Bridging Traditional Digital Humanities and Archives through Computational Archival Science

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Abstract

As libraries and archives across the world are planning an increasingly digital records future, there is a critical need to strengthen digital and computational literacy and training for future librarians and archivists. Acute "skills and management gaps in libraries" have been recognized which highlight the need for greater automation in library work, the facilitation of computational research, and the need for library managers to understand and value the benefits of in-house data science skills. This chapter presents a timely and impactful case study at the intersection of CAS (Computational Archival Science) and DH (Digital Humanities), focusing on the legacy of urban renewal in Asheville, North Carolina in the United States. Between 1965 and 1980, housing policies were enacted that ultimately displaced and erased African American businesses and communities with traumatic and lasting effects. A Community Reparations Commission for Black Asheville was formed in March 2022 and charged with developing recommendations to be presented to the Asheville City Council and County Commission to repair harm done by decades of racial discrimination and systemic oppression against Black Asheville residents.

1. Introduction

As libraries and archives across the world are planning an increasingly digital records future, there is a critical need to strengthen digital and computational literacy and training for future librarians and archivists. Acute "skills and management gaps in libraries" have been recognized[1], which highlight the need for greater automation in library work, the facilitation of computational research, and the need for library managers to understand and value the benefits of in-house data science skills. Discussions on library and archival collections "as data"[2] have emerged in recent years to develop cultural heritage collections that support computationally-driven research and teaching. Our own work has called for the development of Computational Archival Science (CAS)[3] as a new discipline for managing scale and providing enhanced forms of access that support transparency, openness, and representation.

The use of computational approaches has considerably increased in the Digital Humanities (DH) space in recent years, as evidenced by conferences such as CHR2021.[4] In addition, CAS[5] has emerged as a new discipline that explores the use and consequences of emerging methods and technologies around big data with archival practice and new forms of analysis and historical, social, scientific, and cultural research engagement with archives. This chapter presents a timely and impactful case study at the intersection of CAS and DH, focusing on the legacy of urban renewal in Asheville, North Carolina in the United States. Between 1965 and 1980, housing policies were enacted that ultimately displaced and erased African American businesses and communities with traumatic and lasting effects. In this study, a team of archival students at the University of Maryland, George Mason University, and community members in impacted neighborhoods of Asheville discuss DH/CAS as a locus of reparation, truth, and

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[1] Matt Burton, Liz Lyon, Chris Erdmann, and Bonnie Tijerina. *Shifting to Data Savvy: The Future of Data Science In Libraries. Project Report.* (Pittsburgh: University of Pittsburgh, 2018), 1. http://d-scholarship.pitt.edu/33891/

[2] Thomas Padilla, et al, *Always Already Computational: Library Collections as Data.* (Washington D.C.: Institute of Museum and Library Services, 2016), https://www.imls.gov/grants/awarded/lg-73-16-0096-16.

[3] "CAS Portal," Advanced Information Collaboratory, last accessed November 21, 2022, https://ai-collaboratory.net/cas/.

[4] Computational Humanities Research, (CHR2021, Second Conference) Nov. 17-19, 2021, https://2021.computational-humanities-research.org/.

[5] Richard Marciano, "Afterword: Towards a New Discipline of Computational Archival Science (CAS)," in *Access and Artificial Intelligence: Working with Born-Digital and Digitised Archival Collections*, ed. Lise Jaillant, (Bielefeld: Bielefeld University Press, 2022), 205.

reconciliation based on an earlier DH project.[6] On July 14, 2020, the Asheville City Council unanimously passed a resolution supporting community reparations for Black Asheville.[7] After months of delay, on March 8, 2022, a Reparations Commission[8] was finally formed, with five seats for appointments representing the areas of criminal justice, economic development, education, health care, and housing, and twenty seats for residents of historically impacted African American neighborhoods.

This book chapter illustrates how to design and implement a CAS framework[9] that can help move DH projects away from a perception of often being self-contained historical "boutique style" spaces. Our approach engages with community members and strives to impact social justice and reparations policy discussions in the present. The study comes full circle to demonstrate how to create reusable educational modules based on these types of digital interventions and suggests a framework for bridging the DH and Archives developments, based on the design of data science Jupyter Notebooks for Archival DH. The resulting notebook will be published on our CASES (Computational Archival Science Educational System) website[10], an interactive learning platform for the sharing and dissemination of computational case studies and lesson plans.

2. Ethical, Social, Community, and Educational Motivations

In a 2013 essay, Terry Cook discusses evidence, memory, identity, and community as four shifting archival paradigms.[11] Our work is rooted in a community-based approach where we seek to provide new access points to traditional archival content through community partnerships. The work illustrated in this chapter represents over a decade of community partnering.

Our intent is to make people the focus of archives by flipping the archival narrative. While the urban renewal archives of the Housing Authority of the City of Asheville represent real-estate and legal transactions associated with the acquisition of neighborhood properties, we have strived to reveal identity by: (1) seeing the individuals represented in these records, (2) revealing their stories, (3) exposing their hardships, and (4) rekindling their community connections. This has involved community digitization and the design of new interfaces to tell human stories with community partners. Details are discussed in our 2022 paper called "Promoting Archival Engagement through Computational Interventions"[12].

A recently published book, "Archives and Human Rights," discusses why and how records can serve as evidence of human rights violations and documents the emergence of the principles of the right to truth, justice, and reparation. In this book, Trudy Huskamp Peterson (former Acting Archivist of the United States), authors a chapter called "Proof"[13], with the notion that a successful claim always requires at least two types of proof: identity and harm, and that for those proofs, records are needed.

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[6] Advanced Information Collaboratory. "The Fourth Thursday: 'Urban Renewal Impact' in Asheville, June 24, 2021", https://ai-collaboratory.net/2021/06/24/june-24-2021-launch-of-the-urban-renewal-impact-website-initiative/.

[7] City of Asheville. Council, Resolution No. 20 Supporting Community Reparations for Black Asheville, July 14, 2022, https://drive.google.com/file/d/1WKialVISWzu72mhasyy9SslDbVGMSj5U/view.

[8] "Announcement of New City of Asheville Reparations Commission Members", City of Asheville, last modified March 8, 2022, https://www.ashevillenc.gov/news/announcement-of-new-city-of-asheville-reparations-commission-members.

[9] Richard Marciano, et al., "Archival Records and Training in the Age of Big Data," in *Re-Envisioning the MLS: Perspectives on the Future of Library and Information Science Education*, ed. J. Percell, et al. (Bingley: Emerald Publishing Limited, 2018), 179.

[10] "Computational Archival Science Educational System," Advanced Information Collaboratory, accessed December 11, 2022, https://cases.umd.edu.

[11] Terry Cook, "Evidence, Memory, Identity, and Community: Four Shifting Archival Paradigms," Archival Sci. 13, no. 2-3 (2013): 97.

[12] Richard Marciano et al., "Promoting Archival Engagement through Computational Intervention" (paper presented at the DIGI-ARCHIVES-2022: International Conference on Digital Archives, Data and Memory, Copenhagen, 26 August 2022), https://ai-collaboratory.net/wp-content/uploads/2022/08/Marciano-and-team_Paper_08-26-2022.pdf.

[13] Trudy Peterson, "Proof", in *Archives and Human Rights*, ed. Jens Boel, Perrine Canavaggio and Antonio Gonzalez Quintana, (Abingdon: Routledge, 2022), 84.

Ray McCoy, Esq., builds on these notions of proof by focusing on the need to provide a critical resource for Black citizens of Asheville directly harmed by the so-called urban renewal project to be identified. McCoy believes reparations can provide a focused effort to direct resources to those Black people and communities uprooted, directly harmed and disenfranchised. He states: "Reparations, as explained in the policy making process of Asheville and Buncombe County, holds out hope that a program can be constructed with the specific intent to focus on the harm done to a specific group of black people and provide redress to those specifically and intentionally harmed—those whose life chances were stunted—reparations offers an opportunity to reject the nonsense that colorblindness is something to be sought after and replaces that discredited notion with a most realistic one—one that acknowledges specific action is required to repair and make amends for a wrong done to easily identifiable Black citizens and their descendants".[14]

Finally, it is vital to leverage these types of communitarian projects into training networks that can engage future librarians and archivists in order to expose them to the full diversity of the American experience. In the fall of 2022, we launched a new IMLS-funded project (Institute of Museum and Library Services) through Laura Bush 21st Century Librarian (LB21) grant, called the "TALENT Network: Training of Archival & Library Educators with iNnovative Technologies" (RE-252287-OLS-22). TALENT[15] brings together experts from across the United States (including archivists, librarians, Library and Information Science educators, historians, learning scientists, cognitive scientists, computer scientists, and software engineers) to create a durable, diverse, and multidisciplinary national community focused on developing digital expertise and leadership skills among archival and library educators.

3. Bridging DH and Archives through CAS: a Case-Study

Over a decade ago, DH critics discussed whether digital humanities scholarship could be more than "a series of boutique projects that use computers"[16], indicating the inherent siloed nature of many of these projects. Developments in cyberinfrastructure (the U.S. term that emerged from NSF[17] or e-Science in Europe[18]) held the brighter promise of interoperability, reuse, and scale. Research infrastructure entails facilities, resources, or services that have been identified by research communities to conduct top level activities in their fields and they often integrate large amounts of data requiring data management. "To think of research infrastructures as digital ecosystems entails the commitment to identifying them as services that are built around communities. Infrastructures are then the sum and integration of these services that are shared through a platform".[19]

In contrast to European humanities projects, the United States has not managed to successfully sustain larger projects of integrated infrastructures. Examples of European infrastructures include: DARIAH (http://www.dariah.eu) and CLARIN (http://www.clarin.eu/) and their related more domain-specific infrastructures such as ARIADNE (http://www.ariadneinfrastructure.eu/), which focuses on archaeology; CENDARI (http://www.cendari.eu/) working on medieval and First World War resources;

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[14] Ray McCoy, "Consideration and Goals for Reparations in Asheville," Fourth Thursday Webinar, filmed June 24, 2021, video of lecture, https://www.youtube.com/watch?v=PSqbv44Kz-4.

[15] "TALENT Network: Training of Archival & Library Educators in Innovative Technologies," Advanced Information Collaboratory, accessed December 11, 2022, https://ai-collaboratory.net/projects/talent-network/.

[16] Amy Friedlander, "Asking Questions and Building a Research Agenda for Digital Scholarship" in *Working Together or Apart: Promoting the Next Generation of Digital Scholarship* (Washington D.C.: Council on Library and Information Resources, 2009), 6.

[17] Daniel E. Atkins, et al., *Revolutionizing Science and Engineering Through Cyberinfrastructure: Report of the National Science Foundation Blue-Ribbon Advisory Panel on Cyberinfrastructure* (Alexandria, Virginia: National Science Foundation, 2003), https://www.nsf.gov/cise/sci/reports/atkins.pdf

[18] Jim Gray, "Jim Gray on eScience: a Transformed Scientific Method," in *The Fourth Paradigm: Data-Intensive Scientific Discovery*, ed. Tony Hey, Stewart Tansley, and Kristin Tolle (Redmond, Washington: Microsoft Research, 2009), xvii.

[19] Tobias Blanke, Conny Kristel, and Laurent Romary, "Crowds for Clouds: Recent Trends in Humanities Research Infrastructures," in Cultural Heritage Infrastructures in Digital Humanities, ed. Agiati Benardou, et al., (New York: Routledge, 2017), 52.

IPERION (http:// www.iperionch.eu), which is about material research on cultural heritage; and EHRI (https://portal.ehri-project.eu/), concerned with Holocaust research.

Our CAS initiative grew out of the fusion of a three-year 2013-15 series of workshops on Big Humanities Data with King's College of London at the IEEE Big Data Conference, and the development of our own data grid infrastructure (Rajasekar 2010). This convergence allowed for the exploration of DH at scale, and DH reusable infrastructure and interoperability (https://bighumanities.net/). We illustrate the bridging of DH and Archives through a case-study on urban renewal in Asheville, N.C.

3.1 Urban Renewal in Asheville, NC

In this case study, we focus on urban renewal (UR) in Asheville, North Carolina in the United States between 1965 and 1980, when housing policies were enacted that ultimately displaced and erased African American businesses and communities with traumatic and lasting effects. Urban renewal was established with the Housing Act of 1949, "with the intention of redeveloping areas of cities that were deemed blighted".[20] Our project focuses on the East Riverside Project which targeted the Southside neighborhood of Asheville.[21] This neighborhood is significant because it was home to 3,902 residents living in 1,179 households, which accounted for about 50% of Asheville's black population and 7% of its total population at the time. In addition, the Southside was Asheville's "premier black business district, surrounded by a large residential neighborhood. The Southside urban renewal project was the largest in the southeastern United States (and the largest in Asheville) and the scale of the devastation here was unmatched."[22]

3.2 Building an Urban Renewal DH Project

The Housing Authority of the City of Asheville (HACA) records are currently in the custody of the D.H. Ramsey Library Special Collections and University Archives at the University of North Carolina, Asheville (HACA 2022). They form a 12-part series comprising 161 linear feet and 171 boxes. Part 7 contains the East Riverside Project files and comprises 79 linear feet and 73 boxes. The Acquisition files we used are a subset that comprises 20 boxes with 936 Property folders. We identified 930 parcels of the 936 folders that were actually acquired. Folders are organized by Block and Parcel number (based on a system that no longer exists) and each contains between 7 and 243 pages with an average size of 38 pages. The digitized Acquisition files represent a total of 35,909 pages. A typical folder contains: acquisition summary sheet, three independent appraisal reports, deeds of record, rental agreements, transfer of deed records, closing statements, United States Department of Housing and Urban Development (HUD) relocation claim payments, title search records, offer accepted records, and court case documents. However, folders are only organized by a legacy Block / Parcel and Owner name index.

From these digitized assets, a DH infrastructure project was developed.[23] This leads to the interactive interface where we captured a number of events associated with each of the 930 parcels (called UR Parcels). These events include the acquisition date and purchase amount, as well as the following GIS layers: (1) 1963 City Directory, (2) 13 City-owned parcels, (3) 7 HACA-owned parcels, (4) 930 UR parcels, (5) 224 Current parcels, (6) 1966 Land Acquisition map, and (7) 1973 Property Disposal map. The interface includes the following features: Event timeline, Associated people, Acquisition date & amount, and Photos. In addition, we developed a search function to find parcels by People and Street names, as well as a Sliding Timeline to show change simultaneously across the entire neighborhood (Lee et al., 2017).

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[20] What is Urban Renewal (2021): https://storymaps.arcgis.com/stories/ba1e9d724a1a4916bc9ff134283e5a43

[21] R. L. Mace, Inside East Riverside (Asheville: Housing Authority of the City of Asheville, 1967), https://drive.google.com/file/d/12MUm_8xapLT05cC2hJLssDciFIo5JqE1/view

[22] Sarah M. Judson,"Twilight of a Neighborhood," *Crossroads* 14, no. 1 (Summer/Fall 2010): 11, https://www.yumpu.com/en/document/view/8229229/twilight-of-a-neighborhood-north-carolina-humanities-council.

[23] "Remapping," Urban Renewal Impact, accessed December 12, 2022, https://urbanrenewalimpact.org .

Our goal is to leverage this DH project to support current discussions and claims on reparations, an important topic in many cities and states.
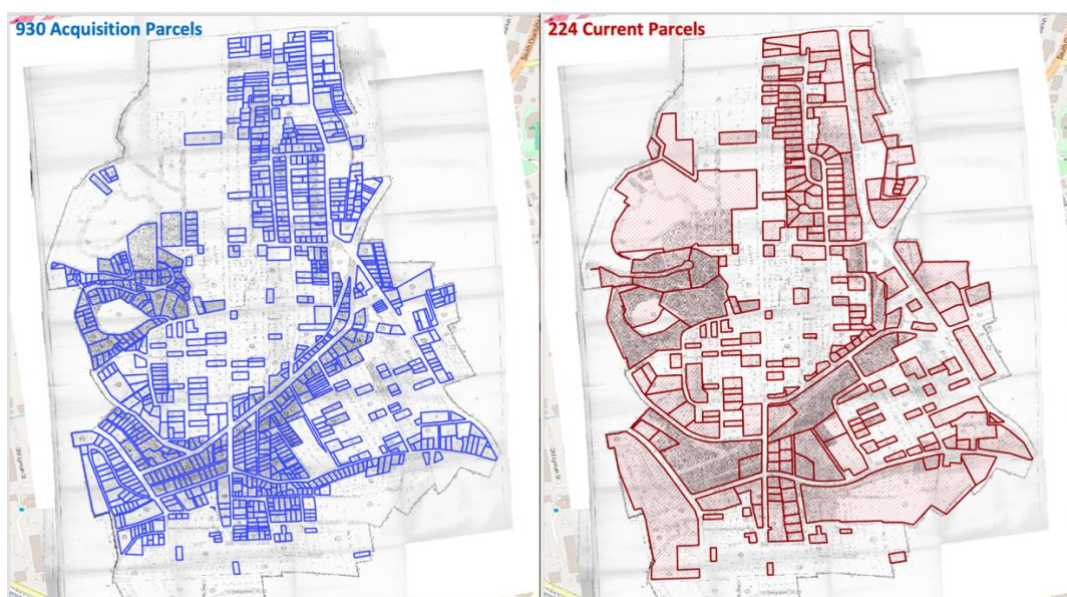
3.3 Measuring the Impact of Urban Renewal

We have so far described the DH Phase I work conducted in the Spring of 2021, led by Priscilla Robinson[24], and presented at a public forum (The Fourth Thursday 2021). In and of itself, this represents an original impactful DH project. However, it may still fall in the self-contained siloed boutique project category described by Friedlander. Following a CAS approach, we extend this work using computational treatments through an interactive Jupyter Notebook cloud infrastructure. This represents the bridging of DH and Archives through CAS that our chapter wishes to demonstrate.

In the last two years, fueled by COVID-19 restrictions and advances in digital scholarship, cultural institutions such as GLAMs (Galleries, Libraries, Archives & Museums) have provided new forms of access[25] to the public through collections presented as data using the Jupyter Notebook platform. A short list of these institutions includes: Smithsonian Open Access, Austrian National Library, National Library of Scotland, Biblioteca Virtual Miguel de Cervantes, Bibliothèque Nationale de France, Library of Congress, British Library, Europeana, UGent Libraries, and Tim Sherratt's GLAM Workbench.[26] Growing 8-fold in number between 2018 and 2020, there are now nearly 10 million data-science notebooks published.[27] However, few of these notebooks are currently adapted for LIS audiences or the public. There is a real opportunity to train our students to become leaders in this GLAM space and help make available underutilized collections that will benefit the public.

3.3.1   The Mapping Problem

Some aspects of this section build on (Marciano and McCoy 2022). How do we relate a current city parcel in 2022 (we call this "CA Parcel" for Current Asheville Parcel) to one or several urban renewal parcels ("UR Parcel" – those acquired under urban renewal) from the 1960s or 1970s? How do we relate all 930 UR Parcels to the 224 CA Parcels from 2022? See Figure 1.
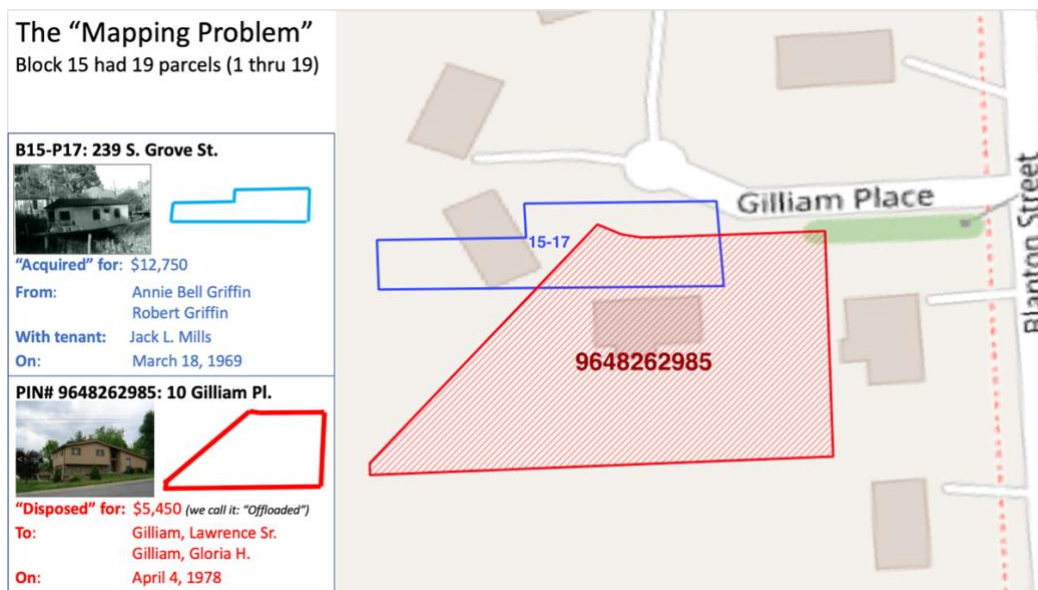

Figure 1. 930 UR Parcels vs. 224 CA Parcels

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[24] Additional collaborators are listed at Urban Renewal Impact, https://urbanrenewalimpact.org.

[25] Library Carpentry Awesome Jupyter GLAM, https://github.com/LibraryCarpentry/awesome-jupyter-glam.

[26] Tim Sherratt, "Welcome to the GLAM Workbench" accessed December 12, 2022, https://glam-workbench.net/.
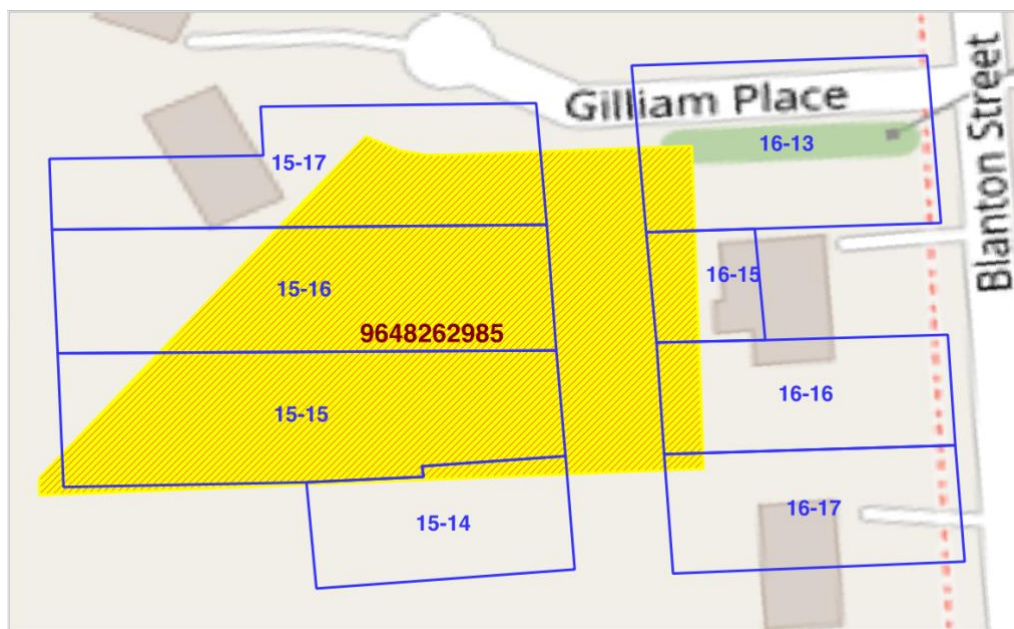
[27] Alena Guzharina, "We Downloaded 10,000,000 Jupyter Notebooks From Github – This Is What We Learned" The JetBrains Datalore Blog, accessed December 12, 2022, https://blog.jetbrains.com/datalore/2020/12/17/we-downloaded-10-000-000-jupyter-notebooks-from-github-this-is-what-we-learned/

A specific example illustrates some of the challenges and shows: CA Parcel #9648262985 on 10 Gilliam Place (in red), disposed of (aka first resold by the City of Asheville) on April 4, 1978 for $5,450, and an intersecting UR Parcel, B15-P17 on 239 South Grove Street (in blue), acquired on March 18, 1969 for $12,750. See Fig. 2.

Figure 2. UR and CA overlapping Parcels

The changes that occurred in this area are substantial: Dewitt Street (east-west) and South Grove Street (north-south) and an alley (north-south) between South French Broad Avenue and South Grove Street, no longer exist; and Gilliam Place is a new *cul-de-sac* that was carved out of a number of acquired parcels. As a result, the older and newer parcels are unrelatable. Next, we highlight CA Parcel #9648262985 (in yellow). See Figure 3.
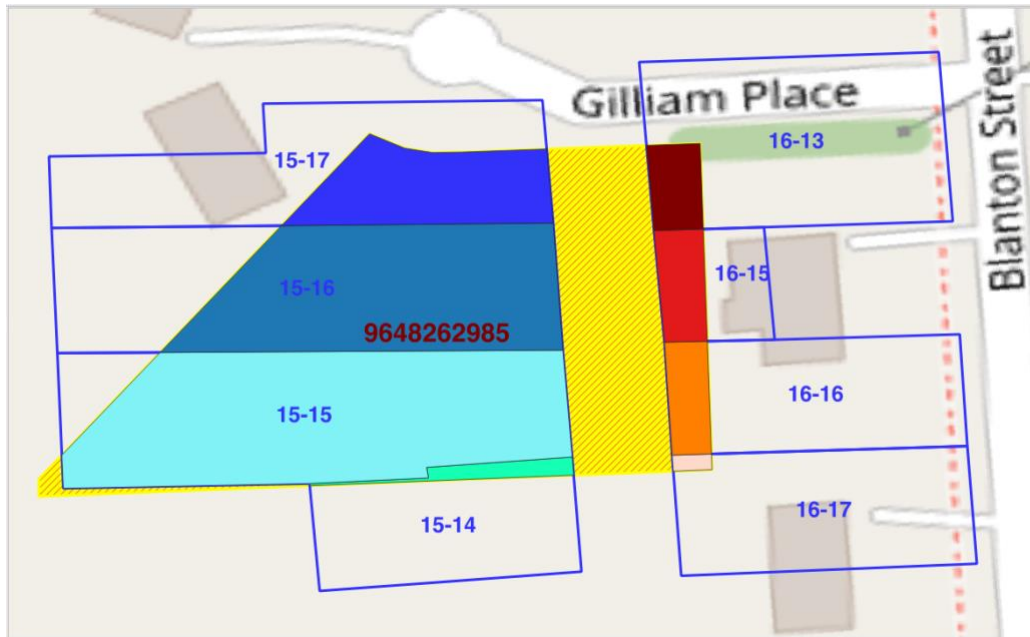

Figure 3. CA Parcel #9648262985 highlighted in yellow

We then intersect this CA Parcel with all eight overlapping UR Parcels. We color code those UR Parcels in Table 1 to match the colors of the parcels in Figure 4 so that the reader can see the correspondence between the eight historical parcels and how portions of them are repackaged to form the new one. This is how we relate the old Block-Parcels to the current ones. Figure 1 shows that the UR Parcel to CA Parcel ratio is slightly over four. See Figure 4.

B15-P17	**B16-P13**
B15-P16	**B16-P15**
B15-P15	**B16-P16**
B15-P14	**B16-P17**

Table 1. List of UR Block-Parcels that intersect with CA Parcel #9648262985 at 10 Gilliam Place.
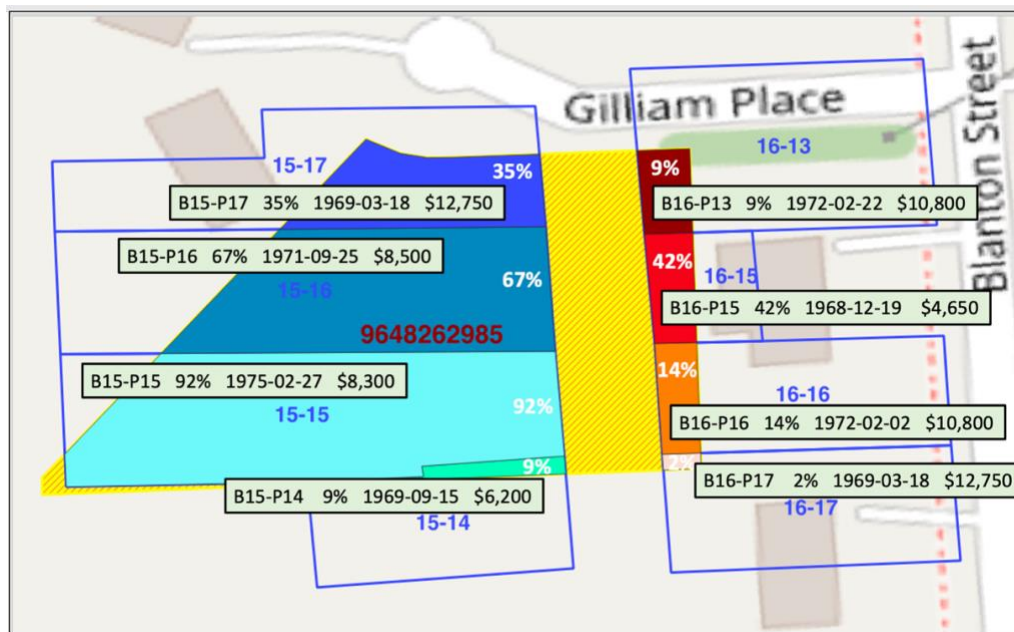

Figure 4. Same as Fig. 3 but with UR Parcel intersecting overlays

3.3.2 Computing Spatial Overlap

This allows us to compute the percentage of overlap for each UR parcel. See Figure 5.

B15-P17	35%	**B16-P13**	9%
B15-P16	67%	**B16-P15**	42%
B15-P15	92%	**B16-P16**	14%
B15-P14	9%	**B16-P17**	2%

Table 2. Percentage of overlap of the UR Block-Parcels with CA Parcel #9648262985 at 10 Gilliam Place.

Figure 5. Same as Figure 4 but with percentage of UR Parcel overlap

As a result, we are now able to relate two parcel systems that were previously "unrelatable" through geospatial aggregation techniques. The relationship shows which UR Parcels relate to current Parcel #9648262985 at 10 Gilliam Place with the percentage of overlap for each of the UR Parcels. In other words, we can now quantify how much a UR Parcel contributed to the making of a CA Parcel. This level of automation is entirely done through the application of a spatial overlap function within the GIS system (we use open source QGIS). This can also be scripted in a Python program using GeoPandas and GIS APIs and recorded in a shared Jupyter Notebook for use and reuse.

3.3.3 Computing Contributed Acquisition Amounts

Using the Acquisition date and Acquisition value features extracted from each parcel, we are able to create an Acquisition database. For the 8 overlapping UR parcels, the Acquisition database shows:

Blk/Pcl	AcqDate	AcqVal
B15-P14	1969-09-15	$6,200
B15-P15	1975-02-27	$8,300
B15-P16	1971-09-25	$8,500
B15-P17	1969-03-18	$12,750
B16-P13	1972-02-22	$10,800
B16-P15	1968-12-19	$4,650
B16-P16	1972-02-22	$10,800
B16-P17	1969-03-18	$12,750

Table 3. Acquisition dates and Acquisition values for the 8 intersecting UR Parcels.

Combining the Acquisition database with the previously computed Percent of Overlap, now allows us to compute a Contributed Value:

Blk/Pcl	AcqDate	Percent	AcqVal	Contrib
B15-P14	1969-09-15	9%	$6,200	**$558**
B15-P15	1975-02-27	92%	$8,300	**$7,636**
B15-P16	1971-09-25	67%	$8,500	**$5,695**
B15-P17	1969-03-18	35%	$12,750	**$4,463**
B16-P13	1972-02-22	9%	$10,800	**$972**
B16-P15	1968-12-19	42%	$4,650	**$1,953**
B16-P16	1972-02-22	14%	$10,800	**$1,512**
B16-P17	1969-03-18	2%	$12,750	**$255**
				SUM: $23,044

Table 4. Constructed contributed Acquisition value for each of the eight UR Parcels.

This computation allows us to construct a contributed Acquisition value, in this instance $23,044. We can now run the computation across all CA Parcels to determine how much the City of Asheville paid in order to acquire the parcels they were carved from.

3.3.4 Computing Contributed Inflation-Adjusted Acquisition Amounts

We further refine the acquisition database by adding two columns: "Inflation Factor" and "Inflation Adjusted Acquisition Value". To achieve this, we use a historical calculator such as *https://measuringworth.com* which shows that $1 in 1965 has a relative price worth of $9 in 2022 (using the Consumer Price Index). For each of the historical AcqDate values we compute the Inflation Factor (InfFact) and then multiply these two values together to drive an Inflation Adjusted Acquisition Value (InfAcqVal). See Table 5.

Blk/Pcl	AcqDate	AcqVal	InfFact	InfAcqVal
B15-P14	1969-09-15	$6,200	8.08	**$50,096**
B15-P15	1975-02-27	$8,300	5.50	**$45,650**
B15-P16	1971-09-25	$8,500	7.31	**$62,135**
B15-P17	1969-03-18	$12,750	8.08	**$103,020**
B16-P13	1972-02-22	$10,800	7.08	**$76,464**
B16-P15	1968-12-19	$4,650	8.51	**$39,572**
B16-P16	1972-02-22	$10,800	7.08	**$76,464**
B16-P17	1969-03-18	$12,750	8.08	**$103,020**

Table 5. Inflation Adjusted Acquisition Values for each of the eight UR Parcels.

Meaning that parcel B15-P14 acquired for $6,200 in 1969 with an Inflation Factor of 8.08 would have been purchased in 2022 for the equivalent of $50,096. Bringing in the Percent of Overlap gives us a new computed Acquisition Value. Table 6 shows that CA Parcel #9648262985 at 10 Gilliam Place was acquired for $160,463 (with Inflation Adjustment and Percent of Overlap).

Blk/Pcl	InfAcqVal	Percent	Contrib
B15-P14	$50,096	9%	**$4,509**
B15-P15	$45,650	92%	**$41,998**
B15-P16	$62,135	67%	**$41,631**
B15-P17	$103,020	35%	**$36,057**
B16-P13	$76,464	9%	**$6,882**
B16-P15	$39,572	42%	**$16,620**
B16-P16	$76,464	14%	**$10,705**
B16-P17	$103,020	2%	**$2,061**
			SUM: **$160,463**

Table 6. Deriving the computed Acquisition with Inflation Adjustment for CA Parcel #9648262985 at 10 Gilliam Place.

The appraisal value of CA Parcel #9648262985 at 10 Gilliam Place per the Buncombe County database as of June 2022 is $344,600. This allows us to speculate that the current appraised value, even after inflation adjustment, is still 2.15 times higher than $160,463. It is worth noting that the Buncombe County appraisal value is still lower than the June 2022 Zillow value of $475,000. If we used the higher Zillow value, this would give us an even higher increase ratio of 3.0. Meaning that the market value is higher than the Buncombe County appraised values. Overall, this computational approach gives us a **measure of how urban renewal deprived Asheville homeowners of a significant source of intergenerational wealth**.

3.4 Measuring the Impact of Urban Renewal

Revealing identity helps us build a historical database about the acquired UR Parcels. Revealing harm helps us build a database of how CA Parcels were formed through the disposal process. These two databases allow us to formulate the following ten key findings on the more complete story of urban renewal in the Southside.

PRELIMINARY KEY FINDINGS:

A. **Who** was affected by urban renewal?

Our Team focused on the Southside neighborhood of Asheville, where we:
- **Identified 930 parcels acquired during Urban Renewal in Asheville from 1965 to 1980** (**UR Parcels**). The data show that many homeowners resisted these acquisitions and went to court.
- **Created a profile for each of these UR Parcels:** showing original owners and tenants at the time of acquisition, property pictures, and a history of everything that happened to that parcel during UR.
- **Created a map interface** that allows searching, interaction, and display across all 930 UR Parcels.
- **Identified 224 existing parcels (as of June 2022),** or Current Asheville Parcels (**CA Parcels**), that were assembled from parts of the 930 UR Parcels.

TEN KEY DATA TAKEAWAYS:

B. **How much** did the City pay for urban renewal properties?
   1. **The total UR Parcel acquisition cost was $6.4M**: across the 930 UR Parcels.
   2. **The median UR Parcel acquisition value was $5,350** (half higher and half lower): with 85% of the acquisitions below $10K.

C. **Which** properties does the City still own?
   3. **The City of Asheville continues to have an 18% UR impact:** the City of Asheville still owns 13 CA Parcels in the Southside that were acquired through UR and overlap with 169 UR Parcels, which represents 18% of the original pool of 930 UR Parcels.
   4. **The Housing Authority of the City of Asheville (HACA) continues to have a 16% UR impact:** HACA still owns 7 CA Parcels that were acquired through UR and overlap with 147 UR Parcels, which represents 16% of the original pool of 930 UR Parcels.
      → **This represents a 34% combined City-HACA UR impact:** across 20 CA parcels that overlap with a total of 316 UR parcels, representing over a third of the original pool of 930 UR Parcels.

D. **How much** are those properties now worth?
   5. **There is a minimum of 400% increase in the valuation of the 224 CA Parcels since UR (as of June 2022 and after inflation adjustment):** based on Buncombe County's Parcel Ownership Dashboard. This is a conservative increase well below actual current market prices *(using Zillow valuations may show an even higher value, up to a 1,000% increase).*

E. **When** did the City start reselling these properties?
   6. **HACA primarily (94%) and the City of Asheville (6%) resold UR Parcels for five decades:** while 86% of the UR Parcels were resold in the 70s and 80s, another 14% were offloaded between the 1990s and 2010s. We call the beneficiaries of the first round of reselling *"repurchasers."*

F. **How much** were these properties resold for?
   7. **The UR Parcels were resold at discounted prices:** the median value of the resold parcels was less than 1/5th of their acquisition value during UR, indicating that the majority of the parcels were offloaded post-UR for a fraction of their acquisition price [83% of the parcels were offloaded below UR acquisition cost and the total resale revenue was $3.3M].

G. **Who** was able to repurchase these properties?
   8. **There were 6 categories of repurchasers:** Individuals (46%), Businesses (40%), City (7%), HACA (3%), Churches (3%), County (1%), with 152 unique repurchasers across all 224 CA Parcels.
   9. **The top 10 repurchasers were responsible for the buying of 32% of all 224 CA Parcels:** none of these top 10 repurchasers were Individuals.
   10. **Only 14 Individuals repurchased in the Southside after losing their property during UR:** these 14 Individuals represent 9% of the 152 unique repurchasers.

These kinds of computational scenarios, when packaged in an interactive way, allow for a traditional DH project to support contemporary policy-based investigations. We are packaging these computational workflows in Jupyter Notebooks that can be run in the cloud and shared.

Also, any of the calculations we made on inflation can be tested and modified. A link to the full Executive Summary with details and graphs can be found at "Measuring the Impact of Urban Renewal," Advanced Information Collaboratory[28].

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[28] "Measuring the Impact of Urban Renewal," Advanced Information Collaboratory, https://ai-collaboratory.net/2022/06/18/june-18-2022-measuring-the-impact-of-urban-renewal/.

4. Conclusions and Future Work

We believe that our approach can be applied to other neighborhoods of Asheville, North Carolina where urban renewal occurred and that it can also serve as a model for other historical types of reparation that can benefit from CAS approaches.

The research questions this work has supported so far include:

A. **Who** was affected by urban renewal?
B. **How much** did the City of Asheville pay for urban renewal properties?
C. **Which** properties does the City still own?
D. **How much** are those properties now worth?
E. **When** did the City start reselling these properties?
F. **How much** were these properties resold for?
G. **Who** was able to repurchase these properties?

There are other research questions to explore with community partners and in response to needs for data from the Community Reparations Commission itself. On March 20, 2023, the framework developed in this chapter was presented to the Asheville Racial Reparations Commission and entered as evidence as part of the record of the Commission. For a recording of this public presentation, see the following video link: https://youtu.be/HO8vPhU0gLs. Through our work, we demonstrate the power of bridging traditional DH and archives through CAS to systematically explore computational valuations of identity and harm. Our CAS computational approach provides a measure of how urban renewal deprived Asheville homeowners of a significant source of intergenerational wealth. More importantly, this approach emphasizes the values of community involvement and educational opportunities.

Acknowledgments

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