Mapping Co-Exhibition Networks

Based On Dumbarton Oaks Exhibition Catalogs

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Abstract

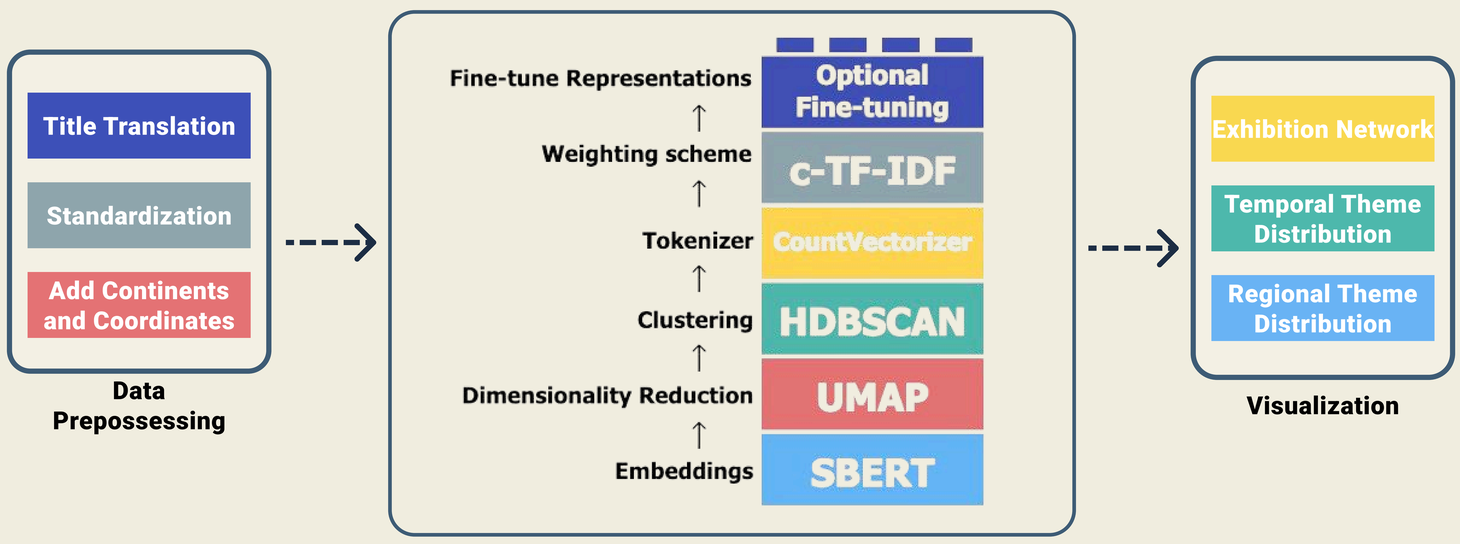
This study investigates the evolution of pre-columbian exhibition networks and narratives from 1930s to 2020s through computational topic modeling of exhibition titles. Using BERT (bidirectional encoder representations from transformers), we analyzed 416 exhibitions across Europe, North America, and Latin America to understand how exhibition themes evolved over time and varied across regions. The results reveal a clear transformation from collector-centric presentations to more diverse thematic approaches, with increasing emphasis on regional and indigenous perspectives.

Keywords: pre-columbian art; topic modeling; BERT; museum studies; digital humanities

Introduction

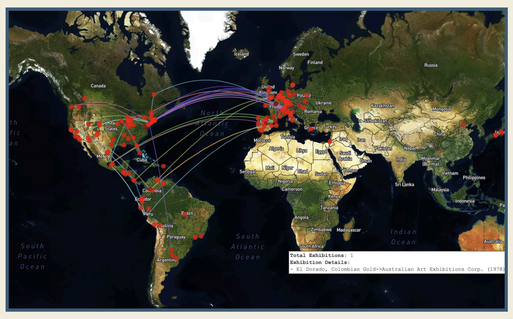
While traditional exhibition analysis often relies on manual categorization, computational approaches using natural language processing can reveal patterns across larger datasets.This research applies BERTopic to analyze how pre-columbian exhibition networks and narratives have evolved from the 1930s to the 2020s across different geographical regions. By examining exhibition data from the Dumbarton Oaks Library collection, a Harvard University research institute and premier resource for Byzantine and Pre-Columbian art research, we identify patterns in thematic focus, regional variations, and temporal shifts in exhibition approaches. Our work contributes to both museum studies and digital humanities by demonstrating how computational tools can enhance our understanding of cultural heritage presentation practices, while providing quantitative evidence for the evolution of curatorial approaches to pre-columbian art.

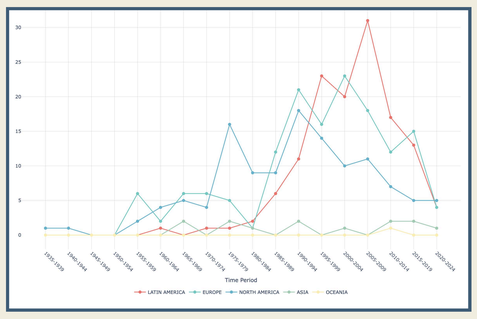
Methodology



Our methodological framework consists of three main components.
The core analysis implemented BERTopic through a sequential process. We began by using SBERT to convert exhibition titles into numerical representations. These embeddings were then processed through UMAP for dimensionality reduction, preserving essential semantic relationships while making the data more manageable. HDBSCAN clustering was applied to group semantically similar exhibitions, followed by CountVectorizer for text tokenization. We employed c-TF-IDF weighting to identify significant terms within topics, with an optional fine-tuning step using Maximal Marginal Relevance (MMR) to refine topic representations.

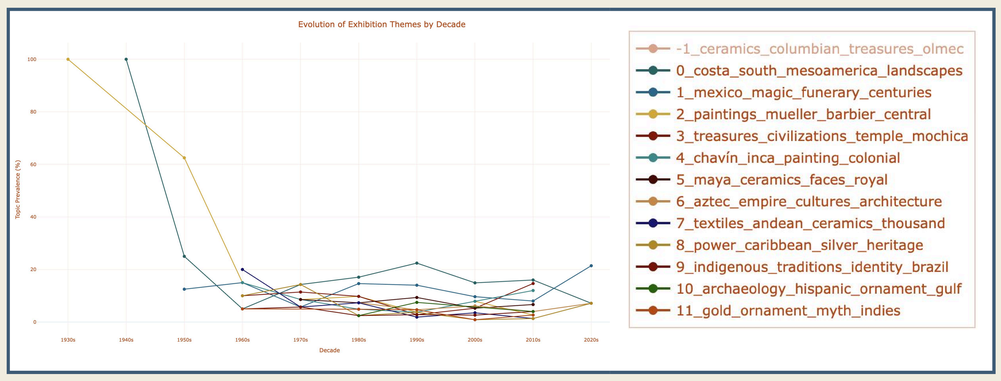
Result



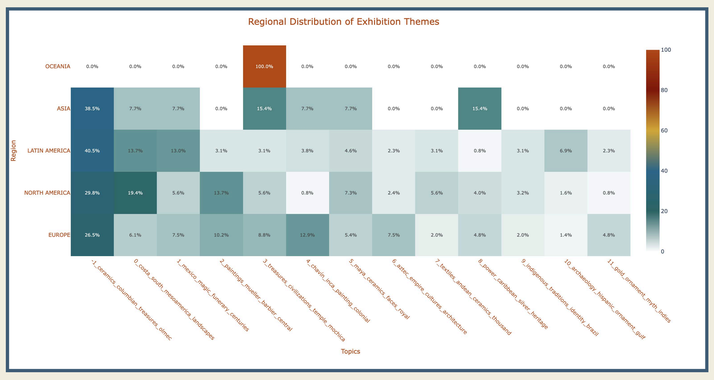


Exhibition Network And Timeline

European institutions (shown in red dots) maintained strong curatorial connections with Latin American exhibition sites, with dense networks of institutional collaboration crossing the Atlantic.
Latin America and Europe demonstrate the highest activity peaks, with Latin America reaching its peak around 2005-2009 with about 30 exhibitions. Europe shows consistent high activity from the 1990s onwards, while North American exhibitions maintained a steady but lower frequency.



Temporal Theme Distribution



Regional Theme Distribution

The application of the BERTopic algorithm resulted in 11 distinct topics. Topic -1 represents non-clustered documents that the algorithm couldn't confidently assign to any specific thematic cluster(appearing in 94 exhibitions).

Conclusion

1. Exhibition narratives transformed from collector-centric presentations to more diverse thematic approaches.
2. Regional analysis shows distinct institutional priorities: European institutions maintained broad thematic coverage, North American institutions focused on Mesoamerican studies, and Latin American institutions emphasized material culture and archaeological contexts.
3. While ceramics remained consistently important across regions and time periods, architectural themes gained prominence in later decades, indicating growing interest in broader cultural contexts.

Limitation

1.The reliance on exhibition titles alone may not capture the full complexity of curatorial narratives, and the English translation process could lose cultural nuances.

2.The dataset is limited to Dumbarton Oaks Library holdings and may not represent all Pre-Columbian exhibitions globally.