

Rewriting the Dream: Beyond Sustainable Sub-urban Living and the Potentials of the Productive Landscape

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This paper argues for a *beyond sustainable* approach to sub-urban living, rejecting the postwar Levitt style single-family home of the American Dream, to instead consider alternative futures founded on new ideas of community. It questions how architecture may engender lasting opportunities for resilient and eco-egalitarian approaches to sub-urban life, while simultaneously meeting the fundamental needs of its inhabitants. This *beyond sustainable* rewriting of the Dream suggests a less individualized, more collaborative, more inclusive notion of sub-urban living, questioning many typical arrangements of inside/outside, front/back, public/private, production/consumption, individual/collective, etc., as seen in American sub-urban tract housing. It will utilize the concept of the *productive landscape* conceived as a catalyst for reconstituting the production of food, water, energy, recreation and social interactions.

This approach is illustrated through the work of several third-year undergraduate design studios taught in recent years at the University of Cincinnati, School of Architecture which maintained similar *beyond sustainable* ambitions. The location for these tests has been Greenhills, OH, one of three “Greenbelt Towns” built as part of Franklin D. Roosevelt’s New Deal Resettlement Administration. While Greenhills was envisioned largely as a response to the question of urban and rural poverty, today, the expanded role of the car, neoliberal global commerce and the increased expectations of comfort and convenience of sub-urban life, alongside its aging, outdated and undersized existing housing stock, have resulted in its decline as a desirable sub-urban living destination. However, its original small-scale walkable planning, many tree lined gently curving streets and cul-de-sacs, central park green, and still intact greenbelt provide substantive community assets from which to consider a *beyond sustainable* model of sub-urban living, especially in a world undergoing radical change due to anthropogenic global warming, climate destabilization and ecological degradation for which the postwar Levitt style suburb has contributed greatly. In this way its specific history and current shortcomings make Greenhills a timely locale for testing alternative approaches to sub-urban living and indirectly the city.

“Today we begin to see that the improvement of cities is no matter for small one-sided reforms: the task of city design involves the vaster task of rebuilding our civilization. We must alter the parasitic and predatory modes of life that now play so large a part, and we must create region by region, continent by continent, an effective symbiosis, or co-operative living together.”

—Lewis Mumford, *The Culture of Cities*¹

PREMISE

As the world continues to precipitously warm, the direct consequence of anthropogenic fossil fuel consumption and accelerated by the current global system of neoliberal capital production, accumulation and exchange,² untold changes in the planet’s climate system and the degradation of the ecologies with which we share the planet continue to emerge. The dominant disciplinary response by architects and designers to such changes has been a movement toward a “sustainable” or “green” approach to the design of the built environment. While beneficial in numerous incremental ways and admirable in its underlying intent, as a proportionate response to the current reality of our shifting planetary system it holds less and less relevance every passing day. The time needed to mitigate such a climatic transformation is steadily dwindling and may have already effectively reached zero.³ If recent history is any indication of future conduct the necessary collective actions — by governments, corporations, institutions, societies, people — that must immediately be taken to maintain any prospect of effectively assuaging climate destabilization by limiting further global warming to below 2°C above preindustrial levels, will in all likelihood not be met.⁴ With the amount of greenhouse gases that have already been put into the atmosphere the planet is almost certainly already committed to upwards of 2°C of warming.⁵ Although a recent International Energy Agency (IEA) World Energy Outlook report issued at the end of 2019⁶ forecasted lower carbon emissions by 2040 than had been previously projected by most IPCC scenarios, effectively lowering the ceiling on projected temperature increases under a “business as usual” approach, it also simultaneously raised the floor on the level of increase most likely to occur.⁷ The world at 2–3°C of warming above pre-industrial levels is not the same world in which humans, and many other living-beings, have biologically evolved, and it is not the same world



Figure 1. Photos of Greenhills, Ohio, Oct. 1939. Photographer John Vachon. <https://www.loc.gov/item/2017718987/> & <https://www.loc.gov/item/2017718991/>.

in which human society and culture developed either. Already today we can point to many adverse ecological and social consequences – both observed and felt – that are a result of anthropogenic global warming and current changes in global climatological patterns.⁸

There is no doubt that the built environment has played a significant role in advancing global temperature increases through its direct and indirect atmospheric carbon emissions. According to the most recent 2018/2019 annual report issued by the World Green Building Council buildings are one of the leading contributors to global carbon emissions, their *operational* emissions accounting for 28% of global emissions and their *embodied* carbon emissions accounting for a further 11%.⁹ The movement toward a “sustainable” or “green” design approach have helped to reduce energy use, pollution and carbon footprints through greater efficiencies of design, fabrication and construction. However these approaches are predominantly reliant on ongoing technological innovations set within the current systems of power and global commerce that have gotten us to this point in the first place and don’t necessarily lead to substantial reductions as is demonstrated by the rebound effect.¹⁰ These approaches also help to further an underlying aspiration to achieve a perceived control over the environments that surrounds us¹¹ and provide little in the way of actually *coping* and *adapting* to such radical transformations of the earth-system already initiated. Most importantly they do not substantively challenge the underlying social, economic, cultural and community values embodied in how we choose to live in the earth-system. This is especially true in the sub-urban context where these kind of “green” technologies are individualized and sold to homeowners at significant initial costs as “smart” home upgrades in the form of energy star appliances, learning thermostats, smart sprinkler systems, programmable LED lighting systems, solar roof tiles, tankless water heaters, etc. While advantageous in their general reduction of month-to-month energy and/or water bills they also reinforce the current extractive model of sub-urban living, are

not accessible to those unable to afford the significant initial investment required,¹² rarely take into account the embodied energy used to manufacture, transport and install them, and may even induce greater overall energy use because of the greater distance one may need to travel by car to get to work caused by relocating into a newer “smart” home further from the location of one’s employment.¹³ More broadly they also reinforce the dualist separation of Society from Nature adopted during the Enlightenment and reflecting the idea of humanity’s ongoing “progress” over Nature through its perceived rational control. Whether by choice or by force there’s a drastic need for a new conception of habitation that moves beyond the anthropocentric desire to control nature through greater technological advance, efficiency, or even effectiveness, to instead recalibrate “our” place with, and within, the ecologies we inhabit by reimagining the architectural, and therefore social, relations of habitation we construct. This *beyond sustainable* approach rejects the Nature-Society dualism conception of the world to instead conceive their relationship as interrelated aspects of a single fluctuating continuum - effectively creating a *new world*.

In a recent essay titled “Beginning with the End” environmental humanities writer Roy Scranton considers what it would mean for the current world – “our mutually constituted sense of the collective now”¹⁴ – to end. What would come next? He articulates how many worlds have already ended for numerous peoples and cultures throughout human history, arguing that the ending of a world is in effect its transformation into a *new world*. Never has this transformative process been so globally pervasive as it is today evidenced through increased planetary warming, climate destabilization and biodiversity collapse. The modern, neoliberal capitalist world is shifting beneath our feet, and the emerging *new world* demands that architects rethink how to conceive of and design the built environment(s) we must now inhabit within its bounds. In a previous book titled *Learning to Die in the Anthropocene* Scranton makes the following suggestion concerning our future: “We cannot escape



Figure 2. Aerial view of Greenhills, Ohio, Dec. 1936. Photographers Theodor Jung and Brice Maritn (top). <https://www.loc.gov/item/2017760249/> Aerial view of Levittown, NY, under construction, circa late 1940's. Photograph Acme Newsphotos (bottom).

our fate. Our future will depend on our ability to confront it not with panic, outrage, or denial, but with patience, reflection, and love.”¹⁵ This paper aims to confront such a future through the articulation of a *beyond sustainable* design approach to sub-urban living, one that may help us *cope* and *adapt* to this moment of world transformation with “patience, reflection, and love” as it relates to one specific form of habitation – the dwelling typology of the postwar sub-urban American single-family home.

A NEW NARRATIVE

Swiss architect and researcher Hans Drexler writes in an essay titled “Building better!” that the conception of a “sustainable” single-family house suggests a fundamental contradiction as this dwelling typology with its low ratio of surface area to volume (SA/V ratio), its low density and high land consumption per housing unit per person, consumes more energy per floor

area as compared to larger or more dense building typologies. It also relies on the automobile and vast infrastructures to deliver access and energy like roads, highways, railways, pipelines, and cables, making it perhaps the least sustainable of all building typologies.¹⁶ Although the garden villa or country house located outside of an urban center has been a long-standing architectural endeavor since Roman antiquity, these rural residences were more like individual self-supporting agrarian homesteads than today’s homogenous suburban developments. It was in the postwar American context that the contemporary sub-urban development most pervasively came to fruition, brought about by the vast demand for new housing by soldiers returning from the war and the availability of low-cost mortgages backed by the Federal Government’s “Serviceman’s Readjustment Act of 1944” (the “G.I. Bill”). This need, combined with modern advances in industrial manufacturing and mass-production, made both individual home and automobile ownership affordable to the masses. As Drexler states: “Only after World War II did the rural single-family house as a wholly residential building become a widespread phenomenon within reach of the middleclass.”¹⁷ Relatively cheap farmland outside many urban centers became accessible by way of the personal automobile and an expanding highway system, resulting in the development of a vast new landscape of repeatable houses, lawns, driveways, sidewalks and asphalt streets.

These early postwar developments were typified by the iconic Levittown, first located on the southern shore of Long Island in Hempstead Planes. While these postwar Levitt & Sons sub-urban developments represented the fulfillment of the American Dream, a narrative promulgating the ideas of individual self-determination, self-realization, freedom, prosperity and democracy, their actual effects instead propelled a very different experience. The construct of the sub-urban single-family house helped to create a form of habitation that was defined by both individual privatization and consumerism, in the service of reinforcing a pervasive demand for social conformity and “acceptable” or “normative” self-expression. Adopting a *beyond sustainable* approach to the design of the single-family dwelling and the development of the sub-urban landscape directly challenges the postwar narrative of the American Dream, to engender alternative forms of resilient community and eco-egalitarian approaches to sub-urban life, while simultaneously meeting the fundamental needs of its inhabitants (i.e. the production of food, water, energy, recreation and social interactions) through the incorporation of a *productive landscape*. This approach adopts a more collaborative, self-supporting, and just hyper-localized strategy, but also acknowledges its participation in many planetary systems of exchange (geographic, climatologic, atmospheric, hydrologic, etc.). The direct incorporation of fundamental needs back into sub-urban life addresses the Buell Hypothesis¹⁸ which maintains that to change the city or the suburbs – to change the way we live – we must “change the dream,” we must adopt a new

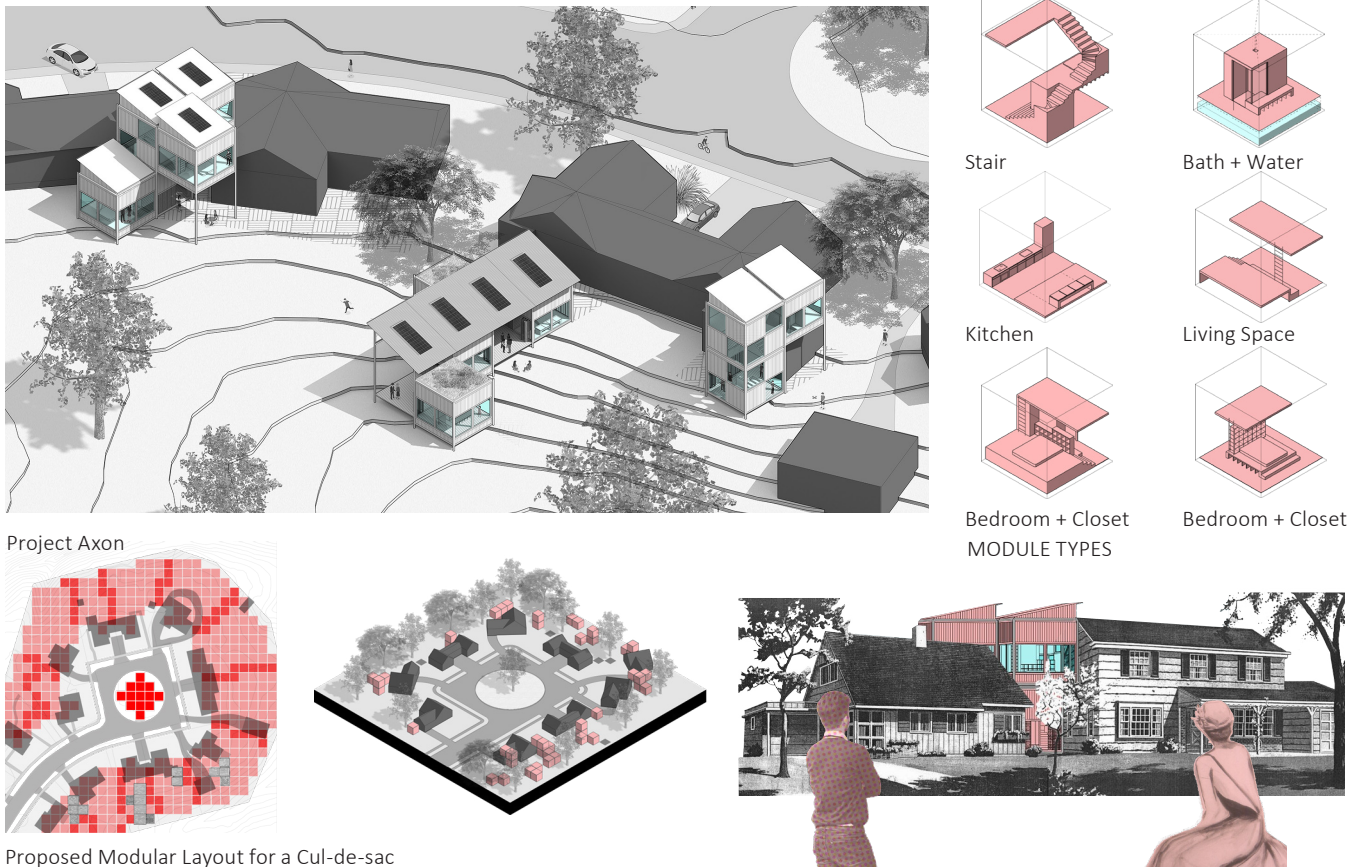


Figure 3. Student project proposal by Brendan Girten.

vision that rewrites the narrative away from one of individual consumerism and conformity, toward one that engenders self-realization while also acknowledging our participation as one of many interdependent community actors.²⁰ Over the last several years teaching at the University of Cincinnati, School of Architecture, I have taught an undergraduate third-year design studio that began from this premise of “rewriting” the narrative of the American Dream to instead imagine alternative sub-urban “futures” that explored the hypothesis of a *beyond sustainable* sub-urban dwelling and neighborhood development strategies. This approach suggested a more collaborative, eco-egalitarian, and inclusive notion of sub-urban living, questioning many typical arrangements of inside/outside, front/back, public/private, production/consumption, individual/collective, etc. It explored new ideas of community and the possibility of meeting fundamental inhabitant needs through the incorporation of a *productive landscape*.

PRODUCTIVE LANDSCAPE

Environmental historian Ted Steinberg in his revealing book *American Green: The Obsessive Quest for the Perfect Lawn* describes the cultural conformity in the postwar sub-urban community through perhaps the most pervasive and orthodox element of their development, the lawn.

Lawn monoculture melded perfectly with the ethos of conformity so central to nineteen-fifties suburbia. For many, urban anomie gave way to suburban togetherness, to picture-window living that allowed people to easily observe and survey each other on a daily basis. In this world of “group living,” as the historian William Chafe has called it, individualism and self-expression suffered. No one wanted to stand out...To a large extent, getting along and going along went hand in hand.²¹

—Ted Steinberg, *American Green*

A well-maintained lawn – lush, green and free of crabgrass – was not only a statement of pride, but also a symbol of upstanding residency and helped to maintain a certain image of sub-urban life that embodied the fulfillment of the American Dream; its continuous upkeep however became both a burden and the object of potential judgement and ridicule by one’s neighbors. To maintain such a conformist image the Levitt & Sons even went as far as inserting a covenant in their deeds requiring homeowners to cut the grass once per week between April and November.²² Fundamentally sub-urban developments have been directly responsible for the destruction of the rural ecological contexts they overtook,²³

replacing them with monocultures of houses, asphalt, and concrete, but it has been the turfgrass lawn that perhaps have been the most insidiously destructive to indigenous ecologies as almost all the grass species currently found in sub-urban yards are non-native transplants from Africa, Asia and Europe that displaced native plant species.²⁴ Also their unending maintenance required a host of toxic chemicals, pesticides and fertilizers to maintain the desired uniformity. Writing in her landmark 1962 book *Silent Spring*, the marine biologist and conservationist Rachel Carson describes how many suburbanite's were encouraged to use toxic chemicals on their lawns to eliminate the lawn "weed" crabgrass (a symptom not the disease), as opposed to its underlying causes of an unhealthy lawn and soil.²⁵

This reliance on commercial products pushed by corporations as "easy fixes" to a perceived problem or need, resulted in the literal toxification of the surrounding environment and is reflective of a much deeper underlying social and economic conformity which continues today. A *beyond sustainable* form of alternative habitation may in part be implemented through a reconsideration of the sub-urban "landscape" as a set of "productive" systems conceived as catalysts for reconstituting the production of food, water, energy, recreation and social interactions. The *productive landscape* helps to shape a new Dream narrative where the individual turfgrass lawn alongside other sub-urban landscape spaces like parks, the interstitial vegetative zones along roadways, sidewalks, side yards and cul-de-sac islands may be reconsidered, reconceptualized, redesigned, reprogrammed and reinvigorated toward a form of intentioned production and in keeping with eco-egalitarian values.²⁶ It is worth noting, as Steinberg does, that the lawn as a neatly maintained intentional design element related to the dwelling originates in Britain around the eighteenth century in the estates of the aristocracy as a marker of wealth due to the large number of laborers required to keep it properly maintained. Not until the invention of the lawn mower in 1830 was it possible for people of more modest means to sustain the upkeep of a lawn. In the United States it was not until after the Civil War that maintaining an open area of turf around one's home became popular, and what was more likely up until that point was for that space to be productive, used as a vegetable garden providing direct access to food, or simply allowing native plants to grow there naturally.²⁷

The reconsideration of landscape in the sub-urban context as "productive" rather than symbolic, alongside maintaining a respect for and solidarity with non-human living beings who inhabit these landscapes, opens many possibilities for its use: small-scale cultivation of food (i.e. gardening, composting, chicken rearing, beekeeping), the collection or harnessing of necessary renewable resources like water and energy (i.e. wind, solar, geothermal), exercise and social connectivity (i.e. sporting and recreation activities, nature walks, habitat conservation) and cultural practices (i.e. performing and creative

arts). This reconceptualization aims to rewrite the Dream narrative away from individualistic consumerism, conformity, and marginalization, to instead foster day-to-day collaborative exchange and shared actions that would also be necessary to undertake these productive initiatives. These types of shared social relations aim to cultivate new ideas and experiences of community, coalescing around shared pursuits – gardening, physical activities, cultural arts, craftsmanship, entrepreneurship, recreation, etc. – providing a more resilient underlying basis for *coping* and *adapting* to living in this *new* world. In this way a *beyond sustainable* approach through an implementation of ideas of *productive landscape* reflects a much deeper, more sustaining, responsive and meaningful path to dealing with the ongoing effects of climate destabilization than simply fitting ones house out with photovoltaic panels and energy star appliances.

GREENHILLS / GREENBELT

The specific site context chosen for the aforementioned design studio to test out the ideas of a *beyond sustainable* conception of a sub-urban living and the incorporation of the *productive landscape* was the Village of Greenhills, OH, about 10 miles North of the city of Cincinnati. Identification with the land at various scales has always been an intentionally designed aspect of living in Greenhills – either through the numerous tree lined cul-de-sacs, the main central park green, various public green spaces, the surrounding greenbelt, or the many agrarian enterprises that once surrounded the community since its inception in the late 1930's as one of three "Greenbelt Towns" designed, built and overseen by the Federal Government Resettlement Administration (RA), headed by Rexford Tugwell and the suburban division by John Lansill. While not explicitly utopian in their intent, these "Greenbelt Towns" were planned communities envisioned as a response to the question of urban congestion and rural poverty exacerbated by the Great Depression. They were designed to provide a higher quality of living, modern domestic amenities, a family friendly walkable environment, and a variety of civic spaces and shared assets. Unlike the postwar sub-urban sprawl that has proliferated since the mid-twentieth century, Greenhills as a planned community was intended to provide residents a relatively self-contained living community which included direct access to shopping, schooling, civic and social experiences,²⁹ specifically providing a mix of housing stock including single-family homes, but also duplex and triplex units in a number of different architectural styles. Concerning the early twentieth century planned community, writing in her book *New Urbanism & American Planning*, scholar and Professor of Urbanism Emily Talen describes the difference between them and the typical postwar suburban development in the following way: "Conventional suburban development that was not in the form of a planned community [] excluded daily functions. It worked to spread out, compartmentalize and individualize daily life in a way that was categorically different from what the planned community had been trying to achieve."³⁰ However,

despite the sensitive consideration to the needs of daily life the social ideas underpinning the design of these RA “Greenbelt Towns,” as well as many planned communities, did present a significant contradiction as they ultimately helped to reinforce trends of urban flight and fragmentation, and intentionally excluded certain groups of people from living in them. Those most in need of adequate housing living in inner city slums were prohibited from living in the RA “Greenbelt Towns,” as were African Americans, whites of Appalachian decent, those with extended families, or families with only a single head of household.³¹ Talen describes this critique in the following way: “The problem was that planned communities, as with the neighborhood unit, became proposals for an alternative social structure. In a manner similar to the City Beautiful ideology, there were social and moralistic overtones.”³²

The Federal government’s “Greenbelt Town” initiative of the 1930’s was not an invention of the RA as the principals of their planning and design were primarily based upon three earlier self-contained planned community precedents:³³ Clarence Perry’s neighborhood unit design of the early 1920’s, its further development and application in Radburn, NJ in 1929 by the Regional Planning Association of America (RPAA) most principally Clarence Stein and Henry Wright,³⁴ and the Garden City movement of the late nineteenth century as articulated by Ebenezer Howard in his 1898 book *To-Morrow: A Peaceful Path to Real Reform* in which he describes the ideal planning of new self-sufficient satellite towns. His concentrically organized planning strategy sought to provide an equitable approach for integrating parks, gardens, agricultural districts, transport routes and various public and private building types. Also, though never implemented, these new satellite towns were to be based on a model of collective ownership, not the control of an individual industrialist or single industry like in many Company or Factory Towns.³⁵ The strategy of using a greenbelt as a planning concept seems to originate about seventy years before Howard’s publication with the Scottish botanist, landscape planner, architect and prolific author John Claudius Loudon. In 1829 Loudon published an essay titled “Hints for Breathing Places for the Metropolis, and for Country Towns and Villages, on fixed Principles” in which he articulated a planning strategy for the future growth of London proposing a series of concentric zones emanating from St. Paul’s that would alternate between the preservation of open natural landscape and future development. His proposal provided inhabitants with a stable “supply of provisions, water, and fresh air, and to the removal of filth of every description, the maintenance of general cleanliness, and the despatch of business”; no resident would ever be more than one half mile “from an open airy situation, in which he was free to walk or ride, and in which he could find every mode of amusement, recreation, entertainment, and instruction.”³⁶ While this proposal was specific to a future zoning and development plan for London, Loudon also considered it a set of principles that could be applied to the founding of new towns.³⁷ In a departure from previous

ideal plans for cities dating back to Vitruvius, the Renaissance humanists or the French and English Utopians, Loudon also did not demand a purity of geometric order imposed over a natural landscape, rather he “envisaged a more economical and ‘more beautiful’ irregular boundary between zones”³⁸ where existing conditions and natural topography would be respected, allowing for a large degree of “continuity and flexibility in this plan for the growth of the metropolis.”³⁹

While the overall planning vision of the RA was implemented at Greenhills, after the war the federal government largely exited from its role in the town, selling off its remaining undeveloped lots to developers who filled them almost exclusively with Levitt style single-family houses, as opposed to the mix of housing typologies the RA plan had conceived. Since this time both the expectations of sub-urban living and the sub-urban context itself have transformed greatly. With its low performing school district, aging, outdated and undersized housing, and financial burdens of maintaining itself as an independent municipality, Greenhills as an attractive sub-urban living destination for young families and professionals has greatly waned.⁴⁰ More generally however, even despite the recent economic downturn in 2008 with the bursting of the vast US housing bubble, the suburbs outside the downtown core of Cincinnati have continued to see significant growth (in particular Warren County⁴¹). Despite these perceived barriers, as a community Greenhills does still maintain some significant assets: small-scale walkable planning, many integrated greenspaces, a still intact surrounding greenbelt⁴² and a variety of integrated public green spaces throughout the community, all of which already provide some form of *productive landscape* that could be leveraged, diversified and/or amplified further. So, if the original planned community vision of Greenhills lacking in inclusivity has also today become ineffective as a desirable sub-urban living destination, but the current popular model of sub-urban development is also lacking as it relates to issues of self-realization, community engagement, ecological health, social inclusivity and cultural production, how might an alternative model of housing take advantage of the remaining “assets” in Greenhills, while successfully cultivating a more collaborative and eco-egalitarian model of sub-urban living? How can the American Dream be rewritten to construct a new *beyond sustainable* narrative that more effectually confronts the changing conditions of the *new world*?

STUDIO PROJECT EXAMPLES

There were a number of different strategies that developed in the design studio; though no one project effectively addressed all aspects of the current situation facing Greenhills, each provided a potential strategy which if taken collectively across the studios might begin to address the situation more fully. The student Brendan Girten conceived of a broad strategy that provided a high level of potential variation capable of dealing with many different specific housing conditions within Greenhills, as well as providing the possibility for a high number

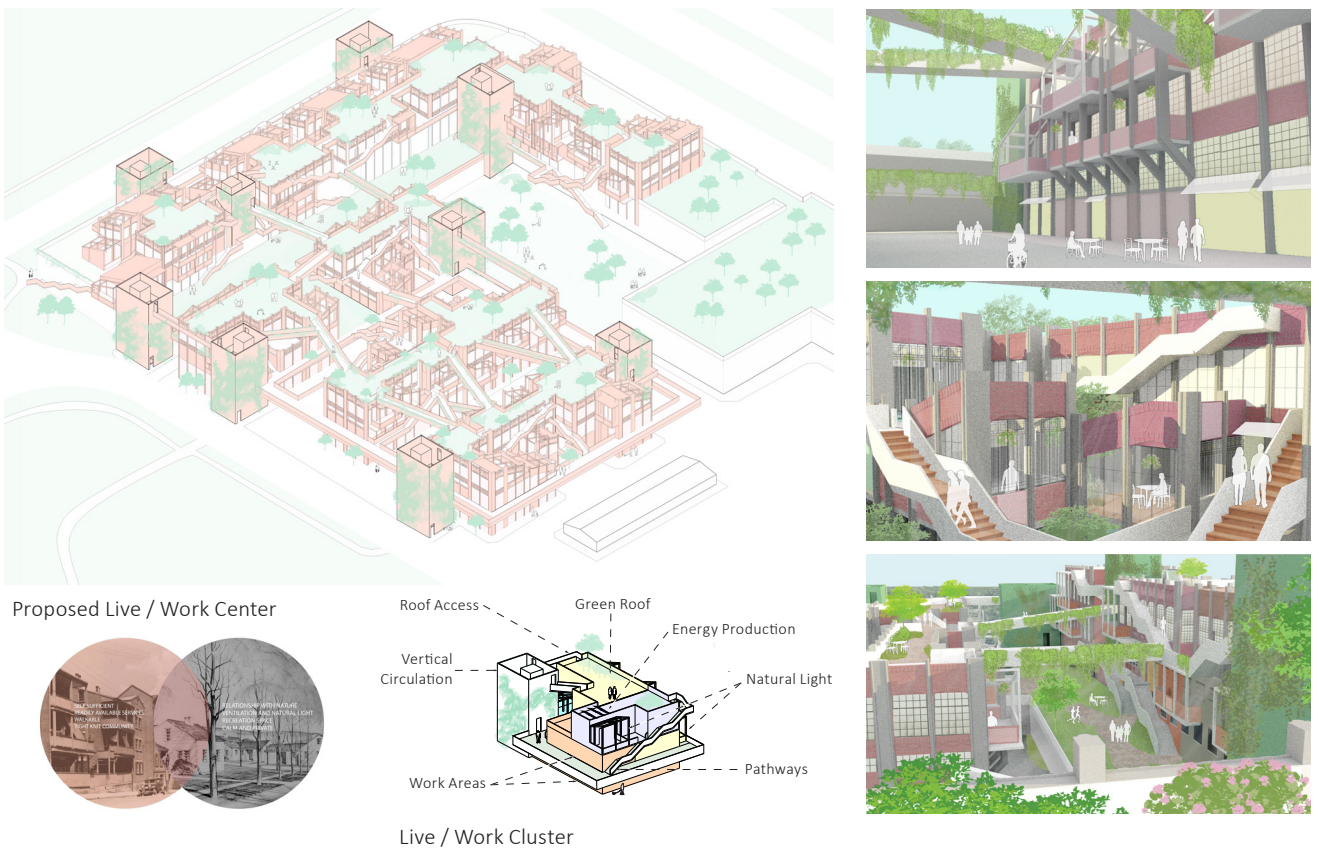
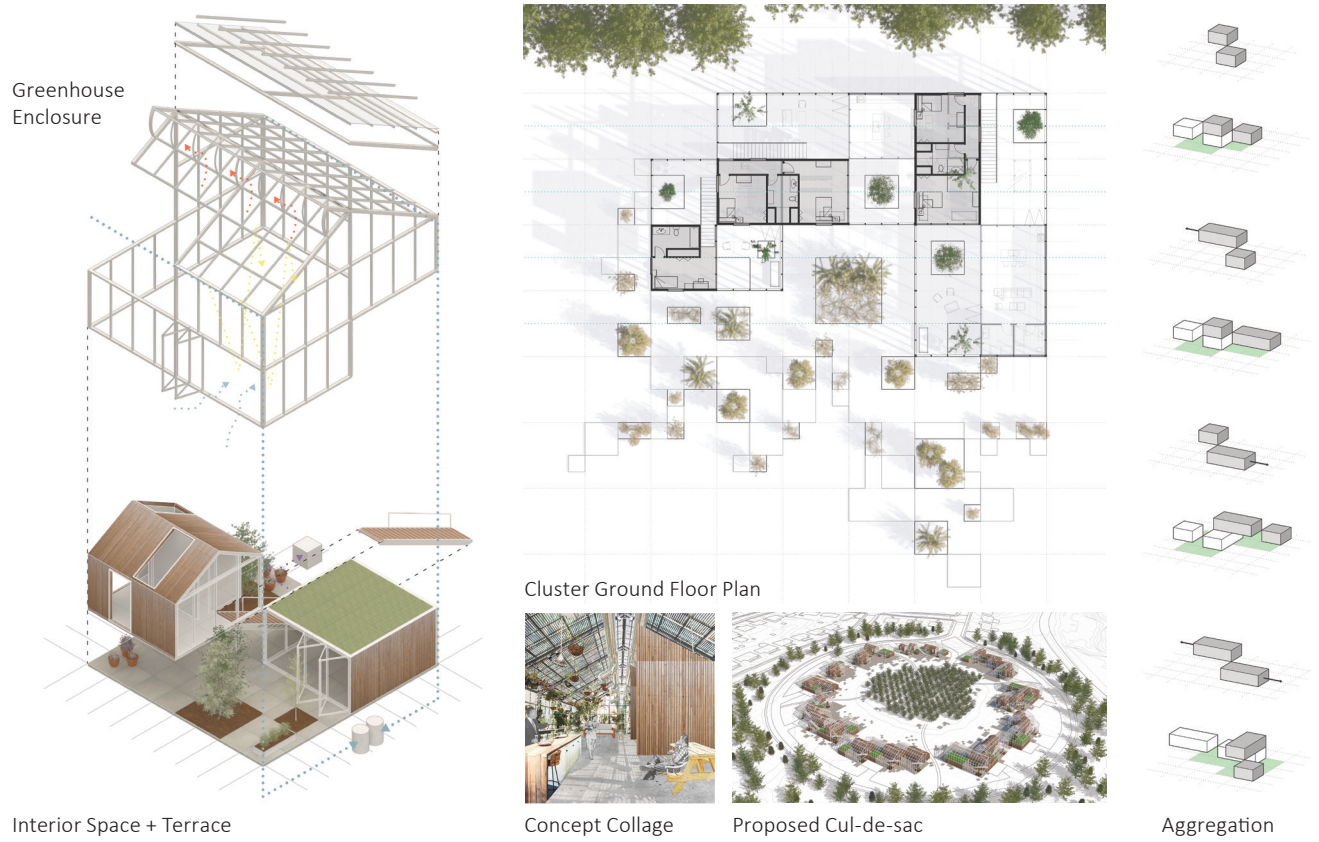


Figure 4. Student project proposals by Elise Kennedy (top) and Isaac Macleod (bottom).

of new configurations depending on current and future resident desires and demands. His approach was to overlay a new modular *productive landscape* across the Village capable of receiving a variety of different customized cubic additions that would “retrofit” the existing housing stock in an almost limitless number of new ways. These modules were designed to meet the specific needs of inhabitants – programmatic, social, energetic, infrastructural, or simply increasing living space. Most of these new additions would be located in the rear yards and thus help to reemphasize the use of the shared internal green spaces of the block for more productive social and community activities, recharging a greater sense of the collective while still maintaining the general character and organization of the original neighborhood. This approach was inherently adaptable as modules could be swapped out for others as needs changed over time, or new residents moved in, thus also providing a strategy for future growth and adaptability.

The next strategy by student Elise Kennedy began from a similar starting point of thinking modularly, but imagined a completely new housing cluster organized around the theme of an agricultural-collective where each dwelling unit was independently defined, but also connected to several others through the addition of a new shared space - a flexible greenhouse - and a shared *productive landscape* for cultivating food. This greenhouse space supported the year-round implementation of localized food cultivation, fostering collective resilience, communication, and a shared effort toward local food production and food security. Each housing cluster would also be arranged around a larger cultivation *productive landscape* for growing more expansive crops that the greater surrounding community could also utilize. Systems for collecting rainwater, harnessing solar energy and a loose infrastructure for the proper rotating of crops was also incorporated into the individual modules, clusters, and neighborhood organizations. In addition to helping facilitate the day-to-day and year-round cultivation of crops within a changing climate like Southwestern Ohio, the flexible greenhouse space would also serve as a dedicated social space for gathering and interaction within the living cluster. This space was to be adjustable in its arrangement throughout the year, creating an extended living space for the dwellings during the summer when the weather was warm and a more expansive growing space in the winter when most crops couldn't be grown outside.

The last student project included here was by Isaac Macleod, his strategy specifically focused on rethinking the commercial strip, currently underutilized but advantageously located in a centralized position within the community and directly adjacent to many public and civic spaces like the central green “commons,” pool complex, library and community center building. He sought to increase the density by adding housing units above the existing commercial strip and transforming the rear parking lot into a *productive landscape* of live/work units containing flexible retail and/or workspace on the ground level

easily accessible and visible to the public. Rather than trying to bring in one or two large corporate retailers to rehabilitate this central commercial zone, his vision argued that what would actually be more sustaining and beneficial to the community would be to link together many smaller scale local artisans and small business makers to create a new artisan market district capable of attracting new patrons, as well as new residents who would be interested in taking advantage of such a unique live-work arrangement. Isaac's proposal also provided vertical *productive landscape* in the form of hanging gardens with public green roof access used for growing small crops and/or flowers to be sold in the ground floor marketplace or simply as a pleasing backdrop to sub-urban living while simultaneously creating new ecological habitats. This densification of the existing commercial strip provided a strategy for rethinking commercial enterprise as a series of flexible micro-economies from within the community and would also create a new source of Village revenue, as well as attracting new locally invested artisan residents.

ENDNOTES

1. Lewis Mumford, *The Culture of Cities* (London: Secker & Warburg, 1938) 9.
2. This point is underscored in the recently published book *Climate Crisis and the Global Green New Deal*, a conversation between Noam Chomsky and Robert Pollin interviewed by C. J. Polychroniou. Chomsky states the connection between capitalism and environmental destabilization broadly when he says: “basic elements of capitalism, both ideological and institutional, lead directly to destruction of the basis of organized life – if unconstrained. We see that dramatically every day.” Pollin more specifically pinpoints how even though capitalism was developed before the nineteenth century's industrial revolution it was a shift from the primary use of water, to the burning of coal and the running of steam engines, as a power source, that provided an accelerant for capitalism, not because these fossil based forms of energy were cheaper or more advanced, but because they allowed for the dislocation of business practices to relocate to wherever cheap labor could be exploited – concentrated energy sources became transportable. See Noam Chomsky and Robert Pollin, with C. J. Polychroniou, *Climate Crisis and the Global Green New Deal* (London: Verso, 2020) 53; 61–64, and also Andreas Malm, “The Origins of Fossil Capital: From Water to Steam in the British Cotton Industry,” *Historical Materialism* 21:1, 2013, 35.
3. In the wake of a 2019 special report warning of the intensifying effects of global warming on the earth's oceans and cryosphere issued by the Intergovernmental Panel on Climate Change (IPCC) a group of prominent international climate researchers led by Timothy Lenton published a commentary in *Nature* on the phenomena of “climate tipping,” a point of no return for the inducement of runaway climate change, in which they argue that

“...the intervention time left to prevent tipping could already have shrunk towards zero, whereas the reaction time to achieve net zero emissions is 30 years at best. Hence we might already have lost control of whether tipping happens. A saving grace is that the rate at which damage accumulates from tipping — and hence the risk posed — could still be under our control to some extent.”

See Timothy M. Lenton, Johan Rockstrom, Owne Gaffney, Katherine Richardson, Will Steffen and Hans Joachim Schellnhuber, “Climate Tipping Points – Too Risky to Bet Against,” *Nature*, November 27, 2019.
<https://www.nature.com/articles/d41586-019-03595-0#ref-CR2>.
4. The journalist David Wallace-Wells, in his book *The Uninhabitable Earth: Life After Warming* states the following regarding the current levels of carbon emissions by nations committed to the 2016 Paris Climate Accords:

“It was as recent as 2016 that the celebrated Paris Climate accords were adopted – defining two degrees of global warming as a must-meet target and rallying all the world's nations to meet it – and the returns are already dispiritingly grim. In 2017, carbon emissions grew by 1.4 percent, according to the International Energy Agency, after an ambiguous couple of years optimists had hoped represented a leveling-off, or peak; instead, we're climbing again. Even before the new spike, not a single major industrial nation was on track to fulfill the commitments it made in the Paris treaty. Of course, those commitments only get us down to 3.2 degrees; to keep the planet under 2 degrees of warming, all signatory nations have to significantly better their pledges.”

He goes on to cite how as of 2019, out of the 195 signatories only 7 are considered “within range” of the agreed upon targets – Morocco, Gambia,

Bhutan, Costa Rica, Ethiopia, India and the Philippines. See David Wallace-Wells, *The Uninhabitable Earth: Life After Warming* (New York: Tim Duggan Books, 2019) 44.

It is worth noting that despite the record drop in total global emissions for 2020 largely due to the COVID-19 pandemic lockdowns, it has been estimated that China's total Greenhouse Gas Emissions for 2020 will increase by 1.7% from the previous year. See Corinne Le Quéré, Robert B. Jackson, Matthew W. Jones, Adam J. P. Smith, Sam Abernethy, Robbie M. Andrew, Anthony J. De-Gol, et al. "Temporary Reduction in Daily Global CO₂ Emissions During the COVID-19 Forced Confinement," *Nature Climate Change* 10 (2020): 647–653; and Mikhail Grant, Hannah Pitt, and Kate Larsen, "Preliminary 2020 Greenhouse Gas Emissions Estimates for China" *Rhodian Group*, March 4, 2021, <http://www.rhg.com/research/preliminary-2020-greenhouse-gas-emissions-estimates-for-china/>.

For the current emissions level of each signatory country of the Accords see Climate Action Tracker.

<https://climateactiontracker.org>.

5. "Warming 'in the pipeline,' mostly attributable to slow feedbacks, is now about 2°C. No additional forcing is required to raise global temperatures to at least the level of the Pliocene, 2–3 million years ago, a degree of warming that would surely yield 'dangerous' climate impacts." See James Hansen et al, "Target atmospheric CO₂: Where should humanity aim?," *The Open Atmospheric Science Journal* 2 (2008): 217–231.
6. Report was released on November 13, 2019. <https://www.iea.org/reports/world-energy-outlook-2019>.
7. David Wallace-Wells, "We're getting a clearer picture of the climate future – and it's not as bad as it once looked," *New York Magazine*, December 19, 2019. <https://nymag.com/intelligencer/2019/12/climate-change-worst-case-scenario-nowlooks-unrealistic.html>.
8. In many areas of the globe, increased temperatures alongside direct human actions of destruction like deforestation, pollution, resource extraction and sprawling development have greatly accelerated habitat loss, furthering the increase in temperatures, in turn, hastening the transformation of vast areas of the planet to be too hot for humans to live, reducing access to food and clean water, prompting mass climate refugee migrations, political destabilization, conflict and war. See Abraham Lustgarten, "The Great Climate Migration has Begun," *New York Times (online)* New York: New York Times Company, July 23, 2020. <https://www.nytimes.com/interactive/2020/07/23/magazine/climate-migration.html>.
9. World Green Building Council, *World Green Building Council Annual Report 2018/2019* (London: World Green Building Council, 2019) 12.
10. The rebound effect is a phenomenon that happens when greater efficiencies of a system are achieved through technological innovation effectively reducing prices and therefore increasing use that offsets the initial reductions achieved.
11. This attitude in its most extreme form is reflected in what has become known as "geo" or "climate" engineering. For a more extensive overview on this subject see Clive Hamilton, *Earthmasters: The Dawn of the Age of Climate Engineering* (New Haven, CT: Yale University Press, 2013) and Holly Jean Buck, *After Geoengineering: Climate Tragedy, Repair, and Restoration* (London: Verso, 2019).
12. While over an extended amount of time the direct savings from upgrading the home to more energy efficient systems will typically offset the initial costs many consumers may still not make the investment – this is known as the "energy-efficiency paradox" – due to both real and perceived barriers, even with governmental tax credit. For a comprehensive examination of this issue see Margot L. Crandall-Hollick and Molly F. Sherlock, "Residential Energy Tax Credits: Overview and Analysis," *Congressional Research Service*, R42089, version 22, April 9, 2018, <http://crsreports.congress.gov/product/pdf/R/R42089>
13. See Emily Badger, "The Missing Link of Climate Change: Single-Family Suburban Homes," *Bloomberg City Lab*, December 7, 2011. <https://www.bloomberg.com/news/articles/2011-12-07/the-missing-link-of-climate-change-single-family-suburban-homes>
14. Roy Scranton, "Beginning with the End," *Emergence Magazine*, (2020). <https://emergencemagazine.org/story/beginning-with-the-end/>.
15. Roy Scranton, *Learning to Die in the Anthropocene: Reflections on the End of Civilization* (San Francisco: City Lights Books, 2015) 27.
16. Hans Drexler, "Building better!," in *Building Better: Sustainable Architecture for Family Homes* (Berlin: Gestalten, 2014) 6–7.
17. Drexler, 2014, 20.
18. Reinhold Martin, Leah Meisterlin, and Anna Kenoff, eds., *The Buell Hypothesis* (New York: The Temple Hoyne Buell Center for the Study of American Architecture, 2011) and Barry Bergdoll & Reinhold Martin, *Foreclosed: Rehousing the American Dream* (New York: Museum of Modern Art, 2012).
19. Martin, Meisterlin and Kenoff, 2011, 8.
20. The concept of "actors" is referred to here to reflect Bruno Latour's use of the term in regard to Actor-Network Theory (ANT). This idea regards both human and non-human, living and non-living, social and natural phenomena all as actors, existing in constantly shifting networks of relationships. Objects, ideas, processes, and other relevant factors are as capable as humans of contributing to the making of social interactions.
21. Ted Steinberg, *American Green: The Obsessive Quest for the Perfect Lawn* (New York: W. W. Norton & Company, 2006) 24.
22. *Ibid*, 24.
23. "The idea of living close to nature romanticizes the countryside. In reality, suburbanization leads to the destruction of such natural and rural spaces. Besides the land needed for actual housing, much more is also requisitioned to construct the necessary infrastructure: roads, sidewalks, and public buildings." See Drexler, 2014, 17.
24. Steinberg, 2006, 11.
25. As Rachel Carson states:

"Instead of treating the basic condition, suburbanites – advised by the nurserymen who in turn have been advised by the chemical manufacturers – continue to apply truly astonishing amounts of crabgrass killers to their lawns each year. Marketed under trade names which give no hint of their nature, many of these preparations contain such poisons as mercury, arsenic, and chlordane. Application at the recommended rates leaves tremendous amounts of these chemicals on the lawn."

Rachel Carson, *Silent Spring*, 40th Anniversary ed. (1962; New York: Mariner Books, 2002) 80–81.
26. In some ways this general reconceptualization of landscape spaces, systems and infrastructures instigating various productive potentials have been described in the early twenty-first century as they relate more specifically to the urban context, as "Landscape Urbanism" articulated by various landscape architects such as Charles Waldheim, Alex Wall, James Corner, and others. For a general overview see Charles Waldheim, ed, *The Landscape Urbanism Reader* (New York: Princeton Architectural Press 2006).
27. Steinberg, 2006, 10–11.
28. The other two "Greenbelt Towns" that were designed and built by the RA during this time were Greenbelt, MA and Greendale, WI.
29. The Village of Greenhills sought to provide all of the day-to-day needs for those living in the community; it's centralized planning of shared amenities provided a central commercial strip, school, civic building, library, public pool and a generous central "commons" green space for community gatherings and events. While residents were still likely to work in the adjacent city center of Cincinnati the daily social, civic, and commercial needs were intended to be localized to within the community, at least to a large degree. Until this day the Village still maintains its own governance, fire, and police services, and only recently merged its school system into the larger neighboring system.
30. Emily Talen, *New Urbanism & American Planning: The Conflict of Cultures* (New York: Routledge, 2005) 199.
31. Frederick E. Lutt, "The Planning Theories of Greenhills" (master's thesis, University of Cincinnati, May 12, 2005), 104–105.
32. Talen, 2005, 201.
33. In his book *Toward New Towns for America* the planner Clarence Stein states: "The Greenbelt Towns are the first experiments in the combined development of the three basic ideas of modern community: the Garden City, the Radburn Idea, and the Neighborhood Unit." See Clarence Stein, *Toward New Towns for America* (New York: Reinhold Publishing, 1957) 122.
34. For a more in-depth analysis and discussion of its impact on the American Planning movement see Eugenie L. Birch, "Radburn and the American Planning Movement" *Journal of the American Planning Association*, Volume 46, Issue 4, October 1980.
35. Mumford, 1938, 395; and Ebenezer Howard, *To-morrow: A Peaceful Path to Real Reform* (London: Swan Sonnenschein & Co., Ltd., 1898) Diagram No. 4, "The vanishing point of Landlord's rent".
36. John Claudius Loudon, "Hints for Breathing Places for the Metropolis, and for Country Towns and Villages, on fixed Principles," *The Gardener's Magazine and Register of Rural Domestic Improvement*, Volume 5, Article VIII (1829) 686–687.
37. Loudon provides the hypothetical example of a capital for Australia; see Loudon, 1829, 688.
38. Melanie L. Simo, "John Claudius Loudon: On Planning and Design for the Garden Metropolis," *Garden History*, Volume 9, No. 2 (Autumn, 1981) 188.
39. *Ibid*, 188.
40. Even in just the last several years, despite being granted National Historic Landmark status in 2010, Greenhills has seen numerous historic housing structures in the community demolished due to lack of proper upkeep by owners and the general deteriorative effects of time.
41. Rachel Richardson, "In Greater Cincinnati, Suburbs still reign supreme." *Cincinnati.com USA Today Network*, Sept 13, 2014, <https://www.cincinnati.com/story/news/2014/09/13/greater-cincinnati-suburbs-still-reign-supreme/15610789/>.
42. Both Greenbelt, MA and Greendale, WI have seen their greenbelts sold off in part and developed with new housing radically altering a fundamental design feature of the original planning.