

AN INTERACTIVE MULTIMEDIA COMPANION TO WAGNER'S *LOHENGRIN*: ENCODING AND VISUALISING A MOTIVIC STUDY

David Lewis

University of Oxford
e-Research Centre

david.lewis@oerc.ox.ac.uk

Kevin Page

University of Oxford
e-Research Centre

kevin.page@oerc.ox.ac.uk

Laurence Dreyfus

University of Oxford
Faculty of Music

laurence.dreyfus@magd.ox.ac.uk

EXTENDED ABSTRACT

Musicological argument has traditionally been communicated in writings that are textual, linear and illustrated by occasional figures despite almost always being concerned with diverse subjects and evidential materials, each potentially exemplified by different media, and each potentially a springing point for digression and exploration of the author's argument. While the activities required to explore the referenced materials may be non-linear, this is neither embodied in nor enabled by the medium of communication.

Previously [3], we have enhanced an *extract* of a musicological article, including dynamic and interactive elements. In this new live demo, we introduce a tablet based interactive application which presents a comprehensive digital exploration as a companion to a complete musicological article. In the article, Prof. Laurence Dreyfus explores the sophisticated way in which Wagner treated recurring themes. Taking the opera *Lohengrin*, he shows how one motive is altered each time it recurs, reflecting its role in the drama.

From the viewpoint of music informatics, we encode the musicological analysis – along with its relationships to the multimedia materials – using Linked Data as an independent, repurposable Research Object, or Digital Music Object. Interactive user views in the app are generated directly and dynamically in the browser from this knowledge graph using novel visualisations, which in turn enable the user to navigate all possible paths through the evidential multimodal materials.

Our companion allows users to explore the different compositional devices Wagner uses to vary his motives, browsing the whole opera for motive occurrences and their musical and textual contexts. Visualisations and recordings support the analysis, making it accessible to an audience that may struggle with a Wagnerian orchestral score. Exploration of this material can follow or be triggered by the musicological article, but can also be entirely reader-driven, with free browsing of the curated musical landscape. A video essay also provides a source of narrative paths through the companion, as a guide itself and as a source of starting points.

The application is built with a new version of the MELD (*Music Encoding and Linked Data*) [4] framework. MELD traverses Linked Data graphs to select and filter relevant information, with reusable components for creating and retrieving annotations, and for displaying and interacting with musical, textual, graphical and audio-visual materials. MELD is written in Javascript and Python, with resources using standards including the MEI [2] music encoding, TEI, the Music Ontology and Web Annotations [1]. By building on Web standards and providing modular libraries, we provide capability for supporting a wide range of applications.

In the *Lohengrin* app, we provide two different for music notational content. Vocal score reductions are rendered from MEI using Verovio, with structural analysis dynamically overlaid. Activating these annotations triggers audio playback from that point. A second, more abstract, notational visualisation of MEI aims to simplify the complexity of a Wagnerian orchestral score. In our orchestration pane (see fig1), each instrument playing at a particular time is shown as a coloured ribbon, with the instrument's section of the orchestra providing the colour. This highlights differences in the orchestration iterations that may look identical as vocal score.



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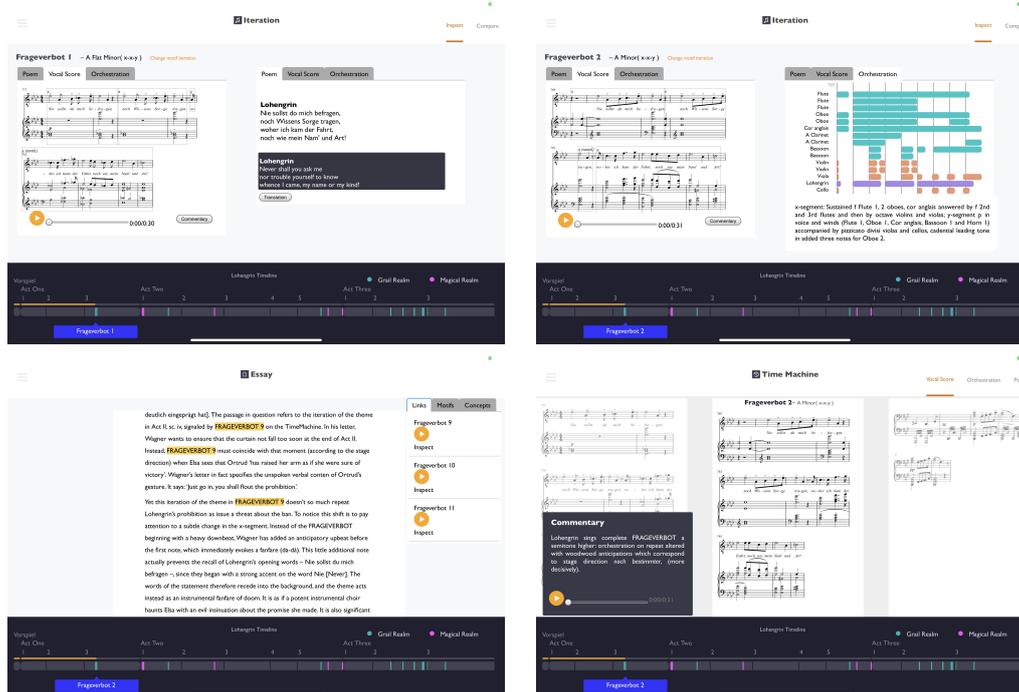


Figure 1. Views of the Lohengrin TimeMachine app, showing clockwise from top left: a view with labelled vocal score, text and translation; the same view with orchestral summary instead of text; the essay showing relevant links to the app; and the time machine view itself (screenshots taken from an iPad Pro)

For an opera thousands of bars long, overviews are crucial. An ever-present timeline shows all occurrences of a motive, providing a visual summary and a base for navigation. In the Time Machine view, users can also flick through motive occurrences – visualised as libretto, vocal score or orchestration summary – summarising the sequence within the opera, supporting quick comparisons, and also acting as an index to detail views. The essay and video themselves are also integrated in the app, providing important narrative grounding, and a reader or viewer is presented with relevant links into the companion as they progress.

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