

Auditing generative AI’s cultural imagination of cities

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Abstract

Generative artificial intelligence (AI) increasingly shapes how people perceive and navigate cities, influencing travel choices, urban understanding, and collective memory. Yet how generative AI systems represent urban culture remains largely unexplored. This study presents a systematic audit of such representations, applied to Stockholm as a case study. I prompted ChatGPT-4o and Midjourney with controlled queries about the city’s “cultural context” and compared their outputs with geolocated demographic data, photographs collected through fieldwork, and findings from previous research on Stockholm’s cultural and spatial dynamics. The analysis reveals a consistent narrowing of urban cultural representation: generative AI systems privileged iconic, consumption-oriented places concentrated in the city center while overlooking suburban and lower-income areas. Integrating text and image generation with geospatial analysis, I introduce a transparent and reproducible framework for examining cultural bias in generative AI. The findings expose how AI systems filter urban life and invite collaboration on responsible, context-aware AI that promotes diversity, equity, and inclusion in cities.

Keywords: AI, generative AI, generated images, ChatGPT, Midjourney, diversity, urban, architecture, bias, cultural context, equality, culture, context, comparative framework

1 Introduction

Generative AI increasingly filters urban life, shaping travel decisions, funding flows, and collective memory. When models consistently promote certain type of spaces, they risk reinforcing segregation, increasing prices of certain areas that push out long-term lower-income residents from certain districts, and erasing cultural diversity. Scrutinizing these representations is essential for cities seeking inclusive and fair AI adoption and for the ambition to lead on responsible, trustworthy AI.

Every day, millions of people use chatbots, recommendation engines, and generative image models to decide where to go, what to visit, and what counts as worth-visiting places in a city. These systems appear objective, yet the worlds they show are built from partial, opaque data.

Understanding what kind of city generative AI describes is a matter of social inclusion, fairness, and equality (Campo-Ruiz [2025a]; Campo-Ruiz [2025b]; Campo-Ruiz [2024]). Cities compete for talent, investment, and visitors, but

also struggle with segregation and uneven access to culture. If the algorithms guiding exploration favor certain types of areas, they risk amplifying inequality and narrowing what people imagine cities to be.

Cultural context matters because it shapes communication, behaviour, and social cohesion (Adobor [2021]). Misrepresentation by AI systems risks reinforcing stereotypes, exacerbating segregation, and undermining diversity (Fosch-Villaronga and Poulsen [2022]). Cities are increasingly governed not only by physical infrastructures but also by digital platforms and algorithms that filter reality (Crawford [2021]; Cugurullo et al. [2023]).

This research addresses these challenges by examining how ChatGPT and Midjourney construct narratives of Stockholm’s cultural context. The motivation is to reveal systematic omissions and distortions and to provide a replicable methodology for critically evaluating AI in scientific and societal applications.

2 AI Approach

This project introduces a comparative framework that systematically contrasts text and image outputs from generative AI with demographic statistical data and field-work.

ChatGPT-4o was prompted with consistent queries such as “List ten places in Stockholm that reflect the city’s cultural context”. The results heavily favoured central sites, such as iconic museums and commercial spaces, while neglecting suburban and lower-income areas (Campo-Ruiz [2025a]).

Midjourney’s bot on Discord was prompted with “a place in Stockholm that reflects the city’s cultural context”. The majority of generated images depicted cafés, decorative interiors, and idealised urban streetscapes, illustrating how the tool reduces culture to commercial and consumption-oriented aesthetics. These outputs are compared with GIS demographic data and field photographs, revealing mismatches between AI-generated narratives and the lived diversity of Stockholm’s neighbourhoods.

To analyse and compare the text and image outputs, I created a set of categories that describe how each AI system represents culture in the city. This system included three dimensions: type of place (such as museum, café, library, or community venue), location (central, intermediate, or suburban), and accessibility (public/free, semi-public, or commercial). These categories were inspired by classifications commonly used in cultural geography and were refined through several pilot tests. All results were analysed manually using the same guide to ensure consistency, and each item was reviewed twice for accuracy. For images, visual scenes were matched to the same categories as text; for example, an AI generated photo of a street café was classified as a “commercial social space.” This method allows a transparent and reproducible comparison between how different AI models imagine a city’s cultural life.

The novelty of the approach lies in its systematic and reproducible workflow. Predefined prompt sets ensure consistency and comparability across AI tools. GIS mapping and photographic documentation act as validation layers. This



Figure 1: The images produced with Midjourney's bot, representing Stockholm's cultural context, predominantly feature buildings and street-level cafes. Images generated with Midjourney's bot on Discord from the prompt: 'a place in Stockholm that reflects the city's cultural context' on 21 September 2024, first and second prompts. Published in: Campo-Ruiz. Artificial intelligence may affect diversity: architecture and cultural context reflected through ChatGPT, Midjourney, and Google Maps. Humanities and Social Sciences Communications, 12(1):1–13, 2025a.

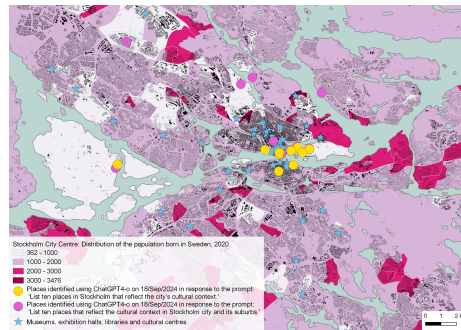


Figure 2: This map of Stockholm shows that the population living in the city is a mixture of nationalities. The places obtained from interacting with ChatGPT, which reflect the cultural context of Stockholm, are mostly located in the city centre. Actually, there are more landmark museums, cultural centres, and libraries (represented with blue stars) in and around Stockholm city centre than in the suburbs. Map 1:100 000 with vector data on the property map, the overview map, and place names (fastighetskartan, översiktskartan, ortnamn) from © Lantmäteriet. Source of distribution of population born in Sweden in 2020 © Statistics Sweden. Source of location of museums, cultural centres, and libraries: Ingrid Campo-Ruiz. Source of location of the places suggested during interaction with ChatGPT-4o: Ingrid Campo-Ruiz. Published in: Campo-Ruiz. Artificial intelligence may affect diversity: architecture and cultural context reflected through ChatGPT, Midjourney, and Google Maps. Humanities and Social Sciences Communications, 12(1):1–13, 2025a.

structured approach moves beyond anecdotal AI usage, establishing a generalizable framework for studying how generative AI systems filter cultural contexts.

3 Potential Impact and Collaboration

The research has three dimensions of impact:

- **Scientific impact.** By integrating AI text, image generation, and empirical validation, the framework provides a methodological contribution that can be applied across cities and disciplines. It aligns with calls for more interdisciplinary approaches to AI in urban contexts (Cugurullo, 2021; Tseng, 2023).
- **Societal impact.** The findings show that generative AI narrows the cultural imagination by overrepresenting curated institutions and commercial spaces and underrepresenting other alternative, suburban spaces. This risks amplifying inequality and segregation (Musterd et al. [2017]).
- **Collaborative potential.** The framework invites collaboration between AI researchers, urban scholars, cultural institutions, and policymakers. It supports evidence-based strategies for more inclusive AI by exposing biases and suggesting paths toward data pluralism and transparency (OECD, 2019; European Parliament, 2024; Lo Piano, 2020).

By making AI biases visible and tangible, this demonstration builds a platform for interdisciplinary collaboration, critical reflection, and methodological innovation.

4 Conclusions

This research introduces a novel comparative framework for analyzing how generative AI systems represent cultural contexts. By contrasting ChatGPT and Midjourney outputs with empirical evidence, it reveals structural biases that threaten diversity and social inclusion. The research offers a methodology and toolkit that researchers can extend to other domains of science and society.

Both text and image generative AI outputs can reduce the complex diversity of an urban landscape into a stereotyped vision of museums, cafés, and picturesque streets; neglecting the experiences of many that exist beyond the tourist gaze.

This work contributes both methodologically and socially by introducing an audit framework that exposes how generative AI shapes cultural perception in cities. The method offers a replicable way to identify spatial and cultural biases in AI-generated text and imagery, enabling comparative studies across languages, models, and urban contexts. Beyond its scientific relevance, the framework supports cultural institutions, urban creators, and policymakers in assessing whether AI tools reflect the diversity and inclusivity of their societies.

It complements the transparency principles of the EU AI Act by providing a concrete approach to evaluate and visualise cultural bias in generative systems. I invite collaborations across disciplines and sectors—from researchers extending the analysis to new settings to cultural and civic actors applying it toward responsible AI adoption in cultural communication.

This research highlights the dual role of AI: as a powerful tool for knowledge generation, but also as a filter that must be critically examined if it is to serve diversity, equality, and democratic values. This analysis makes tangible the ways AI systems represent and filter cultural contexts. By contrasting generative outputs with demographic statistics and fieldwork data, it highlights the risks of reducing cultural diversity and the importance of integrating AI tools with broader knowledge systems. The methodology aims to spark dialogue among researchers and practitioners about designing AI that promotes inclusivity, diversity, and fairness in science and society.

References

- H. Adobor. Open strategy: what is the impact of national culture? *Management Research Review*, 44(9):1277–1297, 2021.
- I. Campo-Ruiz. Controlling the environment with artificial intelligence risks intensifying social inequalities and colonization. *Open Research Europe*, 4(16):16, 2024.
- I. Campo-Ruiz. Artificial intelligence may affect diversity: architecture and cultural context reflected through chatgpt, midjourney, and google maps. *Humanities and Social Sciences Communications*, 12(1):1–13, 2025a.
- I. Campo-Ruiz. Spaces for democracy with generative artificial intelligence: public architecture at stake. *AI & SOCIETY*, pages 1–16, 2025b.
- K. Crawford. *The atlas of AI: Power, politics, and the planetary costs of artificial intelligence*. Yale University Press, 2021.
- F. Cugurullo, F. Caprotti, M. Cook, A. Karvonen, P. McGuirk, and S. Marvin. *Artificial intelligence and the city: Urbanistic perspectives on AI*. Taylor & Francis, 2023.
- E. Fosch-Villaronga and A. Poulsen. Diversity and inclusion in artificial intelligence. *Law and artificial intelligence: Regulating AI and applying AI in legal practice*, pages 109–134, 2022.
- S. Musterd, S. Marcińczak, M. Van Ham, and T. Tammaru. Socioeconomic segregation in european capital cities. increasing separation between poor and rich. *Urban geography*, 38(7):1062–1083, 2017.