Opening Doors to Transdisciplinarity in Architecture

JOURNAL DOI https://doi.org/10.31944

Antonio L. Fernandez
University of Santo Tomas

Architecture borders on art and technology. It requires creativity and technique. How prepared are architecture students for professional practice? It is worthwhile considering an architectural career within one's own sphere of skills and interests, perception of social need, and perhaps, other personal reasons. Sooner or later, the architect is exposed to the real problems and context of practice, but that ought to start at the college level.

To get a college degree in architecture, there is a suggestion for senior high school students to take the Science, Technology, Engineering, and Mathematics (STEM) academic strand, under the K-12 education scheme. This strand will equip them with creativity, communication, and problem-solving skills that they can use in the field. There are those who have a more liberal view, so the Business, Accountancy, and Management (BAM) strand is an option; this would then be a good preparation for those who wish to start their own architectural firm.

In this special section, we learn how architects are drawn to solve real problems of cities and to discover innovative ways in collaboration with professionals from other disciplines, local government, and community members.

Shelter, built environment, and communities

Shelter is a basic human need. Since the Neolithic period (ca. 10,000 BC), it is said that Homo sapiens were no longer cave dwellers. Instead, they built permanent housing and formed villages. Western civilization subsequently saw a new conception of structures and buildings, and thus "architecture," as we know it today, was born. Architecture defines culture and reflects the history of a place. As complex phenomena has continued to "descend" on human life via trade and commerce, transportation, wars and conflicts, globalization, and lately, climate change, architects can no longer depend on what they know but have to learn to collaborate with disciplines other than engineering, opening opportunities in transdisciplinarity.

With time, the many interrelated fields have merged with architecture and the allied fields of engineering and planning. Vernacular and traditional architecture have also been shaped ultimately by the different functions adopted by people in a lived place (such as a settlement, town, or city) with schools, markets, factories, places of worship, administration, and institutions locating in spaces and places where population tend to congregate, or they become the nuclei of human activity themselves. The need for mobility is satisfied by man-made linkages (roads, highways, rapid transit) as people commute and use available transport modes. The urban functions and networks necessitate planning and design, with the help not only of drawings (as often associated with the architectural practice), but also of ideas that are drawn upon current knowledge and experience, tempered by economic and social theories.

This scenario demonstrates how present-day architects have found themselves involved in both interdisciplinary and transdisciplinary knowledge production (Doucet and Janssens 1-15). It is no exaggeration that architecture has evolved, becoming more reflective, and even attuned to bottom-up approaches in community development.

Community-based or ground-up approaches are not new. Architects such as UN Habitat winner, academician Johan Silas of Surabaya's of Institut Sepuluh Nopember (ITS) which translates to "Tenth of November Institute of Technology," spearheaded ground-breaking practices in Indonesian local

governments through the World Bank-funded Kampung Improvement Programme (KIP), In the 1970s, the Asian Coalition of Housing Rights (ACHR) was born out of the dominant rise of low-income or informal settlements (called squatters, in some quarters) in large cities all over the globe. In Asia, including the Philippines, population in capital cities grew due to migration from the periphery to the urban cores. ACHR undertakes a radical approach that will have provided significant input to the pro-poor and "build back better" solutions to post-disaster reconstruction in a hazard-prone country as the Philippines (Hoffman).

Beyond the physical and visual

On the other hand, architects, and the allied professionals like civil engineers together with the building contractors and investors have, in many ways, created the urban skyline in countries all over the world, where skyscrapers and towers have become symbols (such as Petronas in Kuala Lumpur) of power, progress, and prosperity. These have contributed to image-building of cities, albeit constricted to a small geographic area and economic segment of a country.

One may question the utility of architecture if interpreted in the limited sense of the physicality of cities. As per the experiences just mentioned, the architect has such potential to contribute to sustainability and future challenges. Thus, assembled for this issue are research works that interface across disciplines in the projects that architects engage in.

Indeed, the field of architecture has globally been a constant source of creative and original thinkers such as Ebenezer Howard, Le Corbusier, and Tony Garnier in Europe, and Burnham, who had a 'design' for Chicago and Manila. Among these esteemed architects is Jaime Lerner, described by the International Center for Local Environmental Initiatives[1] as a "ground-breaking urbanist and mayor." He was an architect and urban planner who became a politician and made Curitiba, capital of the state of Parana, into a model of sustainable urban development. Appreciation of these contributions provide substantial context in terms of history and culture and the heralding to a path of sustainable development.

One is amazed at the city of Bilbao in Spain which had an environmental renaissance in 1970s, meriting the so-called 'Bilbao effect" with the pivotal transformation of the city through the iconic Frank Gehry's Guggenheim Museum. Though not associated with any landmark, urban transformations, such as those in the Singapore River and Kallang Basin (Hon) and more recently, Cheonggyecheon River in Seoul (Seoul Metropolitan Government 2011) are just phenomenal.

In these examples, the environmental improvement and people's health were key considerations. Heavy expenditure for infrastructure and investment in industrialization were inevitable after World War II. Since then, development was measured in economic terms through gross national product (GNP). GNP has remained an important indicator together with others related to access to water and sewerage, open space, among others.

Sustainable development signalled a paradigm shift at the global level during its adoption in the 1992 Rio Earth Summit. Defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (10) by the Brundtland Commission, sustainable development is the unifying basis of for the Millennium Development Goals (MDGs) adopted by governments and international organizations with active involvement of non-governmental and grassroots organizations through the guidance of the United Nations for 2000-2015. The congruence of three epochal post-2015 agreements - the Sustainable Development Goals or SDGs (2015-2030), the Paris Agreement on climate change, and the Sendai Framework for Action on Disaster Risk Reduction (2015-2030) - set the tone for consistent policies and focused action in various sectors in UN member countries. The SDGs have permeated even educational institutions to impact on their curricular and non-curricular initiatives.

Architecture education: Pedagogical vs. social needs

The University of Santo Tomas was ranked as the top Philippine university in terms of addressing the SDGs by the Times Higher Education Impact Rankings of 2020 (University of Santo Tomas). As its commitment to the

SDGs, the UST Graduate School adopted a teaching and learning matrix within the course plan template wherein the teacher indicated the SDGs relevant to the intended learning outcomes. Thus, the implementation of the 17 SDGs from the high-level of government down to the local level and the educational unit can be traced. Significantly, the whole gamut of human endeavors that influence human lives and anything outside the human person (namely the environment) are covered in the SDGs.[2] The nature of these goals is cross-disciplinary; they are also relevant at different levels, particularly at the local level (Moallemi 300-313).

While the SDGs could provide a framework by which to proceed with interventions in a place or community, what could it have been before 2015, or even years before that? The experience of Surabaya in the implementation of different stages of the Kampung Improvement Programme (KIP) would be instructive in terms of the role of an academic institution as settlement-upgrading schemes evolved (Ni Made Swanendri, 176-194).

Swanendri reveals that KIP is a learning experience for both community and the city government. In Surabaya, partnership among the stakeholders was facilitated by an intermediary - the ITS and John Silas. The three most important concepts are democracy, welfare, and self-reliance. The success or failure of interventions, it would seem, depends on how well interventions to improve a settlement is integrated into the overall planning and development of the city.

It appears that Johan Silas, being the champion for these values that are operationalized through KIP, provides leadership in the program, guidance to the city government, and mentorship to students. With him are other professionals and community workers who have worked together in the Asian Coalition for Housing (ACHR) since 1994. Through the years, other networks have been sharing experiences on tackling problems of land, infrastructure, and housing at scale in their cities, giving rise to a cadre of community architects (Luansang, et al. 497-512).

Reflecting on the work of architects, I cannot help but think about what impact a house may have on those who live there or on what an office within a building has on the office worker. On a larger scale, i.e., outside the build-

ings and structure, the concern of how a community fits into built environment and urban design begs to be discussed and faced squarely.

Research

As a matter of methodology in the context so far discussed, empirical research is essential. In this section are case studies using observation methods, primary and secondary data gathering with interview techniques, and other social methods of research. There are also mapping technologies such geographic information system (GIS) providing maps and images for greater visual appreciation. This has been the approach of the Newton-UST Research Team, of which this writer was the Team Lead for Socio-Cultural-Political sector.

On January 17, 2020, the Newton-UST Research Team held an International Research Symposium with the title "Make Places: Discourses on Urban Eco-Social Values" at Technopark Hotel, City of Santa Rosa, Laguna. This is part of the project entitled Mapping Eco-Social Assets; Urban Greenery and the Connection between Them in Rapidly Changing Times (or MESA) in collaboration with the University of Reading, UK.[3]

The conference explored the common and public spaces of cities where people interact, thereby building relationships and community identity. Furthermore, the conference aimed to understand how people develop these rich public spaces and identify the social and ecological values they place on such.

Architects elsewhere have resorted to tools that help quantify the achievement of key performance targets in terms of social value impacts. In other words, the financial value of social outcomes is estimated as in the case of benefit evaluation used in cost benefit analysis. Methods for getting the quantification is done through primary data gathering methods (such as interviews). For example, in UK the Royal Institute of British Architects (RIBA) in response to the Social Value Act of 2012, developed the Social Value Toolkit for Architecture. The law requires buildings that are procured with public money to be of demonstrable social value. Together with the

University of Reading, RIBA developed the tool kit on evaluating the social value impact on people and communities delivered by a project.

Attention to the research topics mentioned above open possibilities for a menu of options to deal with this question: How does the community fit into built environment and urban design?

Built environment

A term that needs to be more appreciated in the Philippine context is "built environment." UN Habitat reports that the level of urbanization of the country is estimated to be 51.2% (in terms of population in 2015). Thirty-five years hence (in 2050), this is projected to reach 84%, mainly affecting small and intermediate cities.

Globally, the concept of built environment (McClure and Tom 1-28) has been accepted as representing the transdisciplinary mix of the concrete and the intangible, the physical and the spiritual, the context and disconnection, and such other dichotomies. Not to mention the outliers and the in-between, if they ever exist. In developing countries, the dichotomy of the city is visible in the formal and informal sections - the latter being the low-income settlements (Balbo 1-35). The world of architecture, it seems, stems from a recognition of what is observable as well as the attempt to reach what is desired by us, humans. Therefore, an architect is hired to bring a 'dream' house into reality, a building constructed for its intended function. However, the sphere of influence extends far wider than the space where these are built as lives of the users of such spaces organically interact with others in society: structures visually impact a landscape; layouts in a given space of a collection of structures amidst other infrastructure such as roads and nature like rivers comprise the image of a city or the image of a larger space, as a region. (Lynch)

The built environment in highly urbanized communities in the Philippines offers a study of dichotomy which is often labeled as formal or informal and fragmented. Travelers are captivated by European cities, marveling at modern architectural wonders as well as appreciating the rich historical past as reflected in both tangible and intangible assets. These are

drawn from time-bound knowledge and the recognition of the old and the new.

Indeed, the visual elements (of settlements) leave a strong impression on the first-time visitor. Economically stratified societies in developing countries do manifest wide gaps in income, social services, educational, and economic opportunities. However, basic social infrastructure and open spaces, whether built with government or private funds, are assets that bring value to the populace and society. In other words, human experience of an environment consists of a totality of many aspects - physical, economic, social, political, etc. Urban design and planning emerge as a logical result of all these linkages among the disciplines (as Bertanlaffy would call, hybrid sciences).

Reinterpreting architecture in the context of urban design

Architecture, has for centuries, given form to settlements. As knowledge and experience accumulated, one would think that human society would have attained the utopian vision of a city or a town. That is not just the case, as we in this present day and age, realize with the complex interactions of economy and society, politics and demography, science and tradition, and hard and soft technology.

Present-day communities in the Philippines face a complex set of problems. The living and working environment, from the individual needs to family-level concerns and the wider barangay community, is partly shaped by the physical attributes of buildings they occupy as well as the spatial relationships between physical structures in the built environment.

Developing the idea of transdisciplinarity

Planning intrinsically engages different disciplines towards an understanding of a situation or a problem and works towards providing solution options. In other words, through the research works presented here, better-informed decisions are more likely to be made. Another given is that planning in the real world does not take place in a political vacuum; governance issues must be faced.

Informed local leaders are a necessity in this knowledge environment. But what about the people who are affected by decisions? Stakeholder engagement has also been in the literature for decades, framed in terms such as people participation and community-based management. Should the architect and others in the allied professions work their way through with communities?

The answer is a "yes" but how? The papers in these pages provide some answers, opening possibilities for collaboration among stakeholders.

As architecture academicians tackle a "new" bold direction in the Philippines, this issue of UNITAS hopefully contributes to the body of knowledge in the Philippine scene and other parts of tropical Asia. While the University of the Philippines and the University of Santo Tomas have embarked on doctoral programs in architecture, the ground for an indigenous philosophy must be broken to yield fruits of research and scholarship. However, what we will come to appreciate through these papers is the socio-cultural dimension of things, of places, of spaces.

Experiences from the Philippines, Taiwan, and Singapore

The three papers in this issue are manifestations of architects' recognition of what a city or town needs outside the confines of an architectural drawing or plan on paper. In a disaster-prone country like the Philippines, mitigating hazards and risks extends beyond buildings and structures to seeking safe locations within the context of local, natural, and built-up environment (Hoffman).

What seems esoteric, seen externally in outward "expressions" in buildings designed by architects, must in all essence capture the socio-cultural, albeit historic ambience of a place. In other words, context matters. It would probably be reasonable to anticipate that homegrown architects within the Asian context would understand best how Asian cities, landscapes, and their architectural heritage were shaped, altered, and grown as societies embrace modernity (Lico).

All papers in this section are submissions to an international research symposium held on January 17, 2020 in Sta. Rosa City, Laguna, Philippines.

They offer perspectives on how communities develop high-quality spaces and how ecological and social values are improved in rapidly urbanizing societies.

All written by architects, the papers in this issue present models from the Philippines, Taiwan, and Singapore, each has a planning unique to its own setting and solicits collaboration among stakeholders. Thus, place making (or making places) as against creating spaces have a broader meaning. As Lefevre and Nicholson-Smith convey in their seminal work *The Production of Space*, spaces are produced and reproduced through people's intentions in how they plan to live in such spaces. It is a process taking place in small areas or neighborhoods of a city where people's eco-social values are embedded. Friedmann (149-165) believes that true place making is possible through collaborative people-centred planning (as opposed to command-and-control schemes).

The first paper by Dimalanta, Sapuay, and Agarpao focuses on the street environment of Calle Hidalgo. While planning documents recognize the functional value of Calle Hidalgo as a connector road, transport planners practically relegate street space towards the promotion of vehicle use with disregard for the pedestrians and the cultural legacy that the old structures have. Mateo-Babiano and Ieda (1915-1920) see this as a concern for street space sustainability.

The site development plan done by the faculty and students at the Polytechnic University of the Philippines is executed on a map guided by the Patrick Gedde's concept of the integration of Place, Work, Folk for the physical, economic, and social, elements of urban life and the sustainability framework. The latter is ascribed to American economist Edward B. Barbier by the authors. The three pillars (dimensions) – economic, social, and environmental, are widely accepted in different disciplines (Barbier; Munasinghe).

The authors rightfully acknowledge the role of local leadership, specifically the elected mayor. As experience has shown, projects are bound to take off when budgets are allocated, a sure sign of the "elusive" political will being present. Interest among street users and even building owners to support

heritage preservation in the area cannot evolve as long as a street is primarily the automobile's territory. There is no mention about pedestrianization or attempt to convert Calle Hidalgo to be more user centered.

Such underpinnings may thwart efforts to accomplish heritage conservation to a satisfactory degree. As far as the action research is concerned, future work can attempt to understand people's perceptions about heritage conservation. Cruz et al. (346-363) concluded that residents do not regard ancestral houses declared by the city government as heritage buildings with a "sense of pride." The complexity of integrating such varying opinions among different stakeholders can deter progress of redevelopment efforts.

The previous work can be described as an academically motivated action research that provides an evidence-based solution to a local problem. The next paper by Malit and Tsai is a case study in the city where Chung Hua University is located, encouraged by national directives, specifically from the Ministry of Education (MOE). Malit completed her master's degree under the advisership of Prof. Tsai in the said university.

This second paper documents the process by which university students, teachers, and field experts work together with the local government and local community (residents and businesses) for the revitalization of a market in the old part of the Hsinchu City, the "Silicon Valley of Taiwan." Written two years after the program started in 2017-2018, the paper narrates the experience of the Department of Architecture and Urban Planning, Chung Hua University (DAUP-CHU). It explains how an architect's education can be shaped to encourage innovation and collaboration through "Architecture Design," a compulsory course. While design or class studio is part and parcel of any architecture academic program, cases where stakeholder participation is incorporated into the pedagogy is not common.

This would seem a redirecting of academic pursuits to a more socially relevant role for universities. As the USR website states: "…universities are encouraged to step out of their comfort zone and begin dialogues and collaboration with society" (2020 USR Online Expo). Through this, "innovative teaching and social practices" are expected to be generated. As the incentive

to collaborate with others is provided by the government, universities can concretely contribute to the achievement of SDGs at the local level.

The top-down nature of Chung Hua University's experience differs in many ways from the case study done by the Polytechnic University of the Philippines, where there appears to be no direct linkage with the Philippine Government's Department of Education. The USR Program is conducted to guide university teachers and students to form interdisciplinary teams to serve as local think tanks for regional development, voluntarily identify local needs, and solve problems through specialization in order to stimulate innovative development of local firms and community cultures (Taiwan, Ministry of Education).

There are elements in the Chung Hua University experience such as the USR Design Center that resembles the urban living lab (Von Wirth et al. 229-257) which is practiced in Europe. This facilitates stakeholder participation. It is interesting that the set of "small interventions" to promote joint decisions and actions such as "eco-acupuncture" is true to the Oriental origins of the case. A quick web search yielded the use of the same term in Australia (Ryan), particularly in the Melbourne School of Design and RMIT University to respond to the challenges of climate change and environmental degradation. With such commonalities, opportunities for future cross-fertilization of ideas among the different educational institutions and professional organizations can be explored.

While the narrative in the third case study is not university-based, it being recognized in the architecture profession as an example of an evolving "social architecture" in Singapore (Chong and Kato) is notable. It is about an architect's involvement with a grassroots movement in Singapore. Ground-up Initiative (GUI) is community-led as described by author Tan Chia Chia, who co-founded it in 2008. The role of GUI as facilitator highlights the consolidation of the people's will to build the power of the community of volunteers.

Much of the island country's past is associated with Lee Kwan Yew, the first Prime Minister of Singapore who held the position for three decades (1959-1990). Nothing short of phenomenal, the rise of Singapore from a

British colony to a strong Southeast Asian economy is often attributed to the style of leadership - described by some as "autocratic yet democratic." The political environment has significantly changed. In the face of the Covid-19 pandemic, ground-ups have increased (Thian Wen Li 2024).

In Singaporean parlance, a "ground-up" is the equivalent of a community-based and NGO-led movement such as Gawad Kalinga in the Philippines. Through the years, a transformation that links farming to urban living has been happening in high-population density Singapore. Concern for ecological sustainability has established a commune in the Kampung Kanpus. GUI is introduced as "S'pore 21st Century 'School of Life' in a nature-inspired campus to forge A Beautiful Connection with the Earth & Community through Farming Your Heart" in its Facebook page, revealing the character of what may be called a movement.

Tan Chia Chia, at the time of writing, was pursuing a doctorate at the National University of Singapore. As she described the start of Ground-up Initiative, many thought the ten volunteers were "modern Hippies" (note the capital "H") embarking on an impossible journey. In February 2023, Tan wrote in her e-mail:

> [T]he good news that we have finally reached an agreement with our local planning authorities, and we are able to publicly announce the outcome now, which is that we are offered a new plot of land to rebuild our "Kampung Kampus." Though it's not the best outcome that we hoped for of us staying where we are, it's probably the second best option to still have a plot of land in land scarce Singapore for a non-profit….Then again, this presents us as a unique case study for what resilience means in current times of environmental/ socio-economic/ political shifts and how existing urban communities can adapt and thrive despite the odds. (Tan)

GUI is included in a portfolio of case studies documenting the social architecture movement. The Singapore Institute of Architects recognizes that architects, planners, and designers advocating for heritage, biodiversity, sustainability, food resilience, and participatory design are part and parcel of their practice. This is giving rise to social architects "who envisage a new

direction in architecture, take action to bring about change, and use design as a means to encourage others to join them." (Chong and Kato).

Conclusion

It is desirable that areas of human activity in a city - old or new - have vitality and life. Where there has been loss of social and economic activity due to market forces or sheer negligence, architects are finding ways to regenerate communities.

It is no longer a matter of choosing between *laissez faire* or government-regulated planning, as arguments for or against each would seem to matter in the experience of a city-state such as Singapore, an enviable model for both industrialized and developing countries. It would seem appropriate and advantageous for local academicians and researchers who still consider themselves as fundamentally trained in architecture to promote the evolution of homegrown empirical investigations yet steeped in universal thought enriched by the state-of-the-art in the recognized bastions of built environment in the West, and the solid application of the scientific method (Samuel 191-200). Ultimately, our aim is to attain urban sustainability.

In the end, one may ask: What really matters to the subject of architectural and urban design endeavors? People and places are the focus of such efforts. In all cases, context is important.

Through this section, UNITAS shall have contributed to the growth of integrated knowledge and transdisciplinarity; it is not so much about architecture as what makes cities thrive.

Acknowledgment

The draft text for the three papers was reviewed by Dr. Tobias Bonaobra (Graduate School, University of Santo Tomas [UST]), Prof. Lilia Casanova (Helena Z. Benitez School of International Relations and Diplomacy, Philippine Women's University [PWU]), Dr. Lorelei De Viana (College of Architecture, UST), Prof. Nappy Navarra (College of Architecture, University of the Philippines), Prof. Mary Racelis (Department of Sociology and Anthropology, Ateneo de Manila University), Dr. Rei Shiraishi (Graduate School of Sciences and Technology for Innovation, Yamaguchi University), and Prof. Teruhiko Yoshimura (Faculty of International Welfare Development, Nihon Fukushi University). Their assessment and constructive comments on the quality, relevance, topicality, and originality of the papers are greatly appreciated. I also wish to express gratitude for the trust and support received from the Newton-UST Research Team, especially Dr. Leah Punongbayan-de la Rosa, project leader, and Ar. Sylvia Clemente, deputy project. The professional handling of the international research symposium by Ar. John Clemence M Pinlac, as conference convener, is highly commended. The editorial assistance of Ms. Nicole R Tablizo, who undertook editing for language and style, is gratefully acknowledged. Special thanks to EnP Xenon L. Walde of the City Government of Makati for bringing to my notice the latest effort of the city towards environmental sustainability. The experience in Bgy. San Isidro, I hope, will inspire multis-takeholders to bring to fruition Dr. Florangel Rosario Braid's articulation of the role of architecture being "more than just building and designing" but performing "a social task." Lastly, I am grateful to Dean Michael Anthony C. Vasco for his encouragement to pursue the publication of research.

Notes

1. The International Center for Local Environmental Initiatives is now called ICLEI-Local Governments for Sustainability, a network of more than 2,500 local and regional governments.
2. The 17 Sustainable Development Goals formulated by member countries and the United Nations are as follows: no poverty (SDG 1), zero hunger (SDG 2), good health and well-being (SDG 3), quality education (SDG 4), gender equality (SDG 5), clean water and sanitation (SDG 6), affordable and clean energy (SDG 7), decent work and economic growth (SDG 8), industry, innovation and infrastructure (SDG 9), reduced inequality (SDG 10),sustainable cities and communities (SDG 11), responsible consumption and production (SDG 12), climate action (SDG 13), life below water (SDG 14), life on land (SDG 15), and peace, justice and strong institutions (SDG 16), and partnerships is sustainable development (SDG 17).
3. Four papers from the research were published in the Special Section of UNITAS Vol. 93, No. 2 (Nov. 2020)

Works Cited

Balbo, Marcello. "Urban Planning and the Fragmented City of Developing Countries." *Third World Planning Review*, vol. 15, no. 1, 1993, doi:10.3828/twpr.15.1.r4211671042614mr.

Barbier, Edward B. "The Concept of Sustainable Economic Development." *Environmental Conservation*, vol. 14, 1987, doi:10.1017/s0376892900011449.

Brundtland, Gro H., Our Common Future: Report of the World Commission on Environment and Development. Geneva, UN Document A/42/427.

Chong, Keng Hua, and Yohei Kato. "2020 GUI." *Social Architecture: Theory & Practice Summer 2020*, Singapore University of Technology and Design, 2020, asd-20312-satp-term8-2020-pdf.pdf (sutd.edu.sg).

Cruz, Noel, et al. "Redefining Street Life: the Intertwine of Public of Private Space in the Streets of Santa Rosa, Laguna, Philippines." *Unitas*, vol. 93, no. 2, Nov. 2020, pp. 346-363.

Doucet, Isabel., and Nel Janssens, editors. *Transdisciplinary Knowledge Production in Architecture and Urbanism: Towards Hybrid Modes of Inquiry*. Springer, 2011.

Friedmann, John. "Place and Place-Making in Cities: A Global Perspective." *Planning Theory & Practice*, vol. 11, no. 2, 2010, pp. 149-165.

Hoffman, David. *Imagining a Social Enterprise Model for the Provision of Pro-poor Housing Solutions in the Philippines.* Asian Coalition of Housing Rights | UCL The Bartlett Development Planning Unit, 2016, https://blogs.ucl.ac.uk/dpublog/tag/asian-coalition-of-housing-rights/.

Hon, Joan. *Tidal Fortunes: A Story of Change - The Singapore River and Kallang Basin.* Landmark Books Pte. Ltd., 1987.

Lefebvre, Henri and Donald Nicholson-Smith. *The Production of Space*. Blackwell, 1991.

Lico, Gerard. *Arkitekturang Pilipino: A History of Architecture and the Built Environment in the Philippines.* University of the Philippines Press, 2008.

Luansang, Chawanad, et al. "The Role of Community Architects in Upgrading; reflecting on the experience in Asia." *Environment & Urbanization*, vol. 24, no. 2, Oct. 2012, pp. 497-512, doi:10.1177/0956247812456125.

Lynch, Kevin. *Managing the Sense of a Region.* The MIT Press, 1980.

Mateo-Babiano, Iderlina., and Hitoshi Ieda. "Street Space Sustainability in Asia: The Role of the Asian Pedestrian and Street Culture." *Journal of Eastern Asia Society for Transportation Studies*, vol. 7, 2007, pp. 1915-1920.

McClure, Wendy R. and Tom J. Bartuska, and. *The Built Environment: A Collaborative Inquiry into Design and Planning*, 2nd ed., John Wiley & Sons, 2007.

Moallemi, Enayat A., et al. "Achieving the Sustainable Development Goals Requires Transdisciplinary Innovation at the Local Scale." *One Earth*, vol. 3, Sept. 18, 2020, Elsevier Inc., https://www.sciencedirect.com/science/article/pii/S2590332220304152.

Munasinghe, Mohan. "Environmental Economic and Sustainable Development." *Paper presented at the UN Earth Summit, Rio de Janeiro, 1992*, reprinted by the World Bank, Washington DC.

Ni Made Swanendri. "Evaluation of the Kampung Improvement Programme (KIP) and the Comprehensive KIP, Surabaya, Indonesia." *Regional Development Dialogue*, vol. 23, no. 1, Spring 2002, pp. 176-194.

Republic of China (Taiwan), Ministry of Education. *Comprehensive USR Evaluation. USR News | Center for University Social Responsibility, Ministry of Education*, 2019.

Ryan, Chris. "Eco-Acupuncture: Designing and facilitating pathways for urban transformation, for a resilient low-carbon futures." *Journal of Cleaner Production*, vol. 50, July 2013, pp. 189-199, doi:10.1016/j.jclepro.2012.11.029.

Samuel, Flora. *Why Architects Matter: Evidencing and Communicating the Value of Architects*. Routledge, 2018.

Seoul Metropolitan Government. *Back to a Future Seoul: The Cheong Gye Cheon Restoration Project, Cheong Gye Cheon Museum*, 2011.

Social Architecture - Theory and Practice, 2019, Ground Up Initiative, socialarchi.github.io.

Tan, Chia Chia. "Re: Your Paper Contribution to Unitas." Received by A.L. Fernandez. 14 February 2023.

Thian Wen Li. "About 100 ground-up initiatives set up in 2020 during Covid-19 pandemic: Report." *The Straits Times*, 2024, www.straitstimes.com.

University of Santo Tomas. "UST leads Philippine HEIs in terms of addressing UN SDGs, ranks among top 400 universities in the world." University of Santo Tomas, April 24, 2020, www.ust.edu.ph.

Von Wirth, Timo, et al. "Impacts of urban living labs on sustainability transitions: mechanisms and strategies for systemic change through experimentation." *European Planning Studies*, vol. 27, no. 2, 2018, pp. 229-257, doi:10.1080/09654313.2018.1504895.