Digital art history – methods, practices, epistemologies : Conference Program & Book of Abstracts

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dabar

DIGITALNI AKADEMSKI ARHIVI I REPOZITORIJI

INTERNATIONAL CONFERENCE

Digital Art History – Methods, Practices, Epistemologies

Organizers:
Institute of Art History, Zagreb
SRCE – University of Zagreb, University Computing Centre

Conference location:
SRCE – University of Zagreb, University Computing Centre
Josipa Marohnića Street 5, Zagreb, Croatia
12th–14th November 2018

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REPUBLIKA HRVATSKA
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I OBRAZOVANJA

By gathering a wide array of scientists and practitioners from the fields of digital history of art and architecture, visual culture studies, social and cultural history studies, museology, media studies, sociology, information science, arts, and design, this conference aims to offer an overview of both theoretical and experimental academic research in the emerging field of Digital Art History. Given the relatively recent development of the field and its loosely defined disciplinary boundaries, we also want to present and discuss the possibilities for the application of digital tools, techniques and methodologies drawn from Information Science and related disciplines, to the existing and emerging art-historical fields of practice (archival, documentation, visualisation, etc.) in order to create new approaches and understandings of art history, architecture, design and visual culture. Throughout the three days and ten sessions of the conference, our aims are, indeed, manifold. We shall focus both on the premises and consequences of the main theoretical and epistemological currents and practices models that have recently started to emerge out of the academic field of Digital Art History (collaborative research groups, research networks and platforms, as well as the principles of interdisciplinarity, transdisciplinarity). At the same time, we will open up space for presenting new and experimental projects and collaborative platforms, all with the aim of discussing Digital Art History polices and its future trajectories – 'power centres' and 'new' peripheries, economic, social, political and cultural dimension of Digital Art History and its capacity for self-reflection. The conference is bringing together established and early career academics, researchers from independent digital labs, and professionals involved with the transdisciplinary research initiatives from over dozen countries across the world (USA, Canada, Brazil, Italy, France, Portugal, Spain, Luxembourg, Serbia, Russia, Hungary, Austria, Denmark and Croatia), who are interested in critically examining recent methodological, analytical and theoretical developments in the field of Digital Art History. Organized by the Institute of Art History, SRCE – University of Zagreb, University Computing Centre, and DARIAH-HR in Zagreb, the ambition of the conference is not only to connect individuals and create a fertile ground for networking and future exchange among the participants, but also to engage and (re)affirm the role of local institutions which have pioneered – each in their own field of practice – in digital humanities in the local context. In this sense, we want to pay special attention to the "material basis" of Digital Art History, i.e. the infrastructures that form the institutional and technological framework of Digital Art History: development, and accessibility of digital research infrastructures, services and resources (libraries, archives, data repositories, databases, digital museum and cultural heritage collections); institutional support and availability of new technologies.

Introduction

DARIAH day

The closing event of the Conference, DARIAH day, is conceived as an insight into the DARIAH-EU activities which are supportive of a variety of networking practices in the field of Digital Humanities. Open to all Conference participants, the meeting will also be used as an opportunity for presenting DARIAH-HR initiative for the establishment of Art, Art History & Technology Working Group, with the aim of bringing together artists, art historians, designers, media theorists, IT specialists, and other professionals involved with new digital media and communication technologies.

In 2005, Eiko Ikegami stated in her monograph Bonds of Civility: "The increasing density, scale, and complexity of various kinds of network relationships in specific historical contexts (…) create conditions of possibility for new cultural emergent properties to arise. (…) the increase in the density of intersections between networks intensifies communication and in the process produces increasingly varied publics. These publics, in turn, can provide opportunities for cultural innovation." She added that "once a culture has arisen as a manifestation of complex network systems, the culture as an emerging property retains its own qualitative distinctiveness and social dynamics that cannot be exhausted by or reduced to the network relations that gave rise to it." (Ikegami, 2005, 57)

Johannes Preiser-Kapeller:
Mapping Entanglements.
Networks of Humans,
Things and Narratives

While Ikegami focused on the period of Tokugawa Japan (1600–1868), I will use her analysis as a starting point for a wider-ranging discussion of theoretical approaches and practices of (historical) network research and digital visualisation, which allow us to explore the emergence of "cultural networks". Such networks not only include humans, but also objects (created, transported, used or viewed by humans), and the narratives created and modified in the processes of communication between humans and non-humans; these narratives, in turn, also establish frameworks for further interpretations and elucidate network ties. I approach these entanglements with a mixture of theories, ranging from Actor Network Theory (Bruno Latour) and Systems Theory (Niklas Luhmann, Harrison C. White) to Complexity Theory and Archaeology. The aim is to combine these concepts and instruments into a toolkit, which can be used in a productive way for research on actual data beyond meta-theory.

The digital turn indeed involved profound transformations in all orders – social, cultural, political, and institutional – giving rise to the configuration of new forms of access, production, distribution and comprehension of knowledge. The set of practices and thoughts that we today call 'Digital Art History' emerged as a product of this technological enthusiasm, and of the self-awareness of a certain backwardness regarding the disciplines encompassed in the field of Digital Humanities.

Nuria Rodríguez-Ortega: Epistemologies and Critical Re-Evaluation of Digital Art History Practices

Consequently, most of the rhetoric that we have seen to date has emphasized the disruptive potential of the digital turn that has resulted f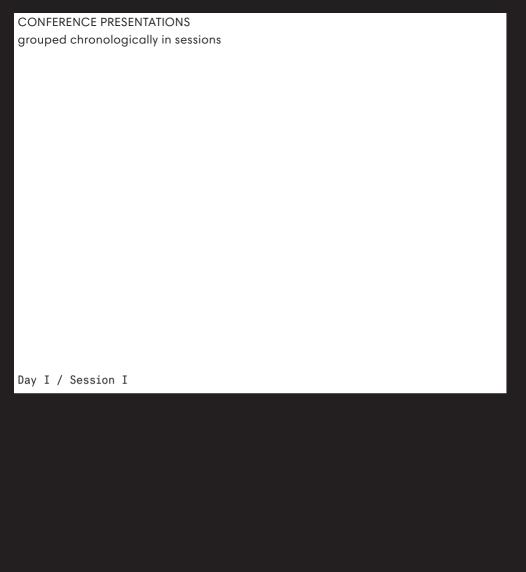rom the opportunities offered by technical advances, computational methods, and digital media for the production of "new" knowledge. However, now that the post-digital society with its pos-humanistic thinking is under way, it is time to re-examine this argument and to re-evaluate the development of Digital Art History in light of this new scenario. Certainly, research practices must respond to the material conditions and to the production systems that are of their time. Therefore, given the consubstantial bond that exists between technology, culture and knowledge, we must ask ourselves how the 'techne' that define our time is transforming the intellectual and methodological processes on which the art historical knowledge has traditionally been founded, even beyond our own conscience and will. This approach involves leaving behind the instrumental perspective that sometimes is associated with the 'digital factor' in order to place issues of epistemological, methodological, cultural and institutional order in the center of a reconsidered critical discussion. For example, we need to examine how it modified the way we produce knowledge in the context of a new ontological system in which human beings, non-human beings, objects, infrastructures, and programming languages are involved in the creation and circulation of knowledge. By the same token, we should re-evaluate the limits of machines, algorithmic calculations, and lines of code in the process of producing art-historical knowledge. In other words, we need to think about what is being lost along the way that should be important to retain. That is why thinking about Art History from a "post-digital" perspective leads us to a self-reflexive attitude, which also means bringing to the center of the discussion ethical issues to the extent that the hyper technological world, where our lives unfold, entails new responsibilities for art historians. Therefore, one of the main questions that we need to pose concerns not only what we can do with the technology, but also what we "should" do. In the end, this implies the crucial question of what does it mean to be an art historian in the post-humanistic age.

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day I / Session I

The paper discusses the process of recognizing the unofficial Soviet art and the dynamics of prestige of various generations of artists in the Post-Soviet art scene, represented in the early 1990s art criticism. Although art criticism is one of the major resources of legitimization in the restricted field of cultural production before 1991 (Bourdieu, 1993; de Nooy, 1999), one can barely talk about it as a relevant source of recognition for the unofficial art. Official art magazines ignored the existence of these artists, while samizdat was very restricted as a professional media: for example, as Solomon (1999) puts it, Kabakov was not mentioned in Boris Groys' famous article on Moscow romantic conceptualism (1979) due to political reasons. On the contrary, the early 1990s was the time when Russian, namely Moscow and St. Petersburg, criticism burst out: not only because of the freedom of speech and the change of cultural policy, now recognizing all forms of art, but because of economic reasons as well – writing about art was among those rare professional jobs one got paid for. The research was carried out in collaboration with the archive of the Garage Museum of Contemporary Art. The data included 824 articles from three major paper media of that time: Moscow Art Magazine ('Художественный журнал,' 1993-1995), newspaper Today ('Сегодня' 1993-1996) and Kommersant (1993-1999), and was analysed employing social network analysis and qualitative content analysis. The research outcomes draw on the importance of heritage of unofficial art, widely represented in all three media, and the interconnectedness of various generations of artists in critical debates (i.e., new stars of political actionism are often contrasted with the 1970s Collective Actions' works). The paper also analyses the art community – specifically, artists' careers and their social-demographic attributes – and problematizes the under-representation of female and non-capitalist artists in the scene.

Margarita Kuleva:
The Soviet Underground
Outcrops: Transitional
Field of Contemporary
Art in Early Post-
Soviet Press

The beginning of the new millennium in Croatia was characterised by the appearance of a number of NGOs working in the cultural field, their quick proliferation and consolidation that resulted with a cultural complex, today most commonly called the independent cultural scene. Although their legal status serves as the first identifier, the affiliation of these organizations to the independent cultural scene relies more upon their shared aesthetic and ideological preferences, which are reflected in horizontal and participatory working models, critical stance toward the socio-political context, close collaboration with other sectors, co-production and programme exchange on a local, regional and transnational level, as well as their joint effort to effect and advance local and national cultural policies. The independent cultural scene can thus be observed as a space where complex personal, social and spatio-temporal relations occur.

In other words, the spaces of networking of the independent scene can be observed and interpreted as "netdoms", a term coined by Harrison White to denote network configurations that include shared meanings and identities, thus bridging the gap between structure and culture. Taking as its starting point the local platform Zagreb – Cultural Kapital of Europe 3000 (2003–2005), and different programmes conducted within its scope by the leading organizations of the platform (Multimedia Institute, What How & for Whom, Centre for Dramatic Arts, Platform 9.81), the objective of this presentation is to demonstrate the innovative methodology developed with the project ARTNET, conducted at the Institute of Art History in Zagreb from 2014 onward.

Based upon art-historical research and subsequent interpretations, the presented research relies – from one standpoint – on exploratory network analysis of the local platform Zagreb – Cultural Kapital of Europe 3000, and transnational collaborations of its leading organizations, while – from the other standpoint – it relies on a qualitative structural analysis of interviews with key actors of the independent cultural scene, the goal of which is to bridge the gap between quantitative and qualitative analysis of networks in the cultural field.

Željka Tonković & Sanja Sekelj: Local Platforms, Transnational Networks, and the Tactical Organizing of the Independent Cultural Scene in Zagreb

Contemporary art world after 1989 witnessed a remarkable expansion and proliferation of various events, both within its commercial and non-commercial segment. Documented in artists' biographies, and mirroring the immense growth of the distribution network, lists of exhibitions read almost like maps, inseparably linked to the discussion of "globalization" of the contemporary art field. Taking the exhibitions as links between various actors in the contemporary art field (artists, curators, gallerists, art institutions etc.), networks of relations are established, that due to their complexity raising, among others, from the number of exhibitions, are possible to grasp only if read distantly (Moretti, F. 2013). That approach is followed in an attempt to address, on one side, the impact of territorial factors, and, on the other, the impact of artists' affinities, on the configuration of their exhibition networks. Departing from a broader analysis of processes of recognition of contemporary artists from Croatia in the post-1989 "globalized" contemporary art field, that encompassed the examination of worldwide exhibition activity of 61 artists from Croatia over a twenty-year period, this paper focuses on an association of artists that has been chosen as a case study for their shared ideological and artistic positions.

Tihana Puc:
Analyzing Subsystems
of Exhibition Networks
– The Case of
Contemporary Artists
from Croatia

The artistic association SIZ (meaning "self-managed interest community"), was founded in 2002 in Rijeka with the aim of collectively approaching the art market and the art system as a whole, as well as positioning the local scene within the international context. The crucial common denominator of the artists gathered around SIZ is their political and social engagement, which is at the same time a selection criterion for their gallery's exhibition program. The paper focuses on the exhibition networks of SIZ artists in order to explore if their shared ideological and aesthetic position is reflected in their exhibition networks. Further consideration of their position is given in relation to the commercial market and the market of knowledge (Graw, I. 2009), and the construction of their international "careers" is examined in that context. Exhibition data extracted from artists' biographies is analyzed computationally and complemented with interviews to shed light on selection mechanism, as well as on artistic choices that shape their networks.

This paper is a part of the larger research project "Observatory of Artistic Work", aiming to create a digital archive of contemporary art exhibitions and artists from Croatia, and thus contribute to the systematization of knowledge on contemporary art, as well as to research in the field of digital art history.

While a growing number of digital art history projects utilize Big Data, many art historians work on a much smaller scale, looking deeply into the work of one or a few individuals. This project explores how digital tools can assist art historical research into "little data." Barriers to such research include the geographic dispersal of archival materials; lack of or limited physical access to such collections; discrepancies between material classification (art vs. non-art); and the legal and ethical conditions restricting access to personal archives, which frequently contain references and insights into the professional activities of artists. Little Data in a Big World demonstrates the possibilities of increasing ease of research into individuals using the small set of available archival materials relating to Austrian-Italian artist Erika Giovanna Klien (1900–1957) as a case study. As a member of the 1920s Viennese art movement Kineticism (Kinetismus), Klien synthesised avant-garde techniques from Expressionism, Cubism, Futurism, and Constructivism to depict bodies in motion. Against a backdrop of the dissolution of empires, establishment of new nations, and shifting gender norms in interwar Central Europe, Klien explored the cultural dimensions of transnational exchange, writing about embodied cosmopolitan ethics in the arts. In 1929, Klien emigrated to the United States, where she taught art at the K-12 level until she died relatively unknown in 1957. A decade later, artist Bernhard Leitner discovered Klien's work and was instrumental, along with the Michael Pabst Gallery, in relocating her American artworks, correspondence, notes, and unpublished manuscripts to Europe in the 1970s. This material has since been dispersed piecemeal among several (mostly private) collections.

Our research is the product of an interdisciplinary collaboration between an art historian of Klien's work and an information scientist specializing in personal archives. As such, it is concerned with both the content of archival records and the custody, arrangement and accessibility of the records themselves.

Our presentation focuses on the first phase of our research, which consists of digitally mapping the dispersion of Klien's archival materials across multiple repositories and geographic locations. This visualization examines not only the physical locations of Klien's archives, but the types of institutions and collectors serving as their custodians, and the conditions governing access to them. Through the process of digitally mapping these collections, we illustrate both the movement of archival materials over space and time and the research activities involved in doing art history. Connecting together these disparate materials thus produces an example of the virtual consolidation of research material and a research product in its own right, making research into Klien accessible to a larger and more diverse scholarly community. Our presentation thus discusses the ways in which both digital points of access (including finding aids, metadata, and digitized documents) and digital art history projects such as our own may make visible the challenges and potential solutions to researching personal archives held in multiple private institutions.

Chelsea Gunn
& Rae Di Cicco:
Little Data in a
Big World: Digitally
Consolidating Dispersed
Personal Archives

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day I / Session II

Providing infrastructural support to scholarly research in the fields of history of art and architecture, art theory and critique, and above all the valorization and presentation of Croatian cultural heritage, the documentation funds of the Institute of Art History in Zagreb (IAH) comprise heterogeneous material forming several collections – Photoarchives, Plans Library, Archival Collections and Legacies, etc. Primarily developed as a museum information system for cultural heritage collections management, the Modulor++ platform is being implemented into the IAH infrastructure as a digital tool that provides an integrated approach to the versatile and complex documentation material that is produced, gathered, and applied in the dissemination of new knowledge by the IAH. The process of implementation is necessarily preceded by conceptualization and modeling of the Modulor++ platform's metadata framework to meet the specific requirements defined by the heterogeneous typology and complex structure of the material, with the ultimate objective of achieving semantic interoperability. Concurrent to the fast-paced development and increasing accessibility of new technologies and digital research infrastructures, the IAH documentation funds are experiencing a shift and advancement from the traditional documentation and production paradigms to a dynamic environment defined by the contemporary approaches in the field of digital humanities.

More precisely, the identified shift is perhaps best epitomized by the production and management of complex formats (digital-born photography, digital-born architectural plans and maps) with such properties and functionalities that support versioning and production of multiple derivatives, rather than single units, and their reuse for various purposes (documentation, research, presentation, and dissemination of new knowledge). The presentation will also demonstrate the use of applied standards (particularly CIDOC CRM) and semantic technologies (Linked Open Data & Resource Description Framework), and the integration of established controlled vocabularies (ICONCLASS and Getty Vocabularies: AAT; TGN; CONA; ULAN) within the Modulor++ platform, as well as the use of other public databases such as Metelwin, OpenStreetMaps (OSMF, ODbl), etc. The authors will address the identified challenges with full comprehension of differentiating between the terms digitization, referring to conversion into digital format, digitalization, referring to a series of digital data management processes, and digital transformation, referring to the overall effects of digitalization on the fields of digital art history, culture, and society as a whole.

Ivana Haničar Buljan, Petra Šlosel & Goran Zlodi: Modulor++ as a Tool of Support for Documentation and Research Infrastructure at the Institute of Art History: Experiences in Design and Implementation

The aim of this presentation is to outline the ways of organizing, managing and using digital/digitized data created by documenting conservation and restoration works on movable cultural heritage that undoubtedly serve as a valuable resource for many researchers. A century-old tradition of preserving and restoring movable cultural heritage in this area is accompanied by written documentation. It is legally required in Croatia that, after the conservation and restoration work on a protected cultural heritage is completed, the documentation remains available. In the last 20 years, in certain fields, as well as in conservation and restoration, paper documents, in some segments, have been completely replaced by digital technology. The advancement of the profession and digital technology requires constant work, good preparation and organization, in order to ensure easy-to-find, accessible and comprehensible information for the creator and user.

Sanda Milošević:
Conservation
and Restoration
Documentation of the
Movable Heritage on the
Digital Road

Conservation and restoration activity is interdisciplinary and a large number of experts work on the movable cultural heritage today: conservator-restorers of various narrow specialties, conservator-art historians, conservator-chemists, conservator-photographers, carpenters, etc. This means that they produce varied types and technical formats of documents. The largest holder of conservation and restoration documentation in Croatia is HRZ (Croatian Conservation Institute) whose main activity is the conservation and restoration of immovable/movable and archaeological cultural heritage. The HRZ database, BREUH, was created in the mid-1990s. The current platform has reached its limit in terms of change, and the data needs to be migrated to a new, more operational platform. Migration means preserving all existing data as it has been entered, followed by a thorough assessment of the organization of the entire system, in addition to the paperwork that needs to yet be digitized and appropriately incorporated into the digital material. The current organization of digital/digitized data for each subject is defined under an ID number within various categories consisting of narrative and factual input. Factual input is defined through downlinking, both with predefined inputs and the possibility of free input. Documents with different technical extensions are joined under an ID number according to the defined workflow. In addition to basic data on cultural heritage, research notes, the course of the works itself is documented and accompanied by a detailed photo-documentation. HRZ owns a very rich photo-documentation fund, which is part of many professional and scientific papers. With the current search capabilities, changes that have occurred over time show a steady increase in the need for searches on specialized topics. The unification of data under an ID number is undoubtedly a good practice and is to be maintained while terminological control will provide additional emphasis on the factual input and make the search much easier. We are confronted with the fact that the aforementioned interdisciplinarity, the creator through everyday work and the external user, expand the array of needs which is desirable, but also very easy to achieve through the possibilities of digital development.

Building Information Modelling (BIM) was originally developed for project management in the construction sector. However, due to the wide possibilities of use, the system has recently been applied to historic buildings (Historic or Heritage BIM - HBIM). It is a dynamic platform that has the ability to include different types of information that can be graphically and semantically united in one place, as well as a multidisciplinary system that, simultaneously and according to its needs, can be used by architects, construction engineers, geodesists, archaeologists, architects and other professionals. This enables interoperability and easier distribution of information among all the participants involved in the project. Its interactive character provides the ability to attach technical information to other information related to historical buildings, including historical, cultural or artistic information. Therefore, HBIM proved to be a powerful tool for documenting and recording historical building information, research, analysis and dissemination of knowledge of historical architecture.

In other words, HBIM provides opportunities such as:

Creating 3D digital models enriched with semantic information (e.g., the material, history, art and architectural values) that help in understanding the heritage either through models for documenting the current state of the building, or 3D reconstructions of missing heritage.

Reconstruction and presentation of important building phases. This allows the visualization of the changes made to the building throughout its history, and thus becomes a tool for re-examining the hypotheses set up in research as well as the current evaluation of the observed changes.

Since HBIM is compatible with the new VR / AR technologies, gaming, QR codes, GIS – and is, as such, suitable for use on mobile devices, it has the potential for better dissemination at multiple levels: as support of scientific research, improved understanding of heritage in society and the possibility of a virtual tour to the architectural heritage or sites that are difficult to reach.

Creating a HBIM library is based on different default parameters (e.g., specific architectural elements, designers, etc.) that can be associated with additional descriptive and numerical information (material, texture, building phases, etc.). Since data within a library can be quickly and easily compared, HBIM is a useful tool for analysis, interpretation, teaching, and mapping. The presentation will also include an overview of a one-year project of historical building research – the palace of the former Slavonian General Command in Osijek Fortress (18th century), analysed and interpreted using BIM software combined with a scanning laser and a thermal camera – the methodology adapted to measuring and interpreting historical facts and values of the researched building. The aim of the research was to selectively verify the interpretation of the building's genesis, the interpretation of its development based on new results, and the analysis of space. In addition to the results of the research, the multidisciplinary nature of the project, which has enabled the creation of a wider context of the historic building, will be emphasized, as well as ways of reflection and understanding of architectural heritage.

Margareta Turkalj Podmanicki & Dina Stober:
HBIM in Documentation, Research and Dissemination of Knowledge About Historic Buildings – Example of the Former Palace of the Slavonian General Command in Tvrđa

Established as the first documentation centre and archives for national art history, Fine Arts Archives have been continuously developing an information system and support for the expert and scientific community. In this paper, we will present the history of the Archives' digitization process started in 1998 – from simple Excel tables and Access databases, created for Fine Archives specific needs, to a complex open access digital platform structure (dizbi.hazu.hr), as a source of the growing field of digital art history. Through various examples we will show possibilities of a simple concept search at offline databases and more advanced possibilities of an online search based on the semantic web technology, available through the DiZbi portal, enabling connectivity of fifteen Academy units' digitized textual and visual material. In order to present digital objects in a more vivid and interactive way, new content is created through virtual exhibitions as one of the visually appealing portal features.

Continuous digitization process of the Archives holdings opened up new opportunities for collaboration with national and international institutions through several projects, such as Europeana Cloud, Athena Plus, Getty Research Portal, Znameniti.eu, etc. Finally, we will present the current project "Digitization of Salon Ullrich Archives" that has a potential to develop into a provenance research infrastructure.

Jasenka Ferber Bogdan
& Andreja Der-Hazarijan
Vukić:
Fine Arts Archives –
Two Decades in Digitized
Art History

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day I / Session III

"The Rembrandt question" is straightforward — did he paint a given work? — yet, it often seems intractable. After half a century of gathering technical information about the paintings associated with Rembrandt, the Rembrandt Research Project (RRP) ended inconclusively. Concrete problems with their method included their ambiguous categories of (A) (Rembrandt), (B) (uncertain), and (C) (not Rembrandt); later changing their minds about the categories of many paintings, and ultimately abandoning the categories altogether. The technical examination also proved irrelevant for distinguishing between paintings by Rembrandt and his students, a task the RRP did not undertake. In fact, from Abraham Bredius' now standard 1935 catalogue down to Werner Sumowski's volumes on "the Rembrandt School" scholars did not recognize paintings by Rembrandt's students produced in his studio, partly for teaching purposes, that were later assigned to Rembrandt, a blind-spot bound up with the investments in Rembrandt's name. The familiar accusation that connoisseurship reflects subjective opinions and personal investments is confirmed by the excessive inflation of Rembrandt's oeuvre.

Benjamin Binstock:
Digital Art History
and "the Rembrandt
Question": Digital
Painting-By-Painting
Catalogue in Color and
Scale of Rembrandt's
Leiden Period

The pertinent task is to distinguish between paintings by Rembrandt and those of his students, not through technical examination, but rather on the basis of visual similarities and differences evident to the naked eye. Such visual comparisons can be made objectively accessible to all—in a way not possible in conventional colour monographs — through digital catalogues, including Rembrandt's painting-by-painting development presented in colour and relative scale, starting with his first Leiden period, 1625–1631. Rembrandt's earliest history paintings from 1625–1626 can be chronologically placed in relation to his undated head studies, based on himself and family members as models, which are mistakenly dated to a later period. In 1627–1628, he developed his use of light and shadow in connection with his etchings and drawings as a means to integrate fewer, progressively larger figures within limited spaces. His subsequent paintings through 1629–1631 incorporate increasingly meticulous details and diverse textures.

Rembrandt's Self-portrait in a Gorget in The Hague, considered a masterpiece until 1998, was thereafter demoted to an unknown follower's copy after a version in Nuremberg. However, Rembrandt's original in The Hague can be recognised as corresponding to the refined mastery of his other signed paintings, in contrast to the loose, rough treatment and flat, slanted posture of the Nuremberg version, characteristic of the free copies made by his student Isaac Jouderville. Similarly, paintings by Rembrandt's studio-mate and rival Jan Lievens, in which he was competing in his own more shallow and grandiose idiom with Rembrandt's compositions, based on similar subjects, and using the same family members as models, were later assigned to Rembrandt along with other paintings by Lievens. Once these works mistakenly assigned to Rembrandt are restored to their respective painters, Rembrandt's own distinctive approach and gradual, consistent development can emerge.

Digital art history can help provide answers to "the Rembrandt question," and help forge an epistemology of Rembrandt, or how we know which works Rembrandt — or his individual students — painted, and what makes them unique.

The present paper aims to examine the challenges and advantages of combining methodologies and work tools within the framework of Digital Art History (DAH), in the context of two projects with different characteristics — Az Infinitum and ORION. Both based on relational databases, these projects document the azulejos still found in situ and Portuguese art collections and collectors, respectively. Azulejos stand out among other art forms for their unique characteristics, namely the fact that they are originally conceived as architectural elements, designed to cover the walls of buildings, and thereby transform the visual perception of the space they are part of. However, from the 19th century onward, and particularly during the 20th century, due to a series of political, social and religious factors, many of these decorations were removed from their original locations and ended up in private collections. This change disrupted the very nature of the azulejo, which ceased to be an operative element in a specific location, lost its original context and was thus deprived of its relationship with the surrounding space. The epistemological implications of this transformation constitute a challenge, but also an opportunity to develop new methodologies and work tools within the framework of DAH.

Az Infinitum — Azulejo Indexation and Referencing System (see http://redeazulejo.letras.ulisboa.pt/pesquisa-az) is a framework created to document and study tile decorations still found in situ, available online in open access. The platform is divided into five main areas, which are interconnected and provide a comprehensive understanding of each tile decoration. ORION's main aim, on the other hand, is to systematize, display and share information concerning art collections (collected artistic objects) and collectors either of Portuguese origin or based in Portugal. The system also contains information on events and entities relevant to retrace the works' provenance, such as auctions, exhibitions, art dealers and antiquarians.

Centred on a common artistic heritage — the azulejo — and two research approaches based on the use of digital tools, we aim to create a "space" for data processing capable of combining, in different phases, the perspectives opened up by these two projects, as well as establishing links, on a wider scale, with other projects and databases. To showcase the potentialities of this approach, enabled by DAH, we have selected a specific case study as the pilot for this crossover. Indeed, by studying the collection of Ernesto Vilhena (1876-1967), whose pieces were sold in auction in the 20th century and scattered throughout public and private collections, we aim to retrace the paths followed by these azulejos and identify their provenances and owners/collectors. Using the two aforementioned databases as a means of organizing and cross-referencing information, our goal is to gain a multifaceted insight into the azulejo, both as an architectural element and as an object. The convergence of the two projects will allow us to establish, without sacrificing their specific identities, a wider timeline for each work, and map out the complex networks involving Portuguese tile decorations and collections. Resorting to a digital environment, we hope to enhance the existing knowledge in a solid and systematic way.

Rosário Salema de Carvalho, Vera Mariz & Fábio Ricardo: WITH(OUT) A TRACE: Exploring the Provenance and Collection of Azulejos in a Digital Realm

The Institute of Art History's multi-disciplinary research project, "Grand Tour Dalmatia" (2014-17), which was supported by the Croatian Science Foundation, brought together a team of theorists in the fields of comparative literature, architectural and art history, history, and architecture. Their task was to identify, study and interpret phenomena related to the description of space in the eighteenth and the nineteenth century, with a focus on Dalmatia. The project began with the collection of various works by important author-travellers that visited Dalmatia in this period, which were scattered across a wide variety of sources and archives. The overall aim was to research the following topics together: textual and visual records of space throughout time; the formation of perceptions of a particular space (Dalmatia) in its socio-cultural contexts throughout time (the 18th and the 19th century); and the influence of travellers' experiences on intellectual, cultural, artistic and architectural practices in a specific period (Neoclassicism and Romanticism), in local and global contexts. Together, these research topics lead to a rethinking and deeper valorisation of the Dalmatian urban landscape in its historical context, thus creating the basis for the preservation and more profound transformation of its inherited spaces.

As professionals from two separate fields – design and app development, and architectural history, respectively – we have been exploring the possibilities of computation and visualization in the study of travelogues about Dalmatia, which have never before been collected in one place. We realized that a computational approach can provide an opportunity to develop research methodologies for this project particularly in terms of the spatial, temporal and typological synchronicities of data. Thus, our aim moved beyond cliometrics; we wanted to transform our data into a more useful set of information, so that it could represent more than just a collection of sources and could help generate new research questions.

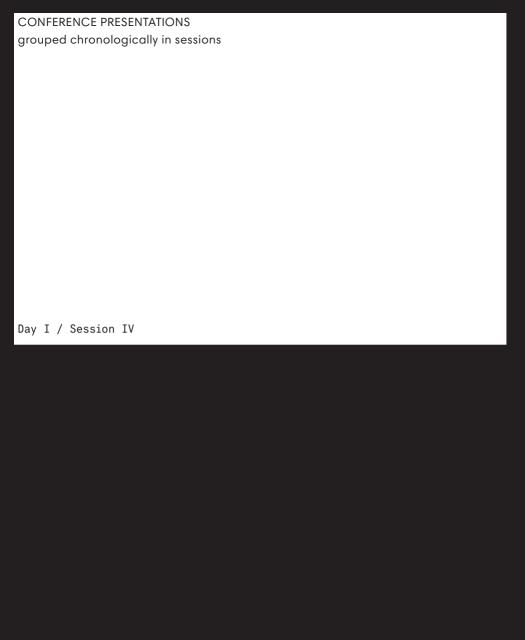This presentation outlines the collaborative research and design process used to establish the chrono-geographical database of 'Grand-Tourism' as a new tool for interdisciplinary historical research. This digital tool is based on the 'time-space-information' concept. It comprises books, images, photographs, essays and letters created as a result of the direct experience of a place, at a particular time, from the perspective of the author (traveller). The methodology used to create the database will be presented as a system of multiple synchronicities: both within a set of structured data, as well as through their integration with the spatial and temporal dimensions. We will explain the principles behind the organization of data, design concepts and visualization process through which data are re-contextualised and transformed into dynamic systems that allow for numerous tactical decisions and combinations of information. We will highlight the foundational, ongoing synchronization between the historical and visualization approaches to exploratory mapping. This is an essential underlying structure upon which all other synchronicities are built, and the basis for further development of this tool, which allows records of space in time to extend beyond the limits of our imaginations, offering us opportunities for research in new, interdisciplinary directions.

Ana Šverko &
Damir Gamulin:
Synchronicities.
Mapping History
through the Works
of Travellers

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day I / Session IV

"ArchiteXt Mining. Spanish modern architecture through its texts (1939–1975)" is a research project funded by the Government of Spain through the 2015 Call for 'Excellence Projects' of the Ministry of Economy and Competitiveness. Despite the success of the development of data analysis as a tool in different disciplines, the research on architectural theory has never made the most efficient use of these technologies. It is time to face a new in-depth research based on objective data. In order to obtain this, we propose the application of text mining techniques to take advantage of the best data source in the field: architectural magazines. Our objective is to offer a new vision of the transformation of architectural production and how it is divulged through the texts published in these magazines.

Ana Esteban-Maluenda,
Laura Sánchez Carrasco,
Luis San Pablo
Moreno & Francisco
Fernández Rodríguez:
ArchiteXt Mining:
Taking Advantage of
Periodicals as an
Architectural Data Base

ArchiteXt Mining (the acronym of Architectural Text Mining) proposes to use the most advanced techniques of data analysis for the creation of a new tool. This facilitates the work of all the researchers who use architectural magazines as a source of information. The current computer engineering possibilities allow us to perform something previously impossible: a global analysis of the contents of architectural magazines. We aim at creating a powerful database hosted on a public website accessible to the global scientific community. This database contains not only the classical bibliographic fields but other relevant data in terms of the text type, a brief description of its topic, the description of the section where the text is included, data about the building, the type of an event to which it is dedicated, etc. Getting access to this information is already a big step forward and provides researchers with a powerful tool to engage in a first quantitative analysis and searches that would help begin their studies. Furthermore, we aim to bring additional values. We apply different statistical techniques and obtain more information from all the complete texts stored in our database using some of the text mining techniques, such as the text similarity studies, the correlations between words, and the global or lineal frequencies of a series of words in a text.

In its first step, this project focuses on Spain as a pilot case study for a bigger worldwide research. In particular, this stage will begin with the Spanish architecture magazines published during the Dictatorship period (1939–1975), when the cultural relations of the country were more limited at an international level. We will be able to compare the issues that Spanish architects considered important with those in Europe, America and Asia, as expressed in the magazines, which will provide a new interpretation of Spanish architecture regarding the international panorama. The project is scheduled to be completed by the end of 2018, although a one-year extension has been requested.

This presentation will overview the research programme of the project The Site of Discourse (funded by the Portuguese Agency for Science and Technology), which, through a dialogue between Architecture, Art History, Sociology and Design, focuses on studying Portuguese architectural periodicals throughout the 20th century. Currently, there is a widespread consensus that architectural magazines have played a fundamental role in shaping identities and giving rise to new orders of thought on the practice and representation of architecture. Editing and design have thus become so inextricably linked that it seems reasonable to claim that they share a common ground beyond the contingencies of constructive practice, resting upon a web of both conceptual and professional relationships. Bearing in mind that architectural culture has been shaped, produced and disseminated by professional journals and specialized magazines, this project argues that specialised architectural periodicals are more than a mere sequence of isolated printed objects.

As a totality, they embody various discursive lines, which formed, over time, an editorial culture supported by constellations of relations between editors, critics and architects. Thus, beyond their diversities, the printed specialized magazine was considered a privileged medium of discussion and dissemination of work, innovations, trends and ideas. In this sense, they constitute a privileged focus of observation enlightening the interactions between different disciplinary fields, the relationship between textual and visual discourses. This presentation explores part of the research criteria and corpus of the project The Site of Discourse, which mapped all the articles, authors, works and other content included in a universe of 28 Portuguese architectural magazines. The survey systematises, in a database, about 20 000 articles, more than 2000 authors and around 6000 architectural works. Given such an amount of data, the research project has been constructed from an exploratory perspective, combining methods and research tools that come from different fields of knowledge.

Rute Figueiredo & Ivo Veiga: Architectural Periodical Press and Research Challenges

The paper deals with the intergenerational and ideological frictions among the architects and architectural groups within CIAM (Congrès internationaux d'architecture modern) in two distinct historical periods: between the fourth and fifth congress (1933–1937), and between the ninth congress and the last CIAM meeting in Otterlou (1953–1959).
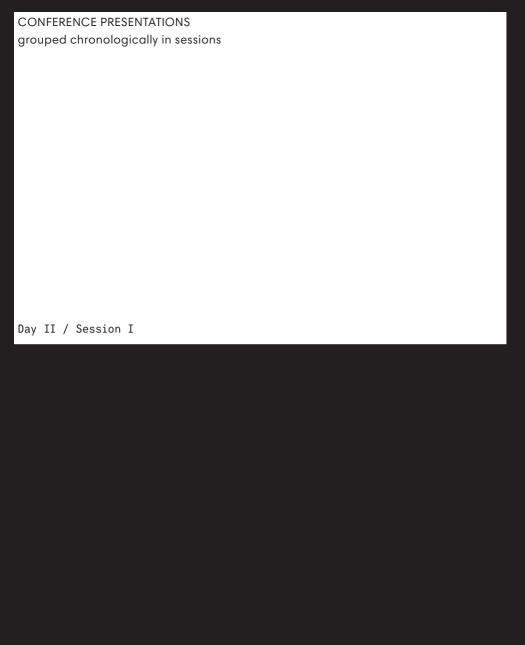
Tamara Bjažić Klarin
& Nikola Bojić:
Tracing the Ideological
Frictions within CIAM
as a Case for a
Network Analysis

From its founding to its dissolution, CIAM's leadership tended to maintain the organisation's apolitical position, claiming its "ideological diversity" and, primarily, the technical nature of the architectural discipline. Opposed to the stances of the leadership, groups of mostly young architects in both periods, argued for the social role of architecture rooted in their left ideological positions. The frictions before World War II emerged after the group of leading European CIAM constructivists had left for the USSR, opening up the space for the generation of younger left-oriented architects organised around Croatian architect Ernest Weissmann. In the post-war period, the opposition to the CIAM leadership was maintained through the work of an international architectural group, Team X, and especially through the engagement of Dutch architect Jaap Bakema as one of its central figures.

By observing the mentioned CIAM congresses as event-based social networks, the paper will detect and trace the evolution of opposed discourses and ideological positions within specific social cliques organised around Weissmann and Bakema. Relying on the knowledge from the field of digital humanities and using the IT tools for visualisation of artists' and architects' networks of the 20th century, developed within the ARTNET project, the paper will provide a series of data visualisations that will enable a detailed analysis of interactions among architectural groups and individuals, as well as a comparative analysis of the networking models rendered through the ideological frictions in two historical periods.

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day II / Session I

Taking into account all possible differences between digital and digitized art history (according to Johanna Drucker), as well as the history of the methodology of "analogue" and "digital" art history, this paper explores the characteristics and changes in the process of writing and reading art history in a digital environment. The approach used in this paper is an approach that is media sensitive, but not technologically hyperdetermined; i.e., this work comes with the view that the new media and the language of new media (Manovich) certainly influence both the reading and the writing of art history, but that they may not fundamentally change the methodology and goals of this science.

In this regard, I am examining here the question of the author and authorship in the process of writing digital art history on the example of the ARTL@S project and the so-called global/total approach in art history. It can be said that the authorship here is collective, that the author is only a selector, that he is the one who only recycles written material after the death of the author (Barthes) or even that the concept of the author is ridiculous. On the other hand, the reading that occurs both in the ARTL@S project and in many other digital art history projects could be called distant reading (Moretti), but also forensic, interactive and multi-scale reading. Such a reader could be called an art historical flâneur who is bicycling through the screens.

Ana Knežević:
Writing and Reading
Digital Art History

The aim of this paper is to present different theories of writing and reading digital art history, as well as a big turn in their process in order to demonstrate that art historians need a new exercise and a new understanding of media messages, but also to show that the essential changes of the science itself, its methodology and goals are actually lacking because the same process is happening all the time, only in this moment written in different media. In the end, the paper concludes that the concepts of writing and reading art history in this (digital/online/new media/cyber, etc.) environment have changed, but that it is not really a new art history, only art history in a new space.

Digital Art History (DAH), which embraces massive data sets, innovative methodologies based on computational techniques and collaborative paradigms, promises to offer new perspectives on the history of art. For example, as has been suggested elsewhere, DAH has the potential to shift the discipline's focus away from traditional topics of inquiry, such as aristocratic patronage, to less explored aspects of the field, such as networks among guild members and labourers—in short, to reposition the discipline's traditional preoccupations from the concerns of the elite to the experiences of the marginalized (Jaskot, 2016). Yet this displacement from the centre to the periphery is not restricted to DAH research questions but frequently applies to other aspects of DAH as well: to its status within the digital humanities; to the demographic it often attracts; and to the infrastructure(s) developed to support it. In many respects, DAH occupies the periphery. The proposed paper problematizes these issues as crystallized by the establishment of a digital art history lab at a privately funded library that serves the general public. Through this discussion, it will explore one instance of how DAH has forced the North American academy to reflect further on issues of privilege, access and the future of art history.

The Frick Art Reference Library's Digital Art History Lab (DAHL) was founded in 2014 to address the increasing need for art historians to organize, visualize and interpret the flood of "big data" released by museums and cultural institutions, as well as experiment with recently developed digital tools and methodologies. The DAHL is accessible free of charge

Ellen Prokop:
(Digital) Art History for the Masses? The Role of the Public Digital Art HistoryLab

to all adults and functions not only as a research centre but also as a community for unaffiliated art historians — a rapidly growing demographic in the United States as tenure-track teaching jobs and full-time curatorial positions vanish. While similar digital humanities centres exist in New York City, most are oriented towards textual analysis, which is not useful for art historians. More importantly, these resources are available only to university faculty and select students. The DAHL serves a non-academic community, thus placing the development of art historical research questions in the hands of the public.

Yet despite its reach and productivity, the DAHL has no dedicated space or budget. Those of us involved with the Lab have had to be resourceful and rely on the goodwill of the digital humanities community to fulfil our mission. By operating on the periphery in multiple ways, we have created an institution that may not be sustainable, but as funding for the arts becomes scarce, there is no alternative. If scholarship in the arts is to advance, if art historians and the public are to be encouraged to embrace new technologies, all adults interested in the arts will require access to digital tools; to open collections; and to a community with which to share, discuss and develop these innovations.

According to Johanna Drucker, there are objective criticalities in conforming to and "taking root" in the digital technologies applied to cultural heritage. Namely,

Stefania De Vincentis:
Digital Art History and
Audience Development.
A Challenge for
the Research of
Museum's Collections

there is a linguistic problem regarding the image translation as the Digital Humanities work in the transpositions of languages: either manuscript codes, inventories, archival sources, laser scans or photogrammetric analysis. In addition to the topic of reinterpreting art history in the light of the technologies that can take part in the in-depth reading and reconstruction of artistic data on the basis of material elements of an artefact, the problem emerges of how to manage digital resources – developed within applied computer science – intervening on a work of art. These methodologies and technologies are constantly being updated and require historical and artistic research related to contemporary contexts and temporalities.

According to Aby Warburg's theories, an artistic object testifies to events, people, and is a source of knowledge in itself; it is a repository of both material and immaterial data, elements that can be read and translated due to the interdisciplinary approach offered by digital databases, real congregations of authoritative resources that are structured following the composite disciplinary fields. Platforms like the Perseus Digital Library, the Deutsche Digitale Bibliothek or Europeana exemplify this. Such databases are resources that contribute to art history research and to the growth of a digital museum intended not as an immaterial, virtual space, but as a complex of digital collections that participate in the perception of artworks. On the other hand, there is a kind of scepticism towards the proliferation of digital objects that in various forms – databases, devices, web platforms – seem to replace the real vision of a work of art, undermining the "aura" and thus guiding the resistance of historical and artistic subjects towards an active investment in research on digital technologies applied to cultural heritage. This opposition is driven by the notion that a digital collection is a mere substitute for the original.

The paper will analyse how modern research assigns to these technological resources the task of making the museum into not only a virtual environment but a mediated context, a space for study and communication, where the visitors can get in touch with both the real work of art and its digital representation, a frame of knowledge that allows the visitors to identify the objects, classify them and bring them back within their field of knowledge. This is a participatory museum where those who enter can enjoy the opportunity not only to be observers, but accomplices in the process of interpretation and artistic production.

By reflecting on the challenges and achievements of an ongoing collaborative research project, this presentation offers insights from a project manager on the structures and roles of trans- and interdisciplinary cooperation, offering recommendations for assuaging high collaborator turn-over in digital projects. The project examined, Itinera, is a digital environment that includes geographic and network visualizations to explore the movement of early-modern people and objects. The undertaking was inspired by the central role that such mobility played in the eighteenth century and stemmed from the desire to better collect and convey the uncovering of historical capta.

Itinera is housed in the Visual Media Workshop at the University of Pittsburgh, a technologically-focused humanities lab that fosters collaboration and creativity by bringing together students and faculty from many departments to apply digital methods thoughtfully to interpretative research and instruction. PhD students from the History of Art and Architecture Department fulfil the role of Itinera's project managers, forming the bridge between faculty and undergraduates while growing and maintaining the database. In addition to collaborators on Itinera working overlapping hours in a shared environment, a Data Stewardship PhD student also shares this same space while managing another project. Most collaborators serve a term of a single academic year, and this physical proximity supports communication and fosters research that crosses traditional disciplinary boundaries. In addition to the collaborative environment and interdisciplinary work, there are many affordances of the variety of skill sets at the disposal of Itinera.

The art historians that manage the project each year bring with them a unique set of language abilities, sub-discipline or region of study, and theoretical and methodological interests that affect the kind of work they accomplish during their tenure as project managers. Such diversity of collaborators has supported more inclusive representations of location, gender, culture, and language. While such oversight ensures Itinera represents a broad array of eighteenth-century cultural producers, high turnover can prove difficult for data stewardship. This experience has highlighted the expectations of humanists who engage in such work and helped cast light on one of the greatest challenges of varied skillsets and experience in collaboration, that of consistency.

Sarah Reiff Conell: Advancing and Adjusting: Lessons Learned from High-Turnover in a Collaborative Long-Term Project

The presentation will discuss lessons learned from Itinera that may help others make more informed decisions about collaborative, long-term projects in the future. I conclude by offering some solutions for this project, and ideas on training, investment, and oversight well suited for a high turnover, collaborative environment. Each challenge and potential solution aims to empower each collaborator to think critically about problems and stimulate an ongoing dialogue necessary for a rigorous and engaging project.

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day II / Session II

Recent extensive digitization efforts led to a significant increase of digitized and online available fine art collections. The increased visibility of digitized artworks is particularly useful for art history education and research purposes. Apart from the advantages of the visibility boost, the very translation of information, from the domain of the physical artwork into the digital image format, plays an important role in opening new research perspectives grounded in the intersection of computer vision, machine learning and art history.

Visual analysis of artworks includes understanding different aspects such as form, expression, content and meaning. Various computational image features can be used in order to analyse and describe formal elements of paintings such as line, shape, colour, texture and composition. However, narrowing the semantic gap between computational image features and artistic concepts remains a great challenge. The successful performance of deep learning techniques for a wide variety of computer vision tasks, motivates us to explore their potential in enabling new ways of exploring digitized art collections.

The first part of my presentation will focus on how deep neural networks can be employed in order to automatically classify artworks based on categories such as artist, style or genre. Although automatically recognizing the artist, style or genre, it is not a trivial task; the attempt to computationally understand artworks goes beyond the challenge of classification. Fine art collections are a data source of historical relevance, as well as perceptually and emotionally intriguing visual information. Because of its manifold nature, the domain of fine art images represents a fruitful data source for formulating semantically relevant image analysis tasks, as well as for challenging neural networks in learning representations of a higher abstraction level. Therefore, the second part of my presentation will be dedicated to the question of using deep neural networks for designing and extracting high-level and semantically relevant features that can serve as a basis for discovering new knowledge patterns and meaningful relations among specific artworks or artistic oeuvres.

Eva Cetinić:
Towards Computational
Understanding
of Fine Art:
A Deep Learning
Perspective

Additionally, I will try to give a critical overview of the proposed methods, their possibilities and limitation, as well as tackle the scope of interpretability of the presented results. Furthermore, I would like to make use of the transdisciplinary research environment to discuss the applicability of the proposed computational methods for art history-related research questions, as well as to identify points of convergence of different research streams united under the term "Digital Art History".

"The Adriatic Highway: Infrastructure as a Generator of Territory" is an independent interdisciplinary research project that uses archival research and textual and visual analysis in order to develop original qualitative cartographic methods. The project uses the route of the Highway as an organizational and narrative device for the structuring of acquired data. It is motivated by the inquiry into the infrastructural inception of a unified coastal territory and the transformation of the previously underdeveloped coast into a continuous peri-urban strip incorporating an array of emerging land-use and landscape patterns.

Departing from the investigations of contemporary visual arts as opposed to the procedures of cartographic and statistical methods of spatial analysis, this research aims at the formulation of qualitative and artistic tools for understanding and representing this vast territory. Through an iterative research process since the start of the project in 2014, we have devised a hybrid analytical framework that fuses the analysis of historical tabular itineraries with sequential narrative conventions, perceiving the environment as a sequence of known points/moments. Through the process of layering visual and textual sources, this project investigates the method of 'Linear Mapping' as a viable alternative to the complexity of the dominant paradigm of geographic information systems. This methodology is based on sub-dividing the linear territory into distinct sequences and further into distinct spatial units, according to their position along the route, or their distance from it. The constituent spatial units form the basis of a robust indexing and classification system that enables the specialisation and facilitates the diagrammatic representation of the various features of the route.

In parallel to the development of this methodology, the project includes the acquisition and systematisation of an extensive database of historical and modern maps, aerial and satellite imagery, spatial and urban plans along with a collection of historical photographs and travel guides. The first application of this tool has enabled the collection of a dense sequence of points along the route rendered by the photographic capture of images publicly available through various mapping services that were geometrically transformed in a way to portray two opposing angles perpendicular to the route. Rather than showing the continuity of the view from the windshield, this comprehensive dataset illustrates the route as two separate linear corridors and allows for an analysis of various disruptions, discontinuities, and breaks that would not be discernible using conventional cartographic or photographic sources. By joining the indexing system with the distinct thematic layers we were able to produce a large dataset of different sources, forming an interwoven and linearly structured foundation for further research.

The main goal of the project is to transform a system of aggregating and overlapping fragments of individual data-points into an overall cognitive map. That could lead to the creation of novel interpretations and representations of this territory, as well as to the unexpected and unorthodox characterisations of larger portions or the entire length of the route, enabling new ways of addressing the potentials for its further development.

Damir Gamulin
& Antun Sevšek:
Linear Mapping of
a Coastal Territory.
Sequencing and
Recombination of the
Constituent Elements
of the Adriatic Highway

The Experiments in Art and Technology or E.A.T. datascape is a project developed at the Sciences Po médialab, in 2011, by Christophe Leclercq, Paul Girard, and Daniele Guido. Its aim was to study as closely as possible the complexity of interdisciplinary collaborative works and was implemented during the processing of the E.A.T. archives. E.A.T. was an organization co-founded in 1966 by the artists Robert Rauschenberg and Robert Whitman, and the engineers Billy Klüver and Fred Waldhauer, in order to support collaboration between artists and engineers.

The E.A.T. datascape can be defined as a digital instrument for exploration and analysis of the digitized traces left by these artists, engineers and other "actors" (mediators, curators, etc.) through many available resources. By taking a joint interest in the life of the works and those of the actors involved in their conception, production, exhibition and critical fortune, the E.A.T. datascape provides synoptic, sequential and reticular views, and combines a close and a "distant reading" (Moretti) of this particular organisation through activities, actors and overviews corresponding to different levels of data aggregation. It, therefore, displays both qualitative and quantitative data – allowing an art historian to visualize the sources from which the data were extracted.

Initially conceived as a multidisciplinary research project in art history and aesthetics, the digital methodology implemented and the new possibilities of reading offered not only help to provide new insights into this complex topic of social art history and, from a sociology of art perspective, to better describe this particular "art world" (Becker), but also lead to epistemological changes: the datascape helps to modify certain habits of thought specific to art history itself (the notion of author, the relationship of the work to a so-called context or even the very concept or definition of a work of art). In other words, it allows us to reflect on what digital design does, in turn, to the social history of art, and to put forward hypotheses about what a digital social art history might be or could offer to the study of complex, interdisciplinary projects that are multiplying in the contemporary art world.

Christophe Leclercq, Paul Girard & Daniele Guido: The E. A. T. Datascape: Experiment in Digital Social Art History

Many artists dedicate a significant amount of time to studying visual references. Searching for reference materials is one way we can learn from the work of others, understand materials, and learn how processes and techniques are enacted. The visual analysis of reference materials may or may not be identifiable in the finished product, but is often crucial to the end result. Locating these visual materials is becoming a largely digital process – taking place on platforms like Google, Instagram, YouTube, Facebook, eBay, and Pinterest. The collections of images and resources acquired can reveal associative patterns and reflect reactions to content, evidencing trains of thought. In his book Wasting Time on the Internet, Kenneth Goldsmith suggests "our browser history could be seen as a scrapbook, a textual and visual travelogue."

Likewise, we argue that the images and information we collect, as well as the trajectory we follow to get there, is capable of revealing the important thought processes at stake when producing art.
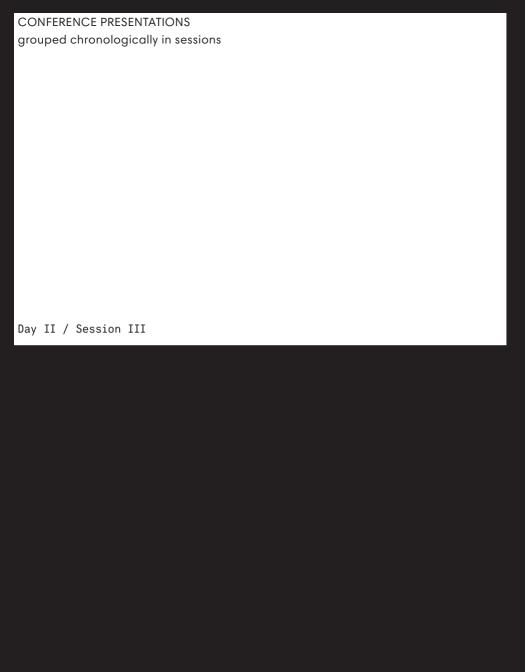
We would like to propose a collaborative talk that explores the intimate labour of locating, selecting, and interpreting source materials online from a research-creation perspective. This labour is often performed alone, as a means of internally processing a given subject, in order to formulate a project, or argument. Browsing the internet is a productive "push and pull of opposites: intuition and intention, conscious and unconscious, drift and determination."

Kristie MacDonald
& Ella Tetrault:
Browsing for Images
as Intimate Labour

We will explore these dualities within our own art practices, as well as work of artists Frances Stark, Anthony Antonellis, Kara Stone and Taryn Simon. It is our hope that an analysis of this particular form of visual association will bring forth valuable elements of artists' daily routines and practices that may not always end up in the finished product. This proposal stems from a discussion between the presenters around the division of digital and traditional labour. Historically, there is a complicated relationship between the handmade and the mechanical or digital. However, we have found that within our respective art practices, it is no longer useful to make a hard distinction between these modes of production. Ann-Sophie Lehmann, in her article Hidden Practice: Artists Materials, Tools and Working Spaces in the Digital Domain argues that work often takes place in an oscillating creative space between the traditional studio and programmes which simulate the studio such as Photoshop and Paint. She argues that tools in the digital studio require an equivalent amount of expertise and sensitivity as "traditional" tools. Upon reflection, we have both observed that digital research and tools play an increasingly important role in the ways we produce physical products. For our proposed contribution to the Digital Art History Conference, we would like to explore the ever-changing and often tangential life of digital source material drawing from our own practices and those of other digital and post-internet visual artists.

CONFERENCE PRESENTATIONS
grouped chronologically in sessions

Day II / Session III

In February 2017, the Getty Foundation is-sued a report on the symposium "Art History in Digital Dimensions", held in October 2016 at The Phillips Collection, Washington D.C., and the University of Maryland. Subtitled as "White paper", it summarizes the three-day discussions "on the current state of digital art history (DAH)", led by the international, multigenerational group of professionals from different strands of art history.

Discussions resulted with "a roadmap for the future practice in the field" – a rather interesting document intended to identify and articulate the most important chal-lenges facing DAH, but also to provide possible responses and future solutions to these issues. Referring to the standpoints, projections and propositions elaborated in the report, in this paper we shall try to provide a somewhat different view of DAH and its problems, based on the multi-disci-plinary research project ARNET, conducted in the last four years at the Institute of Art History, and supported by the Croatian Sci-ence Foundation.

Ljiljana Kolešnik & Sanja Horvatinčić: Current Challenges and Future Prospects of Digital Art History. Lessons Learned at the Project ARTNET

The objective of the project was to iden-tify, describe, and explain organizational models from the background of modern and contemporary artists' and architects' networks, using custom-made digital tools for network visualization, spatial data vis-ualization and collaborative research, de-veloped parallel to the historiographical and methodological project investiga-tions. Using a brief description of ARTNET's working procedures, methods, results and conclusions, as the framework for the re-sponse to Getty's DAH roadmap, we shall also question the notion of digital art history as yet another in a range of recent meth-odological turns in the recent history of art history, advocating for its understanding in terms of paradigmatic shift, symptomatic for the profound transformation of the en-tire field of humanities.

The increasing use of Information and Communication Technologies is deeply changing the pre-existent teaching and research methodologies in a large number of disciplines including Art History. In this rapidly evolving context, it is conceivable that, in the coming years, Art History will more and more profit from Knowledge Representation & Automated Reasoning methodologies in several aspects such as data classification and integration, interoperability of different data sources, and semantically-driven query answering. In particular, on the one hand, the Semantic Web standards and infrastructures provide the required ecosystem for implementing flexible and effective data retrieval at the Web scale. Conversely, Art History offers new challenges to the Semantic Web in the development of specification languages and formal ontologies allowing to describe at the right level of abstraction the complexity and heterogeneity of datasets concerning this domain of interest. In this respect, considerable efforts have been devoted thus far to define conceptual models that properly represent the domain of cultural heritage. Among others, one of the most prominent projects, which has de facto become an ISO standard, is CIDOC RCM. The International Council of Museums (ICOM) has been developing CIDOC RCM over the last ten years and it is one of the largest and well established formal ontologies for describing general concepts and relationships in the domain of cultural heritage. To benefit from the power of the Semantic Web, CIDOC has been recently serialised in the RDFS and OWL languages. Our proposal aims to include in CIDOC RCM concepts and relationships concerning art criticism, such as references on artworks, artists, and the like in articles, catalogues, monographic or collective volumes. CIDOC RCM already allows to properly represent the presence of an artwork in a collection or in the art market. We intend to extend the conceptual model in order to include non-physical forms of circulation and cultural contexts other than institutional ones. CIDOC RCM focuses on information from the museum collections to support documentation and interoperability. In this context, the artistic status of an artefact derives from the fact that, with the acquisition by a museum, it has already publicly gained a special value that distinguishes it from other artefacts with similar formal characteristics. Conversely, in case of objects whose artistic value is not institutionally established – like the spontaneous interventions of street art that are performed without commission from anonymous authors – the knowledge of critical debates allows both end users and researchers to reconstruct the contexts of production and fruition. Information related to art criticism does indeed contribute to forming knowledge of new forms of art that increasingly more often consist of ephemeral processes, widespread experiences which today find traces exclusively in criticism, but in the future will also become part of the museum collections.

Maria Giovanna Mancini
& Luigi Sauro:
A Conceptual Model
for Art Criticism

In my presentation, I intend to address the possible epistemological consequences and challenges of regarding Big Data usage related to research into art phenomena. I intend to do so by presenting a case study from my doctoral research conducted at the Department of Network and Data Science (DNDS) of CEU. My doctoral research aims to contribute to the discourse on the ways of canon formation, more specifically, on the incorporation of the Central-East European (CEE) artists in core museum collections of the western art world. Museums – arguably top institutions of dominant narrative formation – define themselves through the exhibitions they organize and how their collections get enlarged via specific acquisition strategies. Nevertheless, museums operate as parts of a bigger system, the art world, where different actors occupy different power positions finding themselves in competition with each other in order to reinforce their positions, to strive for a better one or to create new ones. Consequently, the above-mentioned processes of self-definition may also function as tools of competition for determining the leading interpretations of artistic tendencies and, thereby, gaining more powerful positions in the system. Building on Pierre Bourdieu's relational theory of artistic fields, Bruno Labour's approach to 'modes of existence', Pascale Casanova's notion of the competition among central actors in the field who strive for dominance, and the perspective of world-systems analysis, I conceptualize the struggle among actors of a semi-peripheral region from the perspective of the central actors in the western art world. I thus focused on the competition among three central actors – Tate, MoMA and Pompidou – by analysing their different acquisition strategies deployed while incorporating artists from the CEE region. In this framework, I examined whether specific acquisition strategies are related to the underlying features of artists' exhibition histories, taking into account different modes of acquisition and multiple time periods in the acquisition history of the three mentioned museums. I built a dataset comprising all the acquired artists in Tate, MoMA and Pompidou, as well as all the acquisition-related information. As for the artists' exhibitions, I built a dataset comprising more than 100 000 exhibitions of more than 3500 CEE artists. Numerous epistemological questions have been raised throughout the research in regard to the use of available data repositories. Building the database on the artfacts.net – to my knowledge, the richest of its kind – by comprising exhibition data on around 550 000 artists, not only opens up possibilities for novel research questions in sociology of art due to the scale of the available data, but also raises new questions and uncertainties regarding its usage which we haven't met before in traditional data gathering. While the source is said to be a comprehensive dataset, and that all information is unbiased, verified and up-to-date, through analysing its structure I found the dataset to be far from being unbiased or complete. This is normal, given it is not an ahistorical or acontextual repository, but one built with certain means. Nevertheless, due to the fact that these means are reflected in the data, its unreflecting usage would reinforce the power structure based on which dataset biases came into being in the first place. What can thus a researcher do? Try not to think about it? State the biases in the restriction part of the paper, but go on as planned? Collect the missing data manually? If available, match it with other sources? Estimate the missing data points and its features with statistical techniques and fill the gaps with them? Go slow? The different strategies will result in affecting the research, its implications and evolving possible interpretive frameworks in various ways. In my presentations, while discussing the research, I also intend to tackle these questions and strategies along with their possible epistemological consequences.

Júlia Perczel:
Epistemological
Aspects of Big Data
Usage and Network
Representation in Art
Historical Research:
A Case Study

BIOGRAPHIES

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Benjamin Binstock

teaches Renaissance and Baroque Art History at Cooper Union in New York City. Simon Schama called Binstock's 2001 essay on Rembrandt's Syndics "a stunning insight […that] can stand for the peculiar genius of Dutch art at this moment in its history." Julian Bell characterized Binstock's 2009 book Vermeer's Family Secrets as "the most comprehensive and detailed analysis ever published of Vermeer… full of ideas that could fundamentally change the current understanding of his paintings." Binstock's essay "Why was Jan van Eyck here? The Sitters, Subject, and Significance of The Arnolfini Marriage Portrait" was recently published in Venezia Arti (Vol. 26, 2017).

Tamara Bjažić Klarin

is a Senior Research Associate at the Institute of Art History in Zagreb. Her work focuses on the 19th and the 20th-century architecture and urbanism. She authored the book Ernest Weissmann: Socially Engaged Architecture 1926–1939, a number of scientific papers and book chapters, and co-authored several documentaries. She participated in a number of national and international research projects, conferences and workshops. In 2006, she received a fellowship by the French government, and in 2014 a fellowship awarded by the Swiss National Science Foundation, on which occasion she spent an academic residence at the Institute for the History and Theory of Architecture (gta eth) in Zürich.

Nikola Bojić

holds a Master's Degree in History of Art and Information Sciences from the Faculty of Philosophy and Social Sciences, University of Zagreb (2011), and a postgraduate Master's Degree from the Graduate School of Design, Harvard University (2013). He is currently a PhD candidate at the Faculty of Philosophy and Social Sciences, University of Split, where he is conducting research on physical planning in Croatia from 1955 to 1975, and Lefebvre's theory of the production of space. Under the mentorship of Ljiljana Kolešnik, he is engaged as a Research Assistant at the Institute of Art History in Zagreb within the ARTNET project on digital humanities. In the fall of 2016/2017, Nikola was a visiting researcher and a lecturer at the School of Architecture and Planning at Massachusetts Institute of Technology (SA+P/ACT), where he co-taught a class "Advanced Studio in Production of Space" (with Prof. Urbonas). In 2015, he edited a thematic issue of Život umjetnosti magazine ("From Territory to Specific Site", no. 96). He has held several public and guest academic lectures, as well as a series of workshops, seminars and presentations at international scientific conferences.

Eva Cetinić

is currently working as a Professional Associate at the Ruđer Bošković Institute and pursuing a PhD in Computer Science at the University of Zagreb, Faculty of Electrical Engineering and Computing, where she received her M.Sc. in Information and Communication Technology with a Master's Thesis titled "Paintings classification by author using neural networks". She is particularly interested in using computer vision and machine learning techniques to expand the research potential of digitized fine art collections. In her PhD thesis, titled "Computational detection of stylistic properties of paintings based on high-level image features analysis", she is trying to address the challenge of narrowing the semantic gap between artistic concepts and computational image features, with the aim to provide a novel framework for exploring visual art image data. She attended several digital art history related events such as the Coding Dürer Hackathon in Munich and the Digital Art History Summer School in Malaga, organized in 2017. She is actively involved in two Horizon 2020 projects, INDIGO-DataCloud and EGI-Engage, by working on establishing and disseminating cloud-based solutions for the requirements of the DARIAH (Digital Research Infrastructure for the Arts and Humanities) research community. The intersection of art and technology constitutes an essential characteristic of her professional path, as well as her personal interests.

Rae Di Cicco

is a PhD candidate in the History of Art and Architecture Department at the University of Pittsburgh, specializing in Central European modern art. Her dissertation, titled "The Kosmos, the Body, and the Other: The Cosmopolitan Imagination of Erika Giovanna Klien," traces the development of Klien's cosmopolitan ethics across her career in Austria and the United States.

Andreja Der-Hazarijan Vukić

graduated with a Master's Degree in Art History and Ethnology at the Faculty of Humanities and Social Sciences in Zagreb, in 1993. Since 1994, she has worked as an Associate, and from 2008 as a Senior Associate at the Croatian Academy of Sciences and Arts – Fine Arts Archives.

Ana Esteban-Maluenda

is a tenured lecturer at the School of Architecture in Madrid. She is an architect who received a PhD Summa Cum Laude of Theory and History of Architecture (Universidad Politécnica de Madrid, 2008). She won the UPM Doctoral Extraordinary Award 2007–2008,

and Special Mention in the XXII Awards Urbanism, Architecture and Public Works for her doctoral thesis, titled "The Imported Modernity. Madrid 1949–1969: Diffusion Channels of Foreign Architecture". Based on the research areas she has developed to date – "20th century architecture and its diffusion", "Architecture and architects in Spain since 1950" – she has published articles in international publications in Spain, Portugal, Italy, United Kingdom, United States of America, Japan, Brazil, Colombia, Argentina and Chile. She has taken part in several international conferences. Likewise, she has given lectures at European and South American universities, and is involved in different research projects funded by the government, institutional and private sources. She is currently a member of four research groups in three countries: Spain, Portugal and Brazil. She is a member of the editorial board and a peer reviewer of several scientific journals, as well as a member of the Organization Board of many international congresses in the Ibero-American sphere. She curated the exhibition Three Magazines in Madrid. The International Glance in the Local Context (1949–1968), organized by the library of the School of Architecture (UPM) in 2011, and was also involved in research for international cultural events such as the Shanghai International Exhibition 2010, and the Spanish Pavilion of the XIV Venice Architecture Biennale 2014. She has received grants to develop her work in several institutions, as the Ministry of Economy and Competitiveness of the Government of Spain, the Carolina Foundation, and recently the Society of Architectural Historians of Chicago.

Jasenka Ferber Bogdan

graduated with a Master's Degree in Art History and Ethnology at the Faculty of Humanities and Social Sciences in Zagreb in 1994. She worked as a conservator-researcher at the Regional Institute for Protection of Cultural Monuments in Zagreb from 1993 to 1997. From 1997 to 2008, she worked as an Associate, and from 2008 as a Senior Associate at the Croatian Academy of Sciences and Arts - Fine Arts Archives.

Francisco J. Fernández Rodríguez

is a technical engineer in management computer science from the Pontifical University of Salamanca since 2001. He has started his professional career in the IT departments of such prestigious companies as Endesa and SGS Spain, developing systems for decision making, definition of balanced scorecards, and analytical models for reporting to management. He is a Big Data Architect, certified by the University of Columbia, and expert in the definition of models and algorithms under the standards of machine learning. He has worked as Data Warehousing Architect, proven history of building large-scale data processing systems, and serving as an expert in data warehousing solutions while working with a variety of database technologies, and Data Analysis Expert, improving the effectiveness of Big Data systems, descriptive analytics systems, and prescriptive analytics systems, as well as working knowledge of machine learning and/or predictive modeling. In 2014, he began his career at BNP personal finance as a data scientist and data engineer. Expert in the definition and implementation of data warehouse systems, as well as in the implementation and design of systems for the automatic processing of information using databases with large volumes of structured and unstructured information, and in the definition of statistical models implemented in R. From 2016, he has worked as the data engineer of AchiteXt Mining research team. He develops ingestion pipelines and data analysis system, designing and developing the ingestion pipeline to process several TB of data and providing technical expertise and creating software design proposals for upcoming components.

Rute Figueiredo

is an architect and architectural historian (MA in Art History). She received her PhD in History and Theory of Architecture at the ETH – Swiss Federal Institute of Technology, Zurich (2017). Her research work has been focused on the architectural critical practice, as well as on the relationship between architecture and periodical press. She is the author of a book titled Architecture and Critical Discourse in Portugal 1893–1918 (Prize José Figueiredo in 2008, awarded by the Portuguese National Academy of Fine Arts). Between 2012 and 2015, she led the R&D project The Site of Discourse, sponsored by the Portuguese Foundation for Science and Technology, which conducted the study of Portuguese architectural periodical press in the 20th century. She has also been researching the impact of cultural institutions, such as the Venice Biennale, on the experience, rhythms, and modes of architectural knowledge construction and communication today. She is finishing a book on this topic. In addition, she has held several research grants from the Swiss National Scientific Foundation, and the Portuguese Foundation for Science and Technology. She is a member of the European Architectural History Network, the Society of Architectural Historians, and the CEEA/Escola Superior de Artes Porto where she is working as a researcher on the HERA project MODSCAPES-Modernist Reinventions of the Rural Landscape. Currently, she is a Research Fellow at the Rennes 2 University, working on the project Mapping Architectural Criticism.

Damir Gamulin

studied Design at the Faculty of Architecture, University of Zagreb. He has been working as a freelance designer and consultant since 2001. He is involved in designing and researching various media, technologies and approaches. In recent years, his work has been focused on projects that take space as their theme; either in terms of spatial design or in the design of the space itself. He develops, in collaboration with other professionals, methods and digital tools for the integrated formatting, editing and interpreting of physical and conceptual content as an upgrade to basic design activity. He is a member of Platforma 9,81, an NGO for research and education in architecture and urbanism, and OOO, an NGO that organizes and manages projects related to art and curation practices.

Paul Girard

is an Information Technology engineer specializing in collaborations between technology and non-technical domains. He joined the Sciences Po Medialab at its foundation in spring 2009, as digital manager of this digital research laboratory dedicated to fostering the use of digital methods and tools in social sciences. Since then, he has overseen the technical direction of the laboratory's many research projects, in a collaboration between social sciences, IT engineering and information design. His present research fields are digital methods for social sciences, exploratory data analysis and enhanced publication through digital storytelling. URL: https://medialab.sciencespo.fr/fr/people/paul-girard/

Daniele Guido

is the lead designer at the Luxembourg Centre for Contemporary and Digital History at the University of Luxembourg. He joined the centre after several years of working as a designer and developer at the Sciences Po Medialab. Specializing in data visualization, network visualization and digital methods, he works closely with historians and engineers to boost their practice in digital publications and to develop experimental web applications for the exploration of historical archives. URL: https://www.c2dh.uni.lu/people/daniele-guido

Chelsea Gunn

is a PhD candidate in Library and Information Science at the University of Pittsburgh's School of Computing and Information. She received her MLIS from Simmons College. Her research focuses on personal archives, digital preservation, and the technical and ethical challenges faced by archivists who collect born-digital networked personal records.

Ivana Haničar Buljan

holds an M.Arch. from the Faculty of Architecture, University of Zagreb (1996). Since then, she has been working at the Institute of Art History as an associate researcher in the field of architecture. Since 2011, she has been Head of the Expert Technical Support Department and assistant to the Head of the IAH. Participated in various field projects of architectural surveying and documenting of historical buildings and sites, held under the auspice of the Institute. She has collaborated in the scientific research IPA project Thematic route Zrinski-Suleiman, (Croatia-Hungary-Turkey). With Ratko Vučetić, PhD, she is the leader of the project Researching and documenting the urban core of the Fortress of Osijek for the purpose of conservation and urbanistic studies. Coordinator for digital mapping on the project Cities of Croatian Medieval: urban elites and urban space (URBES) at the Croatian Institute of History (leader Irena Benyovsky Latin, PhD). She is a member of Croatian Chamber of Architects and Croatian Architects' Association. Her professional interests include interdisciplinary researching, documenting, analyzing historical layers, conservation guidelines, visualization, and production of ideal presentation design using new technology for protecting and revitalisation of architectural and urban heritage.

Mariana von Hartenthal

completed PhD in Art History at Southern Methodist University, Dallas, in 2017. She holds a Master's Degree in the Social Studies of Technology, from the Federal Technological University of Paraná, Brazil, and a Master's Degree in Museum Studies from the University of Southampton, England. As an undergrad, she studied Architecture at the Federal University of Paraná, Brazil. Her main area of research is the History of Photography. She has also worked in Museums in Brazil, the United States, and England for twelve years. She is currently directing the creation of the first online glossary of Art Historical processes in Portuguese, under the auspices of the Instituto Moreira Salles, the most important photographic archive in Brazil.

Sanja Horvatinčić

is a Postdoctoral Researcher at the Institute of Art History in Zagreb. In 2010 she received a Master's Degree in Art History, and English Language and Literature, from the Faculty of Humanities and Social Sciences, University of Zagreb. In 2017, she obtained her PhD at the Postgraduate Study of Humanist Sciences, University of Zadar, with the thesis "Memorials from the Socialist Era in Croatia – Typology Model". She conducts comprehensive primary research on memorial sculpture and architecture in Croatia,

with the focus on their relation to cultural production and memory politics in socialist Yugoslavia. She is researching new methodologies and the application of digital tools in mediating memorial heritage of socialism under the conditions of capitalist cultural production. She is a member of two research projects funded by the Croatian Science Foundation ARTNET (since 2014), and CRO_SCULTPURE (since 2017). She was a lecturer at the Post-graduate course Art for Collective Use: Monument, Performance, Ritual, Body (2015/16, University of Ljubljana), and an expert advisor for the major survey exhibition project "Toward a Concrete Utopia: Architecture in Yugoslavia, 1948–1980" (MoMA, 2018). She is currently co-editing a comprehensive scholarly publication on Yugoslav monuments (Archive Books, 2019).

Ana Knežević

is an associate of the Museum of African Art – Veda and Zdravko Pečar Collection, freelance curator, and independent art history researcher, currently engaged as an Italian language teacher of Art Education at the Third Belgrade Gymnasium. She defended her MA thesis in 2016, titled "Art History as a Discipline in the Age of Cyberculture". She is the organizer of the regional student conference Literature and Art in Yugoslavia: (dis)continuity (1918–1992) and member of the editorial board for the art history journal Artum. She published several articles and book chapters, including: "Residential and Commercial building Objektiv – the Final Work of Aleksandar Đokić (1936–2002)" (Leskovac Almanac, 2016), and "Architecture of the MAA: from Concrete Pavilion to 'African house'" (Nympa kor ndzizi: (Re) conceptualization of the Museum of African Art – the Veda and Dr. ZdravkoPečar Collection, 2017), "Education and Animation as an Extended Field of preschool, school, faculty and non-formal education on the example of the Museum of African Art in Belgrade" (Proceedings of the Regional Conference: School and Museum, 2018). Among her research interests are art history methodology, history of art history, museology, art education, cyber studies, new media studies, and history of architecture.

Ljiljana Kolešnik

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Art History, 2006. She also authored numerous articles on art, art criticism, and cultural policies of Socialist Yugoslavia, but also on the history of art history in Southeast Europe, and most recently, on the digital art history. Ljiljana Kolešnik is the head and founder of the Regional Centre for Art, Culture and New media, established at the Institute of Art History in Zagreb in 2013, and the co-founder of the Centre for Women's Studies in Zagreb. She is currently leading the research project in digital art history ARTNET, funded by the Croatian Science Foundation, and teaching at postgraduate studies of several Croatian Universities. She is the member of DiMPO – DARIAH-EU WG Digital Methods and Practices Observatory.

Margarita Kuleva

is a researcher and lecturer at the National Research University Higher School of Economics and a fellow of the Centre for German and European studies St. Petersburg State University – University of Bielefeld. Creative labour is one of her main research interests along with network approach in the sociology of the arts and the clothing consumption/fashion production. Kuleva has collaborated with a number of Russian and international cultural institutions as Manifesta Biennale, Garage MoCA, Goethe Institute, New Holland St. Petersburg and many others.

Christophe Leclercq

is a lecturer at the École du Louvre, and Research Associate at the Sciences Po médialab in Paris. His research is based on the relationship between art and technology, the collaboration between artists and engineers, digital archives (anarchive, a series of interactive multi-media projects designed to explore an artist's overall oeuvre via diverse archival material; and the Experiments in Art and Technology Datascape), and on digital social art history. He co-curated and co-edited with Bruno Latour the Reset Modernity! exhibition and the accompanying catalogue (2016, ZKM | Center for Art and Media Karlsruhe / MIT Press). URL: https://medialab.scienc-espo.fr/people/christophe-leclercq/

Kristie MacDonald

lives and works in Toronto, Canada. Her art practice engages notions of the archive and the collection, as well as their roles in the evolving meanings and contextual histories of images and artefacts. Mac-Donald is a recipient of awards from the Toronto Arts Council, Ontario Arts Council, Canada Council for the Arts, and the Toronto Friends of the Visual Arts. Her work has recently been exhibited at the Art Gallery of Mississauga, the MacLaren Art Centre (Barrie ON), BABEL Visningsrom for Kunst (Trondheim

NO), Reed College (Portland OR), The International Print Center (New York NY), Open Studio Contemporary Printmaking Centre (Toronto ON), and Gallery 44 (Toronto ON). She has been invited to work as an artist in residence at the Finnish Artists' Studio Foundation (Helsinki, FI), Skaftfell Center for Visual Art (Seyðisfjörður, IS), and Lademoen Kunstnerverksteder (Trondheim, NO). MacDonald is currently a PhD candidate in the Department of Visual Art at York University, and an Instructor in the Department of Visual Studies at the University of Toronto. Web: kristiemacdonald.com

Maria Giovanna Mancini

is a Temporary Research Fellow at Università degli Studi di Salerno, where she works on a project titled Global Art History or Global History of Art? Questioni di metodo e prospettive per una storia dell'arte nell'epoca della globalità. Her research interests focus on public art and the role of criticism and curatorship in the age of globalization. She has published numerous essays and books, including a book titled L'arte nello spazio pubblico (2011), Alternative Spaces of Production. Group Material e Tim Rollins con K.O.S. nella New York degli anni '80 (2013), «October». Una rivista militante (2014). In 2016 she published an e-book titled A Picture of a Critical Practice. Conversation with Douglas Crimp. She curated the documentary exhibition Le carte del critico. Documenti e materiali dall'archivio di Filiberto Menna at the Archivio di Stato in Salerno (2017). Since 2013, she has been a member of the Italian Society of Art Criticism (SISCA). She regularly collaborates with Artforum online.

Vera Mariz

is a Researcher at ARTIS (History of Art Institute, School of Arts and Humanities, University of Lisbon). She is currently developing a post-doctoral project on the Portuguese Art Market (1833–1945), which was awarded the Foundation for Science and Technology post-doctoral fellowship. She has a PhD in History / Art History, Art, Heritage and Restoration (2016) and a Master's Degree in Art, Heritage and Restoration Theory (2011), both from the School of Arts and Humanities (ULisboa). Her research interests, generally limited to the 19th and the 20th century, concern the history of collecting, art market, and history of architectural restoration. She has published several articles in national and international scientific journals, as well as book chapters and a book.

Sanda Milošević

graduated in 2004 at the Department of Art History and Archaeology, University of Zagreb. After graduating, she started working at the Croatian Conservation Institute in Zagreb, Department of Easel Painting, where she attained the rank of conservator. In 2008, she moved to the Department of Information and Documentation within the same Institute where she currently works as a conservator-art historian. She completed her postgraduate studies in 2016 at the Department of Information and Communication Sciences, Faculty of Humanities and Social Sciences in Zagreb. Her doctoral thesis is closely related to her work practice, as it deals with the handling of data collected during conservation-restoration works on movable heritage.

Júlia Perczel

is a social scientist, art historian and curator. Her main focus of research is the applicability of social science approaches and network methodology to the understanding of contemporary art phenomena. She completed her MAs in Social Science (Social and Organizational Psychology) and Art History at Eötvös Loránd University (Budapest) and at Tilburg University (Tilburg). Between 2013 and 2014, she conducted research into the patterns of networking and functional mechanism of the contemporary art field in Hungary. As a curator, she gained professional experience at the Württembergischer Kunstverein Stuttgart and participated in the 1st OFF-Biennale Budapest. She was part of the Kassák Museum Research Group, resulting in the book Doublespeak and Beyond: Art in Hungary 1956–1980 by Thames&Hudson, London, 2018 (credited as a co-author). She is currently working on her PhD at the Department of Network and Data Science at Central European University, Budapest.

Johannes Preiser-Kapeller

holds a PhD in Byzantine Studies from the University of Vienna (2006). He is a Senior Research Associate and Working Group Leader at the Division for Byzantine Research/Institute for Medieval Research of the Austrian Academy of Sciences and Lecturer at the University of Vienna. His research focus is based on Byzantine history in comparison and entanglement within the medieval world as well as social and spatial network analysis, complexity theory and environmental sciences. Websites: http://oeaw.academia.edu/JohannesPreiserKapeller and https://www.dasanderemittelalter.net/

Ellen Prokop

is an Associate Head of Research at the Frick Art Reference Library, New York, USA, where she serves on the institution's Digital Art History Lab Committee. She was the co-editor of a special theme issue on digital art history for The Journal of Interactive Technology and Pedagogy (2018), and the main

contributor to and editor of the final report on the symposium "Art History in Digital Dimensions" (2017). She has also published several articles and essays on Spanish art of the sixteenth and the seventeenth century, including most recently a chapter in El Greco Comes to America: The Discovery of a Modern Old Master (2017). She is currently preparing a book manuscript on the collecting histories of El Greco, Diego de Velázquez, and Bartolomé Esteban Murillo. Her post-doctoral research has been supported by the Samuel H. Kress Foundation, the Andrew W. Mellon Foundation, and the National Endowment for the Humanities. She regularly teaches undergraduate and graduate-level courses at New York University and Hunter College, City University of New York.

Tihana Puc

graduated Art History and Ethnology at the Faculty of Humanities and Social Sciences, University of Zagreb. She holds a PhD in Management and Development of Cultural Heritage from IMT Institute for Advanced Studies, Lucca. She worked at the Department of Art History, Faculty of Humanities and Social Sciences, University of Rijeka (2005–2008), at the Museum of Contemporary Art Zagreb (2004, 2008–2010), and she is currently employed at the Ministry of Culture of the Republic of Croatia. Her recent projects include Proposition for a Map of "trigon" (KM-Künstlerhaus Halle für Kunst & Medien, Graz, 2017), Observatory of Artistic Work (SIZ Gallery, Rijeka and Format C, Zagreb, 2017-), and Youth Salon Cartogram: Award Winning Artists Network (HDLU, Zagreb 2018).

Sarah Reiff Conell

is a fourth-year PhD student in the History of Art and Architecture Department at the University of Pittsburgh. She studies late medieval and early modern cultic practice in southern German-speaking areas, including relics of Christ's Blood and miraculous images of the Virgin Mary. Her dissertation research traces the replicative networks of miraculous images, and the distribution of agency in the fifteenth and the sixteenth century. She is passionate about parsing out the flexibilities and conventions of cross-media reproduction, often making use of digital methods and tools in conjunction with more traditional forms of scholarship. During the 2017/2018 academic year, she was the project manager for Itinera, a collaborative, digital project that facilitates the collection and presentation of historical information concerning culturally-motivated travel in the eighteenth and the nineteenth century.

Fábio Ricardo

holds a grant from ARTIS (History of Art Institute, School of Arts and Humanities, University of Lisbon), where he works in the projects Az Infinitum — Azulejo Indexation and Referencing System and ORION – Art collections and collectors in Portugal. He is currently starting an MA in History of Art and Heritage at the same university. His main research interests are archeology, ancient history, azulejo and photography.

Nuria Rodríguez-Ortega

is the Chair of the Art History Department at the University of Málaga, where she teaches courses in digital humanities, digital cultural heritage, and digital art history. Currently, she is the director of the research group iArtHis_Lab (http://iarthislab es), whose main purpose is the development of the Digital Art History in the Spanish context. She is also the promoter and coordinator of ReArte.Dix, the First International Network about Digital Studies of the Artistic Culture in the Spanish-speakers countries, and the President of the Sociedad Internacional de Humanidades Digitales Hispánicas (HDH). Nuria Rodríguez-Ortega has a wide experience leading international digital projects in the field of Art History and Cultural Heritage. Among them, it deserves to be mentioned the pioneering Digital Mellini: Exploring New Tools & Methods for Art-historical Research & Publication, in collaboration with the Getty Research Project; and the Exhibitium Project (www.exhibitium. com) devoted to enhance the studies on art history exhibitions from the Data Science and Network Science perspectives. She is the author of numerous books and articles related to digital resources for the history of art and cultural heritage, and their theoretical, critical and methodological problematic issues. She is also engaged with the design of new curricula to promote digital training among the students and scholar community, leading several seminars on this topic, such as the Digital Art History Summer School (DAHSS), a joint initiative of the University of Málaga and the UC at Berkeley.

Rosário Salema de Carvalho

is a researcher at ARTIS (History of Art Institute, School of Arts and Humanities, University of Lisbon), and executive coordinator of the group Az – Azulejo Research Network. She has a PhD in History / Art History (2012), from the School of Arts and Humanities (ULisboa) and a Master's Degree in Art, Heritage and Restoration Theory from the same School (2007), granted on the grounds of her theses on Baroque Azulejos. She is currently developing a post-doctoral research (supported by the Foundation for Science and Technology – FCT), dedicated to the issue of frames in Baroque tile decorations, hosted by ARTIS (Az) and the National Azulejo Museum. Rosário Salema de Carvalho is the author of several books and articles published in national and international scientific journals.

Laura Sánchez Carrasco

is an Associate Professor at the School of Architecture in Madrid. She is an architect (Universidad Politécnica de Madrid UPM, 2007), and PhD Summa Cum Laude of the "Analysis, Theory and History of Architecture" (UPM, 2017) with the doctoral thesis entitled "Kevin Roche John Dinkeloo and Associates: ideas that sustain their architectural work. In the meantime, she obtained her Master in Analysis, Theory and History of Architecture" (UPM, 2014). Within the Department of Architectural Composition (DAC), she lectures "Introduction to Architecture" at the Architecture Degree, and "Architectural Composition" at Master in Architecture. Her research, based on projects 20th Century Architecture in the USA and Post-World War Architecture in the USA through periodical publications, has been disseminated in international publications and conferences. She is a member of the research team for the project of the Ministry of Economy and Competitiveness of the Government of Spain titled ArchiteXt Mining. Analysis of modern Spanish Architecture through its texts (1939–1975) to be developed between 2016 and 2018. She collaborated as bibliographic researcher and documentalist in Atlas of European contemporary collective housing, project financed by Ministry of Science and Innovation (Spain). She was also contracted by ICO Foundation in Madrid as responsible documentary for the exhibition project Export: Spanish Architecture abroad. Team assistant for the Organization of the 1st International Conference Ibero-American Routes, held in the Polythecnic University of Madrid in 2015, and for the 4th International Workshop of Museography and Architecture of Museums – Museology and Heritage that took place in Madrid in 2014. She is a scientific journal referee at Cuaderno de Notas (Spain) and Estoa (Peru).

Luis San Pablo Moreno

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