One Thing (Alongside) Another: Piggybacking Practices in Contemporary Urbanism

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Keywords: piggybacking, hybridity, reuse, vacancy, residual spaces, opportunism, entrepreneurship, neoliberalism

This paper identifies and examines a range of experimental hybrid land-use tactics, or "piggybackings," that are emerging in response to the intensifying pressures of contemporary market logics. Piggybacking practices, as defined here, are innovative multiple-use propositions for anchoring socially or economically marginal activities alongside dominant ones. Rooftop farms, student-senior home shares, restaurants doubling as coworking spaces, luxury apartments supporting artist residencies, and public pavilions incorporating repurposed construction mock-ups: these and other examples of piggybacking are shown to utilize a common set of tactics to offset one program's disadvantaged position in relation to other more traditional—and more fully capitalized—forms of urban development.

Piggybacking practices are clearly distinguished from the temporary, interim, or provisional bottom-up approaches that feature prominently in the scholarship around vacancy, temporary use, and "everyday" or "tactical" urbanism, even as they share certain sensibilities.1 Differences between "weak" and "strong" forms of piggybacking are also outlined. Unlike the exclusionary effects of zoning and gentrification, piggybackings are seen to create surprising entanglements that provoke novel forms and programs of social exchange capable of promoting greater equity and resiliency in the built environment. It is argued that architects and planners must understand the practical challenges posed by this work, while simultaneously recognizing piggybacking's wide-ranging potential as a tool for public advocacy of the commons—for social and ecological functions whose inherent value lie beyond those that are typically recognized by market-oriented development schemes.

CHALLENGES AND OPPORTUNITIES IN THE CONTEMPORARY CITY

Unavoidably, most civic-minded designers today must operate in the aftermath of two significant disappointments: the public sector's decades-long retreat from urban planning and design, on the one hand, and the now-deflated recession-era hopes for a newly enlightened approach to state-led infrastructure, on the other.² As a result, it has now become clear that efforts

by architects and planners to address today's mounting public crises—climate change, housing shortages, and record levels of inequality—must be staged from within an increasingly hegemonic framework of neoliberalism. In order to create flexible and robust opportunities for social and ecological innovation, and to unleash the talent of both the general public and design professionals toward productive ends, we must somehow reconcile the private sector's uncoordinated interest in short-term profits with the public's need to invest in and plan for the long-term health of the commons.

A key challenge, as outlined by Rudolf Kohoutek and Christa Kamleithner is that "there are numerous activities within the whole spectrum of urban uses, for which the private real estate market has only inadequate supply."3 These include nearly all activities whose use value exceeds their exchange value (myriad social, cultural, ecological, and entrepreneurial endeavors). "Whereas...zoning categories correspond to the conventional markets for residences, offices and industrial areas on the basis of private ownership of property and buildings and long-term occupation, increasingly a contradiction is becoming evident between the normal economy of private utilisation of space and the demands of an 'urban economy."⁴ The pace of change today in relation to the relative inflexibility of architecture only compounds this problem. As long as a consensus on how (or even if) we should revise the underlying policy landscape remains elusive, it is up to all of us—designers, planners, and citizens—to seek concrete opportunities for positive change. Piggybacking represents one possible response to these challenges and its tactics are being used by a diverse and growing number of actors—both professional and non-professional—to secure opportunities for change within the urban landscape.

Piggybacking is an inherently opportunistic endeavor. Its practitioners operate tactically, within the space of the other. Would-be piggybackers scan the urban landscape for vacancy, waste, and un- or underexploited niches. Potential opportunities may be spatial—that is in, on, or between buildings and sites, or they may be temporal—existing within the daily, weekly, seasonal, or onetime gaps between use and non-use. Piggybackers can be shown to make use of several different tactics in their effort to anchor socially or economically marginal activities alongside dominant ones: they *inhabit a niche*,

capture a waste stream, and share a resource to multiply use. These are not to be understood as discreet categories, but rather as coterminous or overlapping. One or several of these tactics may be found in any given project.

RESIDUAL SPACE, OR, HOW TO INHABIT A NICHE

In his book Drosscape: Wasting Land in Urban America, Alan Berger demonstrates that waste spaces are an expected and inevitable part of urban growth and development.8 Lowintensity land-use goes hand-in-hand with contemporary development regimes, particularly in the margins of urban growth. But one need not look exclusively to the edges of a city or to its post-industrial sites to find spaces of vacancy. Rooftops, for example, are often among the least productive spaces in the built environment. They are one example of what Erick Villagomez terms residual space.9 According to his analysis, other types of residual space include redundant and oversized infrastructures, and spaces between and around buildings. The vacancy and low-intensity use characteristic of residual urban spaces constitute, in Berger's terms, a kind of internal urban frontier, and present unique opportunities for experimentation, including piggybacking.¹⁰

Rooftops are increasingly being considered as sites for supplementary uses including energy harvesting, habitat creation, and rainwater collection and management. For example, in the years following the global economic slowdown of 2007-09, several enterprising rooftop commercial farms emerged in response to a growing appetite for fresh local foods and a burgeoning culture of urban farming. In 2011 New York City-based Gotham Greens built their first 15,000-squarefoot greenhouse above an existing warehouse in Greenpoint, Brooklyn, and now operates four large rooftop farms in New York City and Chicago. The company sells hydroponically grown vegetables to Whole Foods and other high-end grocery stores, and its second rooftop greenhouse was designed as an integral part of a ground-up Whole Foods store in Gowanus, Brooklyn. Its 75,000-square-foot Chicago greenhouse now inhabits the rooftop of the Method Products manufacturing plant in Chicago, designed by William McDonough + Partners in 2015. Montreal-based Lufa Farms shares a similar trajectory, and now operates three large rooftop farms in that city. These farms adapt proven technologies to newly identified rooftop production sites and are thus able to overcome agriculture's biggest economic disadvantage in competitive urban real estate markets—the high price of land—by riding atop other productive land uses. They leverage their urban locales by tapping into local production and distribution ecologies to reach an affluent urban consumer base keen on buying "green."

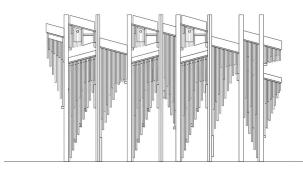
Brooklyn Grange inhabits a somewhat different niche. Unlike Gotham Greens, which prohibits public entry to, and participation in, its greenhouse operations (for reasons of food safety and security), Brooklyn Grange encourages it. It constitutes two extensive soil-based rooftop farms designed and

programmed to address a more expansive audience. Located atop two large industrial buildings now occupied by commercial users, Brooklyn Grange seeks to leverage the collective social capital of the community gardening project to realize urban agriculture's potential as a venue for public action on topics of social, environmental, and economic concern. They employ a wide variety of techniques including polyculture, onsite composting, and beekeeping, and host a weekly farmer's market during summer months, and internship and training programs. The Grange also comprises a green-roof consulting business and a community-events venue with a skyline view. Brooklyn Grange depends on the economics of piggybacking, but it also employs the tactics of piggybacking as a means to catalyze the public, strategically leveraging its rooftop lease toward the establishment of a novel agricultural commons in the heart of the city.11

Residual spaces are also found within sites that are otherwise occupied, particularly in the basements and former mechanical spaces of older buildings. Sugar Hill Capital Partners (SHCP), for example, provides studio space to local artists in its renovated basement spaces in Harlem and Brooklyn either "for trade" or at subsidized rates. Begun in 2013, Sugar Hill's studio program combines its founder's passion for art with the company's desire to recapture underutilized spaces in the apartment buildings they own and operate. Artists living within a 30-block radius of one of SHCP's properties are eligible to apply for a one-year lease on available studios. Most come to SHCP's attention through referrals and word of mouth, and at the end of their stay Sugar Hill collects a "substantial artwork" as payment for use of the space. A cynical assessment of this program might view this arrangement as mildly exploitative basements after all may not constitute the highest quality of studio space—but as one participant in the program put it, "artists in New York City are of course grateful for any space they can get." She further noted SHCP's generally "good intentions" and the unprecedented nature of the studio program's efforts to connect emerging artists with local studio space and private collectors.12

Beyond rooftops and basements, the vertical surfaces of buildings present opportunities for piggybacking that Joyce Hwang of Buffalo-based Ants of the Prairie explores in the projects *Pest Wall* and *Habitat Wall*. These projects intensify the three-dimensional articulation of building facades to maximize their potential to double as habitat for species such as bats or birds (fig. 1). Hwang's projects recognize that other users—other species in this case—already inhabit hidden niches within the spaces we construct. Her work seeks to render these conditions both "visible, and aesthetically intensified." This approach challenges deeply held cultural assumptions about the range of users that architecture typically designs for and is aimed at "constructing interventions which mediate between the human and the animal world."





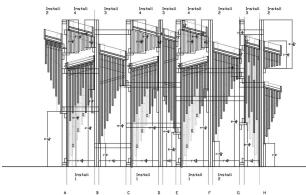


Figure 1. Pest Wall (above) and Habitat Wall (below). Images courtesy of Ants of the Prairie.

Residual spaces constitute attractive niches for those with insufficient capital to act in or on the city to develop (or benefit from) projects that emphasize use-value over market-value. They share this in common with spaces of temporary vacancy, which are themselves the subject of much recent scholarship. Spaces of temporary vacancy also constitute a kind of inhabitable niche, but with a key difference: temporary users occupy residual niches of limited duration. In the case of urban abandonment or underinvestment, a temporary user might bring use-value to a vacant property or building, but typically once market conditions improve, or the necessary capital for

conventional development is procured, the temporary user must make way for other long-term or conventional uses. In some cases, this follows from fluctuations in the market, but increasingly temporary uses are being planned and deployed as interim phases of a long-term development strategy. In either case, while it is possible to interpret this as a kind of piggybacking, the relationship is not durable. It is instead a one-off. Conventional temporary uses do provide an important outlet for experimentation, community building, and education, but their long-term fate is fundamentally precarious. Hey can therefore be understood as constituting a "weak" form of piggybacking, flourishing only provisionally within the fluctuating gaps of the market or as useful stepping stones on the path to conventional development.

The "stronger" forms of piggybacking outlined in this paper exhibit a greater degree of longevity. One use still depends upon another, but the relationship is more durable. Practices of piggybacking leverage vacancies, but they do so at many different scales, and alongside other users. ¹⁷ Piggybackers exploit micro-vacancies in both time and space. If the inhabited niche is a temporal rather than a spatial one, but it recurs with enough regularity to facilitate long-term investment (culturally and economically), it may prove to be just as durable as the inhabitation of residual spaces as in the examples described above. In such cases, architectures can be designed to account for or facilitate programmatic overlays, and a hybrid culture may develop.

HYBRIDITY, OR, HOW TO SHARE A RESOURCE AND MULTIPLY USE

Throughout the past decade a suite of ambitious startup companies, flush with venture capital, have developed innovative protocols and digital infrastructures to facilitate use-multiplying and resource-sharing piggybackings in both the workspace and housing sectors. Spacious and KettleSpace, two drop-in workspace management companies founded in 2016, tap into the daytime availability of well-designed restaurant spaces and make them available as short-term workspaces until those restaurants open for business at dinner. Unlike coworking giant WeWork (which purchased Spacious in August of 2019 before unceremoniously shuttering it four months later amidst its own financial woes), Spacious and KettleSpace are not leaseholders; they simply manage the contracts, infrastructures, and hospitality operations necessary to provide their service at each partner location and split the resulting profits with the restaurant operator. As of the writing of this paper, KettleSpace was operating only in New York City, and Spacious—before its closing—in New York City and San Francisco—two cities where the supply of itinerant office workers is sufficiently high and in relative proportion to the number of high-end restaurants with heavy rent burdens.

Use-multiplying piggybacking practices are not the exclusive domain of the tech sector. They require a granular-level pairing

of one user's needs with another's resources, and represent a kind of spatial and programmatic reasoning that architects and planners are well-equipped to participate in. A prescient proposal by the architect Hitoshe Abe called "MEGAHOUSE" anticipated Spacious and KettleSpace's business model by at least six years. It envisioned the whole of the city as a distributed shared dwelling. Users with particular space needs would be matched with available rooms by a digital provider. The provider would manage the city's ever-evolving catalog of micro-vacancies while collecting payments and granting access to spaces through a system called ZapDoor.

As suggested by the examples above, finance capital's involvement with piggybacking presents a vexing challenge to those who would see the primary value of piggybacking as presenting opportunity for social and ecological experimentation. How are the fruits of successful piggybackings to resist the expansionary interests of capital? For once previously hidden niches are revealed, they become susceptible to market exploitation. How might the socially minded advocate for the emancipatory potential of piggybacking?

Intergenerational Home Sharing programs are one such example of resource sharing and use multiplications in the non-profit sector. New York University has begun exploring the potential for intergenerational home shares to help reduce its students' housing costs. Partnering with the New York Foundation for Senior Citizens, NYU started a pilot program in 2016 that pairs graduate students with seniors who have a spare room and a corresponding desire for company. Students placed through the program make a "contribution to household expenses" rather than rent and may also contribute to household errands. Early estimates suggest that by sharing space with seniors, student housing costs can be cut in half.¹⁹ Though currently only a small pilot program, similar schemes are also being explored in Chicago and Berkeley, and by the City of Boston's Housing Innovation Lab and the home sharing apps Nesterly and Silvernest.

A speculative proposal for Backyard Rotational Grazing, developed as part of the author's research with architecture students in a graduate research studio, also seeks to address the potential of use-multiplication in piggybacking. This proposal leverages the community gardening model to

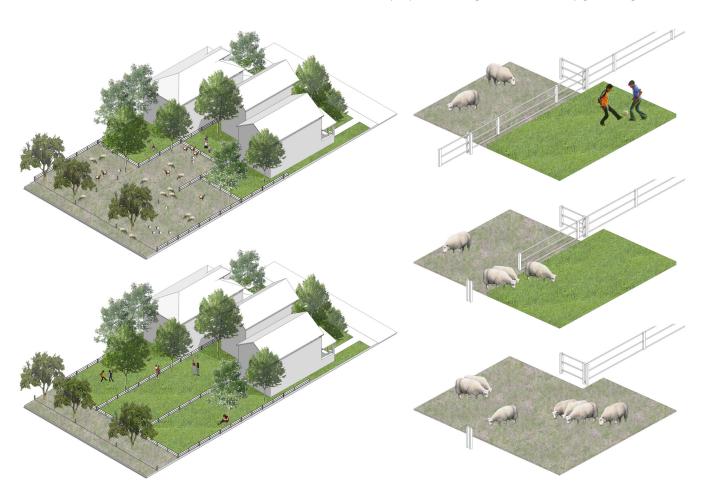


Figure 2. A backyard grazing proposal from the Cultivating Columbus research studio taught by the author at The Ohio State University in 2010. Images by Jonathan Grubb.



Figure 3. Public sports facilities share space with salt piles at P.O.R.T. Park in Chelsea, Massachusetts. Images courtesy of Landing Studio.

offer up a participatory form of community-supported agriculture built around the expanded infrastructural potential of residential backyards and service alleys. While traditional grazing schemes permit livestock to range freely over large sprawling pastures, Management Intensive Rotational Grazing is a system that deploys movable fencing to gather livestock together into small paddocks for a short period of intensive grazing. The subdivision of an otherwise wide-open pasture into small, short-term grazing parcels corresponds well with the pre-parceled landscapes of most residential subdivisions.

In this proposal, residents participating in a local CSA program offer their backyards as part-time rotational grazing paddocks, thus enabling their private outdoor space to double as productive pasture for several days each month (fig. 2). Small-scale livestock (e.g., goats and sheep) are herded by a group of entrepreneurial urban ranchers between participating properties through existing back alleys. A simple system of retractable property fences allows for paddock sizes to be changed according to the number of animals and the available sizes of adjoining properties. In return for their participation, residents receive a small monthly portion of milk, cheese, meat, or wool, and the opportunity to observe and interact with farm animals in an urban setting.²⁰

The P.O.R.T. Park in Chelsea, Massachusetts, spearheaded by Dan Adams and Marie Law Adams of Landing Studio, demonstrates how heavy industry can work alongside the public sector to enhance the public realm amidst the industrial operations of an active waterfront. In the park, public and industrial users navigate the seasonal oscillations of a shifting salt pile. Landing Studio's design for the park—P.O.R.T.

stands for "Publicly Organized / Privately Owned, Recreation Territory"—takes both user groups into account to maximize the opportunities produced by this temporal difference (fig. 3). The salt pile is at its largest in winter when the Massachusetts town's demand for road salt peaks. When the salt pile retreats in the summer, a multi-use public space is revealed to provide the public with fair-weather access to the waterfront.

The project was the result of years of complex negotiations between the city, the property owner, the industrial operator, and Landing Studio. This raises important practical questions for planners and designers concerning the legal, logistical, and practical demands of piggybacking. Suzanne Lanyi Charles writes of the unusual memorandum of agreement that governs both the design and the operation of the park, claiming that the "project's programmatic richness could not have been fully realized...if not for the architects' early involvement in the planning of the project and their collaboration with state agencies, city representatives, local community leaders, and attorneys..."21 Hybrid projects like P.O.R.T. Park and the backyard grazing scheme demonstrate that planners and designers must develop a wide circle of collaborators and an expanded repertoire of techniques if they are to effectively realize the wide-ranging potential suggested by use-multiplying and resource-sharing piggybackings.

REUSE, OR, HOW TO CAPTURE A WASTE STREAM

We have seen so far how piggybackers inhabit the residual spaces of rooftops, basements, or building facades, and how they multiply use by sharing space within the short-term micro-vacancies of dominant users. Both of these tactics involve piggybacking in, on, or among long-term patterns of

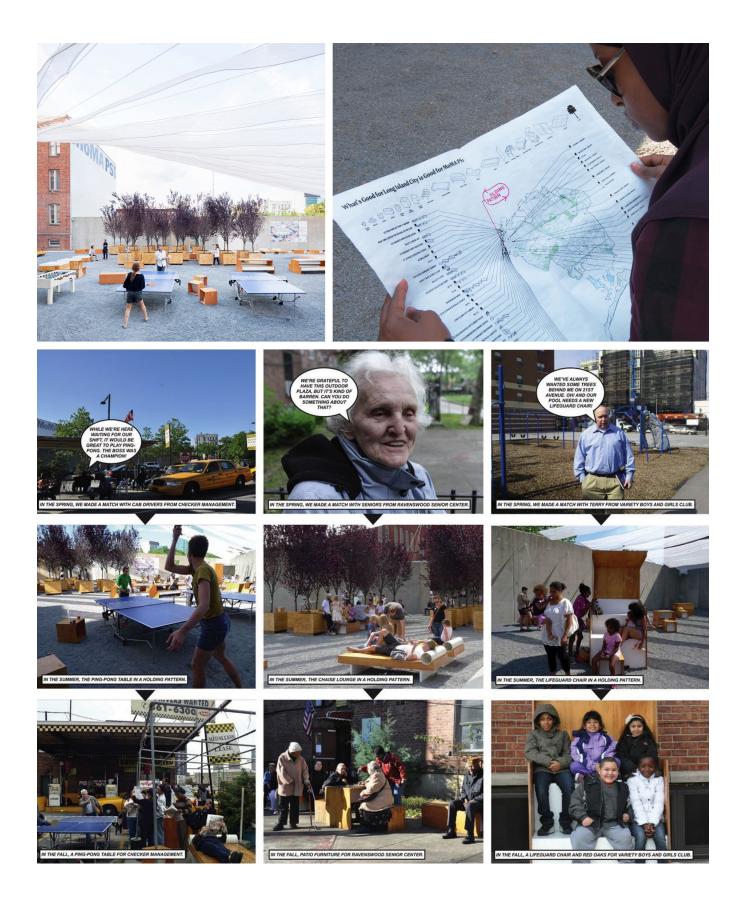


Figure 4. Holding Pattern at MoMA P.S.1 in 2011. Images courtesy of Interboro.

spatial use. A third type of piggybacking involves capturing and reusing byproducts from a dominant user's own temporary activities.

Holding Pattern, Interboro's 2011 project for the MoMA P.S.1 Young Architects Program, is notable in this regard for the way it enlarged the ambitions and possibilities of what is, on its face, a temporary summer installation. More than merely fulfilling MoMA's project brief of providing a dynamic stage for a summer festival, Interboro designed their installation with the project's afterlife in mind. They did this by overlaying the needs of MoMA patrons with the needs of a diverse array of neighborhood organizations, and, in essence, by designing for both groups simultaneously (fig. 4). At the end of the installation's time at P.S.1, the 79 objects that Interboro designed, and the 84 trees they planted were all given new homes among 50 local community organizations for long-term use and enjoyment.²² In this way, through a process of extensive community outreach and inventive design work, Interboro leveraged the commission to realize not one but two projects: the first for P.S.1, the second for the local community. Every element of the installation was uniquely charged and enriched by the designers' ambition to leverage the project budget to serve not just a single institutional client for one summer, but a whole community of clients over the longer term.

It is not only temporary activities like installations and festivals that produce waste, however. Conventional building developments, for example, also produce waste from short-duration constructions in the form of construction mock-ups. Full-scale façade mock-ups up to one story tall have increasingly become de rigueur among New York City's newest high-rise projects. They allow design and construction teams to research, test, and control for technical performance and design quality and are typically discarded upon a building's final completion. Test-Beds, a project by Ivi Diamantopoulou and Jaffer Kolb of New Affiliates in collaboration with Samuel Stewart-Halevy and the New York City Department of Parks and Recreation, seeks to capture and redirect this waste stream for public reuse (fig. 5). Their proposal—which they describe as being akin to a "rescue operation"—is to reconfigure these discarded assemblages as the basis of any number of local community garden structures— sheds, shade structures, casitas, greenhouses, or raised beds.²³ Much more than a simple reuse of raw materials, the project's aim is to bring the "image of the growing city down to the ground" and recontextualize the mock-ups while simultaneously "humanizing the scale of the skyline."24

Recycling processes that break products down into raw materials pose a particular challenge to designers in that they typically obscure linkages between waste and reuse, making it very difficult for consumers to see and understand lifecycles of production, consumption, waste, and reuse. (Think for example of those tote bags announcing in bold typeface that they "used to be a plastic bag.") By contrast, the waste-stream

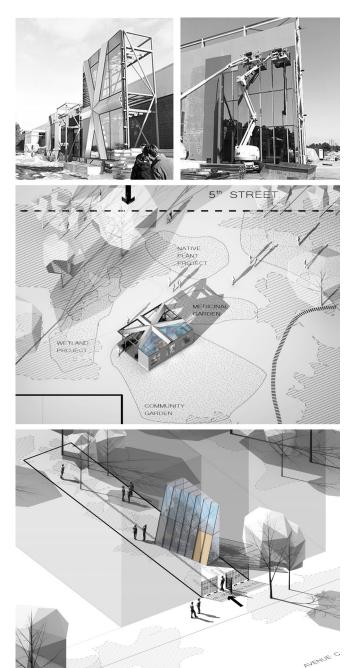


Figure 5. Façade mock-ups (above top) and two renderings for Test-Beds, 2019 (in progress). A casita at El Jardin del Paraiso community garden in Manhattan (above middle), and a greenhouse at the Flower Door Garden on Avenue C (above bottom). Images courtesy of New Affiliates.

piggybackings described above intervene in advance of disassembly to capture not only the raw materials but also the embodied energy and social histories of designed artifacts. Projects like *Holding Pattern* and *Test-Beds* call attention to instances of architectural reuse by creating legible narratives around these efforts and by challenging us to anticipate a project's afterlife at the very outset of design.

RESILIENT ASSEMBLAGES

"We can only meaningfully address the challenges we face by recognizing and leveraging interdependencies among systems and people."²⁵

—Georgeen Theodore

Writing of the long urban history of what he calls the "shop/ house" in his book Living Over the Store: Architecture and Local Urban Life, Howard Davis laments the negative impact that exclusionary zoning has had on modern urban life, arguing against monoculture and in favor of mixed uses: "Fluidity and Hybridity are normal. Instead of describing a "special" condition, they represent what people do and see to be reasonable, when they are unfettered by rigid institutional constraints."26 Whether such constraints are prescribed by Euclidean zoning policies or are the "natural" outgrowth of unfettered markets, the results are often the same. Practices of piggybacking fight against this tendency. They create surprising entanglements that provoke novel forms and programs of social exchange capable of promoting greater equity and resiliency in the built environment. But moving the culture in this direction "requires a wide variety of initiatives, in policy as well as architecture, to provide examples that support new attitudes toward a more hybrid and resilient city."27 This paper has argued that piggybacking practices can contribute to this effort and demonstrated that design and planning professionals can draw important lessons from a range of non-professional actors in this field. What design projects like Test-Beds, Holding Pattern, P.O.R.T. Park, and Pest Wall do is assemble disparate actors together into new forms of collaboration. These projects expand architecture's ability to act on and in the interstices of the contemporary urban landscape. They produce memorable forms of appropriation and reuse, and prompt necessary dialogue around practices of piggybacking.

ENDNOTES

- See Philipp Oswalt, Klaus Overmeyer & Philipp Misselwitz (eds.), Urban Catalyst: The Power of Temporary Use, (Berlin: DOM Publishers, 2013); Peter Bishop and Lesley Williams, The Temporary City, (New York: Routledge, 2012); Margaret Crawford (ed.), Everyday Urbanism, (New York: The Monacelli Press, 1999); and Mike Lydon and Anthony Garcia, Tactical Urbanism: Short-term Action for Long-term Change, (Washington, D.C.: Island Press, 2015).
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- Rudolf Kohoutek and Christa Kamleithner, "Temporary Uses, Deregulation and Urbanity," in *Temporary Urban Spaces*, eds. Florian Haydn and Robert Temel, (Basel: Birkhauser, 2006), 29.
- 4. Ibid. 29
- See Michel De Certeau, The Practice of Everyday Life, (Berkeley and Los Angeles: University of California Press, 1984).
- 6. For a similar application of the term "piggybacking" to an analysis of street vendors and informal settlements in Guadalajara, Mexico, see: Diego Ramírez-Lovering, Opportunistic Urbanism (Melbourne: RMIT University Press, 2008). The book documents the results of an exchange between the architecture program at RMIT University in Melbourne and Escuela Superior de Arquitectura in Guadalajara. (For calling his attention to Opportunistic Urbanism, and especially its like-minded application of the term "piggybacking," the author wishes to thank one of the anonymous reviewers who provided feedback on this paper during the submission process for the 108th ACSA Annual Meeting.)

- 7. "Vacancies and urban wastelands are blind spots in a productive economy. They may be brought about intentionally for speculative reasons, be the product of a crisis situation, or simply be due to the regular turnover of use." Rudolf Kohoutek and Christa Kamleithner, "The Economy of Temporary Use," in Philipp Oswalt, Klaus Overmeyer & Philipp Misselwitz (eds.), Urban Catalyst: The Power of Temporary Use, (Berlin: DOM Publishers, 2013), 88.
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- 10. Alan Berger, Drosscape, chapter 1.
- 11. See Brian Holland, "Piggybacking," part of Alternative Development and Land Use Practices, Innovation and Health panel, Situating Food Symposium, Knowlton School of Architecture, November 9, 2013, video recording, 2:10, accessed January 11, 2020, https://www.youtube.com/watch?v=8VNh7KufTYE &list=PLDVhBlCwGEvKZqBlQoGQS3jfMtK2a3xn&index=5&t=132s.
- Former Sugar Hill Studio Program artist (name withheld), in discussion with the author, June, 2019.
- "Pest Wall," Ants of the Prairie, accessed Oct. 13, 2019, https://www.antsoftheprairie.com/?page_id=733.
- "Regional Zoo," Ants of the Prairie, accessed Oct. 13, 2019, https://www.antsoftheprairie.com/?page_id=264.
- See Rudolf Kohoutek and Christa Kamleithner, "The Economy of Temporary Use," in *Urban Catalyst: The Power of Temporary Use*, eds. Philipp Oswalt, Klaus Overmeyer & Philipp Misselwitz, (Berlin: DOM Publishers, 2013), 87-93.
- 16. The South Central Farm in Los Angeles was at one point the largest community garden in the US. Following the Los Angeles Riots in the 1990's, the city granted temporary usage of a large property in South Los Angeles to a local community group which established on the site a community farm inhabited by and serving mostly minority populations and immigrants. The farm became wildly successful and fed upwards of 500 families. But as the city began to prosper again after the riots, the developer recovered the property and eventually sued to contest the farmers' use of the property in order to develop the site. See Emily Alpert Reyes, "Latest battle over South Central Farm ends this time not with arrests, but a vote," Los Angeles Times. July 2, 2019, accessed October 13, 2019, https://www.latimes.com/local/lanow/la-me-In-south-central-farm-alameda-industrial-businesses-20190702-story.html.
- 17. "There is a type of urban condition that dwells between the reality of massive structures and the reality of semi-abandoned places. I think this condition is central to the experience of the urban, and it makes legible the transitions and unsettlements of specific spatiotemporal configurations." Saskia Sassen, in Urban Catalyst: The Power of Temporary Use, eds. Philipp Oswalt, Klaus Overmeyer & Philipp Misselwitz, (Berlin: DOM Publishers, 2013), 109.
- 18. Hitoshe Abe and Massahige Motoe, "Megahouse" in *Distributed Urbanism:* Cities After Google Earth, ed. Gretchen Wilkins, (New York: Routledge, 2010).
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