

From the Archives to the Citizens: Physicalizing Historical Data for Access and Public Engagement

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AFFILIATIONS & FUNDING

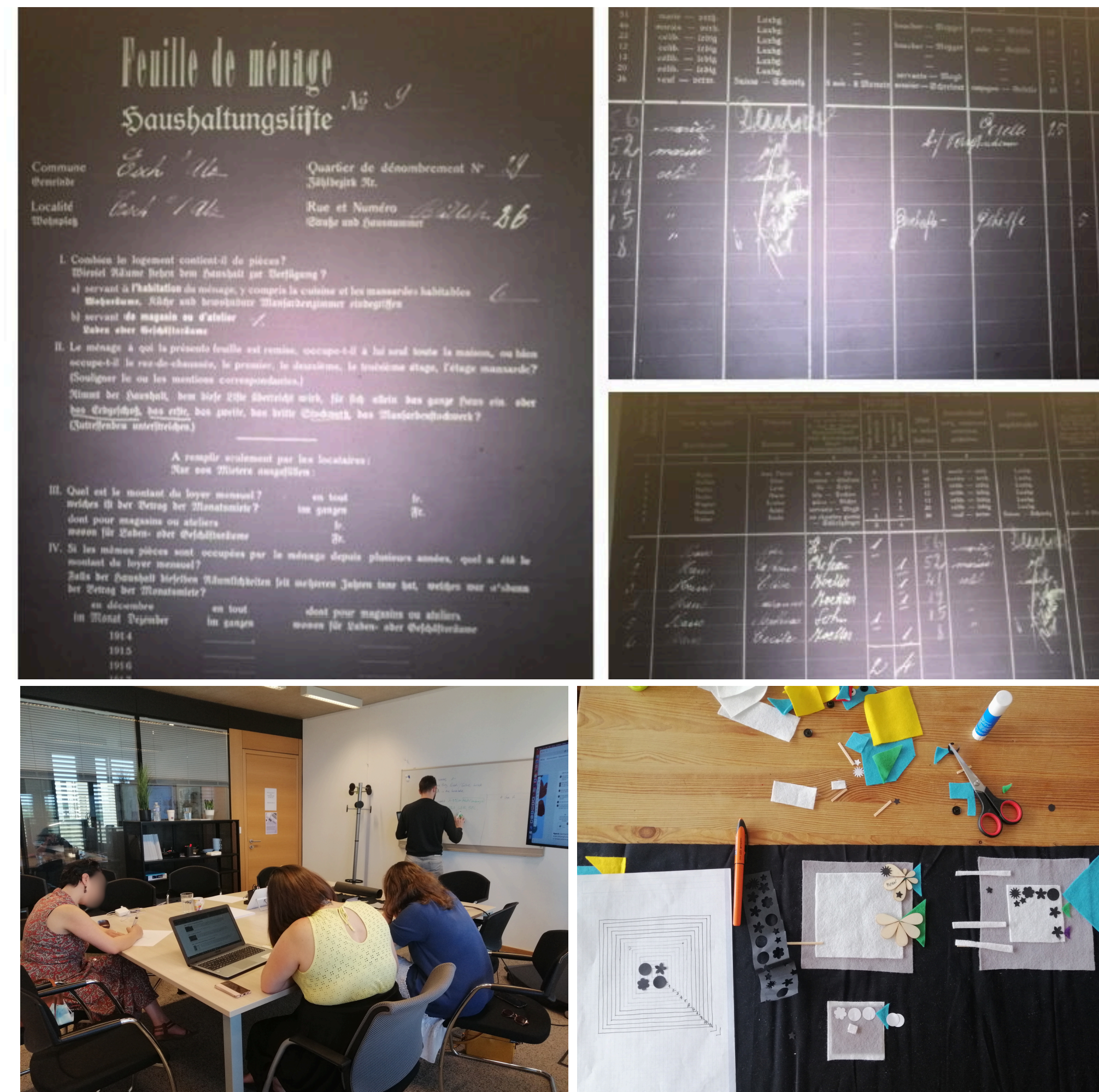
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Custom physical representations offer innovative ways to explore and understand historical data. This project used 1922 census data from Brill Street in Esch-sur-Alzette, applying a human-centered approach to visualize household and inhabitant variables, to create an interactive experience that connects today's residents of the street and town with the street's history.



Figure 1 - Interaction with participants after a public lecture at the university



Figures 3 - 7 from top to bottom and left to right: (1 - 3) Example of a filled-out census sheet from Brill Street in 1922. Photograph of a microfilm reader screen, National Archives of Luxembourg (ANLus), R. Pop. 2207/2222; (4) Students brainstorming design ideas during a workshop; (5) Prototypes with different materials.

04. Results

- The physical display quickly drew attention from passersby, sparking curiosity, especially among adults who often formed their own interpretations of how to read it. However, our ability to engage with them was limited by our availability and language barriers. In some cases, interactions in the café setting extended for over an hour.
- The colorful representation of nationalities was central to many interactions, often prompting discussions about participants' own migration histories. This frequently led to explorations of the reasons behind segregated and mixed households, steering the conversation toward historical legal frameworks and evolving social norms.
- The audience was also drawn to the few interactive design elements.
- Portuguese migrants, the largest migrant group in Esch and Luxembourg, often associated their significant presence since the 1970s with the strong representation of blue (denoting Italians) since 1922. This challenged the mistaken assumption that Portuguese residents had been in Esch for much longer than they actually had.
- People compared their own households to those depicted in the physical display, reflecting on questions such as: How many people in their household are employed? How 'crowded' do they perceive their living arrangements to be now, or how crowded were they when they were younger?
- Many people requested to see specific houses, which was not initially planned for, so we had to refer back to the data sheets to locate the houses of interest. This unexpected focus on the raw data sparked additional inquiries about other available houses and different census years.
- Highlighting the limitations of historical sources in the final physical display remains challenging, as translating these sources into a uniform visual vocabulary tends to obscure their organic nature, ambiguous interpretations, and shifting contexts.
- This type of representation removed digital barriers, any data literacy requirements, and overcame the lack of access to historical archives.



Figure 9 - Example of the physicalization of a household

HOW TO READ IT

The data used for this visualization has been extracted from the population census household forms of Brill Street in 1922, from the Luxembourg National Archives.

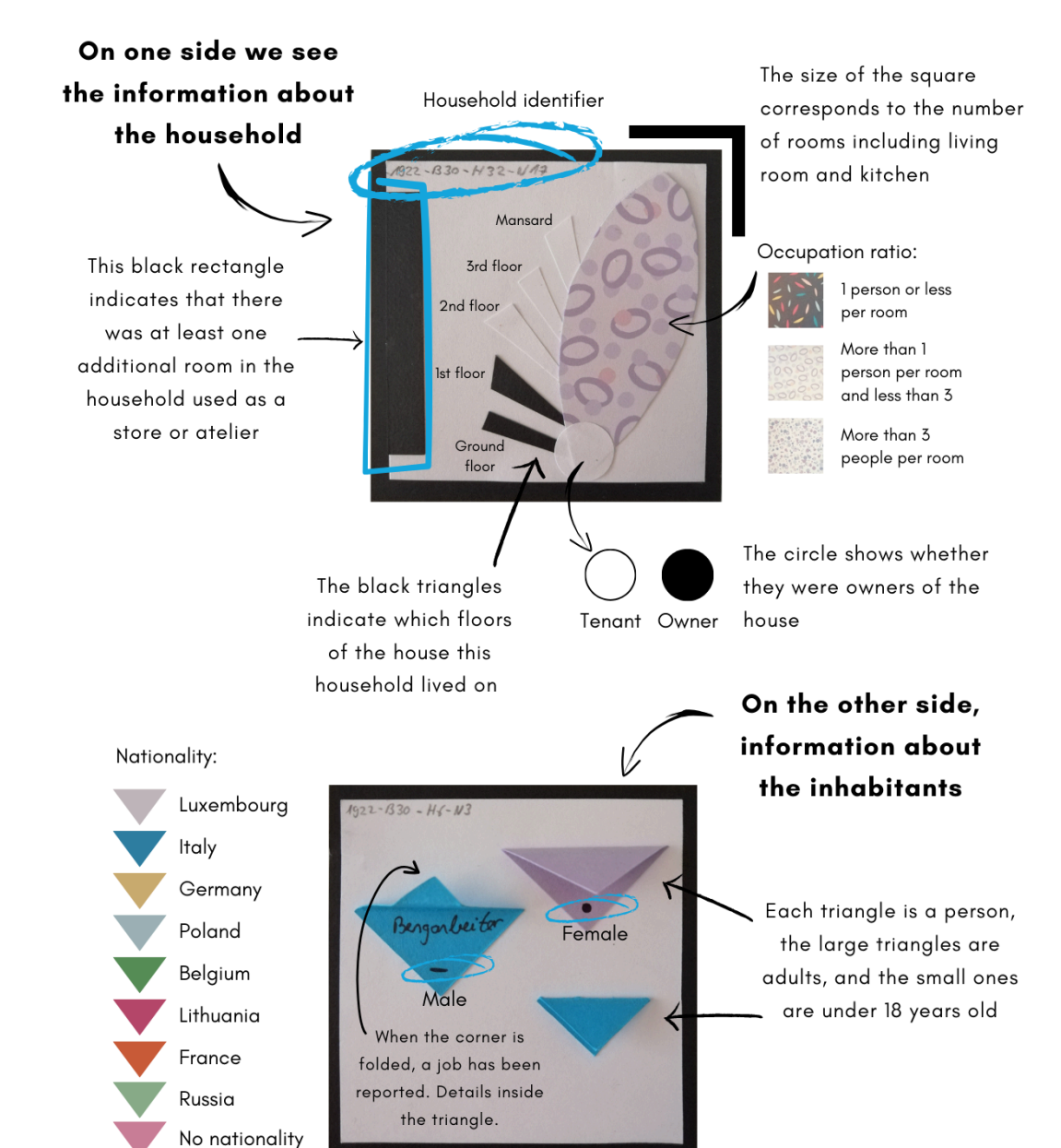


Figure 10 - Instructions on how to read the visualization, which were printed in several languages.

05. Conclusions & Future Research

The use of custom visual encodings and the physicalization of historical data successfully captured public attention in our case study. This engagement sparked conversations in which citizens not only challenged and expanded their historical knowledge but also contributed additional information to the researchers. This approach can serve as a model for other public history projects targeting various audiences, such as schoolchildren or neighborhood associations, where participants could both interact with the representations and create their own data visualizations or physicalizations. Furthermore, it establishes a precedent for future formal evaluations of public interactions with different data representations.



For more information about the project:

01. Abstract

The physicalization of multivariate data on households and their inhabitants aims to present and actively engage residents with historical data about their neighborhood. This type of representation allows them to understand how to read and explore multiple variables at their own pace and potentially engage in a conversation with historians. This project aimed to understand how custom representations (other than standard statistical graphics, e.g. bar charts, scatterplots), and their physicalization can influence the retrieval and communication of information in the context of public history.

03. Methods

Data: The original census data, available on microfilm at the National Archive of Luxembourg, includes personal information about nearly 500 individuals and their living arrangements across over 100 households.

Design: We planned to visualize two levels of data aggregation: household information and details about each inhabitant. We envisioned using a double-surface material, with squares on one side representing the number of rooms in each household, and triangles on the other side representing each inhabitant with personal details. This approach would create a striking visual contrast between "crowded" and "empty" households. Viewers could walk around the panels to explore information from both perspectives. Potential designs were developed during a student workshop.

Construction Process: In addition to the analytical capabilities, we chose materials for their ease of handling by both children and adults, cost-effectiveness, and portability. We developed various prototypes using felt, wood, beads, buttons, cardboard, and pegboards. Ultimately, we selected two 3mm thick transparent plexiglass plates as canvases, each with two top holes for hanging, ensuring visibility from both sides. Colored cardboard, scissors, and glue were used to encode the data.

Evaluation: Our results are limited to this case study and are based solely on the researchers' observations of the open discussions with the public that occurred during three events: a workshop in the premises of a local association in Esch-sur-Alzette, a cafeteria near Brill street, and a public lecture at the university.



Figure 2 - People posing for a photograph in Brill Street (probably 1910s). Archive of the city of Esch-sur-Alzette

02. Introduction

Individual streets often have unique histories, such as Brill Street in Esch-sur-Alzette, which gained a reputation as an 'Italian Quarter'. Built in the late 19th century, it provided essential housing and commercial space for the expanding industrial town. While some long-term residents remember past tavern owners and shopkeepers, most inhabitants are forgotten, just as most of today's residents may leave few archival traces. Local myths and stories often dominate the collective memory. Our goal was to offer a fresh perspective on the street's history by utilizing an underexplored source with a non-narrative structure. We aimed to challenge prevailing narratives and provide locals with a means to connect with their street's past, compare their lives with former inhabitants, question the construction of historical data, and share their own viewpoints.



Figure 8 - Conversation with a neighbor during the workshop in a cafeteria.