Abstracts

Mercedes Bunz, The Role of Culture in the Intelligence of AI

Artificial intelligence has received a new boost from the recent hype about large language models. However, to avoid misconceptions, it is better to speak of 'machine intelligence'. In addition to reflecting on current processes, the cultural sector can benefit from very specific machine learning approaches to transfer literary methods such as 'distant readings' and find new connections in cultural data. In light of resource and exploitation problems, what is needed is a 'critical technical practice' (Agre) that brings together various actors, productively engages with AI's own logics and error cultures, and uses its potential to cope with the flood of information.

Daniel M. Feige, Why AI Cannot Think

In the context of the recent interest in large language models (LLMs) and image creation using artificial intelligence, the debate about whether AI is capable of reasoning arises again and again. This paper argues that it is a mistake to understand the outputs of artificial intelligence in terms of an expression of thinking. It draws on both phenomenological arguments (Dreyfus, Cantwell Smith) and arguments from the context of an analytic anthropology (Davidson, McDowell): To be a thinking being, one must be able not only to operate with representations of the world, but also to understand them as representations of the world. To be a thinking being one also has to be a bearer of a form of life.

Arno Schubbach, AI and Art: Arguments for Practice

Recent advances in the computer generation of pictures using methods and programs from artificial intelligence research, or, more precisely, machine learning, have once again raised the question of whether computers can make art. Based on A. Michael Noll's early experiments with computer art from the 1960s, I argue by contrast that even the latest tools cannot do without human work and can only be part of an artistic practice thanks to this work. Rather than asking whether machines can make art, we should therefore develop creative practices in which it is possible to leverage the potential of new techniques for design and art.

Oumaima Hajri, The Hidden Costs of AI: Decolonization from Practice back to Theory

This paper is dedicated to the ethical and societal aspects of artificial intelligence and focuses on two main topics: the hidden costs of AI and the importance of taking recourse to theory. Investigating the hidden costs of AI is crucial because, while there is a positive narrative surrounding its potential benefits, we must also consider its impact. Who benefits from it? And who is further marginalized? In addition, understanding the underlying logic(s) and theories is essential before jumping to technological innovations, in order to prevent the reduction of complex societal problems to mere technological solutions.

Lukas Fuchsgruber, Dead End or Way Out? Generating Critical Information about Painting Collections with AI

This paper presents issues from critical research on AI in general and attempts to apply these criticisms to the museum sector. AI projects in museums should critically document the use of these algorithms, the use of labour, datasets, and industrial technologies, and how they assess the impact of these facts on their methodology. Secondly, the text shifts the focus to digital collaboration in producing and applying training data. The existing power alliance between museums and the digital industry can be confronted by linking digital art history and social questions—thus necessitating collaborations with social studies and social movements.

Oonagh Murphy, Power, Data and Control: AI in the Museum

The use of artificial intelligence technologies is becoming more prevalent in museums, and with these emerging technologies come emerging forms of museum practice. Aligning the technological possibilities of AI with the ethical and social responsibilities of museums has led to an emerging area of museum practice that focuses on power, data, and control within the context of museum collections and visitor management. This paper presents a range of ethics frameworks and models that can be used to support museum professionals working at the cutting edge of this burgeoning field.

Sonja Thiel, Managing AI: Developing Strategic and Ethical Guidelines for Museums

How can a strategy and ethical guidelines be developed for the use of AI in museums? Based on the Creative User Empowerment project, in which management and ethical issues have been discussed, this paper presents lessons learned and guiding principles and questions that can be used as a starting point for the ethics and management of AI solutions in museums. The paper concludes with a proposal for the future role of museums as facilitators of ethical discussions in different areas of AI,

based on their core competencies of mediation, education, and reflection in relation to collections.

Christoph Bareither, Museum-AI Assemblages: A Conceptual Framework for Ethnographic and Qualitative Research

How can we better understand the role of artificial intelligence in museums and critically evaluate their potential for professional museum work? This chapter introduces an analytical concept of museum-AI assemblages: sociotechnical ensembles that constitute, stabilize, and transform the constantly changing relations between AI technologies, human beings, material objects, and real or virtual environments in the context of museums. The concept is designed to foster ethnographic and qualitative research that can provide insights into the transformations that museums are currently undergoing due to AI technologies.

Baptiste Caramiaux, AI with Museums and Cultural Heritage

This paper discusses AI in the context of cultural heritage. First, I contextualize what we call AI, particularly with respect to infrastructure. With this representation in mind, my first objective is to outline the opportunities that AI can bring to these sectors, as identified in a series of reports and white papers edited by European institutions. In these reports, we have, however, barely grasped the need for stakeholders in these sectors to have their say on how they see this technology and how it should be integrated into their practice and organizations. My second objective is thus to highlight the fact that AI is not just a source of opportunities, as this would obscure the sociocultural and sociotechnical implications of integrating AI into existing practices.

Isabel Hufschmidt, Troubleshoot? A Global Mapping of AI in Museums

This paper introduces a global mapping on the use of artificial intelligence in museums. It was conducted in collaboration with students in the master's program Expanded Museum Studies at the University of Applied Arts Vienna. Guided by the central research interest of identifying the motivations, contexts, goals, and challenges surrounding the use of AI in museums, the mapping aims to help assess the relevance and development prospects of AI in the museum field, both from a global perspective and on a comparative basis.

Clemens Neudecker, Digital Curation and AI: Opportunities and Risks for Cultural Heritage Institutions

Numerous use cases, from text recognition to image analysis or classification to contextualization, have already demonstrated how digitization and curation can benefit from the use of AI. But applying black-box technologies from the private sector to cultural data without fully understanding the implications also involves risks.

This paper presents two examples of the adoption of AI in cultural heritage from the Staatsbibliothek zu Berlin (Berlin State Library), highlights some of the recent criticisms of data practices in the domain of AI, and offers ideas and suggestions regarding the potential role and contribution of digital curators and cultural heritage institutions for the benefit of AI.

Fabio Mariani, Lynn Rother, Max Koss, Teaching Provenance to AI: An Annotation Scheme for Museum Data

Our paper addresses how artificial intelligence technologies can transform museum records of provenance into structured and machine-readable data, which is the first critical step in undertaking a large-scale cross-institutional analysis of object history. Drawing on research on natural language processing (NLP), we have identified sentence boundary disambiguation and span categorization as highly effective techniques for extracting and structuring information from provenance texts. Our paper focuses on a provenance-specific annotation scheme that enables us to retain historical nuances when constructing provenance linked open data (PLOD).

Tabea Golgath, The Funding Program LINK—AI and Culture: Five Lessons Learned after Five Years

Given the immense impact of AI on society and the world of work, a major impact on culture can also be assumed. In which areas in the field of culture is AI being applied and what are the consequences for human artists? Is interdisciplinary collaboration between culture and science easily possible and how is authorship being changed by technology? Over the past five years, the LINK funding program has been trying to answer fundamental questions with the help of experiments. A special AI school for artists and mixed collaborations between experts in AI and culture have produced valuable insights. There is no doubt that culture has the possibility to make AI more transparent and to question it critically at the same time.

Luba Elliott, Discovering Culture with AI

The past few years have seen a rapid development in AI capabilities and applications, including in the fields of art and culture. Machine learning tools now find a variety of uses in cultural institutions, such as improving accessibility, aiding research, and providing new forms of audience engagement by means of roaming robots, deepfake installations, chatbots, and interactive image processing applications. Museums simultaneously serve as venues for AI art exhibitions and discussions of technology ethics. This paper provides an overview of creative AI practices of cultural institutions, showcases artistic exploration with AI, and considers tools for public engagement with museum collections.

Marion Carré, Post-Truth: Archives, GPT-2, and Fake News

This paper explores the intricate relationships between art, AI, archives, and truth through delving into the creation and detection of fake news and forgeries. By means of AI-generated texts, the study examines the living nature of archives and the impact of crowdsourcing on truth perception. AI's dual role in facilitating forgery and aiding detection is explored, thus emphasizing the importance of critical thinking and education as safeguards against deception. Museum professionals play a crucial role in raising awareness about the challenges posed by digital manipulation.

Roland Fischer, Imposter Syndrome: GPT-3 between Fact and Fiction

This text delves into the role of fiction and storytelling in the context of GPT-3, a powerful language model with the ability to generate human-like text. Drawing from fiction theory and historical examples of illusionism such as the Mechanical Turk, the discussion highlights the potential of GPT-3 for entertainment and creative applications. By examining the connection between the art of storytelling, imposture, and the emergence of artificial intelligence, the text provides insights into the blurred boundaries between human and machine-generated content. The discussion also considers the cultural and psychological implications of engaging with machine-generated fiction in societies with a deeply ingrained appreciation for the art of storytelling.

Tillmann Ohm, Algorithmic Exhibition-Making: Curating with Networks and Word Embeddings

This paper characterizes the potential of networks and embeddings for curatorial selection processes using the case of our algorithmically curated exhibition at HALLE 14—Center for Contemporary Art Leipzig. The curatorial process involved the construction of an undirected bipartite network of artworks and associated keywords, further enriched with keyword embeddings based on the ConceptNet Numberbatch dataset. The algorithmic selection of artworks was initially topic-guided and based on keyword associations. Three distinct communities within the network were then used to divide the exhibition into subtopics. Visualizing these communities created a coherent, conceptually focussed display serving both curators and visitors, demonstrating as such the capacity of network-based analysis in curatorial practice.

Nicole High-Steskal and Rainer Simon, Evaluating the Blackbox: Linking Viennese Art through AI

The pilot project LiviaAI examines the use of artificial intelligence to identify connections between objects from three Viennese museums (Wien Museum, Museum für Angewandte Kunst, Belvedere Museum Wien). In the first project phase, collection metadata and their creation were examined in order to derive specifications

for an AI model for similarity determination. In the current phase of the project, a model that uses the metadata of a selected collection as input to learn cross-collection visual representations of similarity is being developed. The goal is to evaluate the model in terms of its practical utility for curators and museum visitors and to gain insights into AI decision-making mechanisms.

Lukáš Pilka, Clouds of Symbols: The Digital Curator Project

In the Clouds of Symbols: The Digital Curator project, Lukáš Pilka explores the intersection of computer vision and art curation using the experimental web application digitalcurator.art. A key component of the app is quantitative iconographical analysis, which uses proprietary neural networks designed to classify motifs and symbols in historical artworks. The basis of the project is a unique, extensive database of 196,000 works, mostly paintings, drawings, and prints, sourced from 90 museums across Austria, Bavaria, the Czech Republic, and Slovakia. The database and symbol detection focuses on Central European art, thus reflecting the shared cultural history of the region.

Sonja Thiel and Etienne Posthumus, xCurator: AI Curation Tool for Museum Data & User Empowerment

The Badisches Landesmuseum Karlsruhe and the Allard Pierson Amsterdam collaborated on the project Creative User Empowerment (2021–23), resulting in the development of the xCurator tool. This AI-powered curation tool enhances the accessibility of and engagement with digital museum collections. It uses AI technologies to suggest relevant objects and information based on individual user interests, thus providing them with a personalized and more in-depth exploration of the collection. Users can interact with large language models (LLMs) enriched with collection data, thus enabling them to write about and share objects. Despite being experimental, this signifies a shift in the role of museums and cultural heritage in the digital age.

Yannick Hofmann and Cecilia Preiß, Say the Image, Don't Make It: Empowering Human–AI Co-Creation through the Interactive Installation *Wishing Well*

Yannick Hofmann and Cecilia Preiß discuss the use of AI technologies in art by means of the interactive installation *Wishing Well*. *Wishing Well* by media artist Yannick Hofmann uses generative AI to transform the dreams, wishes, and fantasies expressed by exhibition visitors into images. Central aspects addressed are the use of AI technologies in art and the challenged identity of art in the face of new technical tools. The text discusses how co-creativity between humans and machines can be facilitated, as well as conveying ethical dilemmas that are to be expected in any use of generative AI. In this way, *Wishing Well* is representative of the 'intelligent.museum' project, within whose framework it was developed.

Oliver Gustke, Stefan Schaffer, Aaron Ruß, CHIM—Chatbot in the Museum: Exploring and Explaining Museum Objects with Speech-Based AI

CHIM—Chatbot in the Museum was a research project during which we developed a chatbot prototype that is able to provide answers to users' questions about museum objects. CHIM was developed by Linon Medien KG and the Deutsches Forschungszentrum für Künstliche Intelligenz (DFKI). The interactive conversation system was implemented as an Android-based demonstration app and tested at the Städel Museum, Frankfurt am Main, in the spring of 2022. The results showed that upcoming chatbot-based systems might motivate and encourage museum visitors and contribute to participation.

Melanie Fahden and Anja Gebauer, With AI to Art! Chatting with Helen of Troy and Co. through IBM Watson

Helen in front of burning Troy, Medea with a bottle of poison—what tales are told about these so-called femmes fatales? Or—even more importantly—what are the stories that they themselves would tell, and what questions do young people have for these characters? For the exhibition *FEMME FATALE: Gaze—Power—Gender* at the Hamburger Kunsthalle, teenage students assisted in the development of an AI-based chatbot within a participatory project. They selected artworks, generated criteria, and created content for a text-based dialogue system. Artificial intelligence facilitates lively conversations with six characters, making themes around the myth of the femme fatale accessible interactively.

Ana Müller, Michael Schiffmann, Anke Neumeister, Anja Richert, Exploring Beyond the Exhibits: Creating Knowledge for Social Robots in Public Spaces

The use of social robots in museums is a growing area of research. This study aimed to evaluate how visitors interact with a social robot connected to an artificially intelligent dialogue system. The study was conducted over a period of three weeks at the OZEANEUM museum in Stralsund using a Furhat robot and an AI backend system. During the study, we compiled a database of 3,268 utterances spoken in situated interactions with the robot. The study offers lessons learned and best practices for operators of social robots in public spaces, as well as regarding user expectations and systems knowledge. In conclusion, our findings suggest that social robots—if well designed—have the potential to significantly enhance the visitor experience in museums and other public spaces.

Franz Koeferl, Matthias Zuerl, Jitin Jami, Jindong Li, Dario Zanca, Bjoern Eskofier, Tracking the Visitor: Optical Indoor System for Visitor Research in Museum

The analysis of the success of any exhibition depends on the visitor experience. The data required for analysis is usually painstakingly collected by hand. We propose a

large-scale optical tracking pipeline to estimate visitor data such as visit trajectory, duration, and, potentially, other personal parameters like age, weight, and sex, yet remain ethically acceptable by obtaining visitor consent. We further show, in preliminary results, that the edge device has a localization error of 0.64 meters and an average precision of 0.2. With this work-in-progress, we intend to ensure a viable alternative to current data collection processes in museum research.

Michael Zöllner, Markus Bosl, Dirk Widmann, Moritz Krause, Symotiv: Virtual Insights into the Symphony Orchestra

The technologies for capturing motion and visualizing data have facilitated new possibilities for describing complex systems to a broader audience. We used the latest methods of motion analysis through machine learning and/or artificial intelligence and visualization in virtual and augmented reality (VR/AR) in order to analyse and explain how the Hof Symphony Orchestra works. We therefore showed diverse aspects from rehearsal to performance to a broad audience via interactive immersive extended reality experiences. In this paper, we describe the process and the implications of tracking the movement and gestures of visitors in cultural spaces.

[transcript]

PUBLISHING. KNOWLEDGE. TOGETHER.

transcript publishing stands for a multilingual transdisciplinary programme in the social sciences and humanities. Showcasing the latest academic research in various fields and providing cutting-edge diagnoses on current affairs and future perspectives, we pride ourselves in the promotion of modern educational media beyond traditional print and e-publishing. We facilitate digital and open publication formats that can be tailored to the specific needs of our publication partners.

OUR SERVICES INCLUDE

- partnership-based publishing models
- Open Access publishing
- innovative digital formats: HTML, Living Handbooks, and more
- sustainable digital publishing with XML
- digital educational media
- diverse social media linking of all our publications

Visit us online: www.transcript-publishing.com

Find our latest catalogue at www.transcript-publishing.com/newbookspdf