



At-Your-Service: Gas Station Futures in Post-Industrial USA

Citation

McElderry, Justin. 2024. At-Your-Service: Gas Station Futures in Post-Industrial USA. Master's thesis, Harvard Graduate School of Design.

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At-Your-Service:

Reimagining the service station as a model for food access, climate resilience, and community well-being in Birmingham.

Transcript of Presentation Given December 19th 2023 to Board of Reviewers on the Campus of Harvard University

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Board of Reviewers:

Gary Bates, Stephanie Lin, Charles Renfro, Alan Ricks, Anne Tate, Carole Voulgaris, & Beth Whittaker

Introductory Remarks:

Hi, my name is Justin McElderry & first I'd like to thank God for the opportunity to make my childhood dreams come true. It's a privilege to have studied here and also to have the family support from my wife, parents, brother, and best friends. I especially want to thank Amir, Joe, and Rikki for your support in the days leading up to this presentation. All of you keep me feeling like I'm 16 years old--and, I love it. It's a privilege to have your attention today, and I look forward to the conversation.

That said, the name of my thesis is "At-Your-Service", and its central aim is to investigate the role of the service station as a model for food access, climate resilience, and community well being in Birmingham, AL.

The Case for Service Station Redevelopment

Realizing the multidisciplinary nature of my background and the variety of conversations it encourages, I'd like to acknowledge that my presentation will stand at the corner of pragmatism, politics, and poetry -- & I'm happy to oscillate between each role. The following slides will be framed through a series of brief, yet provocative questions to elicit architectural form as a consequence as opposed to an aim.

The first of these questions is naturally, "Why should we care about service stations?"

Strictly from a scalar point of view, there are more than 115,000 service stations across the US. And, with each station occupying roughly .5 to 1 full acre of land these plots represent at least 80,000 acres of single-use parcels across the US mainland. For context, this is the equivalent of 60,000 soccer fields of contaminated sites located across America alone.

Through my research, I've found 3 primary drivers to rethink the potential of roadside retail.

1. The globe is preparing for and entering into a highly anticipated climate-driven energy transition.
2. While making this change is imperative for the longevity of humanity and our planet, our understanding of the roadside retail user experience will change drastically.
3. The decline of local and state government funding for social infrastructure leaves many members of the population reliant on private-sector solutions which may be just out of arms reach.

Anticipating the decline of gas stations as we know them, BCG analysts [estimate](#) that if EVs and their associated charging networks do take off, as much as 80 percent of the fuel retail market could be unprofitable by 2035. Should demand for gasoline completely disappear, many of the [100,000 stations](#) throughout the country would be at risk of going out of business.

Naturally, we must ask the question: **What if service stations did more for communities than serve tobacco, chips, and petroleum?**

My thesis responds to this question by framing roadside retail as a catalyst for social infrastructure across 3 main categories. Branching out from these core futures, we begin to see new programmatic opportunities as evolutions instead of complete departures from our known reality.

Mass Media and the Service Station in the Public Eye

Now that we've framed the discussion in terms of the systemic change needed from an economic, environmental, and social lens, we must also discuss the cultural "order" and "disorder" around the service station.

I'll begin by showing a short clip.

This video was recorded recently in Atlanta, GA. And, while the part of me who lived in Atlanta for 10 years can't help but laugh, there's another part of me who sees this clip as a powerful cry for public space and social infrastructure from underserved communities in the U.S.

Looking back in time, this video is a farcry from the very first gas station—which was actually a pharmacy with petroleum sold over the counter in 1885 Germany.

Shortly after, we see a specialization of use as the car began to rise in prominence.

In the 30s, we see stations become icons of the American dream and technological progress.

And through the mid-century, we see signs of post-war "phantasmagoria" coming into view.

While the writings of climate crisis have always been an undertone of the evolution of roadside retail, the call for rapid exploitation, leverage, and growth were too difficult to resist.

The industry of "Convenience" gave way to a social order not often documented in mainstream. Yet, the land still provided an equitable substrate for tense, contested, and debatable interactions.

So, what do we make of this?

How do we bridge the gap between idealized images of how the gas station should be used and the « disruptive » uses that celebrate the spectacle of the space? And, better yet, what opportunities are created when we design spaces which embrace all of these cultural constructs of gathering under 1 roof?

The Case For Birmingham, Alabama

Now, we find ourselves asking a new question of "Why Birmingham?". Aside from it being my place of birth and childhood / teenage memories, it's also an archetype for the ~~post-industrial~~, car-centric city in which gas stations will eventually become obsolete.

This coincides with several urban vulnerabilities related to environment, food systems, and social infrastructure — leaving Birmingham as just one of many sprawled cities with a large network of service stations dealing with each of these conditions. With a consistent increase in tornadoes, flooding, and record high temperatures, Birmingham must find new, more resilient land uses to serve its growing population amidst these climate changes. Likewise, the city must also find new ways to cultivate and distribute food equitably to all residents as the effects of exclusionary zoning and food apartheid are still seen today. Lastly, Birmingham must not fall victim to the temptation of creating a city of single-use climate machines, but remember to integrate values of public and shared space into its planning and development decision making.

This leads me several questions used to guide my architectural interventions:

1. What if service stations transformed into positive contributors to the ecology of tomorrow?
2. What if service station sites enabled more equitable food supply chains?
3. What if service station sites accommodated new types of public space & social infrastructure?

Providing An Architectural Proposal:

*So, how might architecture intervene?
What can it do? What should it do?*

In order to test these principles and frameworks of program and land use, I've chosen two different sites in Birmingham to develop prototypes for rethinking service station potentials.

Site A: Smithfield

My first site is located in the historic Smithfield district on the city's Westside. Less than a mile away from city hall, the triangular site of this gas station exists as a cornerstone between two primary thoroughfares which connect this historically black upper middle class neighborhood to UAB and Downtown.

Within this same 1 mile radius exists a variety of other critical landmarks in Birmingham's history and potential future. Some of these include the headquarters of food delivery company Shipt, 16th street baptist church, Parker High School, and the new Uptown district—commanding millions in tourism, commercial, and retail investment over the past decade.

Despite its proximity to the city center, the site's connection to this urban fabric is all but unrecognizable. Like many other American cities in the mid-20th century, urban sprawl led to the simultaneous construction of highways and destruction of black neighborhoods. This site—and the neighborhood of Smithfield—exists today as an artifact of this crafted demolition.

Whenever stories are told of Birmingham's past, images of the domestic terrorism which took place are among the first to surface. Monikers like Bombingham, Dynamite Hill, or « The Most Segregated City in America » lead the narratives of the city. However, if we think more critically, we must ask questions about whose houses were being targeted the most and why. These were doctors, lawyers, educators, and business owners—even family friends of ours.

Bombs were evidence of an inferiority complex—evidence of an inability to see cohabitation as a net positive for all—evidence that anyone who attempts to pull you down...must first feel beneath you.

After decades of disinvestment and suburban sprawl, the entire district has fallen well behind in almost every notable category. The most devastating category has to do with the condition of food access. In the case of Smithfield, the nearest full service grocery store is 5 miles away—disconnected from any notable public transit.

In spite of these challenges, the outlook ahead shows signs of promise. With over \$280M of total investment coming to the district in the near future, the time has never been better to see this site as a node in the broader food ecosystem and economy of Birmingham. What if this site in Smithfield not only became a gateway between two districts, but also a generator for a new industry in this old steel city?

Taking notes from the typological study of the 6 gas station elements, my architectural response begins with the canopy as a device to organize & cover 90 percent of the site to improve heat island conditions and capture solar energy. This structure creates 5 large zones underneath—3 of which are enclosed and 2 of which are open air. Inspired by the Japanese phrase komorebi (or the ephemeral dappling of sunlight beneath a tree canopy) perforations were added to bring a kaleidoscope of light into the 2 open air courtyards.

The plan strategy réponds to a central Oculus which disrupts the interior circulation within a field of ordered columns. Along the 8th avenue corridor lies a grocery and industrial kitchen for visiting chefs to bring elevated culinary experiences to the neighborhood as well as highlight local emerging talent hoping to expand. Visible from across the open air space, the small footprint grocery store also serves as a hub for last mile delivery with refrigerated food lockers located along the interior wall providing a safe and convenient method to pick up, deliver, and store prepared meals on site.

Located along the acute angle edge of the site is specialized convenience store and micro library selling multivitamins, supplements, fresh produce, and curated nutritional literature.

Underneath the oculus, 2 levels of coworking & lab space for agritech, food delivery, and alternative protein creation are connected by a central grand staircase & a cylindrical volume connecting visitors to an observation deck on the roof.

In elevation, each entry is adorned with a domestic scale entry canopy to provide more human scale touch points to the massive site and volumes underneath.

Site B: Opossum Valley

The 15,000 SF site is situated along one of Birmingham's primary watersheds known as Valley Creek. Sitting at the heart of the industrial suburb known locally as Opossum Valley, the creek has become plagued with pollution, consistent flooding, and habitat loss, this site provides an opportunity to begin reconciling the impacts of an industrial past with the long-term environmental resilience needs. This service station type provides residents of Hueytown and Bessemer with the opportunity to gather, learn, research, and anticipate changes in biodiversity.

Since 1900, the UN estimates that 75% of the world's genetic crop diversity has been eliminated. This is a problem because agricultural monocultures are drastically more vulnerable to disease, pests, and billions in economic loss when disease kills uniform crop varieties.

Seed banks keep diversity alive in the face of these challenges. They also provide source material for plant breeders and researchers in search of genetic traits for new crop varieties with — greater nutritional value, higher yields, resistance to pests and diseases, and the capacity to endure climate change with an increase of flood and drought. This all leads to an increase in demand for spaces dedicated to these purposes — once again putting gas stations centrally on the table for reimagination

The architectural intervention is organized on the site by a central tributary for rainwater collection which splits the site into two equally spaced parcels. The sloped tension canopy, spanning both volumes provides a spectacle of downspout run off as rainwater drifts into the 3' deep collection pool for regeneration within the building. The tributary also provides a poetic connection to the hidden condition of the neighboring Valley Creek watershed. 3 gathering spaces along the south end of the tributary are equally spaced along a translucent corridor containing thousands of species of seeds, specimens, and data for research, use, and conservation of native species and the preservation of local and regional biodiversity.

Situated along this spine are a series of offices, classrooms, meeting rooms, and lab space dedicated to conserving genetically diverse herbaceous plant germ plasm and associated information. Inspired by the porches of the Japanese engawa, these spaces border interstitial courtyards where botanists, researchers, passersby, and local citizens achieve a moment of respite during their time away from the desk. In addition to anticipating impacts of industrial agriculture, habitat loss, and natural disaster, the additional programs of this new service station type also respond to the conditions of today. As users approach the site from the primary thoroughfare on 19th street in Hueytown, local residents find a nursery, cafe, and multipurpose event space to provide spaces for families to host birthday events, graduation ceremonies, as well as visit exhibitions for the advancement of the floriculture industry.

Wrap Up

These interventions are simply prototypes towards a larger goal of reimagining service stations in our rapidly changing future. And, this system I've created to evaluate and propose new potentials can and should be used by politicians, poets, and pragmatists alike. Thank you.