Call for Papers – 50th Annual Meeting of the Social Sciences History Association

What's for Dinner? A Novel Approach to European Luxury Foodstuff Consumption, c. 1500-1850

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Introduction

This paper investigates the long-term changes in the consumption of luxury foodstuffs in western Europe—i.e., France, Germany, Italy, Spain, the Netherlands, and England—between 1500 and 1850. During this period, European cuisine underwent dramatic transformations, including shifts in table manners, the types of ingredients used, and the manner in which meals were consumed. These cultural changes were closely connected to other significant historical developments, such as the invention of the printing press and European expansion. The printing press enabled the widespread publication of cookery books, facilitating access to information about new foods and culinary techniques. Meanwhile, European expansion exposed many to new foods, drinks, and cultural influences from abroad.[1]

Source Material: Historical Culinary Literature

The core source material comprises a diverse range of culinary literature, including cookbooks, dietary advice manuals, and works on carving and table setting, spanning the 16th to 19th centuries. Written in six major European languages—German, Dutch, French, Italian, Spanish, and English—these texts mirror evolving culinary practices and socioeconomic realities. Cookbooks re-edited multiple times are prioritized, as frequent re-editions suggest wider readership and significant cultural impact. Despite their richness, these texts present significant challenges. Ornate fonts, archaic language styles, and handwritten marginalia complicate digitization efforts. The fragmented distribution of these materials across libraries further impedes comprehensive manual analysis. This study employs advanced computational tools to digitize and standardize these sources into structured datasets, making them suitable for both quantitative and qualitative analyses.

Methodology: Semi-Automated Digitization and Structured Data Extraction

Using OpenAI's GPT-4o[2] and o1[3] models, the study builds a semi-automated digitization pipeline. The process begins with optical character recognition (OCR), optimized for historical documents using preprocessing techniques such as upscaling resolution, removing borders, and converting to

[1] Braudel, *Civilization and Capitalism, 15th-18th Century, Vol. I: The Structure of Everyday Life*, 1:203–9; Cowan, "New Worlds, New Tastes: Food Fashions after the Renaissance"; de Vries, *The Price of Bread*, 294f.

[2] OpenAI, "GPT-4o System Card."

[3] OpenAI, "OpenAI O1 System Card."

grayscale. OpenAI's models, particularly adept at recognizing ornate fonts and complex historical scripts, generate high-accuracy transcriptions.

Transcriptions are converted into structured datasets through JSON schemas,[4] capturing bibliographic metadata (e.g., titles, authors, culinary focus areas) from related culinary bibliographies and recipe data (e.g., ingredient lists, preparation methods, serving sizes) from the digitized culinary texts. This pipeline supports the analysis of ingredient usage, recipe evolution, and broader culinary trends. Sampling focuses on widely re-edited cookbooks to maximize sociocultural and socioeconomic relevance.[5]

Advanced NLP techniques identify thematic trends, ingredient substitutions, and recipe evolution over centuries. Methods such as topic modeling, clustering, and word embeddings quantify the diffusion of specific ingredients and culinary techniques. For example, the adoption of colonial groceries like sugar, tea, and coffee is traced to explore their integration into European diets and their sociocultural implications. Findings are contextualized within broader economic, social, and cultural dynamics. Historical price series from Amsterdam, London, and Hamburg illuminate the relationship between global trade, urbanization, and luxury food consumption. The analysis also considers legal frameworks, such as sumptuary laws and trade monopolies, highlighting their influence on consumer behavior.

Relevance to Complexity and Historical Research

This paper aligns with SSHA's 2025 themes by demonstrating how AI tools can address complexities in historical data. By integrating computational and historical methodologies, it provides replicable frameworks for understanding how cultural and economic forces shaped early modern consumption practices. The research illustrates the transformative potential of AI in historical analysis, offering deeper insights into the intersection of socio-economic forces and cultural practices.

Conclusion

This paper presents a novel methodological framework for examining luxury foodstuff consumption in early modern Europe. By leveraging production-grade multimodal large language models to digitize and analyze historical culinary literature, it uncovers key patterns in the transformation of European cuisine from 1500 to 1850. The findings emphasize the role of artificial intelligence in enhancing historical research and provide a foundation for further exploration of complex societal changes.

[4] OpenAI, "Structured Outputs."

[5] Baten and van Zanden, "Book Production and the Onset of Modern Economic Growth," 218.

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