DIGITAL APPROACHES TO RESTORATIONS AND PHILOLOGY

NEW CHALLENGES IN MUSIC, DANCE AND THEATRE

Workshop organised by the DFG-funded Projekt "Dance/Music digital" at the **Department for Music History of the German Historical Institute in Rome** in cooperation with the **Department of the Arts of the University of Bologna**

11–12 May 2026
Deutsches Historisches Institut in Rom | Istituto Storico Germanico di Roma
Via Aurelia Antica, 391 I–00165 Roma | **www.dhi-roma.it**

Organizing Committee
Elena Cervellati | Università di Bologna
Eleonora Di Cintio | Deutsches Historisches Institut in Rom
Silvia Garzarella | Università di Bologna
Vera Grund | Deutsches Historisches Institut in Rom

PROGRAMME

Monday, 11 May

14.00 – 14.30
Vera Grund, Petra Terhoeven | Deutsches Historisches Institut in Rom
Elena Cervellati, Silvia Garzarella | Università di Bologna
Institutional greetings

I – Musics and Voices

Chair: **Eleonora Di Cintio** | Deutsches Historisches Institut in Rom

14.30 – Jasper Teunen | Katholieke Universiteit Leuven
Visual (In)consistency between Chanson Readings

15.00 – Marina Toffetti | Università degli Studi di Padova
The Contribution of Digital Technologies and Interdisciplinary Exchange to the Critical Editon and Analysis of Incomplete Music

15.30 – Gianluca Bocchino | Università di Cassino e del Lazio Meridionale
"Canta come un angelo". The Ontology of Digital Vocal Restoration as an Extension of the Critical Edition. The Case of Francesca Campana (Rome, 1629)

16.00 - Coffee Break

II – From Theatre to Cinema

Chair: **Elena Cervellati** | Università di Bologna

16.30 – Matilde Innocenti | Università degli Studi di Firenze
From Archival Philology to Digital Restoration: Modeling the Teatro Metastasio (1827–1860)

17.00 – Antonio Pizzo | Università di Torino
From Drama Encodings to Interoperable Archives: Drammar + RAG for LLM-Assisted

17.30 – Juliette Bristault Canova | La Rochelle Université
Annotating Theatrical Video Corpora with e-spect@tor: What Student-Spectators' Comments Reveal About

18.00 – Letizia Gioia Monda | Università degli Studi di Udine
Dancing Cabiria in VR. A Methodology for Choreographic Reenactment in a Virtual Environment

20.00 – Dinner for Speakers and Organizing Committee

Tuesday, 12 May

III – Digital Restoration I
Chair: **Silvia Garzarella** | Università di Bologna

9.30 – Federico Filippi Prévost de Bord | Università degli Studi di Genova
Encoding Incidental Music. TEI-MEI Workflows for Theatre Performance Data Modelling

10.00 – Tobias Bachmann | Akademie der Wissenschaften und der Literatur Mainz
Eleonora Di Cintio, Vera Grund | Deutsches Historisches Institut in Rom
Andreas Münzmay | Universität Paderborn
Dance/Music Digital: Visualising Dance and Music Sources

10.30 – Henner Drewes | Folkwang University of the Arts of Essen
Marius Ledwig | Universität Paderborn
Dance/Music Digital & MovEngine: Structural Analysis and Animation of Dance and Movement

11.00 – Coffee Break

IV – Digital Restoration II
Chair: **Vera Grund** | Deutsches Historisches Institut in Rom

11.30 – Maresa Bertolo | Politecnico di Milano
The Virtual Feuillet Project

12.00 – Simone Berto | Consiglio nazionale delle Ricerche (ISPC-CNR) di Roma
Silvia Garzarella | Università di Bologna
EM-Dance: An Exploratory Application of the Extended Matrix Method for mapping Data Provenance and Representing Reconstruction Processes in Dance

13.00 – Buffet Lunch

V – Digital Restoration III
Chair: **Andreas Münzmay** | Universität Paderborn

14.30 – Elisa Corpolongo | Conservatorio di Musica "Giuseppe Verdi" di Milano
The Avatar as a Critical Edition: the Loss of Corporeality in Digital Restoration

15.00 – Marco Argentina, **Matteo Ferraresso**, **Caterina Piccione** | Università di Bologna
Digital Tools for Dance Philology: Stepanov Notation in MuseScore

15.30 – Final Conclusions

16.00 – End of the Workshop

ABSTRACTS AND BIOGRAPHIES

JASPER TEUNEN Katholieke Universiteit Leuven

Visual (In)consistency between Chanson Readings

Unlike contemporary sheet music, sources for fifteenth century chansons do not contain many performance instructions that a modern musician might expect to find. For example, there is rarely mention of the intended musical instruments, no indication of dynamics, few explicitly marked accidentals, and only vaguely indicated text placement at best. However, one must decide how to interpret every one of these qualities to enable performance of these pieces. Hence, musicologists must attempt to reconstruct the original intentions of the composers and scribes.

This paper compares a set of chansons that were among the most popular works of the fifteenth century and that appear in a large number of its surviving sources. Through analysis of the visual (in)consistencies between separate readings of these works, the musical intentions of their scribes are uncovered. This is enabled by the availability of high-quality digital editions of the overwhelming majority of the 53 compared sources, allowing the study of their musical material to take detailed aspects of their physical qualities into account. By analysing the layout and visualisation decisions made by the scribes, their decision processes and musical understanding is laid bare. This is then used in a reverse-engineering process to reconstruct performance instructions such as text placement as close to the original intention as possible.

In conclusion, this paper looks at visual and physical qualities of individual chanson readings, instead of purely their musical content. In doing so, the manner in which the original scribes intended the music to be performed is analysed and used to inform modern interpretation.

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My name is Jasper Teunen and I am a PhD researcher and FWO fellow at KU Leuven in Belgium. I started my project titled ”Musical Stylometry: A Computational Approach to Late Medieval Courtly Song” under the supervision of prof. David Burn last fall. More information on the project can be found here.

Before achieving an MA in musicology, I attained degrees in Software Engineering (B. Sc.) and Mathematical Engineering (M. Sc.), all from KU Leuven. I apply the skills I learned during my engineering training in my research, leading to a digital approach to early music, with the

statistical analysis of compositional style being a central tenet of my PhD project. However, to benefit from a digital approach to the study of music, one does not always need to apply advanced software techniques, as I will attempt to demonstrate in this paper.

MARINA TOFFETTI Università degli Studi di Padova

The Contribution of Digital Technologies and Interdisciplinary Exchange to the Critical Editon and Analysis of Incomplete Music

In recent decades, the contribution of digital technologies has deeply transformed the appearance and structure of many music editions, making the presentation of the results of the reconstruction of the musical text more effective and the use of the edition itself more streamlined. One area where the contribution of these technologies is particularly evident is the critical edition of incomplete polyphonic compositions. According to recent studies, approximately one-third of polyphonic collections published in separate parts printed in Italy between 1580 and 1630 are now missing one or more part-books and have therefore been neglected by performers and scholars for centuries.

Many of these collections, however, could be performed again thanks to a hypothetical reconstruction of the missing portions of the musical text and, in any case, deserve publication and study as much as those that have survived to this day. While making no claim to authenticity, these hypothetical restorations represent an indispensable tool not only for the performance of repertoire forgotten for centuries, but also for a deeper understanding of the techniques and styles of incomplete compositions and the entire contemporary repertoire.

These stylistic reconstructions share numerous analogies with similar virtual restoration operations conducted in the fields of visual arts and archaeology, with which they share the guiding principles of non-invasiveness and reversibility.

This article aims to illustrate the results obtained in the context of critical editions of incomplete polyphonic compositions and to reflect on the advantages and disadvantages of different strategies for presenting the results of the reconstruction of damaged musical structures. At the same time, it demonstrates how collaboration with performers can prove invaluable for verifying the integrative hypotheses formulated.

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Marina Toffetti is Associate Professor of Musicology at the University of Padua. She obtained the Italian National Scientific Qualification for the rank of Full Professor. She has supervised the MSCA project "BEMUS-Pietro Bembo's soundscape" and is the director of the "MusiCare. Taking Care of Incomplete Music" project. She graduated in Piano, Choral conducting, Composition, and Modern Literature and received a Ph.D. in Musical philology. She has won musicological scholarships and has given lectures in Italy and abroad. She has published extensively and has edited critical editions of polyphonic music. In 2013 she was awarded the 'Italian Heritage Award' for 'Research, education and innovation in the protection of cultural heritage' for the reconstruction of a missing part in a pastoral play in honor of St. Charles Borromeo. She is a member of the scientific board of «Musica Iagellonica», of the complete works of Marco Uccellini, Tomaso Cecchini and editor in chief of Giovanni Battista Riccio's opera omnia. Her main scientific interests concern music dissemination, music philology and music analysis.

GIANLUCA BOCCHINO Università di Cassino e del Lazio Meridionale

"Canta come un angelo". The Ontology of Digital Vocal Restoration as an Extension of the Critical Edition. The Case of Francesca Campana (Rome, 1629)

This paper proposes a reflection on the procedural ontology of digital vocal restoration as applied to the European art music tradition between the seventeenth and nineteenth centuries, understood not as a practice of mimetic restitution, but as a critical reconstructive device grounded in indirect and collateral sources. In the absence of sonic traces, past vocality is not regarded as an objectively recoverable datum, but as a culturally mediated construct, accessible through musical notation, contemporary critical accounts, and vocal treatises. Within this framework, objectivity does not reside in the sonic result— inevitably hypothetical—but in the transparency of the method, the explicit declaration of constraints, and the verifiability of the sources employed. Against this background, the case of Francesca Campana (ca. 1607–1665) is adopted as a feasibility study. The *Arie a una, due, e tre voci* (Rome, Robletti, 1629) provide a basis for investigating the relationship between notation, vocal body, and identity through the analysis of tessitura, ambitus, and rhetorical strategies, with particular attention to expressive dissonance as the projection of a vocal gesture. The testimony of Fulvio Testi, who attributes to the composer an angelic yet slightly husky voice (F. Testi, Lettere, Laterza, 1967), allows vocality to be interpreted not as an abstract ideal, but as an embodied phenomenon situated

within a specific cultural horizon. On this basis, the paper introduces a procedure of critical vocal restoration employing digital voice modelling tools as an extension of the critical edition: not to recover an "authentic" voice, but to delineate a field of historically coherent vocal possibilities and to render audible the corporeal implications inscribed in the musical text. Understood in these terms, digital restoration becomes a philological instrument capable of interrogating the limits and potentialities of contemporary performative editions. The systematization of this methodological framework ultimately opens up the possibility of future applications to paradigmatic figures in the history of singing—from Farinelli to Maria Malibran—not in order to reactivate their sound, but to critically analyse the historical construction of their vocal myth.

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Gianluca Bocchino is a musicologist, musician, and researcher. He teaches at the University of Cassino and Southern Lazio, the University of Bari, and the "G. B. Pergolesi" Conservatory of Fermo. His areas of specialization range from medieval secular monody to musical palaeography and philology, with particular attention to sound and choreutic archives, vocality, and performance practices. In his most recent research, he has explored the role of dance in twentieth-century Italy and the relationship between voice and body from an interdisciplinary perspective. His publications include *Raffaello Baralli principe dei paleografi musicali italiani* (MiC – Direzione Generale Archivi, Roma 2019); *Jia Ruskaja. La dea danzante* (NeoClassica, Roma 2023); *La danza del silenzio* (NeoClassica, Roma 2025). He is President of "Assonanze" – the Association of Young Musicologists of Sapienza University of Rome – and directs research projects and academic editions, with particular focus on the voice as an artistic and semiotic device.

MATILDE INNOCENTI Università degli Studi di Firenze

From Archival Philology to Digital Restoration: Modeling the Teatro Metastasio (1827–1860)

The paper explores the intersection between archival philology and digital restoration through a case study based on the Fondo of the Teatro Metastasio (1827–1860), preserved at the Archivio di Stato di Prato. The project addresses the restoration of the institutional and performative ecosystem of a nineteenth-century theatre.

The heterogeneous documentation of the Fondo, which includes deliberations, contracts, correspondence, accounting records, technical documentation and legal acts, makes it possible to reconstruct not only repertory and programming, but also administrative, economic, and material conditions that shaped theatrical production.

The database operates as a philological infrastructure, linking documents, individuals, institutional roles, and events within a relational framework that enables cross-entity queries and the visualization of temporal sequences and correspondence networks. Through the formulation of interpretative categories and the implementation of visualization tools, it aims to make visible the decision-making and economic dynamics that structured the theatre's functioning in the nineteenth century. This relational approach enables the reconstruction of contractual negotiations and production processes, offering a form of digital restoration grounded in critical source analysis.

The paper reflects on the methodological implications of this approach by framing relational modeling as a form of critical editorial practice. A digital model of institutional processes can be understood as an edition of theatrical activity, in which documents are not merely reproduced but organized into structures that reveal their functional relationships. Visualization reshapes the critical apparatus by translating variants, negotiations, and procedural developments into temporal and relational patterns. In this context, modeling choices operate as philological decisions: the selection of entities, categories, and connections constitutes an explicit interpretative act comparable to traditional editorial judgment.

By foregrounding sustainability, interoperability, and methodological transparency, the project proposes a scalable framework for integrating archival research, digital humanities methods, and theatre historiography. It argues that digital restoration, when grounded in rigorous philological practice, can extend beyond scenic reconstruction to restore the institutional and cultural processes that made performance possible.

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Matilde Innocent holds a BA in Philosophy from the University of Pisa and an MA in Performing Arts Studies from the University of Florence. She is currently a PhD candidate in Theatre History and Digital Humanities at the University of Florence. Her research has consistently focused on theatre studies, a field that has shaped both her undergraduate and graduate theses, as well as her current doctoral work. Her doctoral project examines the Fondo

del Teatro Metastasio (Prato), with particular attention to governance structures, economic management, artistic programming, companies, impresarios, and repertory systems in the nineteenth century. The project develops a semantic digital model aimed at representing documents, people, places, and events as interconnected entities, while reflecting on the epistemological implications of transforming archival materials into structured data. Her research investigates the historical, administrative, and institutional dimensions of theatrical practice through the integration of archival inquiry and digital modeling methodologies.

ANTONIO PIZZO Università di Torino

From Drama Encodings to Interoperable Archives. Drammar + RAG for LLM-Assisted

This paper proposes a digital workflow that combines the Drammar ontology for drama representation with Large Language Models (LLMs) to support the creation of sustainable, interoperable corpora of annotated dramatic works. Drammar models drama as intentional action organized along a timeline, structured into units and scenes, and driven by conflicts among characters' plans and goals. In the perspective of drama as Intangible Cultural Heritage, such encodings can be treated as a sharable "expression" of a work, distinct from its material manifestations, and aligned with cultural-heritage standards for long-term access.

We hypothesize a system where Drammar becomes the explicit knowledge layer for a Retrieval-Augmented Generation (RAG) pipeline: the ontology (classes, relations, constraints, and existing encodings) is used to retrieve relevant conceptual patterns and annotation exemplars, grounding the LLM's analysis. The LLM is tasked with proposing (i) a segmentation of a dramatic text into an ordered and hierarchical tree of dramatic units and scenes, and (ii) ontology-compliant annotations (agents, intentions, plans, conflicts, preconditions/effects). An interactive interface then enables scholars to inspect, correct, and refine both segmentation and annotations, preserving editorial accountability.

Crucially, user revisions are recorded as structured feedback (e.g., corrected boundaries, alternative conflict sets, adjusted plan structures) and fed back into the system to iteratively improve model precision—either through targeted fine-tuning or through continuously updated retrieval of validated examples. The expected outcome is a scalable method for producing large, consistent corpora of drama encodings, enhancing interoperability across archives and

visualization platforms, and offering a sustainable pathway for long-term maintenance and accessibility of performance-related knowledge.

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Antonio Pizzo is Full Professor of Theatre and Performing Arts at the University of Turin, where he teaches Theatre History, Dramaturgy and Intermediality. He has been the PI of the PNRR PE5 CHANGES Spoke 2 for his University. He is President of the DAMS degree course (2023–), Vice Director of «Mimesis Journal» and served on various university governance bodies and doctoral boards. His research explores the intersections of performance, digital media and artificial intelligence, with a focus on dramaturgical models, virtual characters and audience interaction. He founded the Interdepartmental Research Center on Multimedia and Audiovisuals (CIRMA) and has led projects such as the interactive museum guide Dramatour, the computational drama ontology Drammar, and the storytelling system DoPPioGioco. He also founded and coordinates "Officine Sintetiche", a longrunning laboratory for digital performing arts. Pizzo has published widely internationally in theatre and computer-science venues and is lead author of the monographs *Interactive Storytelling: A Cross- Media Approach to Writing, Producing and Editing with AI* (Routledge).

JULIETTE BRISTAULT CANOVA La Rochelle Université

Annotating Theatrical Video Corpora with e-spect@tor: What Student-Spectators' Comments Reveal About

The e-spect@tor tool (https://especellu.huma-num.fr/) has been developed to train audiences in the analysis of live performances using video archives. This open-source web application has several features for analyzing live performance videos and mainly enables timed viewing and annotation of theater videos. As part of our doctoral research, we are experimenting with this tool in educational settings (primary and middle schools) in France and Argentina to assess the possibilities offered by e-spect@tor in a school context: What are its features? How can it be used with elementary or secondary school classes? Do the uses of this application vary depending on the class and the teacher's pedagogical objectives?

We will first present the annotation features and modalities available on e-spect@tor and contextualize them within a learning situation. Drawing on data collected during our various field investigations, we will then examine student annotations in the context of theater

education: students' comments, generally focused on their emotions and feelings, help specify the overall atmosphere, characteristics of acting, and identify certain constitutive elements of scenography (particularly lighting). These comments also challenge certain theoretical conceptual limits and highlight the porosity between scenic components, inviting us to rethink the categorization of certain elements, such as the "performer's body" (Pavis, 2018), which lies between acting and scenography. Finally, as a concluding remark, we will discuss how student-spectators appropriate this online tool and reconfigure the academic expectations of video corpus annotation through everyday language that questions the boundary between the use of an online educational tool and social media (anglicisms, disregard for typographical rules, spelling, conjugation, and language registers).

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Juliette Bristault Canova is a doctoral researcher at La Rochelle University under a joint doctoral supervision agreement with the University of Buenos Aires. Her interdisciplinary research lies at the intersection of Hispanic American cultural studies, performing arts, and educational sciences, within the broader framework of the digital humanities. Her theoretical and practice-based dissertation explores theatre education in schools from a comparative France–Argentina perspective and examines the experimentation and pedagogical uses of the e-spect@tor tool in primary and secondary education in both countries. More broadly, her research focuses on contemporary Argentine theatre and theatre education for young audiences.

LETIZIA GIOIA MONDA Università degli Studi di Udine

Dancing Cabiria in VR. A Methodology for Choreographic Reenactment in a Virtual Environment

The intervention aims to present Dancing Cabiria in VR, a research methodology applied to the development of a choreographic reenactment based on the study of Giovanni Pastrone's film *Cabiria* (1914-1931).

The paper will explore how movement analysis can support remediation strategies for designing immersive digital environments, proposing a model of embodied performance in a virtual dimension.

Starting from the presentation of an original method developed for analysing movement language in film performance (Monda 2025), the paper will explore the process that led to the creation of one of the four choreographic engagement strategies designed for the prototype VR Living Cabiria Web.

The paper will demonstrate how:

- Movement analysis became an interface design principle.
- The application of the Motion Bank Web System, a software for movement notation, in the acknowledgment of choreo-cinematic functions.
- The reenactment of the choreo-cinematic functions in the avatar-based simulations for the user's training for alignment with the kinesthetic elements.
- Historical dance practices are reactivated through contemporary embodiment.
- Kinesthetic empathy operates across media and temporal boundaries.

This eccentric choreographic post-digital practice exemplifies how intermediality transforms movement knowledge into experiential architectures, fostering new forms of somatic engagement with moving image heritage that honor both theatrical traditions and technological affordances.

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I am a Researcher at the University of Udine, in the Department of Humanities and Cultural Heritage (DIUM). In 2014, I earned a PhD in Digital Technologies and Methodologies for Research in Performing Arts at Sapienza University of Rome. From 2010 to 2014, I participated in the multidisciplinary Motion Bank project by William Forsythe (Frankfurt am Main), where I was also a regular guest of the Dance Engaging Science Workgroup. Later, I contributed to the project "Clash! When Classic and Contemporary Dance Collide and New Forms Emerge" (Creative Europe Programme). From 2023 to 2025, I was a Research Fellow at the University of Turin, working within the PNRR project "Living Cabiria". In this context, I collaborated on the VR Living Cabiria Web research line, for which I developed the prototype "Dancing Cabiria in VR", a choreographic re-enactment based on four key scenes from Giovanni Pastrone's movie *Cabiria* (1914–1931).

FEDERICO FILIPPI PRÉVOST DE BORD Università degli Studi di Genova

Encoding Incidental Music. TEI-MEI Workflows for Theatre Performance Data Modelling

This paper presents a digital workflow for encoding and analysing textual and musical sources, drawing on a case study from the nineteenth-century prose theatre. Rather than treating dramatic scripts and incidental music as autonomous entities, they are seen as interrelated parts of a single performance. TEI markup language is adopted to encode textual sources, with precise annotation of stage directions, cuts, and additions. MEI allows the accurate representation of music notation, variants and revisions, in order to retain both structural and semantic information. Furthermore, shared identifiers enable the interconnection of the annotated XML files, creating an interoperable system for investigating broader relationships among them. Analysis is then conducted through Python-based XPath queries to provide a distant reading approach that can be applied to individual dramas as well as comparatively across the corpus. The current research focuses on the music fonds of Adelaide Ristori, now preserved at the Biblioteca Museo dell'Attore in Genoa. In particular, among the collected items are manuscripts originating from Parisian theatres between 1855 and 1865, containing performance annotations and cuts. The presence of the corresponding scripts, in conjunction with other archival materials, provides a rare opportunity to conduct a comparative analysis. Although the role of the incidental music is considered merely functional within the drama, its study enables a deeper understanding of a widely performed repertoire that has often been overlooked. Preliminary results show recurring compositional functions and orchestration strategies that correlate with dramatic situations and characters across the analysed corpus. Moreover, this methodological framework could be applied to similar repertoires, extending the analysis to other forms of performance-related data.

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Federico Filippi Prévost de Bord is a PhD candidate in Digital Humanities – Art, Performance and New Technologies at the University of Genoa. He holds a degree in Musicology and Cultural Heritage from the University of Milan, and his thesis (2025 SIdM Prize) examined the first series of the periodical «Allgemeine musikalische Zeitung» (1798-1848). He previously earned a master's degree in Classical Guitar from the "Niccolò Paganini" Conservatory in Genoa, investigating unpublished nineteenth-century concertos for solo instrument and orchestra (2022 SIdM Prize Mention). He also holds a degree in Music and New Technologies.

His research focuses on eighteenth- and nineteenth-century musical manuscripts and printed sources. He integrates digital tools and encoding standards into musicological research to analyse historical musical corpora.

TOBIAS BACHMANN Akademie der Wissenschaften und der Literatur Mainz
ELEONORA DI CINTIO, VERA GRUND Deutsches Historisches Institut in Rom
ANDREAS MÜNZMAY Padeborn Universität

Dance/Music Digital. Visualising Dance and Music Sources

The aim of the Dance/Music Digital project is to develop an editing method that can be used to digitally link information from a wide variety of sources on dance—iconographic documents, music, drama and rhetoric schools, archival documents—in a comprehensive multimodal structural model. The case study is Franz Anton Hilverding and Joseph Starzer's ballet *La Guirlande enchantée* (1757), which has been preserved in the form of music manuscripts, several scenic pictures from the Giacomo Durazzo collection, and a description of the plot. Descriptions of gestures such as John Weaver's "The Loves of Venus and Mars," Gilbert Austin's "Chironomia," or Johan Jakob Engels' "Ideas of Mimicry" provide insight into the semantics, but also the execution of gestures from the pictures. Notations of dance steps in Beauchamp-Feuillet's notation provide clues to dance movements.

The Edirom technology, which has been tried and tested for digital music editions, is used as the editing platform. This is supplemented by a module for animations. The Edirom features developed for the edition, synoptic display, navigation, etc., can be used for the critical edition of the music, but also for the synchronized display of music, image, and text sources, as will be shown in the paper.

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Tobias Bachmann has been a research assistant at KreativInstitut.OWL since 2019 and since 2024 in the DFG project "Dance/Music Digital". He was also a research assistant in the project "OPERA – Spectrum of European Music Theater in Individual Editions" at the Academy of Sciences and Literature Mainz, as well as in the project "The Small Rounded Two/Three-Part Form in Europe before the Genesis of the Viennese Classical Style – a Computer-Assisted

Analysis" (FWF) at Paris Lodron University of Salzburg. In 2016 Bachmann received his Master's degree in Music Informatics from the Karlsruhe University of Music.

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Eleonora Di Cintio received her PhD in History and Analysis of Musical Cultures at «Sapienza» University of Rome in 2018. She was Fellow at the German Institute of Rome (2019), «Sapienza» (2021-2023), Università «Roma Tre» and Villa I Tatti – The Harvard University Center for Italian Renaissance Studies. At the moment she is Researcher at the German Historical Institute in Rome in the project "Tanz/Musik Digital".

Her studies concern Italian Opera, mainly of the late 18th and 19th centuries, a topic that she approaches both as a philological and as a cultural object. Her publications include critical editions of operas by Rossini (*La cambiale di matrimonio* and *Il pianto delle muse in morte di Lord Byron*, Fondazione Rossini, 2022), Pergolesi (*Lo frate nnammorato*, Ricordi, 2023), Donizetti (*Dalinda*, Ricordi, 2023, *Caterina Cornaro*, same publisher, 2024) and essays about musical philology and the relationships between opera and politics.

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Vera Grund received her PhD from the University Mozarteum Salzburg in February 2009, with a dissertation on contemporary music of the 1950s and the journal «Melos». In 2024 she received her habilitation from the University of Paderborn with a thesis on "Venetian Opera as Euergetism and Popular Culture". She was research associate at the Musicological Seminar Detmold/Paderborn and at the University of Salzburg. She was long-term Postdoc fellow at the German Study Centre in Venice and of the DHI Rome with the project "Der Partito Comunista Italiano, Massenkultur und Neue Musik im Italien der Nachkriegszeit". Together with Andreas Münzmay she is conducting the DFG-funded Project "Dance/Music Digital". Since 2024 she is head of the Music History Department of the German Historical Institute in Rome.

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Andreas Münzmay is Professor of Musicology / Digital Music Edition / Digital Humanities at the University of Paderborn (Faculty of Arts and Humanities), scientific director of the Centre for Music – Edition – Media (ZenMEM) and co-spokesperson of the Digital Humanities profile area at the University of Paderborn. As co-spokesperson in the NFDI4Culture consortium, he heads the Paderborn team of NFDI4Culture's "Cultural Research Data Academy" and, as an academy professor, is project co-leader in the long-term project "Beethoven's Workshop" of the

Mainz Academy of Sciences and Literature. Münzmay led the "OPEN Edirom" research project, resulting in a digital edition of *Faust* incidental music, and leads the "Dance/Music digital" and "Digital Performance Edition" projects.

HENNER DREWES Folkwang University of the Arts of Essen

MARIUS LEDWIG Universität Padeborn

Dance/Music Digital & MovEngine: Structural Analysis and Animation of Dance and Movement

The research project "Dance/Music Digital" located at the University of Paderborn is aimed at developing an innovative method for creating digital editions combining information from diverse sources on dance – iconographic documents, music records, drama and rhetoric schools, archival documents – which all can be linked in a comprehensive multimodal structural model. With regard to dance, a four-dimensional movement analysis (spatial dimensions and temporal progression), visualizations and analyses of dance poses, animated gestures and dance steps with information from music, images and texts will be integrated into the overall digital edition.

One of the core elements of this structural model is provided by the software MovEngine, which enables a formal description and animated representation of human body movement based on analytical concepts of existing movement notation systems (Kinetography Laban and Eshkol-Wachman Movement Notation).

The continuing development of MovEngine and its xml-based animation data format provides insights into the general question of codified representation of movement and dance. The animated output may act both as a link and a transparent translation layer between the actual physical performance and abstract ways of representation in notation, highlighting their commonalities and differences.

In "Dance/Music Digital", fundamental approaches to reconstruction or reenactment of historical dance will be re-examined with the aid of MovEngine. A juxtaposition of historical materials translated to static or animated 3D-representations will provide an answer to the gaps present in the sources. The transformation of various sources of different kinds to common formats (visual 3D representation and underlying codified xml-data) will facilitate comparisons and thus transparently display and emphasize the links and the differences. Based on this, it will

be possible to create hypothetical movement sequences, which certainly will not show a precise reconstruction of the original, but may illustrate certain aspects as space, expression and style.

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Henner Drewes is a dancer and scholar, specialized in representation methods for movement and dance (movement notation, digital representation methods, software development). He studied Eshkol-Wachman Movement Notation and Kinetography Laban, and obtained a PhD at the University of Leipzig. Since 2010 he has been teaching notation and coordinating the Movement Notation / Movement Analysis (M.A.) study program at Folkwang University of the Arts in Essen. Since 2023 he has also been works as a research assistant at the University Paderborn within the project “Dance/Music Digital”.

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Marius Ledwig holds a Bachelor of Arts in Dance from Folkwang University of Arts, Essen, and graduated in Dance Composition (M.A.) specializing in Movement Notation/Analysis at the same university in February 2026. He was performing in productions at Aalto Theatre in Essen and Wuppertaler Tanztheater “Pina Bausch” as well as in the free-lance dance scene. Since October 2023 he is part of the project “Dance/Music Digital”.

MARESA BERTOLO Politecnico di Milano

The Virtual Feuillet Project

An overview on the Virtual Feuillet Project, presenting its main development, contributors, methodologies and results. The project started with an approach to computer simulation of the human movement based on a high-level description of the movement grammar and notation, working on the combination of basic movements acquired through optical motion capture systems. The combinatory techniques inspired by the ancient notation system of the Baroque Dance allows to achieve complex tasks - like synchronization with music tempo and rhythm - in a simple way. The first phase has been the study of human morphology and movements in Baroque Dance, then we built an anthropomorphic 3D model which articulated structure made it able to dance. An analysis of the major Baroque Dances lead to identify a syntactic structure suitable for a hierarchical decomposition of a complete choreography. By acquiring the dance movements through an optical motion capture system, thanks to the involvement of a

professional human dancer, we built a digital library of simple and complex movements, to be used to lead the motion of the 3D model in two district cases: (i) real-time generated dances and (ii) rendering-based generated dances. Synchronization with the music tempo and rhythm has also been dealt with, via the relationship between musical measures and complex steps – words in our grammar metaphor. The project led to a video, a live theatrical experience, a set of interactive web tools to be used by the choreographer in order to define a choreography for the virtual dancer and a connection with the virtual stage of Teatro alla Scala.

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Maresa Bertolo, Researcher, Department of Design, Politecnico di Milano; member of ImagisLab research lab, founding member of Lusory Warp interdisciplinary research group on Game Studies; teacher of Computer Graphics and Game Design at the School of Design, Politecnico di Milano. Her research deals with Game Studies and Game Design, with a specific focus on Games for Social Change and on the relationship between design, games, players, communication and culture.

SIMONE BERTO Consiglio nazionale delle Ricerche (ISPC-CNR) di Roma
SILVIA GARZARELLA Università di Bologna

EM-Dance: an Exploratory Application of the Extended Matrix Method for Mapping Data Provenance and Representing Reconstruction Processes in Dance

In the last two decades the Cultural Heritage domain has benefited by the active contribution of Digital Technologies (DT) in research, especially for documentation processes, representation solutions and dissemination purposes. Within this context, the Extended Matrix (EM) method – originally developed in archaeological research – offers a complete framework, the Extended Matrix Framework (EMF), for structuring documentation and reconstruction hypotheses through Knowledge Graphs (KG). By using a formal language, the method allows to map data provenance, distinguishing between: documented evidence, data-driven integrations, and hypothetical reconstructions. In general, information can be represented both within a 2D space, using KG, and a 3D environment, adopting a specific reliability color scale applied to 3D models.

The proposed workflow aims to apply the EM to an animated avatar in order to explore the potential of EM when applied to a movement sequence. Applied to choreographic materials,

this approach enables a performance to be reconstructed while displaying, step by step, the motivations behind editorial choices and the reconstruction process based on available sources. Notation systems, treatises, iconographic sources, archival records, and embodied practices can be connected to specific movement segments of the avatar, making decisions and variants explicit and traceable. The result is not merely a digital representation, but a hybrid scholarly output combining features of a multimodal critical edition and an interactive semantic 3D model. Through the ATON Framework, online users can explore alternative versions of movements and access the underlying philological rationale — sources, critical notes, criteria for integration, and identified gaps — linked to each part of the avatar.

The proposed contribution presents an exploratory application of the EM, outlining its methodological foundations, illustrating the implementation process, and discussing future developments and challenges, particularly in relation to sustainability, interdisciplinary collaboration, and long-term accessibility.

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Simone Berto is a Research fellow at the Digital Heritage Innovation Laboratory (DHILab) of the Institute of Heritage Science – National Research Council (ISPC-CNR) of Rome (Italy). He holds a PhD in History, Criticism and Conservation of Cultural Heritage. His research interests concern: topographic and three-dimensional survey (open contexts and artifacts), 3D reconstructions, and content dissemination.

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Silvia Garzarella holds a PhD in Performing Arts from the University of Bologna. Her research focuses on computational methods of analysis and enhancement of choreutic heritage, with particular attention to choreographic languages. She is currently collaborating with the VARLab – Virtual and Augmented Reality Lab on the CIRI-ICT project "Analysis and design of performative cultural heritage content for extended reality visualizations".

Garzarella published the monograph *Valeria Magli o la poesia ballerina* (Mimesis, 2021) and co-edited, together with Elena Cervellati, the volume *Danza, schermi e visori. Contaminazioni digitali nella scena coreografica italiana* (Dino Audino, 2024). She is a member of C.R.I.C.C. – Center for Interaction with Cultural and Creative Industries and an Affiliate Member at the Department of Digital Humanities, University of Cambridge (A.Y. 2024/2025). Since 2021, she

has been part of the editorial board of the journal *Danza e Ricerca. Laboratorio di studi, scritture, visioni*.

ELISA CORPOLONGO Conservatorio di Musica “Giuseppe Verdi” di Milano

The Avatar as a Critical Edition: the Loss of Corporeality in Digital Restoration

In performing arts, the human body is the primary archive: a dimension where movement is linked to variables such as gravity and breath, but also "presence". The advent of digital technologies – motion capture and 3D modeling – is introducing the use of avatars as tools for restoring historical performances that would otherwise be lost. Current artistic research is also moving in this direction for innovative performances, as seen in the work of Giusy Caruso. While offering immense possibilities, these tools challenge philology (and the "philology of the living") by "removing the body" from the performative moment.

This paper analyzes the paradox of the avatar in digital restoration. When movement becomes vector data (trajectories and velocities), there is a risk of eliminating the physical resistance that defines the hic et nunc of the artistic act. I propose viewing the avatar as a "kinematic critical edition": a necessary abstraction that allows the study of gestures while sacrificing original material consistency. This approach requires a new synergy between computer scientists and choreographers, where technical modeling and physical expertise collaborate to define the boundaries of digital representation.

A critical node is the risk of opaque "supplementary restoration". Excessively realistic avatars may artificially fill gaps in sources, creating an illusion of completeness that betrays the fragmentary nature of the historical document. I propose the design of "transparent avatars": models that do not hide the loss of corporeality but make the uncertainty of data visible (e.g., through stylization or the visualization of calculated muscular efforts).

In conclusion, digital restoration is called to transcend the ambition of restoring the living body, evolving toward a philological practice that accepts its distance from the human original, transforming the loss of corporeality into a scientific and critical analysis.

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Elisa Corpolongo is a PhD artist-researcher and composer trained at the Conservatories of Rome and Milan (graduating with honors under Gabriele Manca). Her interdisciplinary practice explores the boundaries between graphic signs, painting, and performance, focusing on the friction between the body and the score-as-device. Her work for experimental theatre has been produced by the Venice Biennale (Tristrofa, 2018), and she is the author of several essays (Edizioni ETS, 2021). Her current research centers on score-paintings: works where the musical score is transformed into a visual and material device that forces the performer into an immediate physical reaction. Through the use of objects and installations, she investigates the performative act as an organic and necessary event, stripped of aesthetic superstructures in favor of a "via negativa" of sound and voice.

MARCO ARGENTINA, MATTEO FERRARESSO, CATERINA PICCIONE
Università di Bologna

Digital Tools for Dance Philology: Stepanov Notation in MuseScore

As an emerging field of research, dance philology seeks to reconstruct, interpret, and critically edit historical choreographic works through the systematic study of notational and documentary sources, addressing a long-standing gap in dance studies when compared to established philological traditions in music and literature. Within this framework, notational sources play a central role.

Among these, the Stepanov notation system, introduced in 1891 for the transcription of the most celebrated ballet repertory, represents one of the most articulated attempts to record dance on paper. Graphically resembling musical notation, the Stepanov system exemplifies how musical writing can be adapted – through specific modifications – to choreographic transcription, visually reinforcing the close relationship between music and dance within the choreographic event.

Originally conceived for manuscript transmission, Stepanov notation today encounters new possibilities within digital research environments through its graphic rendering in the open-source software MuseScore. Although designed for musical notation, the software has been expanded through the creation of a dedicated library of symbols specific to choreographic

notation, as well as through targeted adaptations developed in collaboration with a music technology lecturer in response to specific philological and editorial needs.

The contribution presents a first example of Stepanov notation realized in its digital version and discusses the technical, practical, and methodological implications of this process. Particular attention is paid to the role of digital tools in facilitating dance restoration and accelerating the production of newly established critical dance editions. The paper frames digital tools as practical instruments serving dance philology: in this perspective, the digital use of Stepanov notation strengthens traditional philological practices, opening new perspectives for the study, preservation, and critical editing of historical choreographic sources.

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Marco Argentina holds a PhD in History, Criticism, and Conservation of Cultural Heritage from the University of Padua, where he serves as an adjunct lecturer in Methodology of Theatre and Performance. At the University of Bologna, he is a research fellow and teaching tutor, as well as an editorial board member of «Danza e Ricerca» and «Il Castello di Elsinore», and a member of the Dance Philology research group. On the 29th Musicology Conference of «Il Saggiatore Musicale», he presented – together with Matteo Ferraresso – a first example of the transcription of Stepanov dance notation using the MuseScore software. He is also the editor of the dance critical edition of *Le Réveil de Flore* (choreography by Marius Petipa, music by Riccardo Drigo), published in 2026 in two volumes by the University of Bologna's open-access publishing house, Alma Diamond Books.

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Matteo Ferraresso holds a Master's degree in Performing Arts and Multimedia Production from the University of Padua, where he completed a thesis entitled *Dalla scrittura alla lettura della danza. L'edizione critica coreica della* Berceuse *dai* Millions d'Arlequin *di Petipa-Drigo*. Among his publications is *Note che trascrivono il gesto: la notazione Stepanov per il balletto* («Danza e Ricerca», 2023). He teaches Stepanov notation within the Dance Philology research group at the University of Bologna, of which he is one of the founders. In addition, on the 29th Musicology Conference of «Il Saggiatore Musicale», he presented – together with Marco Argentina – a first example of the transcription of Stepanov choreographic notation using the MuseScore software.

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Caterina Piccione is a Researcher in Tenure Track in Performance Studies at the Department of the Arts, University of Bologna. She is the author of several monographs devoted to Antonin Artaud, Carmelo Bene, Luigi Pirandello, and Martha Graham. Her current research focuses on twentieth-century theatre, with particular attention to issues of corporeality and representation from an aesthetic-political perspective. Another major area of interest is the relationship between music and dance, investigated both in classical ballet and in contemporary dance. She is a member of the Dance Philology research group, directed by Elena Randi, at the University of Bologna, where she promotes and coordinates several research projects.