

New Haven Building Archive: A Database for the Collection, Study, and Communication of Local Built Heritage

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Abstract

The New Haven Building Archive (NHBA) is a digital, mobile, and interactive field guide to New Haven, Connecticut's built heritage. As an interactive digital guide and database for local buildings, the NHBA harnesses digital mapping technologies, place-based storytelling and community-based research. Ultimately, the development of the NHBA will aid in the co-production of knowledge about the city by students, academic researchers and local citizens in a way that will facilitate conversations about the historical patterns and future development of New Haven while suggesting a model for engaged teaching and research for urban studies more broadly.

CCS Concepts

• **Applied computing** → **Architecture (buildings); Digital libraries and archives;**

1. Introduction

We present work in progress on a unique archive that documents the details of individual buildings in a city, rather than a particular monument or famous site. The documentation includes diverse textual and image data for each building. This archive enables a new kind of scholarship across space and time. In addition to providing a resource for a particular community, the archive is a model for similar archives to enable such studies across communities.

1.1. Background and Mission

The New Haven Building Archive (NHBA: nhba.yale.edu) brings together ten years of student research on buildings and streetscapes in New Haven, Connecticut. The archive currently comprises of more than 350 building entries that can be organized as more than a dozen walking tours throughout the city. As an interactive digital guide to local buildings and the role they play in the life of the city, the NHBA harnesses digital mapping technologies, place-based storytelling, and community-based research. Ultimately, the NHBA aims to aid in the co-production of knowledge about the city by students, academic researchers, and local citizens in a way that will facilitate conversations about the historical patterns and future development of New Haven while suggesting a model for engaged teaching and research.

The NHBA adapts the conventions of the standard architectural

guide that usually focuses on monumental or “important” buildings, elite residential architecture, and high design. This dominant perspective tilts the discussion of the built environment toward the privileged and powerful. In contrast, the NHBA utilizes the humanities to shed light on “ordinary” buildings that make up the bulk of the built environment, and generates opportunities to think critically about architecture, urban form, and the shifting patterns of social geography that constitute the daily life of the city.

1.2. Initial Development

The NHBA was initially devised to get students out of the classroom and into the “field”: the streets and neighborhoods of the campus, city and the public archives where information about New Haven can be gleaned. Both undergraduate and graduate students in architecture have been asked to research a building, present the research in a walking tour, and produce an entry for the NHBA website. The result is a tried and tested database with over 350 entries about the cultural and built landscapes of the campus, downtown New Haven, Wooster Square, Fair Haven, Long Wharf, and streetscapes in between. Each entry is categorized by its era, architect, materiality, and neighborhood, and can be further broken down into walking tours that contain their own themes and call out distinct patterns in the relationship between buildings and the social, economic, political, and cultural lives of the city. In this way,

the NHBA recasts the original architectural field guide from a focus on high style to a consideration of lived and social geographies.

As a public-facing tool, the NHBA offers a way to record, review, and research social and urban histories of New Haven that exist at the margins. This is especially important for a city like New Haven, which like other post-industrial cities, is a palimpsest of past migrations, boom and bust cycles, and urban renewals and decline. Jane Jacobs' seminal *Death and Life of Great American Cities* was defined by these very tensions, between the top-down modernist planning traditions of Le Corbusier and Robert Moses and her insistence on the virtues of bottom-up city planning that come from well-defined neighborhoods and crowded sidewalks that create a kind of "street ballet" [Jac61].

As such, we hope that the NHBA can serve to unearth, record, and tease out these complex urban and social histories through a widely-available, publicly accessible digital platform. The NHBA stands out from other "urban explorer" applications, in that entries about the built landscape can be edited and enriched over time, as the database itself was developed as a pedagogical tool inspired by the following urban themes.

2. Pedagogical Themes

2.1. Teaching with the Local Built Environment

The NHBA was initially set up to guide a user through basic research methods in urban and architectural history. In the first place, this involves the craft of looking closely at buildings to sharpen skills of visual interpretation. A lot can be gained from close looking at the buildings themselves, analyzing its material characteristics, reading its presence on the street, speculating on the intentions of its original builders and users, and marking how the building has been adapted, physically and socially, over time. Users will have access to a range of research resources across New Haven, including the New Haven Museum and the City of New Haven Departments of Buildings, Transportation, and City Plan. Students using the NHBA can also take advantage of significant resources for local research, like Manuscripts and Archives at Sterling Library, the Beinecke, and the university's Library Maps Collection. Together, these sources are used to trace a buildings' social and physical histories. In the past, students have consulted fire insurance maps produced by the Sanborn Company – there are physical copies at both the university and the New Haven Museum. There are several digitized iterations of the maps – which provide invaluable documentation of buildings and land uses over time. City Directories belonging to the New Haven Museum can also be used to determine tenants and landowners by address and are also important sources in reconstructing a social history of the built environment. In many cases, users have also interviewed building owners, architects, tenants, and others with experiences, memories, and insights.

The NHBA also engages students and users in writing for a public audience. After collecting research materials, the user must synthesize and represent building information in an engaging, accessible style that, like a good newspaper article, presents a lead that gives the reader the most pertinent information while inviting them to continue with more detail and narrative should they desire.

2.2. Scholarship: Cultural Landscapes, Urban Geography and Public Memory

The NHBA serves as a gateway for a range of scholarly projects that explore the connections between the built environment, social geography, public memory, and social justice.

For architectural and urban historians interested in the making and meaning of the built environment, the NHBA may serve as a vital portal to the archival resources available to researchers. Working on the archive has sparked a number of research questions in some of our own work on the topic of commercial vernacular architecture, an area where New Haven illustrates important national trends along with its own regional patterns. Likewise, the NHBA has opened up a number of venues on the question of multi-family housing; there are many interesting examples of these in the city, from late-nineteenth century tenements, early-twentieth century courtyard apartments, and postwar towers and garden apartments. The variety of entries produced for the building archive also allows researchers interested in urban geography – the spatial distribution of people and activities – to gain a broad perspective on the emergence of the modern city.

3. Design and Development

3.1. Current web platform

The standard architectural guide presents information to the reader or viewer as fact. These renderings may be nuanced and critical of the power relationships that are embedded and reproduced in the built environment. Even the best guides, however, reproduce a one-way relationship between the producers and the receivers of knowledge, as it pertains to the ordinary environments in which we live, work, and play.

The platform of the NHBA is designed not just as a platform for received knowledge, but as an invitation for urban exploration. The idea is not to look narrowly at the buildings themselves, but at relationships to adjacent buildings, to patterns at the scale of the street, neighborhood, and district; and to look for connections to the public realm, public spaces, sidewalks and streetscapes, landmarks and monuments, plaques and public art installations. To fulfill its promise, the NHBA must be as accessible, easy-to-use, and as mobile as possible so that users may interact with the archive and database. Users must also be able to submit questions, comments, images, and reflections on the buildings and streetscapes that they are observing.

Currently, the NHBA is developed as a web platform for use on a PC or Mac, is open to anyone for research or access to walking tours, and can be edited through an authorized login. The landing page features a scalable map that visualizes all the entries in the database (Figure 1). Using six drop down menus across the top of the landing page, a user can isolate the entries according to "Tour," "Current Use," "Style," "Era," "Neighborhood," and "Last Updated." The left side of the landing page features entries most recently created along with a search bar where users can search for a specific building or streetscape.

The entries are color coded according to a grouping of "tours," or

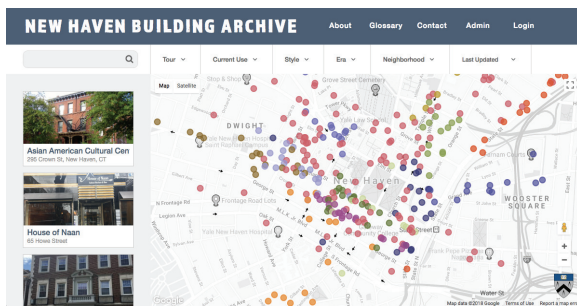


Figure 1: Screen capture of the NHBA landing page.

a set of buildings that characterize a neighborhood or set of structures (Figure 2). Users can hover over any dot to locate an entry according to its location on the map (Figure 3) and each entry can be refined according to the established set of categories (Figure 4).

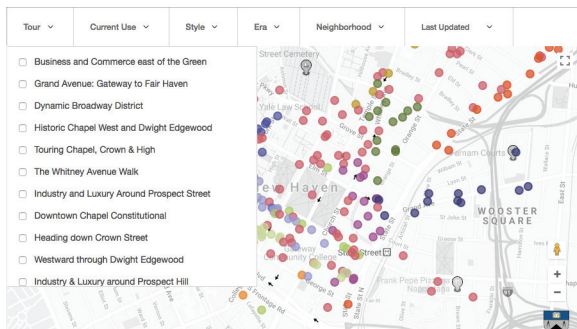


Figure 2: Entries are color-coded by "Tours"

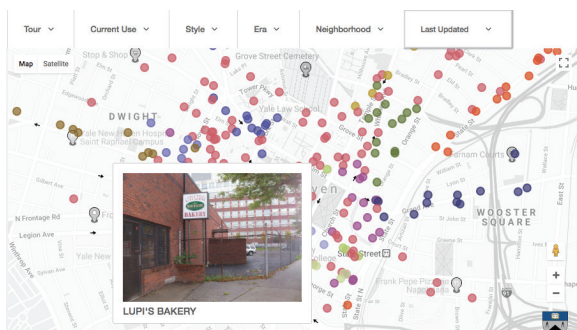


Figure 3: A user can hover over a dot to locate entries by location.

Each entry features a header, where users can scroll through present-day images of the site, and/or archival maps, plans, or photographs. The basic features of the building, including architect, era built, material composition, name of researcher and the date the entry was created, are listed underneath the header. The user can then scroll through textual information about the site, including an overview, physical description of the building or urban setting, social and site histories, structural data, and contemporary or archival sources.

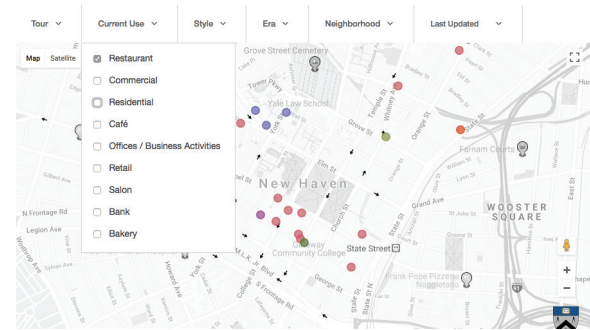


Figure 4: Entries can be refined according to categories such as "Current Use" or "Architectural Style."

When a registered user clicks on an entry, the platform is designed with tools to upload multi-media files, including descriptive texts, archival materials including Sanborn maps, photographs, and plans, as well as video and sound recordings, which can all be edited and improved over time. The entries are also accessible to the public, who can view and download basic and in-depth historiographic information, maps, photographs, archival research, and listen to recorded sounds and watch videos (Figure 5).



Figure 5: Two views of an NHBA entry, featuring scrollable photographs and historiographic information (left) and tabs to upload multi-media files including photographs, maps, sound, and video (right).

3.2. Prototyping and Challenges

In Fall 2015, the NHBA received a small grant that was used to move the original NHBA database platform from Wordpress to Drupal, to have a more robust and resilient framework for the long term management of the data. With the grant we also did more editing and organizing of the materials. Much remains to be done, however, to edit tours and individual entries, and to expand the NHBA's usefulness as a portal for researchers and to strengthen its appeal and functionality for users.

The site has gone through a number of testing and prototyping phases within the confines of courses and seminars. The most intensive phase was this past Spring 2018 semester, in which a large undergraduate architectural survey course added over 350 building

entries. During the course of the semester we were able to improve the site's abilities to filter search terms, a feature that will help tailor the experience to different user needs and desires. Through a series of course assignments the students were able to give NHBA developers valuable user experience feedback, including the ways in which users uploaded and labeled images, automatic rotation of images uploaded from mobile phones, the location of archival documents within the entries of each site, improving the location of GPS coordinates on the Leaflet map of the homepage, and testing for reproducibility of bugs. This initial phase of student-oriented user testing has allowed us to refine the basic features of the sites and ready it for the next iteration: a Wiki-friendly open-source platform.

With further user testing and development, we will engage in additional efforts to improve and enhance written content, curation of images, and embedded links.

3.3. Future development

We are now planning a new, more sustainable version of the NHBA. Our new implementation will support the NHBA's research, educational, and public interaction goals by rebuilding the archive on top of the open-source Wikimedia platform. Wikimedia provides support for adding and updating text and multimedia information about buildings, is compatible with mobile devices, brings a widely used, well-tested interface, and supports full change-tracking and meta-discussions about individual site pages. Off-the-shelf plugins provide timeline views to see how buildings and sites have changed. Compared to the currently deployed NHBA platform using a custom database, we gain flexibility in the type and structure of information we can store and a more intuitive process for incrementally adding information as it is gathered.

The main challenge with our Wikimedia approach is structuring the data so we can search the archive efficiently and discover patterns across buildings, neighborhoods, and time periods. However this is a significant challenge in the deployed version as well: the more structure we impose on our data entry form, the more onerous it is to contribute information from which to deduce those links. We think a hybrid approach using Wikimedia with additional indexing plugins and simple page templates gives the right balance between ease of structuring data and encouraging detailed contributions to the NHBA.

Wikimedia provides a basic editing platform and database, and support for plugins to provide additional functionality. Timeline viewing is one such plugin; another provides thumbnail previews of links. However plugins are also useful for analyzing and organizing data, not just presenting it. We use existing plugins to search for keywords to index whenever a page is edited, and to automatically link mentions of other buildings, architectural firms, etc. to their corresponding pages in the NHBA. When no such page exists we can create a "stub" page.

Additional, custom plugins, will be able to convert individual page sections into structured data. For example, a custom plugin could convert an "occupants" section into structured data with which researchers could analyze neighborhoods' patterns of use over time. Another could look at dates in photo captions (and, for

contemporary pictures, in the camera metadata) to index when they were taken. Even though such plugins will be somewhat less reliable than fully structured data entry, editors can easily update pages to ensure the data is structured in a way the plugins understand. Moreover, such editing goes hand-in-hand with our model of providing expert feedback and annotation on user contributions.

In the first phase, our plugins will store data in a custom database similar to the current one; we will focus our implementation work on deploying the Wikimedia platform, creating the necessary indexing plugins and templates, and testing the user experience. In the second phase we will integrate with Wikidata for our structured data on top of which we can build virtual exhibition and story-telling support. Wikidata is an open-source platform for structured data designed to complement Wikimedia, so that NHBA data can be linked programmatically with other Wikidata-compatible data sources and integrated into new applications in a standard, well-documented way. A good example of building interactive sites on top of Wikidata repositories that are similar in spirit to virtual exhibitions in NHBA is the Science Stories project (www.sciencestories.io). Although alike in many ways, one of the main differences between the NHBA and visual databases like Science Stories is an effort for citizens to document the built environment and lead in creating a database for place-based storytelling.

The primary challenge with Wikidata integration will be settling on an appropriate taxonomy for NHBA data. This is a universal problem for public data repositories, and numerous projects and standardization efforts have published controlled vocabularies for different subsets of data (e.g. Getty Art and Architecture Thesaurus, www.getty.edu/research/tools/vocabularies/aat/). We already collaborate on other projects with colleagues that have deep expertise with Wikidata and taxonomies, and we will solicit their input on our design.

4. Conclusion

The NHBA is a work in progress. Its structure is being redesigned to facilitate updating by new entries by researchers and moderated entries by the public. It is to be used as a new resource for scholarly research in urbanism. It will also provide a base for creating both virtual and in-person exhibitions to engage the public in understanding the history of the city and planning its future.

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