generated with Photoshop using 3 different images as the background scene. These three images represent a) a paved area surrounded by buildings, b) a lawn surrounded by buildings, and c) a spacious open lawn. Other elements such as people, trees, and chairs were added to these images using
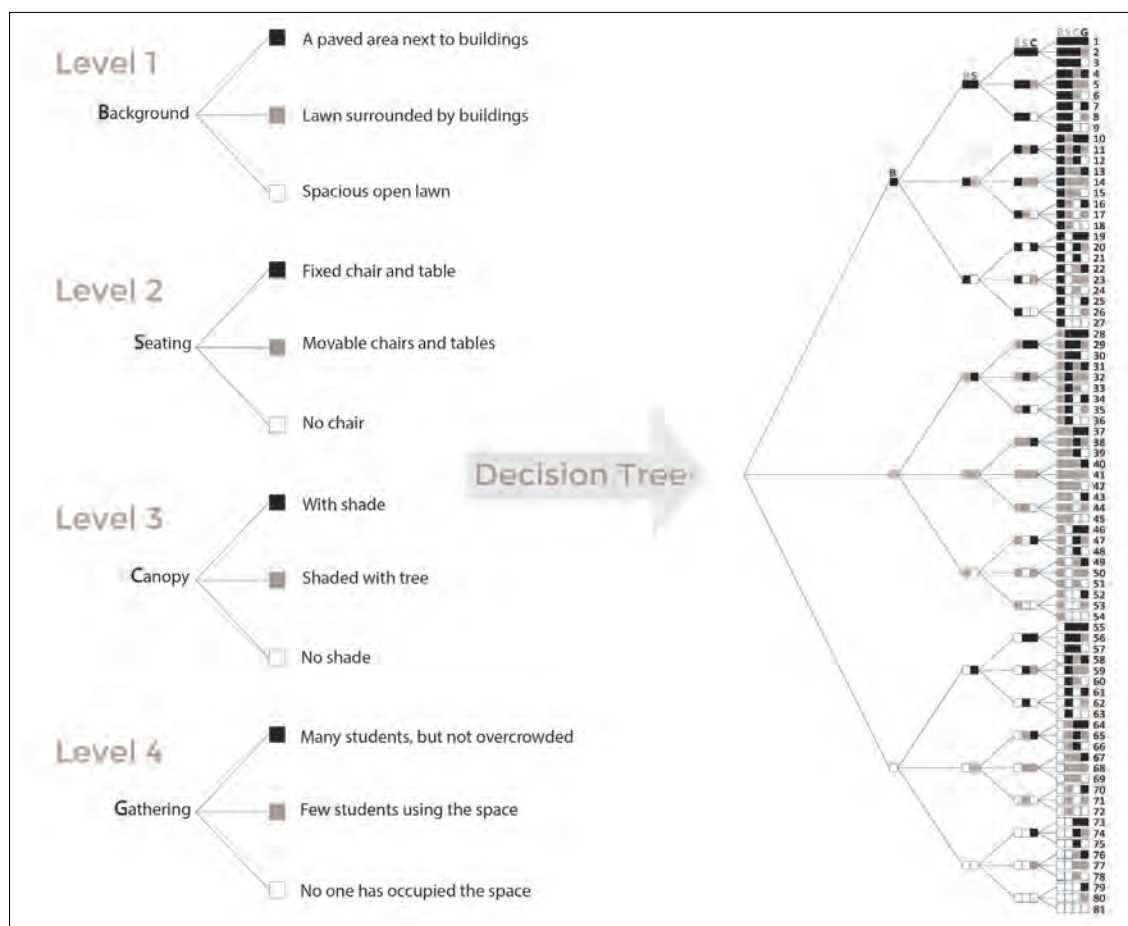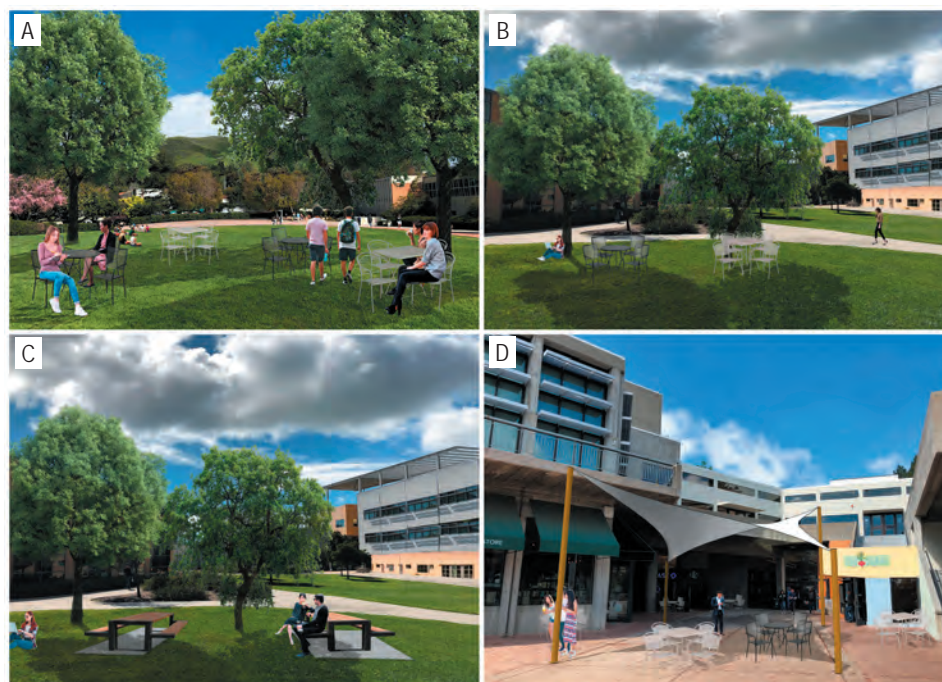
Figure 1: The structure of VPS using a decision tree approach

Figure 2:
Four samples out of 81 collages.

Photoshop. Figure 2 shows a sample of the generated images. At each level of the VPS, respondents selected their preferred space out of three options.

Results

Survey respondents included 110 students from an online general education course during the spring quarter of 2019 (OA cohort), 40 students from the same online course during the summer quarter of 2019 (OS cohort), and 41 students from a different but related face-to-face course during the fall quarter of 2019 (FA cohort). 61.87% (112) of respondents are female, and 38.412% (69) are male.

The time dedicated to studying influences students' use of the campus environment as a study space. Table 1 shows the responses from different cohorts to the following question: "When do you most commonly study for this course?". The results show that while "weekday evenings and nights" was the most common answer among the three cohorts, a quarter of respondents in all three cohorts preferred "daytime of weekdays" to study for their course. However, the students of the online course during the academic year (OA cohort) showed a distinctive study pattern than the other two cohorts. 23 % of students in the OA cohort study for their courses during weekends compared to 5% of OS cohort and 2% of FA cohort. In addition, only

10% of students in the OA cohort, report "no particular pattern" for their study compared to 26% of OS cohort and 29% of FA cohort. That shows that OA students can be or have to be more organized in scheduling a study time. 57% of them either study during weekday evenings and nights or weekends, when many of them are not physically present on campus.

Table 2 shows how often students study for the course while they are physically present on campus and how often they use an open space on campus to study. As expected, the students of both online courses were less physically present on campus while studying for their course, compared to the students of the face-to-face course. The use of campus open spaces is the least common choice among OS cohort, followed by OA cohort. About 35% of students in FA cohort "sometimes" or more use an open space on campus to study for their course.

The general attitude of all three cohorts toward studying in an outdoor space on campus was neutral (see Table 3). On average, students answered they "neither agree nor disagree" to statements such as "Lack of adequate study spaces on campus prevents me from studying on campus" or "When weather is nice, I prefer to study in outdoor spaces, rather than studying in indoor spaces". This lack of interest in outdoor spaces as a study area is also evident in the ranking of their most preferred space for studying against other options including on home, campus coffee shop, off-campus coffee shop, library, or insider other buildings on campus. All the cohorts ranked open spaces on campus as one of the least favorite spaces to study. All three ranked "open spaces on campus" as their second least favorite space among the six given options. No significant differences were observed between students' gender and their study patterns or their attitude toward outdoor spaces.

The answers to the survey's discrete choice questions indicate the environmental preferences for an outdoor space on campus (Table 4). The common question was "In which outdoor space

Table 1: Different cohorts' responses to the following question: "When do you most commonly study for this course?". OA= Online course during an Academic year; OS= Online course during Summer; FA= Face-to-face course during the Academic Year.

	Cohort	Responses
Weekday evenings and nights	OA	33.64%
	OS	41.18%
	FA	48.78%
Daytime on weekdays in between my other classes	OA	18.69%
	OS	14.71%
	FA	14.63%
Daytime on weekdays when I have no other classes that day	OA	14.02%
	OS	11.76%
	FA	4.88%
Weekends	OA	23.36%
	OS	5.88%
	FA	2.44%
No particular pattern	OA	10.28%
	OS	26.47%
	FA	29.27%

Table 2: How often do students study for the course while they are physically present on campus and how often do they use an open space on campus to study. OA= Online course during an Academic year; OS= Online course during Summer; FA= Face-to-face course during the Academic Year.

Question	Cohort	Never	Rarely	Sometimes	Usually	Always
How often do you study for this class while you are physically present on campus (except your dorm if you live on campus)?	OA	30.84%	37.38%	25.23%	7.48%	2.80%
	OS	41.67%	11.11%	13.89%	25%	11.11%
	FA	2.44%	19.51%	48.78%	34.15%	2.44%
How often do you use an open space on campus to study for this class? For example, sitting on a lawn or an outside chair/bench on campus.	OA	51.40%	30.84%	14.95%	1.87%	0.93%
	OS	69.44%	13.89%	8.33%	8.33%	0%
	FA	29.27%	36.59%	21.95%	12.20%	2.44%

on campus would you prefer more to study?". The attributes tested were the level of noise, crowdedness, distance to college, distance to food, greenness, access to an electrical outlet, sense of enclosure and shade, view, and seating. The results show that most students value quietness over moderate background noise. The interesting result was that they also prefer having access to an electrical outlet over being in a green space with a beautiful landscape. "Short distance to the college/department" was selected as frequently as "a short distance to food/drink options". "A moderately green space that is shaded with trees" was more often selected than green spaces with a great natural view but without trees or shade, and also an "A semi-enclosed open space, protected from sun and wind, but without greenery and view". Finally, "a place with movable chairs and small tables" was more frequently selected (58%) than the other two options, "a green lawn without a chair", or "a place with fixed chairs and large tables".

The results of the VPS were consistent with those from the discrete choice section. From the 81 scenes of outdoor spaces shown to respondents, the two images chosen most often were chosen by the respondents (12%+10%= 22%) are similar with settings made up of a lawn surrounded by buildings, shaded by trees, and few students using the space (Figure 2 images b and c). They differed only in the type of seating with fixed tables and chairs being more popular than movable chairs and tables. 15 of the images were chosen by only one respondent.

In the study's VPS section, no significant differences were observed between the results from the three cohorts. The results were analyzed in each VPS level separately. The level 1 variable indicated the respondents' choice for the setting of their study location. "Open lawn surrounded by buildings" was chosen the most (50% of the sample population) followed by "spacious open lawn" (32%) with a paved area surrounded by buildings as the least chosen option (18%).

The level 2 variable indicated the respondents' choice for the type of seating in the study place. "Movable chairs and tables" was the most preferred seating with 51% of the sample,

Table 3: Students' attitude towards using outdoor spaces as a study area. (Cohort: OA= Online course during an academic year; OS= Summer Online Course, FA= Face-to-face class during an academic year; Weighted Average: 1= Strongly Disagree, 3= Neither Agree, nor Disagree, 5= Strongly Agree)

	Cohort	Average
Lack of adequate study spaces on campus prevent me from studying on campus	OA	2.79
	OS	2.86
	FA	2.49
More indoor spaces that are suitable for learning are needed on campus	OA	3.41
	OS	3.94
	FA	3.22
More outdoor spaces that are suitable for learning are needed on campus	OA	3.50
	OS	3.6
	FA	3.29
When the weather is nice, I prefer to study in outdoor spaces, rather than studying in indoor spaces	OA	3.34
	OS	3.29
	FA	3.20
I would regularly use outdoor spaces on campus for studying if there were designated outdoor learning spaces	OA	3.56
	OS	3.51
	FA	3.22

Table 4: Results of the discrete choice questions.

Category	Answer Choices	Responses
Noise vs. crowdedness	A quiet place with few students in or passing by that place	51.77%
	A place with a moderate amount of background white noise with few students in or passing by that place	37.59%
	A place with a moderate amount of background white noise with many students in or passing by that place	10.64%
	A noisy place with many students in or passing by that place	0%
Distance to college vs. distance to food	A place close to your college/department	47.86%
	A place close to a variety of food/drink options	52.14%
Greenness vs. Electrical outlet	An open space with an electrical outlet, but without adequate greenery	62.14%
	A green space with a beautiful landscape, but without an electrical outlet	37.86%
Enclosure vs. View	A semi-enclosed open space, protected from sun and wind, but without greenery and view	37.59%
	A moderately green space that is shaded with trees, but does not have a view of mountains or other natural features	53.90%
	A green open space without trees or shade, but with a great view of mountains	8.51%
Lawn vs. Moveable vs. Fixed chairs and tables	A place with a green lawn that I can sit on	5.6%
	A place with movable chairs and small tables, so I can adjust their location	58.16%
	A place with fixed chairs and large tables, so I can have more space for my laptop and books, although I may share the table with other students	36.17%

followed by "fixed chairs and tables" with 43%. The least popular option was no chairs for their seating, chosen by only 6% of the sample population.

The level 3 variable indicated the respondents' choice for a canopy over study location. The majority of the sample population (62%) chose the area to be shaded with trees while 37% chose "with shade" and only 1% chose their area to have no shade, the least chosen option.

The level 4 variable indicated the respondents' choice for the presence of the other students in the study space. The next most commonly chosen option was "a few students occupying the space" (65% of the sample population) followed by "many students, but not overcrowded" (23%). The least chosen option was an area with no other students (12% of the sample population).

Discussion

This study investigated the preference of Cal Poly students in using campus open spaces as study areas and their preferred environmental factors for studying and learning. The results show that students enrolled in the face-to-face course use both outdoor and indoor campus spaces more often than students in online classes, mainly because students study for their online classes mostly when they are not physically on campus. However, during the academic year, more students are physically present on campus while studying for their online classes than in the summertime. The general attitude of the three cohorts towards studying in an outdoor space was similar: it was not their most favorite choice. Their first choice was studying at home (65% of online students, and 50% of students of the face-to-face class). The second most popular study space for online students was an off-campus coffee shop (20.29%) and campus library (17.5%) for students in the face-to-face course.

The lack of interest in studying in an outdoor space suggests that current spaces on campus may not be responsive and supportive of learning. Such as those in Cal Poly's library and the student union building, dedicated learning spaces can be conceptualized for outdoor study. It is not unrealistic to assume that students' attitudes toward outdoor studying will change once they are exposed to well-designed outdoor spaces that are responsive to their preferences and needs. With that hypothesis in mind, the characteristics of such spaces were investigated in the second half of the survey.

Respondents identified the characteristics of their preferred outdoor study area, once with a text-based survey and once through a visual preference survey. The results of the text-based survey show that the most preferred outdoor study area is a quiet place with few students in or passing by that place (51.77% of respondents), with access to an electrical outlet (62.14% of respondents), shaded with tree (53.90% of respondents), and with movable chairs and small tables (58.16% of respondents). The results from the VSP section of the study indicated that the most preferred outdoor spaces are open spaces with a "lawn surrounded by buildings" (50% of respondents), "movable chairs and tables" (51% of respondents), "shaded by trees" (62% of respondents), with "few students occupying the space" (65% of respondents).

The fact that most students prefer a quiet space but, at the same time, they prefer to see a few other students using the space, is both an opportunity and a challenge for campus designers. First, the site location has to be away from the main pathways on campus, but not completely secluded from the pathways. As every campus has lost spaces that are underused because they are away from the main pathways, they may be good candidates to be transformed into study spaces. One of the most important interventions is to provide electrical plugins, which was valued even more than greenery by students. However, providing shade with structures and/or tree canopies is also important. A mix of a paved area with furniture and lawn space is most preferred since it provides choices for different studying styles. A student can lay down on a lawn to read a book, while another uses a table to work on a laptop.

Sense of enclosure was also valued by some students (%37), even without greenery or a view. Therefore, open spaces next to campus buildings may be suitable as long as they are away from the main entrances and other sources of noise. Some level of building transparency will add 'eyes on the street' and increase the sense of safety. VPS results suggest one more important lesson. Of the 81-total images of space types, 34 were been selected by at least one student, which highlights the significance of providing choice in types of outdoor spaces on campus. This finding should encourage campus designers to evaluate campus public spaces and determine the space types. It will be a valuable step in their decision-making process of how to transform the campus environment for more active uses.

One of the limitations of this study is the applicability of the findings to other college and university campuses. Firstly, Cal Poly campus benefits from a moderate climate that may impact students' perception of outdoor learning. Secondly, the low crime rate on and off Cal Poly's campus is not generalizable to other campuses, and this study should continue in the other campuses with more diverse demographics and a different environmental and urban context. Thirdly, continuing to collect data from the three cohort types over time will allow the analysis of trends. And finally, the application of more advanced data collection tools, such as sensors or drones, can also enrich the findings.

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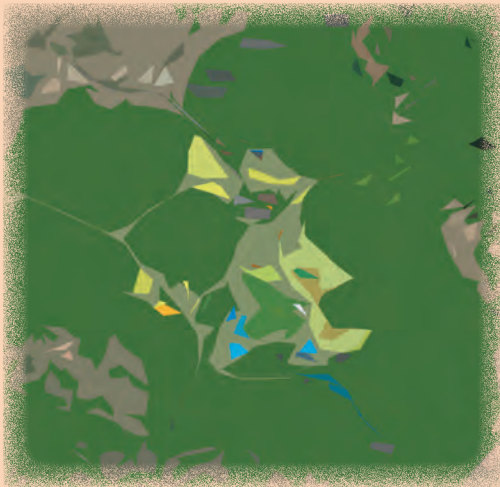
Culture and the Construction of Urban Space in Japan

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In this article , Neiva and Righi discuss how cultural and religious values are deeply related to design and the production of place in Japan. As Westerners we need to drop our Cartesian sense of order behind in order to understand the more organic, complex, and open architectural and urban structures of Japan, and spatial values such as voids, depth, intervals, fragmentation and open order. This understanding can help us reach out to a more meaningful urban experience.

In Western urbanism, the use of perspective and the prominence of squares, monuments, and streets have always been relevant. However, this notion of a city as a hierarchical and linear structure is the antithesis of Japanese urban spatial design. Space always reflects the principles of a given culture. The Japanese have always managed to preserve their traditions whilst assimilating the culture and techniques of other peoples. The Westerner's great difficulty in perceiving and understanding Eastern spaces can be explained by unfamiliarity. To overcome this obstacle, we need to use nonlinear spatial grammar. To understand Japan's spatial system, it is necessary to research the complex relationships between the visible and invisible worlds. The principles that define the characteristics of space are; *Ku* – empty space (emptiness), *Oku* – inner space (depth), and *Ma* – in-between space (interval). They create a more organic, natural order, with an open and busy structure, common to the expansion of typical Japanese cities. In short, the purpose of this article is to understand these concepts. Nowadays, in face of the difficulties in the West of conceiving adequate urban environments, the pursuit of a new vision, such as the Japanese one summarized here, is very pertinent.

Culture and Urban Space

Linearity as a visual ordering structure for urban spaces constitutes the standard for the western concept of good city form. It is part of the work of important urbanists, such as Le Corbusier (1925) with his modernist utopias; Lynch (1960) in establishing the line as an element that organizes urban vision; Cullen (1961) with his concept of serial vision; and Venturi et al. (1972) in introducing linear patterns in the exploration of the physical form of Las Vegas.

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To correctly understand the Japanese city, concepts that are uncommon and foreign to the West are needed. This is why when observing cities like Tokyo, Western visitors have difficulty in understanding them due to ignorance of the principles that govern the composition of such spaces. In Western spatial design, the straight line is present and understood as an abstraction, and is used by architects when laying out their cities. For the Japanese, curved lines are understood as a variation of the straight line, not as a distinct form (Itoh, 1973).[1] Around 700 (C.E.), due to Chinese influence, there was an attempt to directly implement orthogonality in the cities of Nara and Kyoto. However, the guiding elements of this type of composition were based on religious and not merely rational considerations, differently from the layout of western grids, which stem from Greco-Roman tradition.[2] Moreover, given its strangeness to Japanese culture, this kind of delineation did not have a lasting impact on the urbanization of other Japanese cities (Sorensen, 2002). Funahashi (1990) considers that there is still strong resistance to the Western model in modern-day Japan.

For Ashihara (1998), the illegibility of Japanese cities to the Western eye is due to the different values attributed to line and

[1] Traditionally, Japanese architects used methods of their own, such as the tawami-jaku or shinai-joogi to draw both the straight line and the curve. Whenever a curved line was required, the master carpenter would use a long, thin rafter. The shape of the curve varied according to the width of the rafter and the intensity of the force applied to it. The rafter had no gradation measurement and therefore the process was quite subjective. Practically all the curves of roofs of Buddhist temples and Shinto shrines were created this way. For the Japanese, the curve is a mere variation of the line and not a totally distinct form.

[2] Nitschke (1996) notes that the layout of Nara and Kyoto resemble the design of Hindu or esoteric Buddhist mandalas, in which a microcosm that symbolizes the macro is reproduced. As in a mandala, the layout of these cities transcends space and does not just present a potentially manipulable physical space through a merely rational visual order.

territory in the two cultures. In the East, planes, exterior and interior interaction are dominant. This difference in language is evident in the Western and Japanese writing systems – the former is based on unidirectional lines, and the latter on a multidirectional surface. Barrie (1999) considers that Western characters need linear grouping while Japanese ideograms, or *kanji*[3], convey meanings either alone or grouped. This profound difference is reflected in the traditional writing instruments, the pen and the brush, in Western and Eastern traditions, respectively. As noted by philosopher and semiotician Roland Barthes (1975) in a book on the poetics of reading, the pen strokes the paper linearly while the brush offers complete freedom of movement.

For Bognar (1985), the way of organizing space reflects the principles of a culture, like it does in Japan, with a relationship between the wide visual field of a text and the city, which does not have a single center and translates ambiguity between urban elements. The Japanese addressing system is an effective indicator of this spatial logic. An address is represented by a vertical sign at the corner of two anonymous streets, which in turn represents the number of a unit of area called chome, which is not as regular as Western city blocks, and the machi, another unit of area consisting of several chomes. The numbering of buildings or homes does not follow a serial pattern within the chome but represents other logical patterns, such as the date of construction or the subdivision of lots. The process results in a non-linear and complex system, exacerbated by the sinuosity of Japanese streets which, according to Takatani (1987), have neither independence nor individuality.

In order to understand the complex spatial system in Japan, one needs to penetrate the culture, considering the relations between the visible and the invisible. The principles that define spatiality are the basic concepts of *Ku* (emptiness), *Oku* (depth), and *Ma* (interval).

Ku

Until around the end of the 19th century, the western concept

of architecture and planning was unknown in Japan. There were no words in Japanese to refer to them. It was only during the Meiji era (1868-1912), when relations with the West intensified, that, joining the ideograms ku and kan, the concept of space was introduced as the term kukan, which literally means "empty place" (Nitschke, 1993).[4] However, despite not being expressed in words until the modern era, the Japanese already had a concept of space in art, where emptiness was dominant. In one of the oldest Japanese religious practices, Shintoism, stones and trees are adorned with *shimenawa*, ropes of rice straw or hemp, with added paper garlands, creating a sacred space around them that people do not approach (Figure 1).

It was during the medieval period that the ideas of emptiness and nothingness were reinforced through Buddhist teachings that rangied from religion to the arts. In a passage from the Tsuzuregusa (1330), a classic of Japanese literature, the monk Kenko suggests rejecting everything concrete: "Too much furniture in a room, too many Buddhas in a temple, too many stones and plants in a garden; the person who talks too much about the things he has done - everything is despicable" (Yoshi-da, 1967). A similar attitude concerning emptiness is defined and depicted in medieval Zen painting. When compared with the paintings of the previous Heian period (784-1185) in which the surfaces were filled with images of people and buildings in perspective, it is clear that Zen painting gradually gave way to emptiness, which began to occupy most of the surface in the form of mountains and clouds represented in the distance.

Over time, the idea of emptiness became strongly ingrained in the Japanese mentality, including cultural manifestations such as writing. Its presence in the art of calligraphy, shodo, occurs through kukaku "air-drawing" (Itoh, 1973) in which the writer

Figure 1: The Meoto-iwa are two rocky stacks in the sea off the town of Futami. They represent the two creator gods of the Shinto religion, and the shimenawa *connecting them represent marriage and the act of creation. (Source: WikiMedia Commons; https://commons.wikimedia. org/wiki/File:Meoto-iwa.jpg)*

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[3] Kanji is one of the four forms of Japanese writing, the others are hiragana, katakana, and romaji. Hiragana is the most common, formed by 46 syllabic characters, used in the phonetic transcription of Japanese words. Katakana is of limited use, consisting of 46 simple characters, used in the spelling of foreign words adapted to Japanese phonetics. Romaji is used in the transcription of Japanese in the Roman/Western alphabet. Kanji is the most erudite writing, derived from Chinese between the 3rd and 6th centuries (C.E.). It is of an ideographic and abstract nature, and constituted of very stylized representations of objects, beings, and concepts. Although there are about 80,000 characters, the mastery of about 3,000 is enough to read a newspaper (Barnabé, 2005; Rudovsky, 1965).

[4] The kanji for Ku also means heaven, universe, or infinity, and Kan means interval, increasing the possibilities to interpret Japanese space.

strokes the air with an imaginary brush to create invisible characters. This hidden dimension is disregarded in Western writing, where only the lines that remain visible after the pencil touches the paper is relevant. In Japanese writing, the mastery of kukaku is essential in creating a beautiful character in written expression.

In urban planning, it was only in the modern era, after the destruction of Edo castle in 1657, that the Japanese cultural affinity for emptiness resulted in the formation of one of the most intriguing aspects of Tokyo (Naito, 1987). After this event, the city center became empty, creating a conformation that differs fundamentally from Western metropolises (Figure 2). Philosopher Roland Barthes (1970) discusses this difference:

> The empty center of Tokyo hurts Western sentiments regarding cities, in which a center is required to go to, to return to, a place that one dreams of, that advances or retreats in relation to itself. In the West, city centers are always crowded, the values of Western civilization are condensed in them: markets, churches, administrative buildings, banks, and squares. However, Tokyo offers a paradox. The city lives indifferently to its center, which is among the leaves of trees, hidden, out of sight. The flux of the city goes around it, the walls, the streets, the cars, the people rotate centrifugally, perpetually around the central void. (p. 30)

Barthes refers to the Imperial Palace in Tokyo as an "empty center"; the urban structure of the city is characterized by having its greatest void in the center. Thus, despite its economic growth and urban development, Japan's largest shrine remains untouched.[5] According to architect Atsushi Kitagawara (2006), Roland Barthes detected what *"we Japanese had known for a long time: in Japan, the city center is empty"*. Even today, the space left by the castle consists of a forest set on a plane. For the Japanese, Tokyo's empty center exists without any need for a vertical visual landmark to represent it, unlike what happens in most Western metropolises (Figure 3).

While in the West, materiality is a characteristic of spatial composition, in Japan emptiness and depth are desirable qualities in the creation of arts and spaces. The void left by the castle was taken by the trees and enveloped by the city, gradually hiding it more and more. Thus, the city today, consciously or unconsciously, applies a concept that emerged in ancient Japan: *Oku*.

Oku

The concept of *Oku* first appeared during the Yayoi era (200

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[5] As nobody should be able to contemplate the Imperial Palace from above, the construction of skyscrapers around it is discouraged. The opening of subway lines below will never be possible though highly convenient. All that can be done is to circumvent the urban void.

Figure 2: Map of Edo (old Tokyo) around 1840's.
(Source: Wikimedia Commons / University of Texas Online; https:// commons.wikimedia.org/wiki/File:Edo_1844-1848_Map.jpg)

Figure 3: The empty center of Tokyo: The Imperial Palace complex.
(Source: Google Earth Pro)

B.C.E. - 250 C.E.) with the development of rice cultivation and migration to the plains (Yuichiro, 1977). During this period, villages abandoned the mountains which became sacred ground (Figure 4). In this process, mountains, which were objects of worship for the Shinto religion, moved away from everyday life. There, sanctuaries (*okumiya*) were built to meet the needs of the religion in formation. Sanctuaries established the notion of a place that existed, but was not visible, located far from common people. For Maki (1979), the Japanese established a pattern of spatial organization that contrasts with traditional Western patterns. In the West, the formation of cities is marked by churches, whose position is striking and central.

Oku is the opposite of Western centrality, as it is hidden, undercover, and invisible. It creates the sense of depth that has been used by the Japanese in their cities for centuries. In the old maps of Tokyo, collected by Takatani (1987), it appears that the paths coming from the periphery to the interior of the blocks led to where there once had been shrines, temples, and samurai residences. Over time, the overlapping of spatial components became interrelated with the topography, roads, fences, trees, and walls creating an intricate urban structure. This tangled complex gave rise to the urban fabric of *Oku*, which resembles mountain vegetation. The layers that were formed over time envelop, hide, protect, provide depth, and create mystery around the void (Figure 5). Hence, that which used to surround the *Okumiya* now envelops many empty centers in Japanese cities.

Arriving at the centers of Japanese and Western cities are exactly opposite experiences. In Japanese cities, when approaching *Oku*, there is no pursuit of Western urban prominence: one moves towards intimacy, which has no climax. In the composition of urban space in Japan, it is important to create layers, folds, and curves that hide the *Oku*. In Japan, there is no certainty of reaching an address following a straight line. Japanese urban culture is that of the empty, hidden center. For architect Atsushi Kitagawara (2006, n.p.), the feeling we have in the Japanese city is that "[...] around it, various things and events appear, but nobody knows of the center". For a Westerner, arriving at the end of a walk through a neighborhood can be frustrating, as converging to *Oku* means arriving at nothing, reaching zero, emptiness, and then getting lost again.

Ma

Like *Ku*, *Ma* is a spatial concept that is characterized by immateriality. It is more subjective than objective and its meaning is understood through its visual manifestations in the arts. Since the medieval period, achieving perfection in *Zen* painting, or the "harmony of *Ma*", meant not only having an ability with painted forms but also mastering their relationship

Figure 4: Shirakawa-go, traditional Japanese village in the Japan Alps, is a UNESCO Heritage Site. (Source: Breath in Travel; https://breathintravel.com/small-villages-in-japan/)

Figure 5: Trees obstruct the direct view of the Kinryusan Temple at Asakusa. From the series "One Hundred Famous Views of Edo" by Utagawa Hiroshige, 1856. (Source: The Metropolitan Museum of Art; https://www.metmuseum.org/art/collection/search/56689)

with the surrounding void. If the overall relationship between the elements was inadequate to the essence of *Ma*, it would certainly be lost.

In this sense, painter Ike no Taiga (1723-1776) made an important consideration about the void in his paintings when he said that "the empty areas are precisely the most difficult to produce" (Nitschke, 1966) (Figure 6). In architecture, the ideogram for *Ma* is present in words used for design such as *Ma-dori*, which means to understand *Ma*, or *cha no Ma*. *Cha no Ma* transcends the living room as a physical space, involving the act of drinking tea in a relaxed manner. Both the *Ma-dori* and the *cha no ma* indicate that architecture is the art of creating a particular *Ma*, a special ambiance.

The architectural plans of the old Japanese master builders did not have facades or sections. The design was two-dimensional. The important elements were: columns and beams, represented by black dots that symbolized the entire building. A good master was able to visualize the finished building just by observing these points. For Itoh (1973, p. 106), "the existence of this system brought about the possibility of mental visualization of all the parts above the plane". This ability allowed the interval between points, the *Ma*, to constitute a type of space that, although invisible, was taken into consideration. However, *Ma* was not limited to the structural elements of space but was also present in arrangements for temporary uses, a characteristic of Japanese culture. *Ma* was created by adding and removing sliding doors, portable windows, and utensils that allowed a house to adapt to the changing seasons, social uses and needs. According to Seike (1981), when planning a traditional house, architects created *Madori*, that is, a sense of place, something invisible, yet perceptible.

In a space dominated by horizontal planes, the *Ma* required the creation of artistic formats quite different from Western

ones. Among these, *emakimonos*, or "picture scrolls" stand out as in them time is suggested by the reproduction of successive events in the same story. In *emakimono,* the scenes are independent and do not constitute a continuous panorama, which induces the observer to constantly change their point of view. *Emakimono* reproduces, on a plane, something similar to the way the Japanese experience city spaces, "an experience to be memorized, made up of a myriad of smaller experiences" (Nitschke, 1966, p. 154). Only the fusion of the sequence of images constitutes a complete experience in this painting format. This process of spatial reading, known as *Ma no torikata*, makes it possible to capture the *Ma*, but it requires an enormous effort of imagination from Westerners, accustomed to a linear reading of space.

An even greater abstraction than that applied to observation in the plane is required of the Westerner by the *Ma* in the three-dimensional city. As in the plane, the *Ma* in urban spaces is composed of elements seeminly unrelated to each other. Similar to an *emakimono*, Japanese cities present successions of events and scattered elements that are impossible to be grouped by a Cartesian mind. Barthes (1982) described his first contact with *Ma* when visiting Japan:

> You must be guided [...] not by book or address, but by walking, by sight, by habit, by experience; here each discovery is intense and fragile; it can be repeated or remembered only through the memory of the trail that it left in you. (p. 36)

Barthes suggests that, with the aid of memory and repetition, each person creates their own panorama. In this way, ephemeral and fragmented images may orient you. The *Ma no torikata* is the key to "ordering" and understanding space; ignoring this process makes Tokyo "unreadable". In reality, the Westerner's difficulty or inability to understand the Japanese

Figure 6: The Ma *as the harmony in emptiness. "Landscape with Yueyang Tower", by Ike no Taiga, 1750. (Source: WikiArt; https://www.wikiart. org/en/ike-no-taiga/landscape-with-yueyang-tower-1750)*

city stems from the fact that it is the imagination, and not the straight line, that orders elements in space.

Fragmentation

The construction of the Japanese urban space has a strong relationship with the rural environment. They are a physical and conceptual continuum. Japanese farms are very different from western ones as spatial concepts found in urban areas are also applied in the field and vice versa (Barrie, 1999). The countryside consists of small farms or lots, not extensive fields or large estates. Despite their size, these small areas have clear divisions between them defined by solid structures on which one can walk, such as a dike, or a wall or a fence (Figure 7). Although the lots tend to be more linear on flat land, in most cases this division produces lots of all shapes with irregular curves and contours. In fields where rice cultivation is not dominant, other varieties of crops such as vegetables, fruits, tea, or flowers are cultivated but, regardless, there are always limits between the areas that reinforce the notion of a mosaic.

In 1937, while discussing the Japanese way of life, modernist architect Bruno Taut referred to the planes of the countryside: "These planes show an immense dismemberment of the land, particularly when it is spread out into different properties and even though some are cared for by the same owner, they are clearly separated from one another" (Taut, 1937, p. 219). Nowadays, despite the rationalization of planting areas, the practice of fragmentation continues in Japanese spatial division. Although they appear to be contemporary divisions created by new landowners, fragmentation has been present from the beginning, as it is a collection of partitions. The local farm is the antithesis of linearity and retains the Japanese spatial heritage in its fragmentation.

It was over this fragmented landscape that Japanese cities emerged. The urban topography maintains the characteristics of rural fragmentation. Where fruits and vegetables were once grown, there are now hospitals, gas stations, schools, and houses randomly distributed forming a very different division of land use and function than what is adopted in the West. Activities are not grouped but spread out, and the autonomy of each area is maintained.

There are few flat areas in Japanese cities. Retaining walls and built-in slopes separate occupied areas and roads. Each lot extends its area, elevated, or cropped at its boundaries. Buildings are rarely built on uneven land lots, they are flattened. The landscape becomes an irregular mosaic, with small flat areas. The hills that keep their natural relief are strewn with narrow streets and pathways that connect independent areas. This resembles the rice field terraces and the *engawa,* the platform

Figure 7: The mosaic of rice fields in Shiroyone Senmaida in Wajima, Ishikawa. (Source: Japan Wireless; n.a.; https://jw-webmagazine.com/wonderful-rice-field-terraces-in-japan-280405074a78/)

people step on before entering a traditional household and reaching the *tatami*.

Open order

The random dispersion of elements that make up Japanese space originated several centuries ago in ancient settlements and is still found in contemporary cities. In traditional villages, just below the *Oku* of the mountains, constructions followed a natural order known as *arare* or *iso-gai*, terms which synonymous with "by chance" or "disorganized" (Inoue, 1985, p. 145). These words are used to compare the spontaneous arrangement of houses in the villages with autumn leaves scattered on the ground - *arare*, or shells scattered on the beach - *iso-gai*, patterns that can be found in the organic expansion of typical Japanese cities.

This spontaneous arrangement lasted until the 6th century, when, under the influence of Chinese philosophies, the Japanese began to relate a balance between natural elements and religion. During this period, the strength of Chinese beliefs such as *shishin-soo*, related to the cardinal points, was decisive for the physical structure of cities (Gale, 1981). Within this principle, the Japanese sought the compatibility between a location and the spirits of the four directions as an ideal: the river to the east, corresponding to the blue dragon; the lake to the south, corresponding to the phoenix; the main road to the west, corresponding to the white tiger; and the mountain to the north, corresponding to the turtle.

In the foundation of Nara (year 710) and Kyoto (year 794), both former Japanese capitals, the choice of terrain and orientation

of the constructions observed the balance between the elements of heaven and earth. Although the orthogonal layout of these cities shares similarities with Western layouts, the ordering principle of the streets is different. These patterns initially influenced cities and temples, but later affected ordinary architecture as well. In the 16th century, João Rodrigues, one of the first Westerners to visit Japan, commented on the influence of religion in the positioning of houses on the land (in Cooper, 1975) (Figure 8):

> The Japanese and the Chinese, when building their houses, castles, and cities, pay close attention to the four cardinal directions, the front, the back, and the sides, as the activities and ceremonies carried out in their homes depend on this. The front should face south, the back north, the east to the right, and the west to the left. The left side is always more honored than the right. (p. 215)

Despite the presence of Westerners in Japan since the 16th century, linear geometry never became the ordering principle of space. In 1958, architect Bruno Taut noted that "Japan appropriately ignores the concept of the architectural axis, that is, that the straight line, the line with which all architects begin their work, exists only in our minds." (Taut, 1958, p. 222)

With the exception of Nara, Kyoto, and Saporo, other Japanese cities remain like the old villages, which were essentially organic. To Westerners, Tokyo looks like a badly cut patchwork surrounded by tortuous streets, unlike other contemporary metropolises. In their eyes, Tokyo's layout seems illogical and non-functional. However, what matters to the Japanese is that the city contains its various *Oku*. In Japanese cities, the straight line appears as a foreign element. Its existence nullifies the possibility of experiencing the *Ma*, as by joining one point to another in the process of spatial reading, it does so rationally, without the use of imagination.

The linearity of the Western urban layout is clean and direct; there is no hiding, creating layers, nor enveloping. In a way, it is in opposition to the depth necessary in creating Japanese space. The adoption of a linear layout over the millenary urban fabric of Japanese cities would require the clarity of each urban element, unveiling buildings and facades, and even if it made cities more "legible" to Westerners, it would mean the imposition of a foreign system to the Japanese spatial perspective. Even today, the implementation of a linear western model is rejected by most Japanese (Nitschke, 1966). Tokyo is laid out as a giant ball of yarn, respecting the *Ku*, *Oku,* and *Ma* spatial concepts. Thus, the relationship with the invisible, in the creation of artifacts and forged by traditional Japanese culture, still endures in contemporary times.
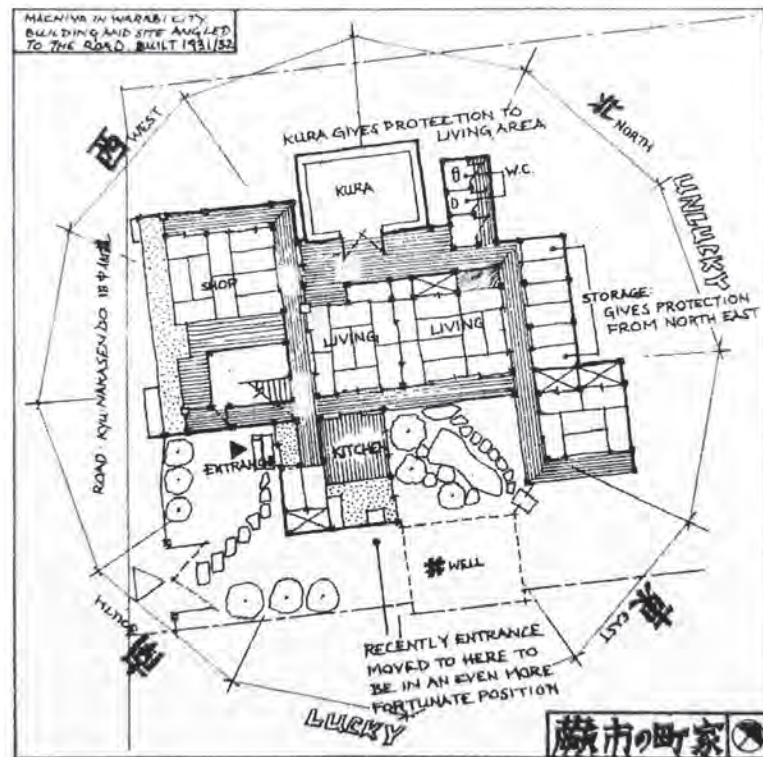
Figure 8: Position of the house in relation to the influences of the Machiya in Warabi, Saitama; built in 1931. (Source: Tingey, 1981).

For a long time, the influence of the heavens, which determined good or bad luck, was more important in the construction of Japanese spaces than environmental comfort, aesthetic or geometric patterns. This is still true today and, even in highly technological cities such as Tokyo, Shinto rituals are observed before the construction of most buildings. Before starting to build, the territory is delimited by priests with the help of *shimenawa*, the ropes and paper garlands that marked the holiness of trees and stones in the past. In this sacred space, the gods are invoked and the purification of the area is carried out.

Movement

The Chinese spatial arrangement was no longer adopted in the Japanese feudal period and the aversion to orthogonal spaces became evident (Inoue, 1985). At that time, having overcome orthogonal geometric influences, Japanese architecture became more complex and followed its natural tendencies towards movement. Among the most significant architectural spaces of the period is the complex of the Hommaru Palace (1640) in the old city of Edo, now Tokyo (Figure 9). Its spatial arrangement is quite irregular, and it is not possible to find an axis or center. About its interior, Inoue (1995) remarked that:

Figure 9: The Hommaru and Ninomaru palaces, part of the Edo Castle. Both palaces were surrounded by several keeps, defense houses, gates and guardhouses. (Model by Daderot, Tokyo Museum. Source: https://commons.wikimedia.org/w/index.php?curid=61321972

...the countless buildings are connected by corridors or joined directly. It is possible to take the entire complex as a continuous interior space. It doesn't matter if the buildings are aligned or oblique in relation to each other [...] apparently there is no spatial order in the relationship between them. (p. 145)

The buildings thus organized contrast with aligned ones. As you walk through these spaces, a new scenario is uncovered at each turn. Like the unfolding of an *emaki-mono*, each component is seen in succession to each other. Space is never revealed in its extension all at once, it is revealed, little by little, in time. In spaces of this nature, the elements are connected like links in a chain. The intention here is to create a space full of movement and nuance. The succession that results from walking through the spaces is more important than a having a spectacular ending.

The tendency towards movement in Japanese space includes city and architecture. The architectural complex of Kiyomizudera (1633) in Kyoto is closely related to its neighborhood through the articulation of busy spaces (Bailey, 1973) (Figure 10). Throughout the complex, there is a sense of continuous movement and attraction that leads the individual to always advance and retreat to the starting point, without any particular climax. The twisting movement in Japanese architecture parallels Buddhist concepts such as the mutability and transmigration of the soul, which imply flux based on temporal existence. This flux has no constancy, resembling a deflected and discontinuous movement, it does not require regular speed or fixed direction.

Figure 10: The Buddhist Kyomizu-dera temple complex halfway up Mount Otawa overlooking Kyoto. (Source: Google Earth Pro)

Conclusion

It is important to recognize the study of new concepts beyond one's own culture as a way to expand the perception of one's world. This has been the Japanese attitude for centuries: learning the culture and technique of other peoples without losing their own traditions in the process. The Japanese affinity for the invisible has forged, through religion and concepts such as *Ku*, *Oku,* and *Ma*, a space that rejects the immediate rationality of the straight line, characteristic of western spatial culture. In today's pluralist contemporary universe, including the Japanese perception in discussions about space means considering the existence of other principles and patterns of order, which are still alive in human culture and experience. The concepts we discussed reveal some of the limitations of linear perception in the reading of spaces and the importance of recognizing the existence of other systems, such as the Japanese one.

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Revisiting a Nourished Urbanism

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In the face of global climate change, providing urban systems that support sustainable agriculture and recognize the critical nature of water is fundamental. In this article, William Riggs calls for a 'nourished' urbanism which builds on food systems alongside urban environments with social, cultural, economic, and aesthetic nourishment. By comprehensively addressing land use, urban form and water issues, cities can foster a truly resilient nourished urbanism.

How can we feed a growing planet without destroying it? In the face of global climate change, how can we provide 'nourished' food systems that remind us of things as simple as where an apple comes from (e.g. from trees not the shelves of a grocery store)? Consistent with numerous studies, the great urbanization of the past century, and its related impacts on our planet's climate, show few signs of slowing (Hamin & Gurran, 2009; McCauley et al., 2015; United Nations, 2014). Most global population projections agree that at the end of the 21st century there will be between 8 and 15 billion people on earth, after which population growth may plateau, as we reach carry capacity. Of this anticipated growth, the majority will likely be absorbed in cities, both existing and new. The growing urban population presents serious environmental challenges that require innovative approaches to balancing economic prosperity and ecological integrity. Reducing the human footprint of humanity is however only the step. More actions are needed to push cities toward ecological resilience.

The economic and ecological features of cities generate both opportunities and constraints.Historically, the non-urban has been able to co-exist with the urban condition, but the tension between them has increased as cities have continued to grow (Burdett & Sudjic, 2007). In the city-states of the Italian Middle Ages, for example, non-urban areas fed the city, while the city provided the opportunity for government, religion, economies, and cultures to flourish by encouraging interaction not only within the city but between cities and in non-urban areas. While this symbiotic relationship between urban and non-urban defined the cities of the past, it does not frame the present global urban condition, in which urban development consumes non-urban land (Knight & Riggs, 2010).

Literature indicates that we are now living during a shift in the natural world from the Holocene to the Anthropocene (Steffen, Crutzen, & McNeill, 2007; Zalasiewicz, Williams, Steffen, & Crutzen, 2010). Past ways of organizing, designing, and governing, that have served so well, are no longer a match for the complexity of the emerging planetary conditions, nor their local expressions. The inherent complexities of this shift create areas of great uncertainty as we consider how to navigate a collective and informed transition into this new era. There are challenges specific to making coherent connections between localized questions and global conditions. There are challenges associated with diverse local environments and the pace of adjustment, each with its own needs and having a shared relationship to planetary systems.

To address the future sustainability of urban areas, both practitioners and academics must begin to re-envision adaption and resilience, and how built form can promote both ecological sustainability and economic growth, given social and political complexities (Berkes et al., 2000). Given these complexities, we argue that a theme of integrated agricultural urbanism is key to these adaption strategies, focusing on shifting paradigms in the areas of energy, water, soils, infrastructure, and design (Knight & Riggs, 2010). This includes systems that feed or 'nourish' society, for example, enlightening children who come home from school troubled because classmates do not understand that apples come from trees. While the proposition that a child could not know where their food comes from sounds momentarily irrational or even preposterous, in truth it is quite a reality. There is a complex series of relationships between growing, processing, packaging, distributing, purchasing, consuming, and disposing of the food we eat every day (DiRamio & Cantrell, 2005). This series of relationships is internationally based, making it possible to have pears from Chile, garlic from China, and apples from Washington on any given month throughout the year. Our local communities have become dependent on international

and national agricultural and natural resources to satisfy our "normal" daily diets when food is growing locally and regionally in most parts of the world. This long-distance relationship we now have with food, which is more packaged, processed, and convenient than any other time in human history, has reduced our connection to what we eat, and the public at large has little concept of how and where food is grown.

Despite these difficulties, in recent years there has been a surge in school gardens and education, urban agriculture initiatives, City Farms, "buy local" movements, local food distribution infrastructure such as food hubs and CSA programs, urban & city farms, food policy councils, young and new farmers' incubation programs and publicly-funded programs like the Food Corps. Some of the most forward-thinking communities taking strides to bolster their local food systems are Detroit and San Francisco (Mansfield & Mendes, 2012). The efforts of multiple Detroit nonprofits combined with the city's public work agenda have capitalized on the approximately twenty square miles of vacant land within the city limits to create thriving urban farming initiatives (Morgan, 2015). Cities are no doubt strengthening their relationship to food and proving compatibility between rural and urban environments by infusing rural agriculture typically outside the city into everyday urban life (Barthel et al., 2013).

We have seen a rise in community-based organizations spearheading local food systems work as well. Nonprofits and for-profits are making locally grown food more accessible through local-only online grocery stores such as Good Eggs and food hubs or regional aggregation and distribution businesses. For example, Cherry Capital Foods in Michigan typically facilitates purchasing relationships between small to mid-sized farmers and businesses or institutions along with boosting equitable access to healthy food (Dixon et al., 2007; Portney, 2005; Renting, 2012).

These have been matched by self-organized bodies such as food policy councils that are taking a policy advocacy approach to enable and encourage local food production, consumption, and sales in urban environments (Ding et al., 2012). Additionally, federally-funded grants and programs are emerging, which impact the local food landscape in communities across the US. Notably, the Food Corp matches young local food educators with schools in underserved areas to teach children about nutrition, gardening, and local food, and work with cafeterias to offer more local products. Some government programs and grants now support these efforts indicating that a sustainable food system can be achieved through land use, water, and urban form most appropriately and effectively addressed on a local planning and policy level, including the United Nations

and Habitat 3, which has made sustainable urban design (Mansfield & Mendes, 2012; United Nations, 2014).

In this context, we posit that there is a continued need to focus on a nourished urbanism and an integrated approach to agricultural urbanism. We argue that despite the positive growth in recent years there is still room for drastic, and more equitably distributed, improvements in the United States and abroad. Some have argued blankly that urban agriculture is positive in cities (Barthel et al., 2013; Bellows et al., 2005; Brown & Jameton, 2000), this is not tempered by scale and level of integration. We argue that these are essential components. By infusing our cities with agricultural elements (local food infrastructure) we can create urban environments ripe with social, cultural, economic, and aesthetic nourishment. By addressing land use, urban form, and water issues through the lens of urban planning, we can create communities defined by a nourished urbanism that are truly resilient.

Background

There is a common theme in urban planning of the increasing challenge for cities to become self-regulating, sustainable agricultural systems. Deelstra and Girardet ask whether it is possible to make cities viable over the long term— socially, economically, and environmentally. Cities exist in an environment where distances are irrelevant as natural resources, people, and products are in constant "mobilization" instead of "civilization" (Deelstra & Girardet, 2000). In this context, the urban condition has long been divorced from the non-urban or rural, something that many recent policies recognize as synergistic in the success of communities (Knight & Riggs, 2010).

Considerations in these systems include land use, policy, and economic factors. For example, the conventional food system is driven by profit maximization and market control, designed for efficiency and externalized costs (Campbell, 2004). Such models have traditionally been standardized with farming practices under corporate control damaging local and rural economies as it drives diversified, small-scale farming operations out of business (Campbell, 2004). City and regional relationships with food and agriculture create a negative environmental impact because of the energy required for production, processing, and transport; fossil fuel consumption; air, water, and soil pollution through conventional agricultural practices based on chemical use; and wildlife habitat destruction (Deelstra & Girardet, 2000).

When incorporating urban agriculture into cities, a landscape urbanism approach can be utilized in planning efforts. Land-

scape urbanism is the theory that landscapes, rather than buildings, should lead city design and planning (Steiner, 2011). First, urban areas must envision a new idea of framing related to landscapes—a productive landscape—where food production centers around the community. Urban farming can be ingrained into the natural city structure as a sustainable element and planning tool.

These factors are in large part influenced by factors related to (1) land use/design and (2) water, areas traditionally viewed through the lens of city planning and urban design. Given this paradigm, we explore these factors through a series of case studies of how the landscape has and is changing to support efforts to integrate agriculture in urban areas throughout the world. We also focus on policies and opportunity spaces for communities looking to increase their resilience by keying in on local, sustainable food systems. By institutionalizing these efforts, setting up policies and programs that may be adopted by any municipality, we argue that it can make it easier for cities to move in this direction a develop both catastrophic (e.g. resilience from natural hazards and sudden system shocks) and day-to-day resilience.

Land Use and Design

As we have argued previously, much of the foundation of agricultural urbanism is in the use of land, yet as simple as this sounds many land-use decisions to build non-compact developments in suburban areas reduces local greenbelts, which puts pressure on the sustainability of local agricultural systems (Martellozzo et al., 2014). Currently, the production of local food is increasing in popularity through efforts to make urban agriculture visible and accessible, the local production laws (sometimes called cottage food laws) that allow small-scale production and sales of goods from your home (McDonald, 2019; Sibilla, 2014). Food is being salvaged and maintained within the region it was grown through gleaning programs that collect and distribute produce that otherwise would have gone bad, through local distribution companies like food hubs (Barham & Delgado, 2015; Feldstein & Barham, 2017).

The City of Portland also has established progressive zoning laws to encourage urban agriculture (Hatfield & Cohen, 2016). In June 2012, Portland approved an update to its zoning code that addressed the needs of urban agriculture and urban food distribution to be efficiently managed and promoted. The update was the result of a multi-year effort to acknowledge and encourage urban farming and food production—creating a healthier, more sustainable city. The change in zoning allowed for gardens and markets in residential areas—something not allowed by prior codes. Additionally, the changed code

supported the ability to raise animals and bees, have farmers' markets, and engage general food production and distribution in residential areas.

Yet, many communities still think of these as conceptually separate. They define farms as large parcels that are functional for the industrial production of food but not for the individual community-based agriculture that is romanticized. To bridge the gap between our food and the people who eat it, sustainable and local food production must be treated as a community planning issue. We need to shift the paradigm from a separation between urban and rural activities to communities with a blend of both. The health of developed communities depends on the ability to incorporate agricultural activities into the infrastructure of urban environments through land use and design decisions. Coexistence is essential.

The Case of San Luis Obispo

The City of San Luis Obispo (SLO), California demonstrates this urban disconnect. The City of San Luis Obispo is characterized by a unique combination of rural and urban environments that will allow for the expansion and development of urban agriculture. Although a small city with a population of less than fifty thousand, San Luis Obispo still has many urban components including a compact downtown and Cal Poly. Even with an absence of stereotypical city markers such as skyscrapers, San Luis Obispo has a very urban feel. The city is fortunate that it does not have similar problems that plague other California cities such as traffic and pollution while still maintaining a thriving urban life.

Alternatively, the urban center of San Luis Obispo is nestled in a rural area with the immediate surroundings mostly composed of undeveloped private and public land. Public open space is a priority for the city and the Land Conservancy of San Luis Obispo is a powerful voice in preserving land and conservation of resources. San Luis Obispo already owns 4,000 acres of open space that is dedicated to recreation (LCSLO.org; Slocity.org).

The agricultural industry is strongly represented in San Luis Obispo County with 1,338,874 acres of farmland (agcensus. usda.gov). A 2013 agricultural report by the SLO Chamber of Commerce reports that "Wine grapes and strawberries are once again leading the county's agriculture industries, contributing 8.3% and 6.9% respectively to California's total wine grape and strawberry crops by dollar value in 2010" (SLOChamber.org). San Luis Obispo's love for its agriculture is shown through its well-organized farmer's markets and extensive wine tasting operations. This pro-agricultural atmosphere has created the perfect environment to expand urban agriculture within
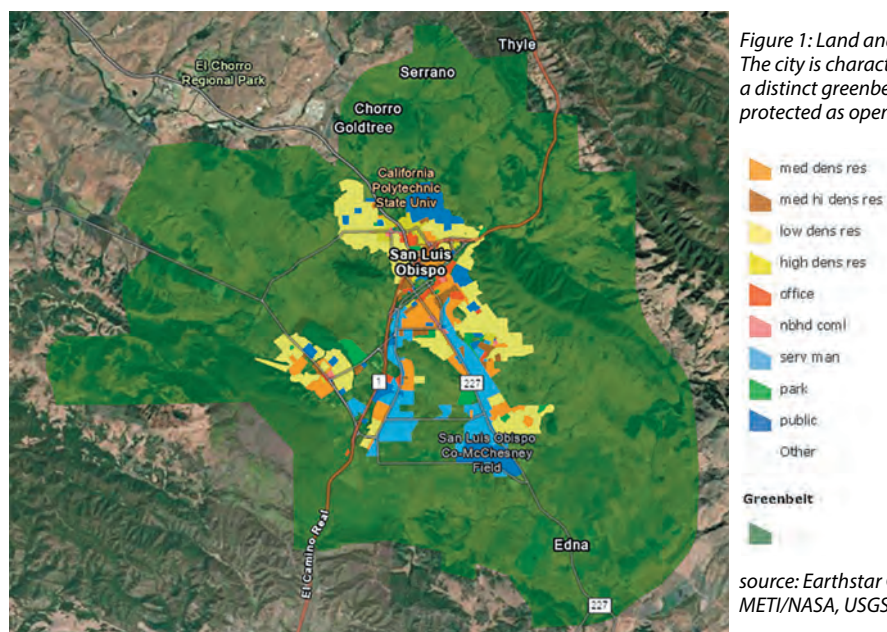
San Luis Obispo's urban city, yet from a regional land-use perspective, this may not represent the highest and best use of urban land to house and provide for the population.

Consistent with predominant theories of greenbelt preservation dating back to the 19th Century (Howard, 1898; Parsons & Schuyler, 2003), the city has chosen to preserve large components of green areas outside the city while providing for the development of housing and economic uses in the urban core. This tradeoff created a dichotomy and provocative policy question when the city faced questions about how to deal with a large, historically agricultural parcel in the urban core. While many argued that the historic integrity of the parcel should be preserved, this would in turn encourage greenfield development in more suburban areas on active agriculture. The city faced a policy decision – preserve a ceremonial, hobby farm in an urban area or incentivize housing development to preserve a productive greenbelt.

Land-Related Policy

While the property in question was large (over 60 acres) it presented an interesting policy dilemma and question – is a large parcel in an urban area the most effective method of providing for the basic needs of a community by providing water, shelter, health, and safety to its citizens? Food production and distribution - arguably the most fundamental of all human needs - are conventionally overlooked by localized planning policy efforts, but this issue brought them ahead. In this situation, adaptive policies can assist in meeting the demand for, and expound on the benefits of, local food and agriculture and slowly adopt policy accordingly.

For example, in dealing with the complex issues referenced earlier, San Luis Obispo completed a Public Land Survey (PLS) which assessed publicly owned land within the county based on qualitative criteria including soil type, land use type, slope, shade cover, etc. These parcels range to over 50 acres in size and accordingly are located in most part outside of the urbanized areas.

This model could be scaled down to assess parcels and portions of parcels within a city for their food-producing capability—on a small, community-oriented scale—which could provide true local food production. When looking at smaller-sized parcels for personal and neighborhood level production—in contrast to commercially-based agriculture—the spaces being identified may require a less pristine agricultural setting than parcels identified through the PLS.

Empty portions of parcels, yard spaces, green strips on sidewalks, less permanent planter boxes, concrete-laden public spaces, rooftops, and public parks can all be considered in a survey to increase public and local production of food. This could allow for the identification of sub-parcel spaces and hyper-local food production where agriculture would be viable. It would not, however, make it allowable, which requires additional tools. From a policy standpoint, this can include prioritizing local production and processing through overlay zones like food innovation districts. Land use and zoning can paint a different landscape for the diversity of settings in an urban space: open land, backyards, and apartment or dense residential.

Beyond overlay areas, many city-wide urban plans are beginning to consider food as a community planning element, just as they do with land use, circulation and housing. This can allow for pockets of urban spaces that are related to individual neighborhoods, using shared spaces in neighborhoods like sidewalks or adjacent backyard spaces. It means evolving design standards to encourage (or at least not a disadvantage) food production.

In 2013 the Los Angeles Department of Public Works passed a resolution that allows residents to maintain plants on public parkways. While technically the city owns the gardens, residents are free to maintain and grow approved edible plants from a list provided by the city (Curtis & Salter, 1975; Loukaitou-Sideris et al., 2012; Stehlin & Tarr, 2017)). While the resolution was a successful first step, further work is needed to fully reap the benefits of urban farming. There is a push to expand the list to incorporate a broader range of food since Los Angeles currently gives an extremely limited list of legal plantings. Establishing a wider array of approved edible plants could help residents of South Los Angeles and other historically disadvantaged communities have access to fresh produce instead of fast food.

While cities like Portland and Los Angeles assisted in breaking ground in adopting progressive zoning policies to allow urban agriculture, new California laws have recently come into fruition that will allow California cities to more easily transition into pro-urban farming communities. In 2013 California passed the Urban Agriculture Incentive Zone to promote local food production and to allow "cities and counties to enter into contracts with landowners who agree to restrict the use of their land for a minimum of five years for small-scale agricultural production" (NCSL, 2019). Additionally, the California Neighborhood Food Act was signed by Governor Brown in 2014 and guarantees individuals the right to grow their food regardless of their housing status or leasing contracts.

The City of SLO is in a unique position to efficiently develop new zoning of its own through the combination of assistance and prodding from the new pro-urban farming legislation and benefit from already having a community that is accepting and familiar with agricultural projects. Some resources that can contribute to the successful development and implementation of new pro-urban agriculture zoning are as follows:

Economic & Social Policies

Food swaps bring the social and economic facets of local urban agriculture together by allowing community members to meet and exchange their homegrown goods with others. In addition

to exchanging their homegrown goods, urban farmers can share tips and recipes, all while becoming immersed in a local community. The PDX Food Swap is popular in Portland and Oakland's "Crop Swap" held at a local urban farming store (Gottlieb & Fisher, 1996; Hatfield & Cohen, 2016; Paster, 2016). Cleveland is also emerging as another leading city in the urban agriculture movement. The city is using its surplus of vacant space for urban farming and aims to have community gardens located a quarter-mile away from every resident to promote public health, give everyone equal access to healthy options, and stress the importance of locally grown foods (CCCFoodPolicy.org).

SLO already has an extremely successful farmers market infrastructure with hundreds of residents visiting the popular downtown event every Thursday evening. Due to the farmer's market popularity, a food swap network would likely be easy to implement in SLO due to the locals' interest in buying fresh, regionally grown produce and goods. This would mean a bit of a paradigm shift in local food production but it is not without parallel. A food swap booth at the farmer's market may be the first step in implementing such a program, and residents can continue to build upon it after its introduction. A food swap network in SLO is an additional method to encourage locals to be conscious of where their food is coming from.

In 2013 the California Homemade Food Act went into effect, which allowed small businesses and individuals to make, package and sell homemade food items. Also known as cottage food laws, this legislation allows people to use their locally grown produce to make baked goods at home and sell them for profit. These laws have the opportunity to increase community participation in local food distribution networks and create a market of more available goods that can be sold at farmers' markets. Local food is convenient to purchase and accessible to urbanites. It may initially be a change of routine to visit a neighborhood farm stand instead of a grocery store chain, but people will soon experience the benefits.

Water

Similar to land use, in the last few years several California cities have made headlines as they have adopted new zoning codes that include urban agriculture (Olik et al., 2013), but very few have addressed the connection with urban water use in a location that has been plagued by water shortages. That said, applying a GIS suitability framework (Malczewski, 2004; McHarg, 1995) as a test to explore methods of increasing the amount of urban agriculture in a way that is sensitive to water use and local land opportunities can dramatically increase resilience. The method could use an Area-of-Interest (AOI) factor that takes into
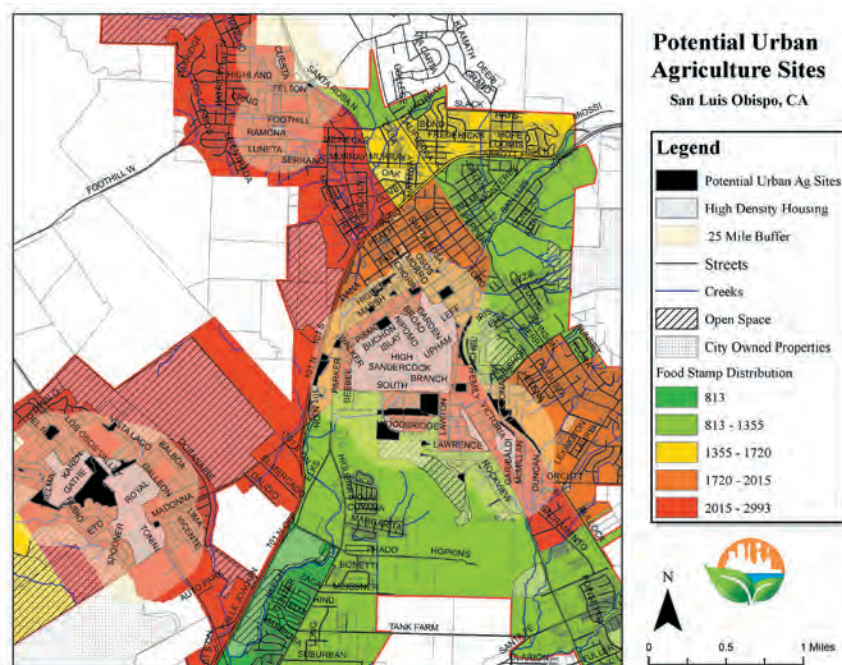
Figure 2: A suitability analysis illustrates underutilized parcels available for increased agricultural production.

account land use, transportation, economic and infrastructure characteristics, specifically stormwater and greywater.

For example, as alluded previously, large-scale agriculture operations can contribute to urban sprawl, which can be detrimental to sustainable, resilient cities – but how can urban areas look at capacity to support agriculture? We conducted an example analysis that avoided big parcels on the periphery of the city and instead looked for smaller-sized vacant lots within the city. Smaller lots can maximize productivity and sustainability. Using GIS data, we mapped vacant areas, to single out the lots that would be most suitable for urban farming and then layered on factors such as water sources and runoff potential. This is consistent with a City of Portland, Oregon analysis that used the following parameters: distance from bus stops, pedestrian access, bike paths, water availability, parcel size, slope, impervious surfaces, 100-year floodplain, wetlands, zoning, soils, and brownfields.

The example map and GIS workflow are provided in Figure 2 which show the information as it relates to residential areas (R-2 and R-3) consistent with our argument that the scale of agriculture should be integrated at the neighborhood-level rather than at the regional-level—underscoring food accessibility and equity cases for lower-income and minority residents who have historically suffered from food desert issues (Morland et al., 2002).

This is currently an untapped area for urban agriculture,

especially when using the parcel-based framework discussed previously. Expanding this method to look at rooftop gardens and rainwater harvesting could provide additional opportunities. Technology may also reframe this area. Moves toward big data online and the ability to accurately depict parcel-level opportunities online – where water and soil quality converge at the hyper-local level. A 'Farm Score' tool, similar to what has happened with Walk Score to identify walkable areas, could be an opportunity where technology can fill a void in helping communities better identify assets.

Similar methodology can be utilized to efficiently design optimal water usage regarding planning urban agriculture. By using parameters that take water supply and demand into accounts such as proximity to drainage areas or elevation differentials, parcels can be evaluated in a way that maximizes water use efficiency. In urbanized areas, rainwater is typically lost as runoff that ultimately drains to the ocean. If such runoff could be captured and applied to urban farming efforts or even just for home usage, this would be extremely helpful in solving modern water supply challenges.

California is in the midst of a historic drought and San Luis Obispo is no exception to feeling the negative effects. Urban farming development within the city must be extremely cautious towards water planning to ensure that water can be efficiently managed and conserved. By using water runoff as a GIS parameter, the best parcels for urban farms can be determined. Stormwater can be captured and then used for

irrigation purposes, which can save energy and wastewater treatment costs and return fertilizer pollutants to the soil.

There are several simple methods to capture rainwater and urban runoff that a homeowner can install and use towards farming and landscaping. A home's traditional gutter and downspout system can easily be converted by removing the bottom portion of the downspout and redirecting water into a tank. Instead of the water draining onto the ground, the water from each downspout is collected into a barrel or cistern. The gutters that connect to the top of the downspout have leaf screens to prevent debris from entering the water holding tank, and the top of the tank is lidded to also prevent debris. (See SFWater.org.). The barrel or cistern should be mounted on a sturdy surface and are typically strapped to the sides of the house for support and safety. The barrels also have a hose bibb to make it easier to water nearby plants. It is important to note that this water may be contaminated due to contact with the roof and gutter system but is ideal for agricultural purposes.

In addition to collecting rainwater straight from built surfaces such as roofs, rainwater can also be captured from water that is already flowing on the ground. This method is especially applicable when utilizing GIS to examine existing areas of runoff in San Luis Obispo to determine the ideal location for constructing a collection system. In this case, a tank is constructed underground, allowing the top of the tank to be at ground level. Installing an underground tank requires more labor and is typically more costly and permit-heavy than installing above-ground collection systems. A pit needs to be excavated and lined in concrete, or a pit dug for a metal or plastic tank insertion. Water drains into the tank through a screen system.

Greywater is another source of water that can be reclaimed for agricultural purposes. Greywater is water that has been lightly contaminated, typically from the water used for the shower or laundry which is quite different from a sewer, or blackwater. In most home plumbing systems both blackwater and greywater are combined when sent to the treatment center. Alternatively, greywater can be individually collected and reused for agriculture and landscaping. Moreover, rainwater collection is a relatively easy way for home water collection, and if it is being utilized for agriculture it doesn't need to endure treatment processes. Rainwater harvesting can ensure that urban farming is a sustainable process and has additional positive effects within the community such as reducing the amount of pollution that enters the ocean.

The Built Environment

An additional tool that maximizes space and food production

while taking into account the space constraints of dense cities is known as vertical agriculture. Vertical agriculture operates on the premise that artificial light can be used to grow more plants in less space. Instead of traditional greenhouses, where one plant occupies a sector so it can receive proper light, vertical agriculture has plants growing under other plants, using artificial LED lighting. More infrastructure is needed to develop and implement this idea, but with the proper lighting setup, more plants and thus more food can be produced from extremely space-limited spaces, ultimately assisting cities in reaching food sovereignty.

Opportunities and Conclusions

The urban agriculture movement provides an area of attention as neighborhoods move toward a revolution of urban sustainability. And we have provided a case and method example with a key question in mind: what propels this forward? Many have the desire to eat locally and reduce food miles, consistent with the slow food movement. Community gardens are popping up in urban neighborhoods all over the US, and provide a vibrant meeting place for residents to give life to the future of their community. These places allow for residents to take part in the planting, growth, and harvesting of healthy foods for consumption or sale, and ignite a movement toward a healthier overall community.

In response to our question above: we would argue that the answer is integration or integrative agriculture. From a municipal and government standpoint, we argue that communities can encourage and increase local food production by blurring the lines between urban and rural paradigm and by acknowledging the large room for improvement in the area of land use and approaches to water use. Considering these issues communities can begin to blend the rural with the urban environments geographically first, and perhaps eventually, culturally as well. However, first urban areas must envision a new idea of framing related to landscapes—a productive landscape—where food production centers around the community. The urban landscape is supportive of locally self-reliant communities by increasing plant growth and food production in unconventional, underutilized spaces. The method and density of land use should evolve to intensify the benefit we receive from each square foot of developed space.

Community Origins

Further moves toward urban sustainability necessitate re-thinking broader the theory about food production and distribution on a larger scale—alongside things like energy consumption and walkable or bikeable transportation. Specific

steps may include: (1) rethinking urban form concerning food production and food miles; (2) correcting land use codes to promote rather than prohibit food-producing (productive) urban landscapes; (3) educating behavior about eating locally and seasonally. Most of these organic efforts also begin organically – by community members voicing opinions and being active to bring about changes.

These grassroots and ground-up changes come from intensifying land use from public space, open space, urban space to productive space; moving up in scale from residential to include small-scale commercial uses and economic activity. Cities are already moving in this direction. Agriburbia is an agriculturally-based development that focuses on the hyper urban, small parcel lots in urban areas in locations from Colorado to British Columbia (Birkby, 2016; Newman et al., 2015). The goal of the community is to not only supply all the residents of the development with their own food, but also supply local restaurants with food and generate community funds. Cleveland is using its surplus of vacant space for urban farming and aims to have community gardens located a quarter-mile away from every resident to promote public health, give everyone equal access to healthy options, and stress the importance of locally grown foods (City of Cleveland, 2017).

Citizens can demand service grocery stores, farmers' markets, and community gardens within walking distance and local food outlets along transportation lines. This can continue the trend towards an integrated urbanism that can nourish our society in a way where we don't forget where the apple came from.

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Strategies for Financing Rio de Janeiro's Metropolitan Development Plan

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In 2019, Rio de Janeiro's State Government launched an ambitious urban development plan for the city's metropolitan region. David Vetter discusses how its implementation may be helped by capturing the real estate value generated by public and private investments, and discusses the types of value capture instruments used in Brazil.

The *Strategic Plan for the Integrated Urban Development of the Metropolitan Region of Rio de Janeiro* (*Modelar a Metrópole*) establishes scenarios, strategies, and instruments to guide the future urban development decisions for the federal, state, and municipal governments. *Modelar a Metrópole* was an initiative of the State Government of Rio de Janeiro (2019) through the Câmara Metropolitana with World Bank financing. The planning process began in 2015 and involved the consultants (Quanta/Lerner Consortium) with substantial participation by officials of the state and the region's 21 municipal governments, specialists, and civil society representatives. The consultants submitted the final documents in 2018.

Although *Modelar a Metrópole* provides a formidable list of the priority action programs in Table 1 at a cost of US$16.2 billion, it bluntly acknowledges the financing gap for these many programs given the "operational insolvency of the State of Rio de Janeiro in 2016-2017." Brazil's Great Recession of 2014/2016 increased the financing gap for the infrastructure needed for sustainable urban development and climate resilience at all government levels. The ongoing pandemic is further augmenting it.

Given this challenging financial and economic environment, how much could capturing the real estate value generated by

Table 1: Highlights of the priority action programs from Rio de Janeiro's Modelar a Metrópole plan. (source: author's summary)

Priority action programs	Estimated Cost (US$ millions)	Main objectives	Project areas
Balancing the Metropolis	5,566	Reduce spatial inequalities in social and economic conditions, improve the adequacy of urban infrastructure, and decentralize employment opportunities.	Strengthening of peripheral centers, multifunctional projects transversing the region, mobility between the peripheral centers and their surrounding areas, decentralization of employment and social services.
Housing the Metropolis	5,436	Provide adequate housing units, access to job opportunities, urban infrastructure, and social services.	Housing finance, infrastructure (water, wastewater, and drainage), social services, mobility, safety, and environmental resilience.
Smart Metropolis	3,883	Expand the region`s role as an international center for research, innovation, and industrial development.	Industrial sector (oil, gas, health, defense, shipbuilding, and energy), creative economy, tourism, and culture.
Sustainable **Metropolis**	566	Preservation of the environment in the region, including its rural areas, the protection of water resources, and increasing climate resilience.	Support for rural activities, reduction of water pollution, and recovery of the rivers, bays, and lakes.
Revitalize the Bays	764	Enhance the environmental protection of the Guanabara Bay, improve its use for intra-region transport, and revitalize its areas of historical and cultural importance	Complete the sanitary and storm sewer system around the bay, renovate port facilities, establish waterway transport lines, and restore historical and cultural sites.
Governing the Metropolis	18	Establish and implement an entity for metropolitan governance.	Constitute an entity for metropolitan planning with sufficient political support, an adequate institutional structure, and sustainable financing.
Total cost	16,234		
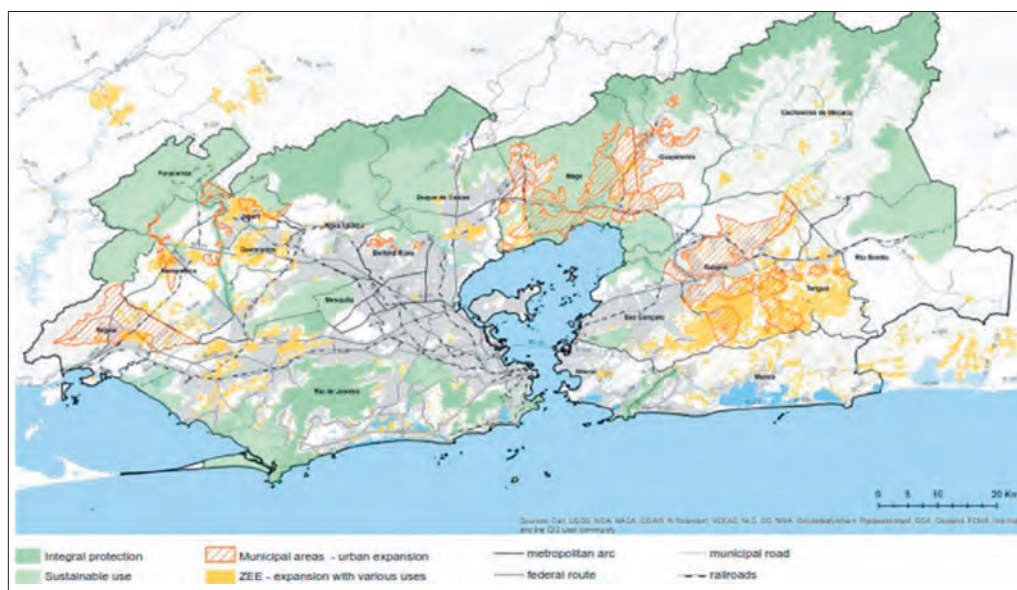
Map 1: Metro Rio - Map of municipalities, transportation lines, and urban expansion.

public sector investments and other interventions (e.g., zoning and density controls) help close the financing gap for this plan? More specifically, to what extent could the real estate value capture instruments available under Brazilian law help finance the needed investments for the priority action areas listed in Table 1? In addressing this question, we discuss value generation and the instruments available for capturing this valorization under Brazilian law citing examples of their use.

Metropolitan Rio covers 6,744 km and had a diverse population of 12.6 million in 2019 (Map 1). During 2001/2019, the number of households increased by 1.3 million at more than 2.5 times the rate of population growth (annual rates of 1.8% and 0.7%, respectively), due to such factors as population increase in the ages of family formation, divorce, and the unpacking of crowded housing units. In this way, Metro Rio needed to provide infrastructure for 1.3 million housing units to meet the demands of new household formation during this period.

Closing the financing gap for plan implementation with real estate value capture

Capturing the real estate valorization generated by public interventions can provide positive feedback in the form of additional resources for further investments (Blanco et al., 2016). In this way, value capture can create a cumulative, self-reinforcing process (i.e., a virtuous circle) by financing additional infrastructure investments. Chart 1 illustrates how value capture can generate this virtuous circle and the instruments available for capturing the value produced. On the other hand, the lack
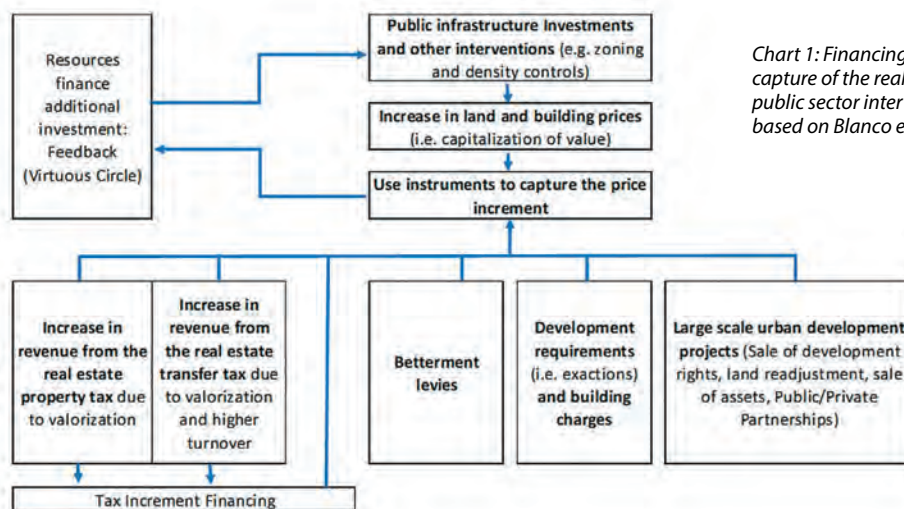

Chart 1: Financing infrastructure via the capture of the real estate value generated by public sector interventions. (source: partly based on Blanco et al., 2016)

of adequate public investment and land use regulation can induce a vicious circle of declining real estate values, causing government revenues and investments to fall, along with living conditions, environmental quality, and climate resilience.

Public sector interventions in infrastructure, public services, and land use regulation (zoning and density controls) can create benefits by increasing access to jobs, parks, and schools and providing adequate land use. And, they can also generate costs (e.g., a freeway in your backyard). Empirical studies have long shown that the real estate market capitalizes the costs and benefits caused by these public interventions into residential property values (Baranzini et al., 2008). Vetter, Beltrão, and Massena (2014) calibrate a hedonic rent model using 2010 census data with indicators of housing quality, access to jobs and infrastructure, and neighborhood conditions as the independent variables. These variables generate the highly differentiated surface of average housing values in US$ in Metropolitan Rio shown in Map 2.

The economic rationale for value capture

Properly executed, value capture can contribute to the government's stability, efficiency, equity, and environmental objectives. Value capture can contribute to the stability objective by creating *fiscal space* for financing additional infrastructure investment. Heller (2005) defines fiscal space as: "room in a government's budget that allows it to provide resources for a desired purpose without jeopardizing the sustainability of its financial position or the stability of the economy."

Real estate value capture can help improve the economic efficiency of municipal investments as the beneficiaries are showing their willingness to pay. Peterson (2009) notes that "as long as the spatial distribution of project benefits can be internalized within a well-defined 'benefit zone,' it is economically efficient to finance projects by tapping the increments in land values resulting from them. When there are spillover benefits, it is still efficient to recover part of the costs by tapping land-value increments within an identifiable benefit zone." Bird (2005) argues that: "The efficient provision of goods and services requires local governments to charge directly for services wherever possible."

Value capture can contribute to social equity by allowing cross-subsidies from higher-income families to lower-income housing and urban infrastructure, including lower-income renters living or homebuyers wishing to locate in the benefitted area. Calavita and Mallach (2009) argue that inclusionary housing programs often involve linking to "the gain in land value resulting from public action." Finally, value capture can help to finance the investments needed for environmental sustainability and resilience.

The main instruments of value capture

What are the main value capture instruments available under Brazilian law and examples of their use? Smolka (2013) provides a comprehensive review of how Latin American governments effectively use various instruments to capture the real estate value created by their infrastructure investments and other

Map 2: Metro Rio - Average Estimated Housing Values for Census Areas in US$ (2010).
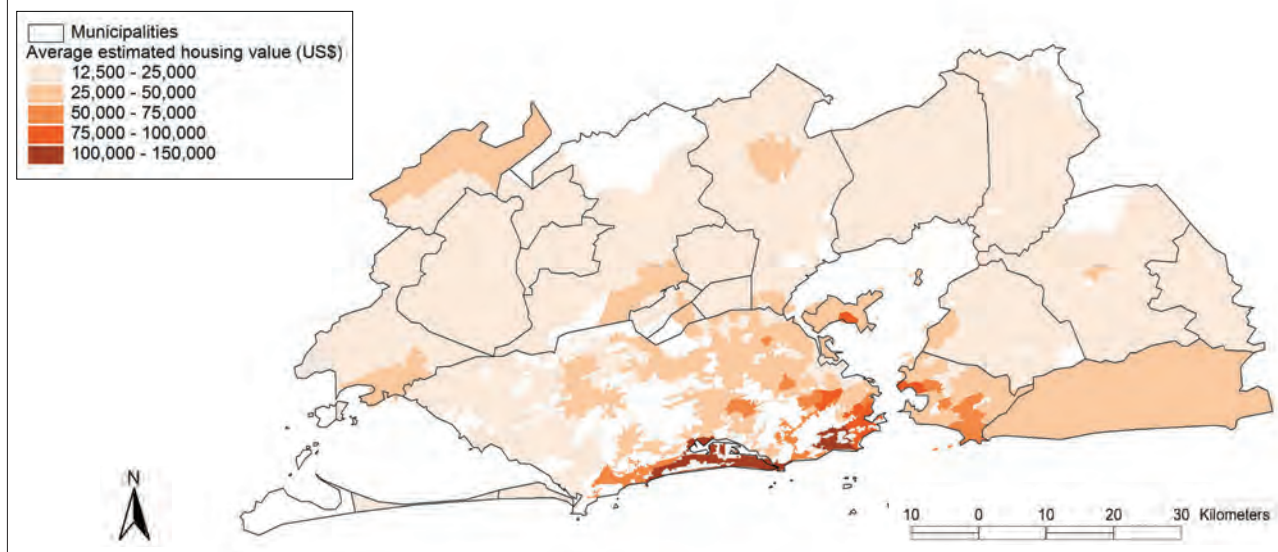
government interventions such as zoning changes and density controls. As shown in Chart 1, the main types of value capture instruments used in Latin America are:

- Real estate property and transfer taxes are based on property values and sale prices and, therefore, rise with valorization and can be used in Tax Increment Financing (TIF)

- Betterment levies are charges based on the valorization of real estate generated by public interventions.

- Development requirements and charges (i. e., exactions) oblige developers to provide land for public uses or infrastructure or make payments in exchange for permission to build.

- Tools for large-scale urban development projects employ several value capture instruments, including the sale of land or development rights and land readjustment.

- Public/Private Partnerships can involve land for infrastructure swaps and concession of the right to provide public services in exchange for tariffs, leasing, and other Project Finance structures.

We will discuss each of the main types of value capture instruments used in Brazil.

Real estate property and transfer taxes

Smolka (2013) argues that any tax on land value "is a form of value capture in so far as much of the land value results from accumulated public actions and investments." Recent experience shows that cadaster modernization can generate significant increments in the real estate property and transfer taxes. For example, in the Municipality of Campo Grande in the State of Mato Grosso do Sul, a cadaster modernization project more than doubled annual revenue from the real estate property and transfer taxes during the 2006/2011 period. Over this period, this increase in the real estate property and transfer taxes (IPTU and ITBI) helped Campo Grande to boost its annual fixed capital investment from US$91 million in 2006 to a yearly average of US$156 million for 2008/2011 (70.7%). One option would be to use tax increment financing by earmarking the increase in the real estate property and transfer taxes generated by the valorization due to municipal interventions to finance its infrastructure.

Betterment levies

Betterment levies are charges paid on real estate property of owners who benefit from infrastructure improvements. The levy can seek to recover the intervention costs or the total valorization it generates. It must take payment capacity into account, especially for lower-income residents and business

owners. In structuring betterment levies, the first steps are to define the renewal district that should coincide with the impact area of the public investment and other interventions and prepare its development plan. Calculating the valorization generated can represent a significant challenge if reliable data are unavailable from the cadaster or other sources. Blanco et al. (2016) discuss alternative strategies for estimating valorization.

A series of municipal development projects financed by the Inter-American Development Bank in the State of Parana increased municipal performance on betterment levies. According to Pereira et al. (2012), the central executing agency for these projects (Paranacidade) made a concerted effort to increase the use of betterment levies by participating municipalities by requiring cost recovery and providing technical assistance (e.g., developing a manual and offering courses). Due in part to these efforts, Parana's municipalities ranked high among the Brazilian states in the collection of betterment levies for 2000-2010, with total revenue of US$77.2 million.

Development charges and requirements (i.e., exactions)

Instruments of this type require payment in the form of money, infrastructure, or land in exchange for permission to develop a property. According to Smolka (2013), these instruments are the most common in Latin America, including the requirement for developers to provide between 15% and 35% of the project's area needed to supply public services such as schools and parks. In Rio de Janeiro, the municipality required the developer of downtown office towers to renovate nearby historic buildings and build a large reservoir to store rainwater runoff. In Rio's new expansion area of Barra da Tijuca, the municipality required land developers to extend sewerage trunk lines as part of the agreements to allow the construction of new buildings (Smolka, 2013).

Sale of development rights

Brazil's Estatuto da Cidade (Statute of the City) of 2001 has permitted many innovative value capture instruments. This law incorporates the concept of *solo criado* (i.e., created land) that separates the right of ownership of a two-dimensional plot of land from the right of construction on the lot (i.e., air rights). In this way, *solo criado* defines land in three dimensions, including height and lot coverage regulations. The municipal master plan establishes what the landowner can build on the lot by setting the lot coverage ratio (building footprint size/total lot size) and floor area ratio (total constructed area/total lot size). These two ratios establish ownership of the air space above a lot. The municipality "owns" the *solo criado* (i.e., buildable area) above the basic level defined by the ratios in the master plan. In addition, the master plan may require set-

asides for public use and set zoning by type of land use (e.g., residential, industrial, or commercial).

In this way, the Statute of the City has permitted municipalities to use Charges for Additional Building Rights (*Outorga Onerosa do Direito de Construir*) and CEPACs (Certificados de Potencial Adicional de Construção/ Certificates of Additional Construction Potential). CEPACs are an ingenious market-based instrument for capturing the value generated by development in an area defined for an Urban Operation Consortium (*Operação Urbana Consorciada*). This instrument provided allows a municipality to carry out urban projects in partnership with the private sector (including residents, property owners, businesses, and real estate investors) to obtain social, economic, and environmental benefits. Two such revitalization areas in the Municipality of São Paulo (Água Espraiada and Faria Lima) netted more than US$1 billion for infrastructure and social housing investments in their Urban Revitalization Areas.

Each CEPAC establishes the right of the holder to build additional square meters on his lot above the base density level set by municipal law. In São Paulo, the municipal development entity sells the CEPACs at public auction on the São Paulo stock exchange (B3 - Brazil). Selling CEPACs at public auction on the stock exchange resolves the problem that inhibited the sale of development rights for years by providing a regulated, transparent and reasonable way of determining their market value. The São Paulo stock exchange lists CEPACs much like stocks, bonds, and mutual funds.

Since the municipal agency can issue the CEPACs at various auctions at different times during the implementation of the development program, it can capture the valorization of the area as it occurs. The municipal entity keeps the proceeds from the sale of CEPACs in a separate account for exclusive use for investments in the Urban Revitalization Area, thereby assuring the CEPAC the buyers that the municipality will make the promised public investments in the area. Maricato and Ferreira (2002) argue that CEPACs are neutral instruments that municipalities can use to create a more democratic and equitable city or (unfortunately) do the opposite.

Sale or concession of underused assets

Municipalities can also finance infrastructure by selling or concession of assets, such as underutilized public land and buildings. Brazilian law requires that municipalities sell publicly-owned land via auction to assure transparency and avoid corruption. Selling underused public land and buildings will also generate revenue from the real estate property and transfer taxes and other taxes resulting from the more productive land use. Rio's center city development plan

showed a vast amount of underused land and building space owned by the municipal, state, and federal governments.

Public/Private Partnerships

Another option widely used in Brazil is for the public sector to contract with the private sector to provide infrastructure under the concession or other Public-Private Partnership (PPP) laws. For example, in 2020, the Municipality of Rio signed a contract of over US$260 million, under which a private firm will modernize the street lighting, internet access, and traffic light control in the higher-income, expansion area of Barra da Tijuca, as well as operate and maintain the system. The firm will provide 90,000 additional streetlights with LED technology, install 5,000 wi-fi points and 10,000 surveillance cameras, and provide 6,000 traffic sensors to reduce congestion. As compensation, the firm will receive 80% of the street lighting fee charged with the electricity billing of consumers. The municipality will save about US$23 million per year from its previous budget for these expenditures.

Value Capture in Rio's Central City Revitalization Plan

Rio's Central City Revitalization Plan provides some lessons on the use of value capture. In 2008, the Instituto Municipal de Urbanismo Pereira Passos (IPP) of the Municipality of Rio de Janeiro began the preparation of Rio's Center Plan, a complex effort involving many public and private sector stakeholders. The IPP contracted APUR/ L' Atelier Parisien d'Urbanisme (the entity charged with the urban development of Paris) with financing from the Inter-American Development Bank (IDB). Paris has been using value capture to finance infrastructure since Haussmann's renovation of Paris between 1853 and 1870.

Around twenty professionals formed the core planning team that produced the plan (IPP, 2008), including state and municipal officials and consultants. This team first identified 26 potential project areas. The initial analysis identified property ownership and development potential in these areas. In parallel with assessing alternative development options for these areas with the stakeholders (e.g., land uses, density levels, and market demand), the team began a financial feasibility analysis of the potential valorization in the areas using a straightforward model with available data (Vetter and Vetter, 2019). This analysis revealed that CEPACs and improved use of the publically owned land and buildings were viable options for financing development.

This plan helped to identify the renovation of Rio's port area (Porto Maravilha) for redevelopment, financed in part by value capture via the sale of development rights by the issuance of about US$2 billion in CEPACs and the use of underutilized land and buildings owned by government entities. The public sector stakeholders set up a PPP to manage its execution. As

with all urban revitalization projects, Porto Maravilha has had suffered its share of criticism of its plan and its implementation (Werneck, 2017). Furthermore, Brazil's Great Recession and political conflicts have prevented its complete execution. Nonetheless, it illustrates that value capture is feasible, even for a large-scale urban project.

Final note

Using the value capture instruments available under Brazilian law will be critical in a strategy for financing Metropolitan Rio's development plan, given the existing financing gap for all levels of government. Although many share this view, Rio's decision-makers have missed significant opportunities for value capture in the recent past, such as the massive mobility investments for the Olympics (Silva, Maiolino & Torres, 2018) and the metropolitan beltway (*Arco Metropolitano*). Hopefully, the government decision-makers and other stakeholders will analyze the viability of value capture for financing the ambitious metropolitan urban development plan programs.

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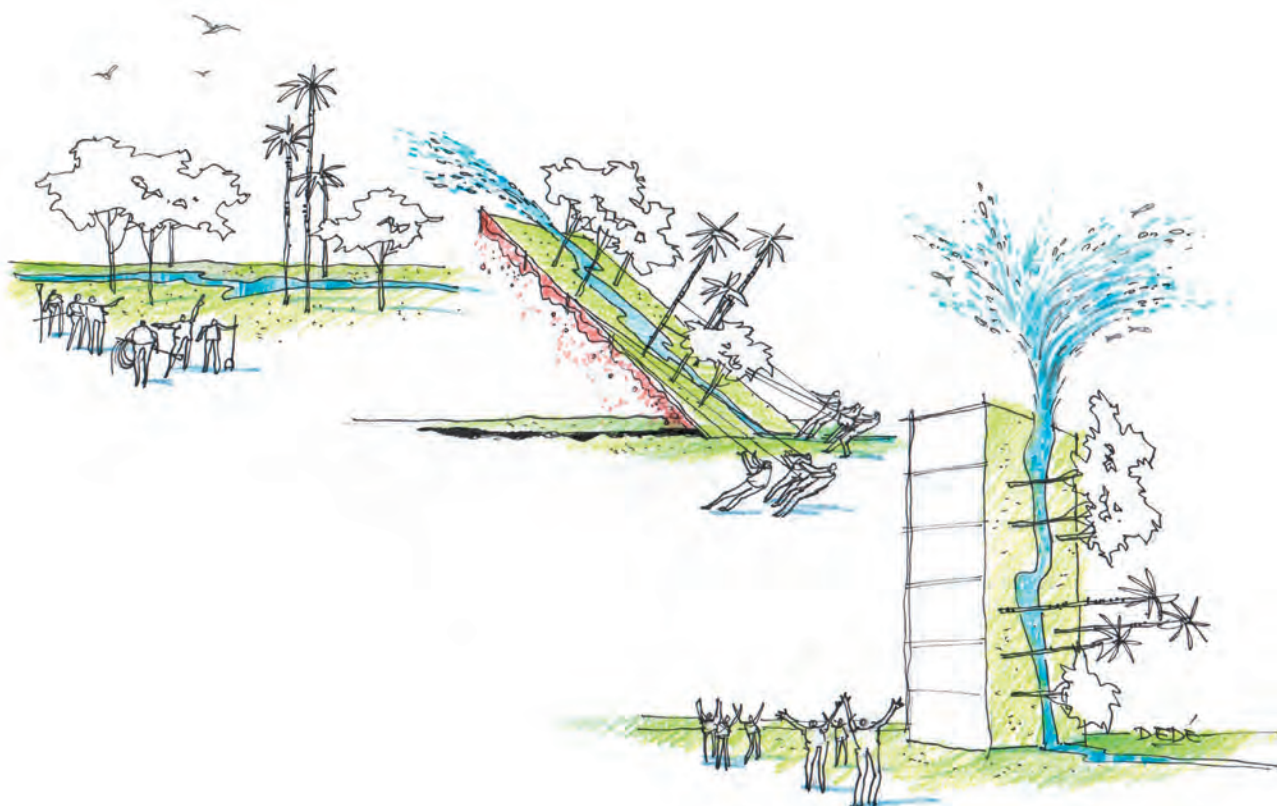
Making the Most of the Site

by Eduardo (Dedé) Rocha

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FOCUS 18

CRP Faculty and Student Work

Planning to Cook Sustainably

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The contemporary planning paradigm recognizes the need to embrace more sustainable, resilient, and locally-based systems of production and consumption. In this article, using the case of India, Professor Dandekar discusses the role of food systems and traditional, family-oriented practices of cooking and eating, showing us the direct connection between cooking, place making, and sustainability.

Planning, cooking, and sustainability-what on earth is the connection; you might be tempted to ask. And to some extent, for a long time, I might have echoed this skepticism. But, in the last couple of years, sequestered at home, teaching on Zoom, coping with the isolation imposed by Covid-19, the subconscious connection I made many years ago become clear to me.

When I wrote *Beyond Curry, Quick and Easy Indian Cooking: Featuring Cuisine from Maharashtra State* in 1982, it was a reckless act. I was a young academic, an untenured assistant professor of urban planning at a prestigious research university. At the time, there was just one tenured woman professor on the University of Michigan's College of Architecture and Planning's predominantly male faculty. She was a sociologist, so less problematic than I, a registered architect. Publishing a cookbook under my own name, not a pseudonym, was rash. It would only serve to confirm faculty suspicions that Architecture and Planning were disciplines "not suitable for women," as the associate dean was known to tell women in the college. A sure recipe for disaster! Academics did not, and do not, look kindly on "deviant" contributions that cast doubt on disciplinary rigor and seriousness.

But I was grappling with the fact that two young women, close friends made during my one and a half years of doctoral fieldwork in a village in Maharashtra, had committed suicide. We had cooked together, sharing convivial meals and laughter. Intuitively I understood that their extreme acts stemmed from their limited options as village women to address unsurmountable issues in their marriages. The news of their suicides paralyzed my efforts to complete a scholarly manuscript on development planning. This book, later published as *Men to Bombay, Women at Home*, was based on fieldwork I had done in the village. I observed village society, economy, and change but also inter-family dynamics and the narrow contours of women's role in them. My research was not on rural women

but on planning and its impact on rural development. But the differences between the life choices for the village women I met, some who became friends, and the life choices I enjoyed in the city as an educated woman from an urban, middle class, professional family were undeniable.

I wrote *Beyond Curry* ostensibly as a fund-raising effort for the publications program of the university's South and Southeast Asia Center. But it was also an escape from grappling with the challenges village woman faced despite decades of development planning efforts to change society and their lives. A book on cooking was constructive and helped me deal with the guilt I felt for knowing about my two friends' angst but feeling powerless to change their reality.

At that time, gender roles in India definitively delineated the kitchen and cooking as women's domain, both in the village and the city. But in my own middle-class, professional family, the roles were much more fluid. My father, defying traditions and conventions, was often in the kitchen, especially on the weekends, innovating dishes with vegetables and other ingredients he has brought home from the market (Figure 1). Interest and experimentation with cooking food defied gender boundaries in my extended family too.

Thus, the fact that the preparation and eating of food are important and intimate matters was amply brought home to me in my formative years. I overheard lengthy discussions between my father and his elder sister about the relative merits and demerits of a recently (and voluminously) consumed meal or snack. Would another variety of pumpkin have been better? Could the texture or fragrance of the particular delicacy we were popping in to our mouths be improved? Cooking was recognized to be a complex and challenging undertaking, each meal another experiment in the continuing effort to achieve perfection. Unqualified accolades were only rarely

bestowed on a preparation. My father and my aunt, and their passion for food shared by other members, male and female, on the Dandekar side of my family, heightened my awareness of the science and art of good cooking. For some years, as I lived and worked as a licensed architect in the USA, I had been scribbling down notes on ways to modify traditional recipes to replicate the excellent traditional Maharashtrian food I loved and consumed with gusto.

But my two friends and their passing served as the catalyst to *Beyond Curry*. Writing the cookbook allowed an escape from the academic mandate to write about development and village life. To avoid confronting the paucity of choice and lack of empowerment that was the lived reality of young village women like my two friends. It was also an acknowledgment and celebration that cooking and the kitchen were domains over which Maharashtrian women, across class, in the city and the village, exercised control and power.

The Second Edition

Chris Steins of Planetizen Press offered to publish a second edition of *Beyond Curry* with minimal changes (Figure 2).[1] But approaching updating the cookbook for the second edition, almost forty years later, when tenure and an academic future were no longer in the balance, allowed room for reflection.

I discovered and sought to foreground elements that had been described in the first edition but now resonated with mainstream planning and its concern for and attention to sustainability. The sustainability themes I had alluded to in the first edition and tried to underscore in this latest second edition include:

- Investing in the Local: Buying and Consuming Local
- Place-Making: Adapting to the Local
- Cutting the Carbon Footprint: Eating Vegetarian
- Quick and Easy: Not Fast Food
- Minimal Gadgetry: Multiple Uses
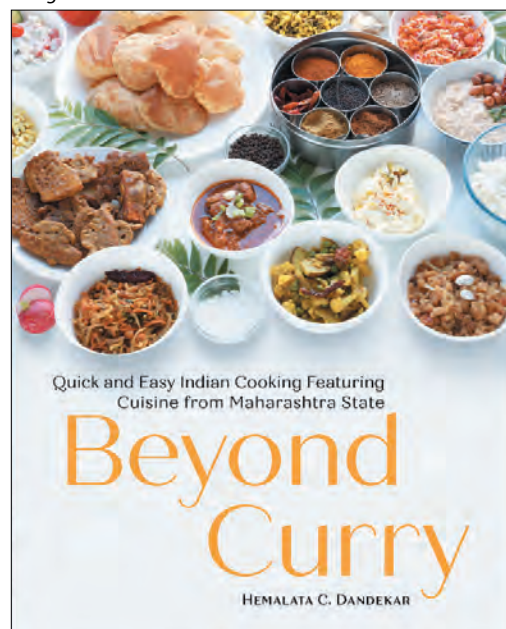- Ingredients that Keep: The Test of Time

Investing in the Local: Buying and Consuming Local

The farm-to-table movement in the USA is strong. Buying and cooking locally produced, minimally processed, fresh, and where the supply chain is "knowable" are embraced. In California, this is attested by the proliferation of farmers' markets and the increased attention on supermarket labels to sources and places of production. These are seen as ways to more sustainable, nutritious, healthier, and tastier food. And the underlying driver of this approach is the rationale for investing in the local economy, narrowing one's carbon footprint, and reducing adverse environmental impacts.

Figure 1: Street market in Maharashtra.

Figure 2: The second edition of the author's cookbook.

Quick and Easy Indian Cooking Featuring
Cuisine from Maharashtra State

Beyond
Curry

HEMALATA C. DANDEKAR

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[1] The new second edition of *Beyond Curry Quick and Easy Indian Cooking* was published in July 2021 and is available from Amazon at: https://www.amazon.com/Beyond-Curry-cooking-featuring-Maharashtra-ebook/dp/B09884DL96

Although Indian cuisine varies greatly by region, most traditions foreground local foods. I learned most of the recipes in *Beyond Curry* by osmosis as a child growing up in Maharashtra, watching my mother, aunt, and father cook. Situated in the western region of the Indian subcontinent, the State of Maharashtra is about the size of France, has a population of some 120 million people (2018), a majority of whom speak Marathi. Although it is one of the most urbanized Indian states, both in villages and cities, most Maharashtrians still cook with and eat what is grown in the region and available locally and seasonally.

My family originated in the rice-growing, coconut-fringed coastal plain of the Konkan region but migrated to the dry, peanut-growing parts of the Deccan Plateau. These roots were reflected in the dishes that we prepared and ate at home, and are featured in my book's recipes. Although the increased availability of prepared, store-bought, ready-to-eat meals and snacks has created a greater shared tradition of common food and taste across class and caste in India, the authentic taste of the vast array of delicious traditional and unique dishes made in the subcontinent is best experienced in the meals served in family homes where local traditional foods are prepared.

Place-Making: Adapting to the Local

A foreground idea in planning is that listening and adapting to the specifics of locale is critical in making places that are authentic, true to the culture of residents and the terrain. Placemaking resulting from such an approach holds the potential to be resilient and sustainable. Analogous to an Indian cook experimenting, adapting and combining ingredients that are local, available, and at hand (Figure 3). Adding an extra pinch of this or a handful of that to very standard dishes

is a quintessential aspect of Indian home cooking. It is what establishes a cook's personal "hand." In the circle of admiring family and friends, this "hand" is what is remembered—distinguishing dishes and providing legacy and memories.

Beyond Curry tries to capture and pass on this "free form," innovative approach to cooking that wastes little, uses all, and is frugal. The standard recipe is just a starting point. From there, the cook's imagination and the foods available that day in that kitchen allow for limitless variations. There are no hard and fast rules to good Indian cooking. The recipes in the book are guidelines to be creatively modified. Ultimately the food must satisfy individual tastes and preferences. Most recipes can be prepared from ingredients available in supermarkets in the USA. Substitutions like powdered, skimmed milk, and cornflakes have been tested and approved by the initiated. An occasional, well-planned trip to a store stocking more exotic Indian ingredients enables the cook to prepare every recipe in the book. And the section on basic spices and stand-by ingredients allows even a neophyte Indian cook to decide, among the maze of unfamiliar foodstuffs in such stores, which are the ingredients to buy at the start and which to be acquired later. Although *Beyond Curry* provides specific, measured recipes, detailing the process step-by-step so even the uninitiated can prepare them, it also suggests numerous alternatives, encouraging cooks to experiment with available ingredients.

Cutting the Carbon Footprint: Eating Vegetarian

When *Beyond Curry* was first published, *Diet for a Small Planet*, by Joseph Collins and Frances Lappé (1971), was a well-known, articulate, bestselling book that spoke to the idea of eating vegetarian as a purposive act. By collectively shifting to a
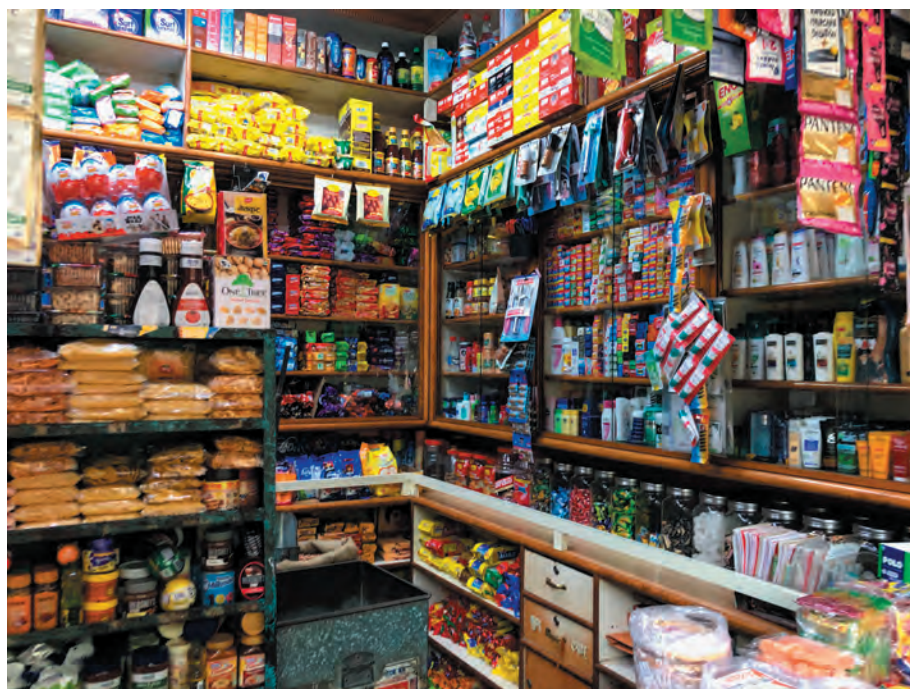

Figure 3: A neighborhood store with a great supply of local ingredients.

Figure 4: A typical street market with fresh local produce.

more vegetable-based diet, one could take the steps needed to save the planet. It noted the environmental impact of meat production, quantified the calories that went into feeding and raising animals for meat, and the negative effects of factory-based animal husbandry on the environment. These were described to illustrate how wasteful modern meat production was and how much it contributed to global food scarcity. Collins and Lappé presented a position that few in planning embraced at the time, but now their ideas are mainstreamed in sustainability thinking and rhetoric.

For instance, in its wedsite the Vegetarian Society proclaims "eat to Beat Climate Change" adding that by "eating a vegetarian diet is one of the best things you can do to stop climate change." [2] A recent study claims that "going vegetarian can cut your food carbon footprints in half", [3] and researchers at the University of Oxford established that "cutting meat and dairy products from your diet could reduce an individual's carbon footprint from food by up to 73%." So, how can you shrink your foodprint? Shop locally and seasonally and cut down your food miles. The fact that what you eat is tied to sustainability is no longer at the fringes and margins of planning thinking.

In India, most food is vegetarian. In urban Maharashtra, one finds vegetable markets at selected major crossroads in every neighborhood. The Sunday morning vegetable markets are

a riot of fresh and varied vegetables and fruit—the bounty reflecting the time of the year and the crops in season. Sunday markets during cooler winter weather are the best. Vegetable vendors spread their baskets of produce along the sidewalk in staked-out locations and defend them fiercely (Figure 4). There are fewer vendors at these crossroad vegetable markets during weekdays, but full-time housewives and retirees like to saunter to them and buy fresh produce on the day that they will be cooked and eaten. But the Sunday market is abundant, varied, and has the freshest vegetables. A fridge in every home is the new reality for middle-class Indian families, and two-earner households are the emerging norm. With it comes the ability to buy more fresh produce, usually on a Sunday, a holiday, and to use the refrigerated vegetables for freshly cooked meals throughout the week.

California's Central Coast is rich with farmers' markets. Laden with fresh seasonal vegetables and fruit, they are irresistible to those who cook primarily vegetarian food day in and day out. One has to find the "real" Farmers market. It is the market for locals, not the ones for entertainment and socializing. These real farmers' markets are where you buy vegetables that end up on your kitchen counter and beg to be cooked and eaten soon, at your dining table. They have clients who swoop in when it opens to snag the freshest brown eggs from favored vendors who let their chicken free range all over their farmyard. The draw is seasonal produce. I end up coming home with enough vegetables and fruit to serve a growing family. Which mine is not. But the produce is hard to resist.

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[2] See https://vegsoc.org/info-hub/why-go-veggie/environment/

[3] Brad Plummer. (2016). "Study: Going vegetarian can cut your food carbon footprints in half". Vox, https://www.vox.com/2014/7/2/5865109/study-going-vegetarian-could-cut-your-food-carbon-footprint-in-half

Arguments are made for eating vegetarian, even for one day a week, as a contribution to reducing greenhouse gases. The basic premise is that eating predominantly vegetarian has a lighter footprint on the ground, requires less resources, and produces a smaller carbon footprint. *Beyond Curry* recipes are mostly vegetarian, reflecting the traditional cuisine in Maharashtra. And they are delicious, offering the possibility of doing good for the climate, for our health and for your spirit. The ingredients are relatively inexpensive. Little is thrown away. And ways to adapt the recipes to use locally sourced food are suggested. The result is healthy meals and sustainable living.

Quick and Easy: Not Fast Food

The recipes in *Beyond Curry* are designed for those for whom time is short. They were selected from the vantage point of professional, working women, for whom time is always scarce (Figure 5). A key criterion in selecting recipes was preparing a satisfying meal with minimum time and effort. Elaborate, labor-intensive recipes are adapted so that their preparation becomes easier and quicker. Most recipes in the book take half an hour or less to prepare; few take more than an hour. The goal is to enable the cook to put a meal on the table in half an hour or less. Each recipe comes with a graphic notation indicating how long it takes to make, enabling rapid judicious selection of meal planning and preparation. Once cooking these dishes becomes second nature, you can, in fact, cook a meal in the comfort of your home, at the end of a long and tiring day, and have a delicious meal in a shorter time than it would take for you to drive to the nearest fast food place, wait in line, get a meal, bring it home and consume it. And you would be eating food that is much healthier and will sustain your body and the world!

Minimal Gadgetry: Multiple Uses

The utensils and gadgetry needed to prepare Maharashtrian meals can be, and usually are, relatively minimal. Each utensil is put to a variety of uses. *Beyond Curry* features sketches of many traditional cooking pots and gadgets throughout its pages. Nevertheless, just a few standard pots and pans are more than adequate for cooking every recipe in the book. For more than fifty years I have rarely used anything other than a handful of go-to pots in my own kitchen. Almost all these cooking pots are standard equipment in the USA; the all-American "*A 4-quart cast-iron Dutch oven with lid.*" Mine has a glass lid. I love this traditional American pot which was a staple in pioneer kitchens. The heavy metal retains heat, cooks slowly and evenly, and is indestructible. Add a small and a large cast-iron frying pan, and one is ready to cook any meal. In India too, a cast-iron wok-

Figure 5: Modern, urban, professional women in Pune City, Maharashtra.

like pot and a flat griddle are the essential equipment in most kitchens, enabling the cooking of most meals. The frugality of using minimal tools skillfully for creative and multiple outcomes is ingrained in traditional cooking. Something that designers lose sight of when creating luxurious, large kitchens replete with expensive equipment that is seldom used.

Although ceramic or plastic plates are now largely used in urban households, the traditionally "taats" or "thalies" are also ubiquitous, particularly in villages. Larger than a plate—up to 14" in diameter, of stainless steel, they are sturdy, indestructible, and easy to scour clean. They have raised edges that keep the food from spilling over. In villages in the coastal Konkan area of Maharashtra, banana trees are plentiful, and meals, especially at feasts on occasions such as marriages and births, are served on large freshly cut banana leaves. In the Deccan region of Maharashtra, round plates and bowls fashioned out of dried leaves, stitched together with small twigs, are also used. "Leaf dishes" are very "sustainable" as, after the meal, they can be used to feed to goats and cows who eat them with relish. A far cry from the disposable plastic plates and utensils that underpin more consumption-oriented modern practices. In response, environmentally-conscious planners and activists have turned to promoting metal, reusable utensils for dining out. A folding metal sfork (spoon cum fork) and knife are one of the sought-after gifts of the City of Santa Monica, which is seking to divert 95% of waste from landfills by the year 2030.[4]

Ingredients that Keep: The Test of Time

It is a happy surprise to discover how many delicious meals can

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[4] See https://www.smgov.net/Departments/PublicWorks/ContentRecycling.aspx?id=45134Pu

be cooked with dried beans, lentils, and rice, ingredients which last for months and even years in the pantry. They require no refrigeration or freezing, and no energy-consuming appliances to cook them. Soak them in water overnight, and they are good to go. Dal is a generic term to describe various soup-like curries or lentils made from a variety of dried split beans, lentils, and peas. The word dal means a bean that has been split in two. It is often used in conjunction with the proper name of a bean, pea, or lentil to describe the split, dried form, for instance, masoor dal, mung dal, etc. Various lentils, beans, and dals are used in Maharashtrian cooking. They are rich in protein and well worth the time to soak, cook and consume.

It is tempting to reach for basmati rice in US supermarkets because it is widely available and has acquired a certain aura of "specialness." But experimenting with different rice varieties and cooking with what one likes and fits one's budget is a good thing to do. In India, families are pretty opinionated about what varieties of rice they prefer. Thousands of rice varieties are grown in India, each a good fit with the region's soil type, climate, and water. People living in different country regions have distinct preferences for the texture, feel, and aroma of rice and the softness, stickiness, and size of the grain.

Ambemohar (amba is the name for mango in Marathi), a traditional variety, is a local favorite in the Maharashtra Ghats. Grown on the western hills, it has a smaller-sized grain that breaks easily, is soft and slightly sticky when cooked, and has a subtle, mango-like aroma. An aroma that also wafts out from fields where the seed is ripening. Rice types adapted to and developed for specific soil and water conditions across the state are bought by local people, stored in large containers, and used throughout the year. With rice, dal and spices – all storing well without refrigeration, a meal can be conjured up at any time of the day and year, and there is no waste.

Cooking, Sustainability, and Women

On reflection, and with the hindsight of more than forty years as a planning academic, it is clear to me that very early in my planning career I had made the connection between cooking, sustainable economic development, and women's power. I had recognized thei sphere of women's control in their role as cooks in the division of domestic work. The book's first edition addressed these connections indirectly; this second edition, modernized and beautifully photographed, draws them more directly and with confidence.

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Smart Cities and Urban Design

Sharon Ng

BSCRP student, Cal Poly San Luis Obispo.

In a world of rapid and intense technological changes, the notion of smart cities and the impacts of internet connectivity have started to dominate planning and design discourse. Sharon Ng discusses the importance of such changes but also the need to evaluate their implications for livability and social relations as well as the need to avoid them as a panacea to all our everyday needs.

In the 21st century, advancements in technology emerge almost faster than the ordinary civilian can imagine. It's almost as if the technology from futuristic movies we once thought were implausible are becoming a reality. When learning about the concept of smart cities, visions of *Wall-E* and *The Jetsons* come to mind. Although these are fictional cartoons, that world could be the one we live in by the next century (if climate change doesn't completely unravel life first). We are currently at a crossroads between technological advancement and the preservation of "true cities" of the past. As someone who rejoices at wandering in between corridors, meeting strangers, and the idea of cities full of life, smart cities come with a degree of skepticism. Not to say that smart cities and traditional city characteristics are mutually exclusive, but there seems to be a tradeoff to some extent. Planners should focus in thinking about how cities will evolve in the future while maintaining livability and all the qualities of cities designed for people.

A smart city uses information and communications technology (ICT) to enhance its livability, workability, and sustainability (Figure 1). The idea is the use of digital technologies such as software, hardware, telecommunication, databases and data warehouses, and human resources and procedures to improve our overall quality of life (Hajrasouliha, 2021). This new internet of things (IoT) would allow for a smart grid, smart transportation, smart waste management, and smart crowd management. Smart grids would allow for two-way communication between utility providers and customers which could allow for more transparency since consumers could monitor their energy use and use less power when it's most expensive. This could also benefit whole regions as they would be connected to another source in the grid if the power supply is somehow affected.

Note: This article originated from an essay by the author for the class CRP 204 Theories and Methods of Urban Design (Winter 2020, instructor Vicente del Rio)

Smart transportation could regulate what we know about traffic today. This could result in fewer car accidents, a more efficient flow of traffic, and even something as simple as allowing individuals to be guided to parking spots. Smart waste will allow for more efficiency and the analysis of flow rates, water quality, overflow volumes, etc. (Hajrasouliha, 2021). Cities striving for highly integrated systems are already emerging all over the United States including Denver, Dallas, Columbus, San Diego, Chicago, Portland, and more. In Denver, the project known as CityNow is sponsored by Panasonic and strives to be a "smart city" by 2026, equipped with smart highways, self-driving cars, and free wifi for residents (ARUP 2010, Watson, 2020).

Smart systems are increasingly common around the world. Barcelona, for instance, saves billions of dollars every year through smart sytems, such as for street lights, parking sensors, and garbage sensors and automated collection (Watson, 2020).

**Top Twelve Smart Cities
in the US, 2020** (Locke, 2020):
1. New York, NY
2. San Jose, California
3. Boulder, Colorado
4. Pittsburg, Pennsylvania
5. Boston, Massachusetts
6. Washington, DC
7. San Francisco, California
8. Charlotte, North Carolina
9. Seattle, Washington
10. Austin, Texas
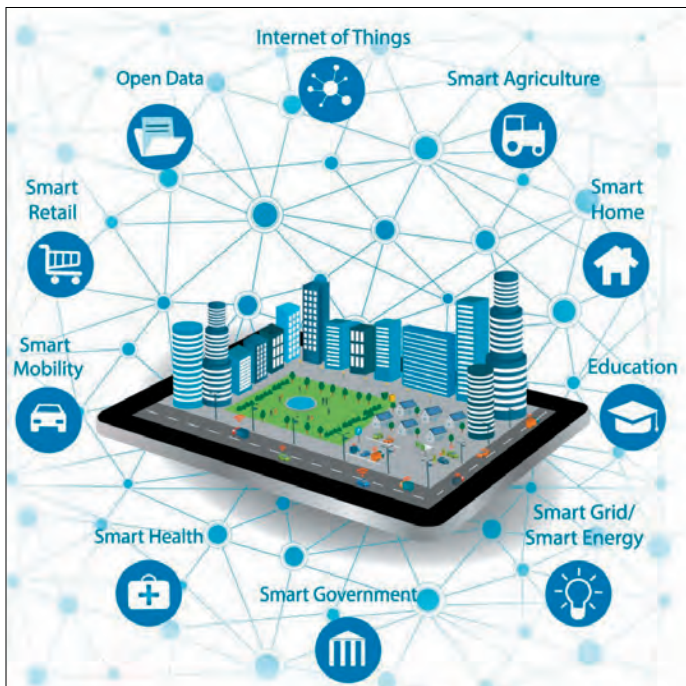11. Chicago, Illinois
12. Dallas, Texas

Figure 1: Elements of a smart city (Watson, 2020)

Bergen, Norway, has a 7.5 km underground piped vacuum collection system to transport 30 tons of waste per day (Figure 2). In Rio de Janeiro, Brazil, a project between the city and IBM led to the implementation of a smart operations center linking data and on-site conditions, allowing the city to control its services and emergency response in real time (Figure 3).

This is only the beginning. The range of what a smart city encompasses is truly so broad, but the consensus behind it is the use of technology to connect the city through soft infrastructure. The intensity of smart cities can be adjusted depending on the cities themselves. The formation of these cities is a group effort between cities, the private sector, and people. While cities are sometimes the ones backing the initiatives, most cities don't have the personnel or technological skills to act on those desires, so private companies step in. A smart city also couldn't function without the participation of its citizens and willingness to be part of the system. There is the idea of "the whole is greater than the sum of its parts" and that the collective grid of a smart city is much more efficient than individual parts of the city trying to function on their own. It will allow for efficiency and connectivity that we haven't seen before and provide the opportunity to engage people in new ways. One idea is even the use of virtual reality to envision new developments.

Local is the perfect scale for implementing smart technology innovations because it makes it easier to engage citizens and gauge the success of new solutions (Townsend, 2014).

An important concept that Townsend suggests is that smart technology should be done from a city scale so that each city can create something tailored specifically to them which will serve their needs. There is also the idea of "work smarter not harder" as quoted from West Hollywood's Smart City Strategic Plan, in which they advocate for smart technology that can solve the problems of today more easily. The acronym S.M.A.R.T. in their definition refers to sustainability, mobility, accessibility, resiliency, and transparency (WeHo Smart City Strategic Plan). This discussion suggests that all these characteristics of cities can be solved by centralizing through the use of ICT.

Although the concept of smart cities has the potential to create a utopia, there are questions and implications of highly centralized and technology-heavy cities. These challenges and potential repercussions must be kept in mind as we transition into smart cities if implemented. Firstly, because all of its information systems from residential and school to medical, business, and government are interconnected, it raises the question of privacy (Hajrasouliha, 2021). Should private companies have access to all our data? When in the wrong hands, personal information leaked can be destructive.

In my opinion, we can't guarantee a "better" world under new technologies without addressing the inequities and issues we presently have in the world. A challenge to smart cities is that in the past, we've seen how hackers can infiltrate large companies with seemingly secure encryption, so how can we guarantee that this data network is secure on all ends? Issues beyond security include privacy and livability. There might exist a livability tradeoff when it comes to smart cities; it appears as if freedom, liberty, and privacy are on one end, and security, efficiency, and convenience are on the other end of the spectrum. Finding that balance is the difficult part when smart cities are almost like clockwork. In regards to privacy, there is also the idea of social

Figure 2: Bergen, Norway has a 7.5 km long vacuum operated smart garbage collection system.
(source: https://tomorrow.city/a/from-nocturnal-trucks-to-ai-how-urban-waste-management-is-changing)

justice. One question is if governments or employers should have open access to your medical records, but taking this even further there are questions about who benefits from this surveillance. With an all-encompassing network, will people who are traditionally deemed as "dangerous" be targeted even further? We cannot forget that data bias and profiling are still prominent issues nowadays (Hajrasouliha, 2021). Similarly, by analyzing the events of Arab Spring and Myanmar currently, we can note that governments can sometimes limit the freedoms of their citizens when they have control over the internet.

Not to propel fear, but anything is a possibility. Another challenge to consider is that "our mobile [phones] are a catalyst for density" and we can share everything within seconds, but these same systems can "be a substrate for sprawl [with] a metropolitan nervous system conveniently connecting our [everything] to the cloud" (Townsend, 2014). With more efficient transportation systems and connections like never before, people can afford to live further apart, undermining the sustainability of it all. Much like when automobiles were first invented, these new technologies may catalyze people's move from the proximity of cities (Townsend, 2014). There must be a way to combine both the innovations that can propel us into the future without compromising the livability and simplicity of city life.

Smart cities may be the answer to many modern-day issues from sustainability to transportation and as simple as increasing digital connectivity by providing internet access everywhere, but there is no clear answer to how socially sustainable this idea is. Townsend preaches that for smart cities to succeed, we need to "lift up civic leaders," empower ourselves and uplift everyone equally (2014). He is right: to widely implement the technological advances of smart cities, the challenges of current society must first be addressed. The desires of governments and private companies cannot overshadow the needs of regular people. Although these advances can create a utopia, they could also quickly destroy cities as we know them, as drastic as that sounds. Planners need to bear in mind that there is no single innovation that can act as a panacea for the world's problems, but maybe smart cities will help a bit if done properly. Only time will tell.

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Figure 3: The Operations Center in Rio de Janeiro, where the city can integrate and operate all services and respond to conditions in real-time. (photo: V. del Rio)

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CRP Collaborates in the Solar Decathlon

Zach Noyes
BSCRP senior, Cal Poly San Luis Obispo.

CRP's Zach Noyes and Trisha Tran competed as members of Cal Poly's 2021 Solar Decathlon Team. The Solar Decathlon is an international student competition hosted by the US Department of Energy that challenges groups to design a building consuming net-zero energy while "providing solutions to complex problems related to climate change, affordability, and environmental justice through building design." While Cal Poly has fielded teams to compete in the past, this is the first time that planning majors have collaborated in the competition.

Led by instructors Beate von Bischopinck (CRP) and Ansgar Killing (Architecture), Cal Poly's interdisciplinary team consisted of ten students from Mechanical Engineering, Architecture, Construction Management. and City and Regional Planning. The group designed a 10-unit attached affordable housing facility in the Watts neighborhood of Los Angeles. The group was awarded the Hasslein Fund Grant that supports and empowers "students and their co-creative projects which embody the special spirit of interdisciplinary collaboration" that drives Cal Poly's College of Architecture and Environmental Design.

The team's design of the Alice Harris Community Housing was a holistic process taking into consideration every interaction between building systems, natural environment, and human lifestyles in order to minimize the energy and resources consumed while maximizing the quality of life and affordability. The project aims to offer low-cost housing and essential services, such as grocery and daycare, in an environmentally responsive structure. The design incorporates concepts of community and wellbeing ithrough vibrant open spaces, community gardening, and passive microclimate improvement techniques. Using strategic passive heating and cooling techniques as well as implementing cutting-edge active systems, the Alice Harris Community Housing can provide environmentally sensitive housing at a price affordable to residents far below the median income.

Zach and Trisha, the CRP team members, were responsible for the initial site analysis including neighborhood demographics, adjacencies to the project site, and connections to the Greater Los Angeles Region. They also completed graphics illustrating key demographic, climatic, and financial indicators relevant to the project. Zach conducted a financial and market analysis for the $4.5 Million project. This includes identifying funding sources for the project and determining rent and utility pricing.

Cal Poly's 2021 Solar Decathlon Team (from left to right, top to bottom): Angelee Cheas, Khan Fleshman, Zach Noyes, Ashley Kim, Carina Monaco, Emma Siegel, Anne Kanazawa, Grace Brekke, Ian MacLean, Ansgar Killing (ins.), Erich Fenczik-Warnock, and Beate von Bischopinck (ins.).

Location map of the Alice Harris Community Housing in the Watts neighborhood of L.A.

Entrance to the Alice Harris Community Housing from street level.

Interior courtyard of Alice Harris Community Housing.

Learn to Observe, Observe to Learn

Vicente del Rio

PhD; Professor Emeritus,
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The simplest and most efficient method to learn urban design is observation. Methodic, systematic and organized or spontaneous, unordered and resulting from flaneries, observations can teach us a lot about cities. In his classes, the author urges students to get into the habit to observe cities and people's behaviors, overt or latent, learn from it, and build a repertoire of precedents and experiences. This short photographic essay exposes some simple yet important learnings from common situations right before our eyes in different cities.

The design and positioning of benches should support conversations between friends or distancing between strangers. The examples show the only types of benches in both plazas. Left: Patternoster Square, London. Right: Praça Paiva Couceiro, Lisbon.
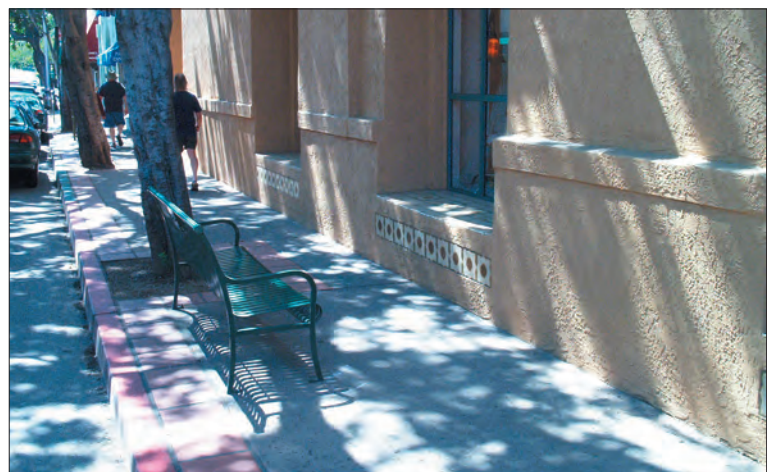
Would you prefer to sit close to the curb and admire vehicles, or face a blank wall without stretching your legs to avoid passers by tripping over them? Both examples from San Luis Obispo, CA.

Is blocking sidewalks and pedestrian flows with permanent or temporary features inevitable? Left: bus shelter in Lisbon. Right, a neighborhood supermarket taking over the sidewalk in Rio de Janeiro.


Politicians fashionably love to support bike lanes, even if it means taking over precious sidewalk space or endangering pedestrians at a bus stop (right image). Both in Rio de Janeiro.

The connection of buildings to sidewalks is a fundamental for a good public space. Modern architecture and planning requirements combine to produce bunker-type of parking structures. Both images from Bairro Oriente, the redevelopment of the EXPO 98 site in Lisbon.

Why can't a city coordinate its own departments when dealing with street furniture and infrastructure elements in public spaces? Left and right examples in San Luis Obispo, CA.
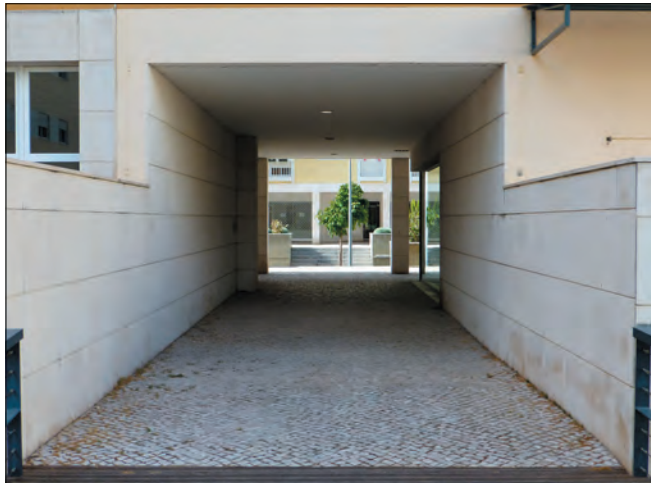
Modernist "public" connections poorly adapted to the existing morphology and with no side transparency discourage people from using them. Left and below: examples from Lisbon.

Good public architecture should promote an easy, visible access for the public and not depend on added signage. Not the case of this recently inaugurated museum in Lisbon.

Were they even thinking? Left: city dumpsters blocking the bike lane (Buenos Aires). Right: lack of coordination between pedestrian crossing, ramp and bollards (at the regional airport, Rio de Janeiro)

What happened to Jane Jacob's "eyes-on-the-street"? Left: this restaurant replaced the old and was allowed to wall up the original window (San Luis Obispo, CA). Right: one of two pocket parks at facing corners where none of the facades have openings (Lisbon).

Pedestrian arcades are important urban design elements but only if well designed and inviting (left: Lisbon), and when they do not depend on the implementation of land-use regulations over time (right: Rio de Janeiro).

Shadows of buildings around public places always influence behavior. In many occasions, people avoid them. Left: Sunday gathering in the Piazza del Dumo by the Galleria Vittorio Emanuelle, Milan. Right: beachgoers avoiding the shadow of a tall hotel in Rio de Janeiro.

Public infrastructure does not have to be ugly. These are not nuclear bunkers but ventilation shafts for the subway line in Rio de Janeiro.

It is important to observe behavior. Left: coble stones provide a great solution both historically and for traffic calming, but not for pedestrians (Chester, England). Right: planters and rain gardens are great but make getting in and out of vehicles very complicated, particularly during a rainy day and for the elderly (San Luis Obispo).

Historical: The Electrification of Paris

by Albert Robida

Illustration from Robida's 1883 book Le Vingtième Siècle *(The Twentieth Century)
where he presents a future vision for Paris in the 1950's, focusing on technological
advancements and how they affected the daily lives of Parisians. Often compared
with Jules Verne, his proposed inventions were integrated into everyday life and
his social developments were often predicted with accuracy, including the social
advancement of women, mass tourism, pollution, and modern warfare.*

(source: Archivart / Alarmy Stock Photo)

CiRPAC
City and Regional Planning Advisory Council, Cal Poly

The City and Regional Planning Advisory Council (CiRPAC) was formed in 2015 with a three-prong mission: to advise the department on the needs of industry and the profession so that future graduates are prepared to enter the workforce and be successful; assist the department in meeting its advancement goals; and to serve as a voice for promoting the interests and activities of alumni.

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Stantec

Bruce Baracco
Retired Planner

Geoff Bradley
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M-Group

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Michael Codron
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Leeanne Singleton
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City of Hermosa Beach

Delvin Washington
Manager, South West
Division, City of San
Francisco

Conversations with Alumni

Brenton Gibbons

AICP; Bachelor of Science in City and Regional Planning, Cal Poly, 2013

FOCUS: *Why and when did you decide to become a planner? Tell us about your path at Cal Poly since I know you took multiple classes in other departments, pretty much as a renaissance man!*

My career path in planning was not the traditional one. For years my passion was urban design and architecture. I came across my 4th Grade yearbook, where I had a stated in a quote that I wanted to be an architect when I grew up. Wow have things changed since then. After graduating high school, I attended Cuesta College in San Luis Obispo where I completed my required basic collegiate courses as well as introductory architecture studios and related classes. While at Cuesta College, I started a local American Institute of Architecture Students (AIAS) chapter and assisted the college with solidifying itself as a mover and shaker for architecture programs at a community college level. I represented Cuesta College twice at the National AIAS Conference in Milwaukee and Denver.

After completing two years at Cuesta College, I transferred to Cal Poly's Architecture Program and completed an additional two years in the program. At Cal Poly I continued to participate in their local AIAS Chapter serving as Secretary and then President. During my two years in the Architecture program, I represented Cal Poly at the National AIAS Conference in Minneapolis and Toronto. During this time, I also led a team seeking to host the 2012 AIAS National Conference in San Francisco and partnered with CAED and the Academy of Art University in San Francisco. Unfortunately, our bid was not selected.

As I continued my pursuit of becoming an architect, it became apparent to me, that I am more of a realist and prefer practical application of design, which differs from the way most architectural studios are oriented. I was dissatisfied with the fact that many of my studio projects were unrealistic and could never be implemented in a real-world scenario either from an engineering, financial, or planning aspect. I decided that if I was to make a shift in my trajectory I should do so before moving

any further in the Architecture program. The natural shift for me was into the City and Regional Planning Program which included modified design and policy-based studios, as well as fundamental courses that outlined planning from both the public and private sectors. This new direction was more comfortable and challenging in different aspects, since unlike architecture which focuses on a structure, planning focuses on a community. In planning I could also still have a hand in crafting design, but from a different perspective.

FOCUS: *Can you tells us about your professional path: from being an intern to becoming a planner? Talk about the places your worked for and your roles there.*

My time in the CRP Program at Cal Poly was invaluable. The program focused on a multidisciplinary approach to planning which aided in my transition into professional practice. One of the most important aspects of the program, that I think distinguishes it from the rest, is the requirement to complete an internship. My goal was to have an internship every year before graduating in varying areas of the profession. I first started as a Project Engineer for Hathaway Dinwiddie, a California construction management firm. I interned out of their Santa Clara office and worked onsite at the Solyndra Headquarters in Fremont, CA. I assisted the Project Foreman with review of onsite construction and building application, as well as filing for building permits with the City's Planning Department. This position was an incredible experience and tied together my passion for architecture and the laborious entitlement process.

My next internship was with Housing and Community Development (HCD) of San Mateo County. As part of this internship, I evaluated CDBG applications and funding sources, and reviewed incoming affordable housing projects in their final stages prior to occupancy. This internship opened my eyes to housing, the lack of equitable and affordable options, and the overall bureaucracy surrounding it. As a result of

this internship, I was selected by the National Community Development Association (NCDA) to receive a scholarship and was sent to their national conference that year in Palm Springs to accept the award. I took that trip as an opportunity to meet planners from across the country and expand my network.

During this time, I also reached out to my hometown Planning Department in Gilroy, CA, to discuss planning from the perspective of their Senior Planner, Stan Ketchum. Taking the initiative and reaching out to other planners in the profession to learn more about their role in their community was insightful, and I highly recommend aspiring planners do the same. A decade later Stan and I are still friends, and I even had the opportunity to work with him professionally when I managed the Gilroy General Plan and Zoning Code Update.

As my time at Cal Poly was ending, I wanted to ensure that I was primed for employment. To do so, I increased my quarterly units and coordinated with the college to graduate one quarter early in March 2013. This move was strategic as it allowed me to enter the workforce months before most students statewide and nationally were set to graduate. I was eager to land my first job and applied to over 80 jurisdictions across the country, with only handful in California. It wasn't as easy as I thought it would be since most areas were finally starting to recover from the 2008 Recession. I interviewed for several positions and was hired as a Planner I for Madera County. The most memorable part about landing my first career position, was that I was notified by the Community Development Director via a phone call walking into my last final exam. Let's just say my excitement took over, and I finished that multiple choice geology exam in minutes, not caring about the final score since my career goal had just been achieved minutes earlier. Probably not the smartest move on my part, but you only get that moment once in your life.

As a Planner I for Madera County I assisted senior staff in the review of entitlement applications that were set for the Planning Commission or Board of Supervisors and managed the front counter. Working for the County was exciting as I was able to be a part of several different planning projects including being the lead planner for setback variances in the Oakhurst/Bass Lake region, prime reviewer of all wireless telecommunication permits, and assisted with the O'Neals Area Plan Update. During my time with the County, I was promoted to a Planner II which included increased roles and responsibilities on several projects.

After two years with the Madera County, I decided to shift gears and move north. I started a new position as an Assistant Planner with the City of Turlock. This job incorporated many of the same tasks as those at Madera County, but with a more urban/

Figure 1: Example from the City of Santa Clara Zoning Code Update pertaining to development standards for residential uses.

Figure 2: Community Engagement event at Spring into Green for the Town of Los Gatos General Plan Update. The event focused on the existing conditions and visioning process of the update.

suburban focus. At the City, I managed all Foster Farm projects, led the creation of all Master Sign Programs, and coordinated with the City's Housing Director, based on my previous internship experience. During my year with the City, I did not feel challenged enough in my position and felt that I needed a new trajectory in planning, aimed at the private sector.

In January 2016, I was hired by Mintier Harnish, a planning consulting firm based in Sacramento, CA, as an Associate Planner. This new position was far more challenging than previous planning positions I held, but more rewarding at the same time. I was thrust into preparing elements of several community General Plan Updates as well as facilitating community engagement programs. I had finally found my preferred style of planning and am currently still employed with the firm.

FOCUS: *What was the most challenging aspect of transitioning into professional practice?*

The most challenging aspect of transitioning into professional practice for me was the unknown of what a career in planning actually included. I understood the fundamental framework, but the real-life application still seemed very abstract. Cal Poly laid the foundation for my knowledge, but to truly understand the inner workings of planning it took a "baptism by fire" moment; mine was landing my first career position.

FOCUS: *What is current job? What are your primary responsibilities, and what type of work do you get involved with?*

Currently I am a Senior Project Manager with Mintier Harnish. I manage General Plans, Zoning Code Updates, Community Plans, and Housing Elements. This position requires an understanding of all facets of planning either directly related to land use and planning framework in California, as well as off-shoots of planning such as environmental law, environmental justice, sustainability, economic development and trends, and transportation. My primary responsibility is twofold, first managing personnel in an office environment, and secondly managing projects with our clients. My position also requires that I juggle a variety of tasks and projects, which at times can be very challenging. Currently I am managing 12 General Plans, 18 Zoning Code Updates, six Housing Elements, and one Community Plan.

FOCUS: *What are the plans and projects that you feel happier with and you can call your favorites in your career?*

This question is tough because I truly enjoy all aspects of my job and the range of projects it includes. Zoning code updates and amendments are my favorite types of projects to manage and work on. I am methodical in my work and enjoy the nitty gritty regulatory side of planning. You could say I'm a zoning

nerd, and I will gladly wear that title. What interests me about zoning is that it is tangible with no gray areas. Zoning overall is relatable, and most people understand what it entails and its implications. I do enjoy the overarching visioning processes in general plans, but with zoning you can see actual impacts of your work following adoption. Implementation of general plans can take years or decades and most changes are policy driven and do not have a direct correlation on the built environment. Zoning is the complete opposite. I can draft alternative landscaping guidelines, or design standards, or sign regulations, and the application of these regulations are visible after the ordinance is approved.

I've driven through several communities where I had managed their comprehensive zoning update and can tangibly see the progression of the standards created unfold before my eyes. It is truly amazing. I also find that zoning applies to the everyday person, and I feel a sense of responsibility making the standards clearer and more concise, and the process less laborious. I can appreciate a streamlined zoning code that is easy to interpret, as I have struggled to understand the zoning regulations for my own community where I reside. I enjoy working on zoning codes so much so, that in 2020, I teamed with Martha Miller of Miller Planning Associates, also a Cal Poly Alum, to co-teach, "How to Update Your Zoning Ordinance" at the UC Davis Extension in Sacramento. This fantastic opportunity, which is still ongoing, allows me to share insights with other planners across California on ways they can improve their zoning regulations and permitting processes.

One of my favorite zoning code updates is from the City of Santa Clara. The Santa Clara Zoning Code had not been updated since 1969. This effort was a complete overhaul of their regulatory framework and processes and required consistency with their 2035 General Plan. My team and I created a hybrid code that includes not only traditional zoning provisions or Euclidean provisions, but also form-based standards for specific districts in the City (Figure 1).

In regard to general plans, two rank at the top of my list, first being the City of Gilroy. Gilroy is my hometown, and I had the unique opportunity to serve the community I once called home through the process. It was exciting to work with community members, many of whom were my neighbors, friends, and teachers to create a plan that met the community's expectations over the next 20 years. The Gilroy 2040 General Plan was unique in that it shifted the original outward growth mindset, and instead focused exclusively on infill development to achieve expected growth.

The second general plan would be for the Town of Los Gatos. Los Gatos is a highly influential Silicon Valley suburb with

renowned shopping and quaint neighborhoods (Figure 2). The general plan was challenging as we were working with the community to adequately plan for the anticipated amount of dwelling units that would be required as part of the next Housing Element cycle. As one could imagine, this was a highly contentious topic. This plan also included one of the first Racial and Social Justice Elements. Following on the heels of the George Floyd killing and protests in mid-2020, the Town decided to confront the topic of racial and social inequity head on by highlighting the Town's controversial past and providing a pathway forward to a more inclusive community for all.

FOCUS: *Does your Cal Poly education reflect in your work?*

Without a doubt. Cal Poly prides itself on fostering a "learn by doing" environment, where in order to master a skill, you must first attempt and routinely challenge yourself to complete it. My focus within my career so far has never been to back down from a challenge, but to take it head on. This mindset has catapulted me professionally and has established me as a leader. Cal Poly also focused on fostering collaboration not only amongst our program, but within the overall construct of CAED. This method of approaching projects and tasks mirrors that of what is required of a Planner. Being a Planner is not a silo position. Whether you are collaborating with staff, project applicants, elected officials, subconsultants, or community members; planning is social and requires a team effort mentality (Figure 3). I work hard to institute that mindset on all my projects and foster that style working relationship with all my colleagues.

FOCUS: *From your perspective, what are the critical knowledge areas for the aspiring planners?*

Planning is changing at a rapid pace. From my perspective it is now more important than ever that aspiring planners are familiar with ongoing legislation and are up to date on State and Federal law changes. It seems like Sacramento is passing new legislation monthly that has direct impacts on planning and overall processes, many of which are stripping local government control. Whether it be SB35, AB101, SB330, SB9, or the pending SB50, all these bills have impacts on housing, allowable development standards, use of design criteria, and allowance of new housing typologies. Legislation will become even more important as we move forward, and in order to plan efficiently and transparently for all communities, aspiring planners must know how to implement new legislation and provide education to their respective communities.

Figure 3: The multi-day Pleasant Hill Planning and Design Workshops focusing on alternative scenarios for development and incorporation of streetscape and parkway designs within the community.

FOCUS: *Any final words of advice for the new generation of planners?*

My final advice for this new generation of planners can sound cliché but it is very applicable. Focus on building a positive and inclusive network amongst the planning community. We are a small community, and I can attest you will work with fellow classmates, and eventual former colleagues throughout your career. I can remember my first planning director telling me on my last day to always create lasting friendships and bridges, because one day I could be his boss. Well, he is correct, and things always come full circle. I might not be his boss, but I currently have found my way back to the County and am managing several projects with the same staff I worked for years ago. That previous great working relationship undoubtedly helped land the projects.

So again, the world is a very small place, build bridges and create an expansive network. Now go out and make your mark!

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Conversations with Alumni

Michael Austin

AICP; LEED AP-ND

Bachelor of Science in City and Regional Planning, Cal Poly, 2007.

FOCUS: *Why did you decide to become a planner and why Cal Poly?*

Early on, I was set on a career in urban design and planning. Cal Poly felt like the right fit because the school of architecture brought many of our respective disciplines together under one umbrella. Admittedly, I was also a band geek, and being able to stay involved through wind ensemble was a bonus.

FOCUS: *What was your work trajectory after leaving Cal Poly?*

After Cal Poly, I moved back east to obtain my master's in architecture from Pratt Institute in Brooklyn and after graduation, my partner, the dog, and I drove out to Seattle to "give the Pacific Northwest a try." From there I was fortunate to get involved with local volunteer groups and grow as a professional (with the help of some fellow CRP alums like Doug McIntyre and Bob Bengford), including being a part of Perkins & Will's urban design and campus planning groups, crossing over to the public sector as an urban designer for the City of Bellevue, and getting to take on volunteer positions with the Seattle Design Review Board and Planning Commission. After 8 great years in Seattle, we relocated to Los Angeles and where I started my role with WSP I'm in today.

FOCUS: *Tells us about your current job. What are your primary responsibilities, and what type of work do you get involved with?*

I am currently a senior lead consultant for our new and growing urban design and planning team at WSP (which also includes CRP grad Juan Alberto Bonilla Sanchez). I think the general perception is that WSP is a large multi-disciplinary mobility-focused firm, so being a part of a growing practice is really exciting, especially when getting to be around some pretty incredible mobility projects. My responsibilities typically include supporting general client engagements, project management duties, assisting jurisdictions with advancing their housing initiatives, supporting station area urban design studies for LA Metro's growing network, and being a part of advancing our equity initiative.

FOCUS: *Can you give us a couple of examples of your favorite jobs or projects? Why?*

I count myself lucky to have been involved in so many interesting and complex projects, but a few that stand out include:

Bellevue Grand Connection. The Grand Connection in Bellevue is a signature pe-destrian/wheeled user-focused experience that links all of the key cultural, retail, and employment centers in Bellevue to transit. I loved being involved with this initiative since it included getting to do a little bit of everything from setting a signature color for place-serving features, facilitating the development of design guidelines and standards, to developing new graphics intended to build community support. Being part of such a unique place-serving project was super-rewarding, and I'm excited to see how it continues to develop (which includes involvement from fellow CRP grad Laurie Tyler!)

Seattle 2035 Comprehensive Plan. This was another highlight during my time as a member of the Seattle Planning Commission. Seeing the development of a robust racial equity analysis, and being involved with recommendations to see the Plan and its guiding policies serve as an aspirational north star for racially-equitable growth was a true highlight and also something I hope jurisdictions (including Seattle) continue to advance.

American University of Beirut Space Needs Assessment. Firstly, just getting to be a part of campus planning projects for higher education institutions is a fascinating process. In this particular case, it involved the opportunity to support a campus master plan for the historic American University of Beirut, including travel to Lebanon. The whole experience was a bit surreal for so many reasons, and in the spirit of exploring places, also involved getting to stopover in Dubai.

FOCUS: *What are your professional goals?*

My main goal is to continue to be inspired and excited by chal-lenging projects and volunteer opportunities of all scales around

collaborative practitioners, electeds, and community members. I definitely hope to get more involved in teaching as well.

FOCUS: *How does your Cal Poly education reflect in your work? Do you feel that the classes and skills you took supported your professional trajectory?*

I owe so much of how I work in the field to my time at Cal Poly, whether it was embracing the fundamentals of graphics development to collaborating with others on community planning projects. CRP 201, in particular, was my favorite since it was the first dive into urban design and learning how to understand the basics of representation. While the tools we use today are a little different, the fundamentals of how we develop and share our concepts, fortunately, haven't changed.

FOCUS: *Which do you think are the strengths and weaknesses of the CRP program?*

My favorite strength about the program was the people—students, faculty, and staff. The experience definitely felt like there was a general sense of community across the undergraduate and graduate programs.

I wouldn't necessarily call this a weakness per se, but the location along the central coast means students looking to work in other urban areas typically need to spend a little bit more time focusing on networking. There are also many conversations and research taking place in larger urban centers, so making sure students are connected to these topics is definitely important.

FOCUS: *What was most challenging in your transitioning from the university to professional practice?*

I've heard this from other practitioners as well, but to practice urban design it's strongly recommended, and for many firms required either an architecture or landscape architecture degree. I've seen this requirement get relaxed over time, and hope fellow practitioners never get deterred from career opportunities simply for not having a design-focused degree.

FOCUS: *What professional knowledge you would consider most critical for planners who are starting up?*

I felt like we definitely came out of the program with a strong foundational platform to build our skills off of, but three items I would definitely recommend would be:

- Understanding research methods: more and more projects should include a data-driven process, including the development of metrics and evaluation methodologies.

- Having a strong understanding of how to integrate public health and racial equity outcomes into planning processes. There should always be a rigorous data-driven process

Above: Bellevue's Grand Connection is a signature experience linking all city features together. (Image credit: City of Bellevue)

Below: Street as a Plaza; creating this image involved so many focused conversations to ensure it conveys the intent of the Grand Connection. (Image credit: City of Bellevue)

Aerial view of Dubai: not my typical work trip location but a day-long stopover on the way home! (photo by M. Austin)

rooted in racial equity outcomes for our programs, policies, and practices.

- Good facilitation and engagement skills are also a plus—everything we do is about (re)building trust with the communities we serve, and so much of it involves being a true partner.

FOCUS: *What skills/tools you would consider most critical for planners who are starting up?*

There are definitely some basics that are common expectations from employers for team members at all levels, but the following immediately come to mind that I still use weekly:

- A strong understanding of Adobe CS, particularly Illustrator, Photoshop, and InDesign. I love collecting examples of great documents and graphics that help inspire me to learn new tools, approaches, and skills—there are so many precedents to remain inspired!

- Rhino is the most common modeling program used at this time. I love it because it can be more precise than a SketchUp model or just as detailed as a full architectural design.

- ArcView GIS (any level of knowledge is better than none!)

FOCUS: *What do you see as the biggest challenges for planners for the next 5-10 years?*

Oh gosh, so many—to say that this is a challenging time to practice in is an understatement. Some of the particular challenges that come to mind include:

- Addressing a history of racial oppression. The term, "equity" has become a buzzword for influencing programs and policies with little focus on addressing the root causes, but ensuring practitioners, decision-makers, and community members really focus on addressing systems of racial oppression is so important.

- Climate change. This one goes without saying, but the impacts of climate change on top of our existing systems of inequities will continue to disproportionately impact communities of color, in particular.

- Facilitating good public health outcomes. This is closely tied with racial equity work, but it's a huge field of its own. Regardless, we must pair public health outcomes and team with public health officials in our work to ensure both short and long-term outcomes only contribute to improving the quality of life for our respective communities.

FOCUS: *Any suggestions for our students*?

If and when possible, travel! It doesn't have to be extensive or far-reaching—just focus on seeing and experiencing new places.

Say yes! I've had the opportunity to work on a variety of projects that I never assumed I'd work on, whether it was campus planning for higher education institutions to part of a team to develop a master plan for a naval base in the middle of the desert. Every project has been an opportunity to learn something new, develop and refine skills, and see things from a different perspective.

Be a volunteer. There are so many outlets to becoming involved in our respective communities, and each opportunity offers an outlet for learning, professional development, and, positive change for our communities. You also never know how one opportunity leads to something else, even if it didn't seem like it fit the traditional urban design path.

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Illustrative Plan_UCR Competition
Getting to be part of interdisciplinary teams for projects, even competitions like this one, was an opportunity to learn something new and collaborate with other passionate designers! (Image credit: Perkins&Will)

Conversations with Alumni

Tom Van Pelt
Master in City and Regional Planning, Cal Poly, 2014.

FOCUS: *Why did you decide to become a planner and why Cal Poly?*

I had decided to become a planner after my time in the US Navy where – during my travels – I became conscious of the different attributes of cities and towns, and how some were great and others lacking. I wondered how cities came to be, how they were designed, and who were the people guiding city development. After some research, I became aware of the planning profession and the critical role and impact planners have on both the environment and the social and economic prosperity of our cities, towns, and places. Knowing that I wanted to pursue a career in the planning profession, I was attracted to Cal Poly's learn-by-doing philosophy and felt that the MCRP program would provide me with the hands-on experience to immediately launch my career.

FOCUS: *Can tells us about your work trajectory after Cal Poly?*

During my time in the MCRP program I was fortunate to gain an internship at RRM Design Group, a respected planning and design practice based in San Luis Obispo. After graduation, I worked for RRM briefly before transitioning to San Francisco where my (future) wife had her career. In San Francisco, I was fortunate to gain employment as a campus planner for WRNS Studio, a leading sustainability and design practice. In this role, I shifted my professional focus slightly from city work to campus work – particularly higher education campuses. This shift was not difficult, as university and college campuses are akin to small cities, having similar operational imperatives, services, and facilities. However, generally being physically and socially smaller than cities, campuses are generally more contained and the challenges less intractable. After my time at WRNS Studio working at several major universities, I went to work for a client, the California State University Maritime Academy (Cal Maritime) where I am currently employed.

FOCUS: *What is your current job? What are your primary responsibilities, and what type of work that you do?*

I currently serve as Cal Maritime's Director of Planning, Design and Construction, with departmental responsibility for all aspects of the University's campus development, including all planning, design, permitting, contracting, and construction activities. I am also directly responsible for updating and implementing the Campus Master Plan, the annual 5-Year Capital Outlay Plan, and for fiscally managing all capital project budgets at Cal Maritime. My responsibilities also extend to the design of the campus environment, ensuring that campus development maintains harmony with the campus character, natural systems and campus ecology, and the University's long-term planning and sustainability goals.

FOCUS: *Can you give us a couple of examples of your favorite jobs or projects?*

My Department is currently managing two complex building projects which are under construction. While I enjoy the challenge of these large projects, I find myself—as a trained urban designer—most attracted to projects that deal with the interstitial spaces between buildings. Some of my favorite project types include those with pedestrian and bicycle improvements, public spaces, and environmental graphics. Recently, my department completed a campus-wide signage and wayfinding master plan, the first phase of which has been implemented. While small in scale projects like these greatly contribute to a sense of place and help to create a cohesive campus environment.

FOCUS: *How does your Cal Poly education reflect in your work? Do you feel that the classes and skills you learn supported your professional trajectory?*

Many of the skills learned at Cal Poly have been useful in my career. Going back to the learn by doing approach, the public outreach and presentation skills that I gleaned during my participation in the San Juan Bautista General Plan update our cohort completed under guidance from Professor Cornelius Nuworsoo have been critical in my career. Also, the skills and knowledge developed during my graduate thesis project titled "University Square", which involved a theoretical student

housing development project adjacent to the Cal Poly campus, have been directly translatable to my current position. I'm indebted to my thesis advisors, including Professors Vicente del Rio and Michael Multari for their contributions.

FOCUS: *Which do you think are the strengths and weaknesses of the CRP program?*

One of the major strengths of the Cal Poly CRP program is the real-world hands-on experience students are provided. The opportunities to work on real plans with real cities provide a direct view into the profession, the chance to build critical skills, and is a great networking opportunity.

FOCUS: *What was most challenging in your transitioning from the university to professional practice?*

Politics!

FOCUS: *What professional knowledge you would consider most critical for planners who are starting up?*

Cal Poly provides excellent technical training but I'd also encourage emerging planners to hone their communication skills. As planners, we interact and communicate with the public, other professionals, and leadership daily. Opportunities to improve communication skills - such as projects with students in other departments and from other majors, participation in public speaking courses such as toastmasters, etc. – shouldn't be passed up.

FOCUS: *What skills/tools you would consider most critical for planners who are starting up?*

In my opinion, the most important skill that burgeoning planners should develop is interpersonal communication.

While the planning profession can be technical, it is primarily a social profession in which we are tasked with interacting with the public in a tactful, respectful, and professional manner. Furthermore, developing positive relationships with the public, colleagues, and decisions makers is the most critical in resolutions and forging consensus.

FOCUS: *What do you see as the biggest challenges for planners in the next 5-10 years?*

Climate change. For over a decade planners have already been leading the charge on climate adaptation and mitigation. The continuation of this work is critical to the survival of our planet and our species.

FOCUS: *Any suggestions for success to our students?*

Be bold and put yourself out there. Take advantage of the unique opportunities Cal Poly CRP provides you: speak at City Council or Planning Commission meetings, get involved in extracurricular activities and challenges – such as the ULI Hines Student Competition, and immerse yourself in the program… it goes quick!

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Example of the way-finding system installed at the Cal State University Maritime Academy campus.

Rendering of the Mayo Hall renovation and addition at Cal State University Maritime Academy,currently underconstruction.

Learning from California:
Highlights from CRP Studios 2020/2021 AY

Planning and design studios are fundamental for the CRP department mission and both the undergraduate and graduate curriculae. As the best vehicle for Cal Poly's learn-by-doing pedagogy, the studio experience allows students to engage in quasi-real projects and work with real cities and their officials, stakeholders and communities, helping them to become better prepared for professional life.

Undergraduate (Sophomore year):
CRP 202 Urban Design Studio I (Winter 2021)
Instructors: Beate Von Bishopink abd Josh Cross.

Monterey Street Corridor Redevelopment, San Luis Obispo, CA.

The pandemic had all CRP classes taught remotely with Zoom as a meeting space. In-person site visits and analysis were replaced by on-line research and Google Earth and Street View tours, and our studio used Concept Board, a virtual platform for collaborative design work and critiques. Our project area was the Monterey Street corridor in San Luis Obispo, between the train tracks and Johnson Street. A natural corridor for the expansion of the downtown, currently consists mainly of one-story commercial buildings with front parking or large front setbacks. The students explored urban design scenarios for a denser and mixed-use development, as well as opportunities such as connecting to a new bike path along the train tracks, the possibility for a future light train stop using the existing railroad infrastructure, and adapting the existing railroad bridge into a gateway into Downtown SLO.

*CRP 202: Monterey Corridor Redevelopment;
by Clark, Partain, Yamamoto & Hauk.*

Undergraduate (Sophomore year):
CRP 203 Urban Design Studio II (Spring 2021)
Instructors: Amir Hajrasouliha and Beate Von Bishopink
Client: City of Gilroy Planning Department

First Street Corridor, City of Gilroy, CA.

This studio worked on the City of Gilroy's First Street Corridor, as did the Urban Design Studio III (CRP 341) (see this article). Collectively, the students conducted background research, site analysis, literature review, reported on case studies for inspiration, and identified a set of design principles to apply in design development. For the design phase, the class was divided in two groups: one adopted a vision with a focus on increasing the residential uses, while the other focused on intensifying commercial uses and a higher density. Students were then divided in teams of 3 or 4 to develop urban design proposals for specific sections along the corridor. Their sections were smaller than those taken by students in the CRP 341 studio, but their design products were more detailed. Deliveries (site plan, sections, elevations, and perspectives) were completed using a mix of hand nd technical drawing, AutoCad, SketchUp and Photoshop.

CRP 203: First Street Plaza, City of Gilroy. Design by Niklas Nordstrom.

Undergraduate (Junior Year):
CRP 341 Urban Design Studio III (Spring 2021)
Instructors Amir Hajrasouliha & Beate Von Bishopink
Client: City of Gilroy Planning Department

First Street Corridor Long-Term Development Concept, Gilroy CA.

This studio's mission was to conceptualize long-term development alternatives for the First Street Corridor, in the City of Gilroy, California. The corridor was reimagined as a mixed-use district, up-zoned from its current use of strip malls and parking lots. Due to the COVID-19 pandemic, the studio had to operate in an online format, with both asynchronous and synchronous meetings in Zoom. Although the lack of site visits and public engagement was a severe limitation, the students were able to explore new technologies and various web-based programs to generate a useful document for Gilroy.

Starting from an analysis of the area and the conditions set by the existing zoning regulations, the class worked on four alternative development scenarios. ESRI's ArcGIS was used to study existing conditions and ArcGIS Urban and CityEngine were used for scenario planning. Diferent alternatives for the Corridor, with demographic and environmental capacity changes in real-time, were developed accompanied by 3D modeling to depict the resulting urban environments. Each of the four scenarios for the First Street Corridor focused on a unique theme and density. The final proposals --presented to to Gilroy's planning department in ArcGIS Story Map, Powerpoint, and InDesign-- will enable the City to start a dialogue with the public, collect opinions about the corridor's future, and inform their efforts to adapt the existing zoning regulations.

CRP 341: First Street Corridor Urban Design Vision, City of Gilroy. Above: Bird's eye view of Scenarion A. Below: Section-Perspective of Scenario C.

Undergraduate (Senior Year):
CRP 410/411 Community Planning Lab (Fall 2020 & Winter 2021)
Instructor Dave Amos
Client: City of San Luis Obispo Planning Department

The Missing Middle Housing Report, City of San Luis Obispo.

Students in this studio developed a comprehensive housing report for the City of San Luis Obispo dealing with the "Missing Middle": low-rise, medium-density housing, such as duplexes, triplexes, fourplexes, townhomes, ADUs, and cottage courts. Missing middle housing, when added to single-family residential areas (e.g., the suburbs), can expand housing choice, provide more affordable options, and increase overall density. During this COVID year, students met via Zoom and conducted a limited number of public outreach activities, including stakeholder interviews and an online public survey. The final report proposed changes to the City's zoning code to increase residential density and increase active transportation trips. The City of San Luis Obispo will use the report to help guide its efforts to its missing middle housing strategy.

Undergraduate (Senior Year):
CRP 410/411 Community Planning Lab
(Fall 2020 & Winter 2021)
Instructor Cornelius Nuworsoo
Client: City of San Joaquin

San Joaquin Community Plan Draft Update.

Following the department's emphasis on hands-on learning in a virtual mode due to the COVID-19 pandemic, with unwavering determination, this studio's group of 20 undergraduate seniors worked on a comprehensive draft update to the General Plan for the City of San Joaquin in Fresno County. Usual field activities, such as the land use inventory and community meetings, were conducted virtually.

The 2040 Plan update sought to accommodate population increase and minimize the negative impacts of growth by striking a balance between preserving agricultural lands while meeting other land-use needs, establishing a program for energy conservation and efficiency, adopting green building and water conservation practices as well as new landscape standards, and reducing greenhouse gas emissions. Although there was no formal agreement with the city, the students benefitted from the experiential learning in preparing a plan for a real city.

CRP 410/411:
Above: Cover of Housing Report for the City of San Luis Obispo.
Below: Proposed zoning map, City of San Joaquin Community Plan Update.
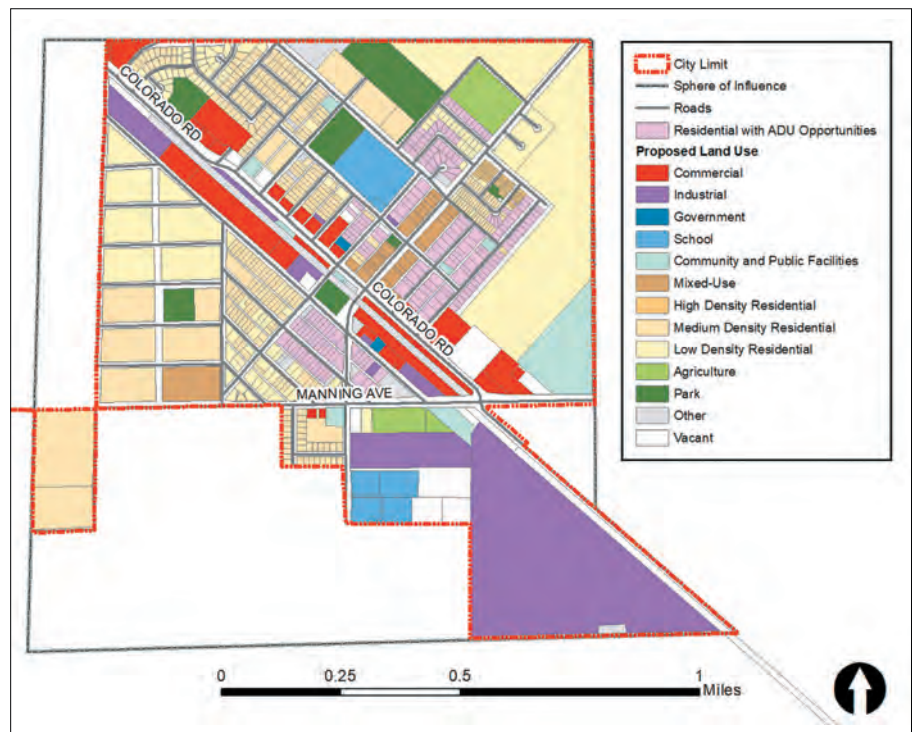
Graduate (First Year):
CRP 553 Project Planning Lab (Spring 2021).
Instructor: Hemalata Dandekar.
Client: City of Gilroy Planning Department.

Downtown Concept Plan, Gilroy CA.

This studio contributed to the City of Gilroy's efforts to update the Downtown Specific Plan with a strategic focus on the core blocks of the historic downtown centered around "Gourmet Alley." The residential area, between downtown and Highway 101 was considered to increase economic development and minimize displacement of lower-income residents. The three project phases were: a) assessment of community needs and assets; b) case studies, visioning, and goals setting, c) devel-

opment of strategies and recommendations. Student teams developed plans to: 1) Connect Gilroy and encourage visits to Gilroy's Downtown with way-finding initiatives, enhanced streetscape and a pedestrian-orientation; 2) Develop a green way connecting the civic center with East Gilroy building on physical assets in the area and introducing new recreation community and senior centers; 3) Preserve and promote Gilroy's historic buildings and spaces, adding paseos, a public square and enhanced gateways; and 4) Develop Gourmet Alley with mixed-use infill buildings which complement the historical character of the downtown with arcades, outdoor seating, decorative pathways and signage at entry points.
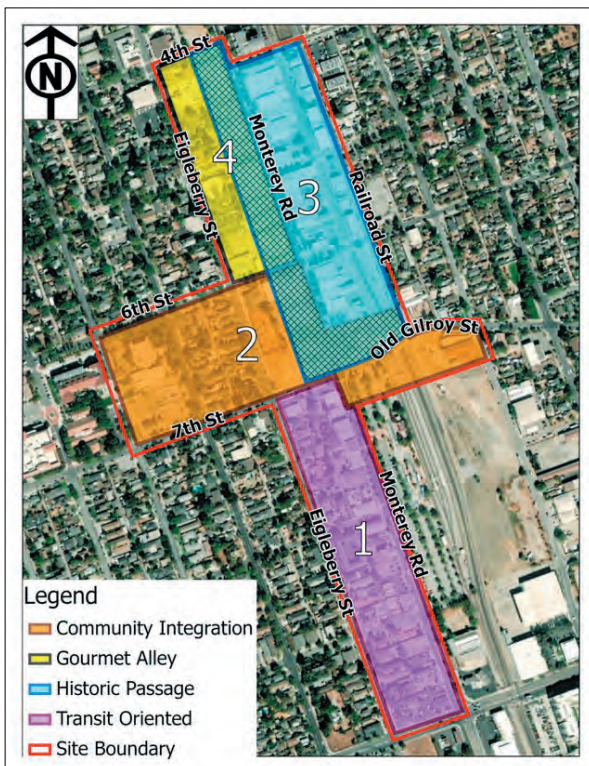
CRP 553: Illustrations from the Concept Plan for Downtown, Gilroy.
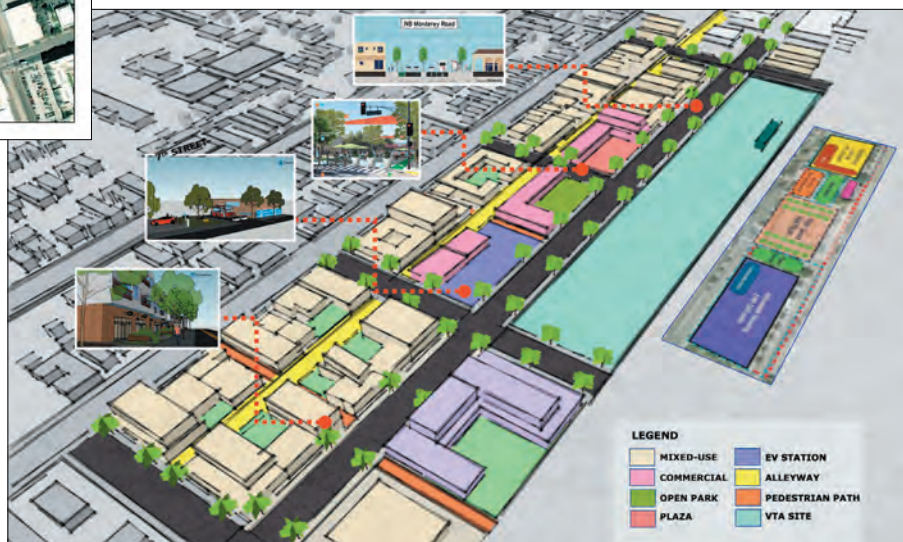
Graduate (Second Year):
CRP 552/554 Planning Lab (Fall 2020 & Winter 2021).
Instructor Kelly Main.
Client: City of Norwalk.

Norwalk Strategic Plan.

In 2020, the City of Norwalk retained the second-year graduate class to create a Strategic Plan. Richard Rojas, Norwalk's Deputy City Manager and a graduate of Cal Poly's MCRP Program, proposed the project and, along with City's planning staff and that of many other departments (Sheriff's, Social Services, Public Services, Recreation and Parks), provided support and guidance. Over a 20-week period, the students engaged with community stakeholders to develop a document aimed at increasing public health and equity for all Norwalk residents. The project team was inspired by other communities that are integrating environmental justice and equitable development approaches into plans while working towards healthy, inclusive neighborhoods. The team sought to bring these innovative planning practices to the City of Norwalk.

During a challenging year for many communities, including Norwalk, and with the studio online and unable to visit Norwalk, the students were determined to ensure a diversity of community members were able to participate. Community engagement methods included the creation of the Norwalk Connected website, social media postings on Facebook and Instagram, distribution of online and paper surveys, an online interactive mapping exercise, interviews with community members, and focus group engagement. Whenever possible, these methods were provided in a bilingual or multilingual format (English, Spanish, Korean, and/or Tagalog). Over the course of approximately three months, the team estimates that more than 500 Norwalk residents participated in at least one of our outreach efforts, contributing immensely to the class efforts in creating the Norwalk Strategic Plan.

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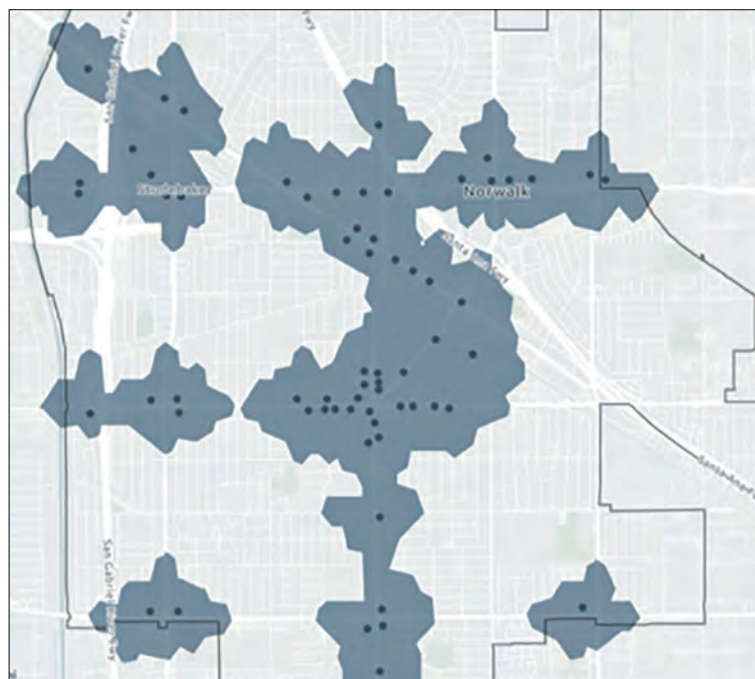
CRP 552/554: Map of the retail walkshed in Norwalk.

Theses and Professional Projects: 2020/2021 AY
Master of City and Regional Planning
City and Regional Planning Department, Cal Poly San Luis Obispo

For fulfilment of the MCRP degree at Cal Poly's CRP department, the student may choose between developing an independent thesis or professional project, or to participate in a final studio (CRP 556) where they pursue a specific theme resulting from the capstone planning studio (CRP 552/554). The following abstracts are from master's theses and projects defended in the 2020/2021 AY. They are available upon request or from Cal Poly's Kennedy Library at http://digitalcommons.calpoly.edu/theses

Thesis/Professional Projects

Expanding Housing Typology, Increasing Affordability: A Flexible Density Program for the City of San Luis Obispo.

Graham Bultema

San Luis Obispo's Flexible Density Program was proposed as a strategy to facilitate the increase of the overall housing stock, incentivize development of smaller and potentially more affordable residential units, and provide viable housing options for young professionals seeking to live in the downtown. Starting from an analysis of the city's housing shortage and community needs, this report follows with an investigation of examples of inventive city development programs and mixed-use residential projects featuring small units. Research findings are used to develop the structure of the Flexible Density Program as a draft ordinance imbeded in the City's Zoning Regulations. Current conditions of the San Luis Obispo's Downtown and Upper Monterey areas are then analyzed to identify potential development constraints and evaluate their potential capacity to accommodate small residential units.

Examining the Ecological and Social Implications of Parklets and Plazas Across Multiple Urban Scales.

Joshua Miller

Cities are experimenting with smaller-scale and cheaper strategies. New York City has led the way in converting low-efficiency intersection space into public plazas with a limited range of permanently installed elements and San Francisco has pioneered the concept of the parklet, which converts two to four street parking spaces into a modular and flexible pedestrian space. I reviewed scholarly works on urban ecology, resilience, and the social components of cities, and conducted structured observations of plazas and parklets and appropriate control sites in these two cities to answer two questions: a)

what common factors influence the viability and successful implementation of parklets and public plazas? b) what are the social and environmental outcomes of these spaces at a site-specific level and across larger urban scales? At a site-specific scale, these developments promote a diverse range of uses and can serve as localized nodes. Across larger scales, design can be used to change the perception of an area or neighborhood and has the potential to create a linked system that provides widespread circulatory and ecological improvements.

Studio Projects (CRP 556)

Increasing Housing and Housing Types Through Adaptive Reuse: A Feasibility Study of Two Sites in Noerwalk, CA.

Saba Asghary

This study examined two sites in Norwalk, California and provide a comprehensive overview of new and promising models for housing, as well as land uses that can benefit the community. While the sites may be approached differently, the primary objective for both will be the same: an emphasis on increasing the intensity of land uses, increasing the diversity of uses, and integrating segregated uses when designing both sites.

Walkable Routes for Seniors: Improving Walkability in the City of Norwalk.

Cameron Bauer

This thesis project was conducted on behalf of the seniors of the City of Norwalk. Seniors have different walking needs and susceptibility to walking barriers than other generations. They also systematically lack a voice in smaller scale improvements within their neighborhoods. This project aims to address these walking needs while also providing seniors with a platform to share their experiences and opinions. It sets objectives that could be integratedbeyond project completion to bolster

senior outreach and increase their involvement in designing urban spaces. The 'Walkable Routes for Seniors' project yielded products include flyer mockups, proposed walking routes and usable walking maps, and senior walkability surveys. The project found that challenging daily barriers to senior walkability were, mainly, a lack of shade, a lack of places to sit, and inaccessibility to destinations by foot. As a result, the project aimed to recommend cost-effective and readily attainable measures to surmount these issues. Major recommendations included street tree and vegetated buffer placement along sidewalks, establishment of new public benches, and visibility improvements at targeted crosswalks. These recommendations followed each of the four proposed senior walking routes to ensure the short-term establishment of places that are both safe and enjoyable for seniors to walk through. The intention of this project is to incite continued engagement with the senior community to attain more thorough outreach measures that inform age-friendly design solutions

Increasing Economic Opportunities and Community Vitality Through Adaptive Reuse.

Josephine Buchanan

This is a Pilot Project Plan for the adaptive reuse of the Exelsior High School Campus in the city of Norwalk, California. Due to its location and historic presence in the city, the revitalization of the campus can fuel a strong sense of place and economic growth and opportunities. This plan is based on three . components: a comercial/retail marketplace, a business incubator, and public open space. The strategy is that by investing in entrepeneurship opportunities and job training for typically underserved populations the space will reflect the diversity and cultures of the surrounding communities while providing them with support to fight displacement and the rising cost of living.

Norwalk Community Garden System Making Healthy Foods Accessible.

Gabriela N. Cortez

City planners can facilitate the improvement of overall community health. This work posits that such efforts should include plans to enable access to affordable and nutritious foods. Through planning, support from local government, and food retailers, communities can foster a healthy food environment. (CDC 2010) Gardens are a strategic way to increase health and wellness, encourage civic engagement, foster a sense of place, and improve access to healthy foods. This document describes an approach to neighborhood community gardens and school gardens in the city of Norwalk and provides case studies which illustrate ways to improve healthierfood alternatives in Norwalk. The approach builds on existing successes and identifies new locations in the city that have a high potential to be developed into useful community gardens.

Grant-Ready Norwalk.

Henry Eckold

Norwalk is a medium-sized city in the Los Angeles metropolitan area and, in comparison to the rest of the state, it is environmentally and economically disadvantaged and has public safety concerns in the form of gang activity. The goal of this document is to provide Norwalk with new grant application ideas and building project capacity and, due to the increasing government resources devoted to climate change, the focus is on grants for climate-related projects. After reviewing the grant context and the city needs, the plan takes a deep dive into Norwalk's planning documents to provide project-level recommendations for grant eligibility and competitiveness. The state climate grants reviewed within this plan include three California Climate Investments grants: Affordable Housing and Sustainable Communities (AHSC), Urban Greening, and Transformative Climate Communities (TCC), and the SB 2 Grant. The federal grants investigated included the American Rescue Plan Act , and FEMA's Building Resilient Infrastructure and Communities (BRIC) program. Grant recommendations vary depending on the specific program, but a few overarching themes prevailed: fostering partnerships, strong community engagement, and connecting projects together for the most benefit from the grant money.

Accommodating Growth: A Gentle Density Approach.

Bryce Haney

This report provides a series of functional and feasible residential prototypes to inform growth planning effortsin the City of Norwalk. After an examination of the existing development patterns the report discusses how they can transition to allow for environmentally, socially, economically sustainable growth. The types of residential buildings that can be feasibly built on a typical single-family lot under the current zoning ordinance are identified as well as the development standards that represent major barriers to redevelopment. Adjustments to the zoning ordinance are suggested through two approaches that fit the concept of "gentle density": a) reforming the development standards in single-family neighborhoods towards higher density housing while maintaining community character; b) a smart growth oriented specific planning effort to accommodate denser development in key locations with walkable access to transit and amenities. Using the single-to multi-family conversion as the unit of analysis, the report assesses the potential for additional development according to the broad zoning reform approach and the smart growth approach. Findings suggest significant potential for the addition of ADUs in Norwalk's currently single-family neighborhoods and the potential for smart-growth oriented development of gentle density types around Norwalk's major boulevards, the Metro Green-

Line station, and the Heart of Norwalk project area.

City of Norwalk E-Commerce Plan.

William Kwon

This thesis seeks to begin filling the unstudied gap between the impacts of e-commerce and urban planning through the case of the City of Norwalk. These studies are based on prior class work culminating on a Strategic Plan for the city as well as on a literature review on e-commerce related research, planning documents, and case-studies of cities planning for e-commerce. E-commerce planning remains a novel concept and there is uncertainty whether e-commerce development is feasible given current conditions in Norwalk, the rapid changes in the industry, and the historic gap that planning has yet to cover in how urban areas should plan for e-commerce. E-commerce continues to become deeply ingrained in our society, and there will come a breaking point where cities must address the challenge of planningfor e-commerce in their communities. To harness the potential benefits of incorporating e-commerce uses in traditionalcity planning, there is a need for understanding the gap between e-commerce and city planning, thus this thesis presents a preliminary means of doing so via a walkthrough of the e-commerce industry, the context of the city, and a potential glimpse of how Norwalk could look like with such uses incorporated.

Green Street Master Plan: The Carmelas Neighborhood in the City of Norwalk, CA.

Ayla-Louise Mateo

The City of Norwalk California's Planning Department is seeking to improve the safety, environmental conditions, and aesthetics of the Carmelas Neighborhood. An effective way to address these are through green streets, which include multiple additions to a typical street system–stormwater management; plant material; making streets more pedestrian, bike, and transit friendly; and effective and environmental lighting. The projetc assesses where and how green street strategies could be used in Norwalk's Carmelas neighborhood, and proposes a plan for implementation. The plan includes various illustrative graphics of projects and a series of design guidelines.

Objective Design Standards to Streamline Development Review.

Owen Goode

California has been experiencing a strong need of housing development for a long time, and localities continue to fall short of the mandatory allocated number of units. Over the past few years state legislation was passed to encourage housing supply. One of them was Senate Bill 35 with the goal to provide an agreed upon set of design standards to streamline the design review for housing developments and mixed-use projects. This project will examine the bill's minimum requirements, delineate how to develop these design standards, and provide examples of how those standards could look like in a community. Additionally, this report provides recommendations of tasks not included in these design standards and how a community can adapt them to their own city.

Improving Active Transportation on Excelsior Drive: A Complete Street Design.

Simon Poon

Excelsior Drive is an eastbound and westbound minor arterial in the City of Norwalk that was originally designed to prioritizing vehicular travel speed and traffic volume. It provides intra-community continuity, serves as a connector to principal and minor arterials, and provides access to numerous elementary and middle schools, parks, multifamily high-density housing, single family housing, and other small commercial businesses. This report examines a segment of Excelsior Drive and recommends a set of complete street design strategies to improve the experience of experience of pedestrians and bicyclists towards a healthier and more equitable community. Recommendations include road diet, buffered bike lanes, separated bicycle lanes, colored bicycle facilities, separated bicycle signals, improved sidewalk connects, additions of crosswalks, tree shading, leading pedestrian intervals, right turn on red restrictions, and improved roadway lighting. Recommendations and their feasibility are collected from a variety of reports, federal guidelines, and research cooperative guidelines.

Trees as an Urban Amenity: A Green Infrastructure Plan for the One-Ways Neighborhood of Norwalk, CA.

Selma Anissa Sellami

This project analysis and design proposal is focused on a low-income, highly populated neighborhood located in the City of Norwalk, California known as the One-Ways. Deemed as a dangerous and uninviting, this neighborhood has the city's most dominant presence of street gangs as well as a high level of street crime. There are also several limitations for pedestrian and vehicular circulation as the sidewalks and roads are narrow, unatractive, unsafe and poorly maintained. The lack of street or adjacent trees canopy reduces walkability, livability, attractiveness, and environmental advantages. This project suggests the introduction of street trees to the One-Ways neighborhood through a comprehensive plan that includes the designation of locations for a series of sidewalk design improvements, tree planting, plant pallete, and funding mechanisms for implementation.

**Proposed Inclusionary Housing Ordinance for
the City of Norwalk, CA.**

Ethan Thomas Stan

This report investigates the effectiveness of an inclusionary housing ordinance to enhance the production of affordable and mixed-income housing in the City of Norwalk, CA. Part 1 describes the key elements of an inclusionary housing policy, contextualizing them in the context of the latest nationwide data and California's legal and legislative landscape. Part 2 presents an overview of Norwalk's economic and housing characteristics and how they may inform the design of an inclusionary housing policy. Part 3 makes recommendations as to how Norwalk may design an inclusionary housing ordinance in-line with best practices and current conditions in Southern California, utilizing the Southern California Inclusionary Housing Database created for this report.

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FOCUS is a professional-oriented yearly journal. It highlights the work promoted, discussed, and produced in the City and Regional Planning Department, Cal Poly San Luis Obispo.

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