# Materializing Multimodal Research Discourse

## Problem: The State of Digital Publications

Research is discursive practice. This claim is applicable in two ways: first, research is a social activity and second, knowledge is a phenomena which resides and is created in discourse. Publications are objects that used to support well both aspects because they partly suspended space and time in communication. Globally, this quality of publications improved the conditions for knowledge dissemination. Structurally, it improved the conditions for the creation of more complex meaning and reliable knowledge. Publications take discourse out of the flow of space and time and re-materialize it into an object which moves across space and time instead. However, materiality dramatically changed shape in digital world and there are activities allover to change the shape of publications likewise.

Approaches like Enhanced Publications, Scientific Publication Packages or Semantic Publications among many others propose to make publications modular, formally annotated, distributed, multi-media, including data and software, a living entity, automatically reproducible and much more. In contrast to these abundant activities which started at least in 1995 with the ACM Publishing Plan its success seems limited. The PDF is still the most common digital publishing strategy, especially in the Humanities. Where publications are more sophisticated its richness is bound to the portal where it is presented (Scalar, PLOS).

Digital publications are often ideologically bound to certain domains and to the *End of Theory* debate (Ex. in last par.). Contrasting examples (JDH, Scalar) explore new possibilities of multimedia writing but do not offer a generalizable model. Hence, new publications lack sustainability in terms of concepts and preservation. Accordingly, there are many models and few tools for their production. Their potentials remain unexploited and the reality of digital discourse that takes place is rarely objectifiable.
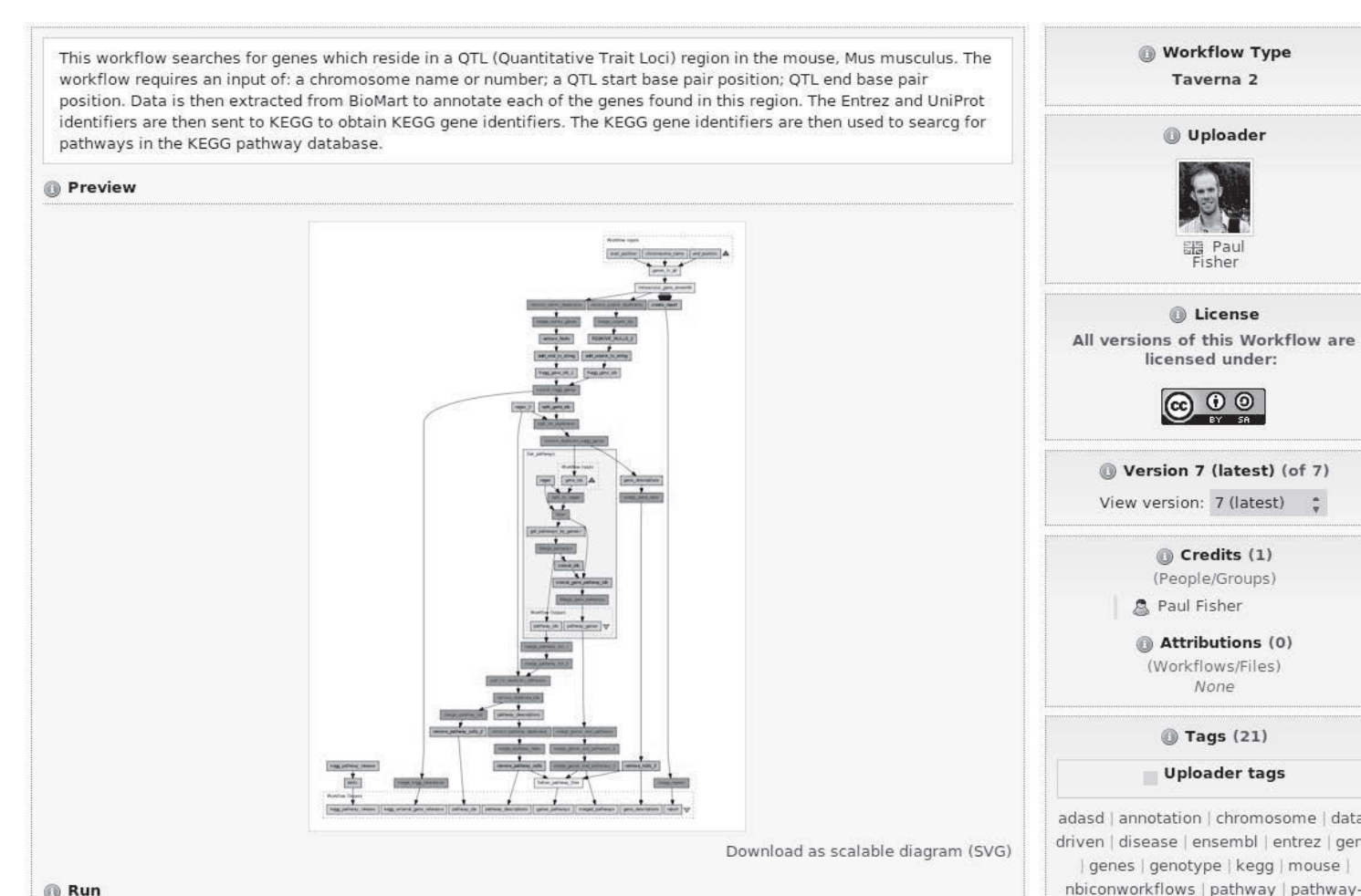
## Approach: Multimodal Analysis

The accomplishment of publications is twofold as I claimed at the beginning. However, digital publications tend to focus on the communication and dissemination aspect of publications and neglect or take for granted aspects of meaning making and knowledge – the ideological background. It is this part which forces to ask for the changes in the way knowledge and thus publications function in society. The question of digital publications is not how to do old things better due to digital technology. The question is how to do things good in a changing world of digital technologies. Thus, what is missing in the debate on digital publications is a theoretical framework which is capable to contribute both to the sociocultural re-evaluation of knowledge and publications as well as to the formalization and serialization of digital publications. In this respect I propose the field of and Multimodal Analysis.

Multimodal Analysis is a research field which grew out of Social Semiotics, a branch in linguistics initiated by Michael Halliday. One of the main claims of Social Semiotics stresses that signs are socially constructed and thus that there is no categorical realm of signs, for example language. Multimodal Analysis is following this claim by investigating semiotic and grammatical structures in linguistic and non-linguistic resources like: visuals, audios, colour, space, rhythm and so forth. Furthermore, Multimodal Analysis investigates how these resources relate to each other grammatically. In doing so Multimodal Analysis offers sophisticated insights on structural and semantic aspects of discourse beyond language. Additionally, the historical orientation in a social approach to language makes it possible to evaluate how the configuration of signs and grammar as a condition for meaning and knowledge changes over space and time.

By stretching Multimodal Analysis I like ot make two claims: 1) computation is not the dominant theme to design digital publications as many existing models suggest. Instead, the omnipresence of computation provokes a proliferation of strategies (interfaces) to create knowledge; 2) the dominant function of publications in a digital world will shift from dissemination to the creation of complex knowledge which is hardly organisable outside of such a framework like publications.



Research Objects treat publications as workflows which include packages of data and software
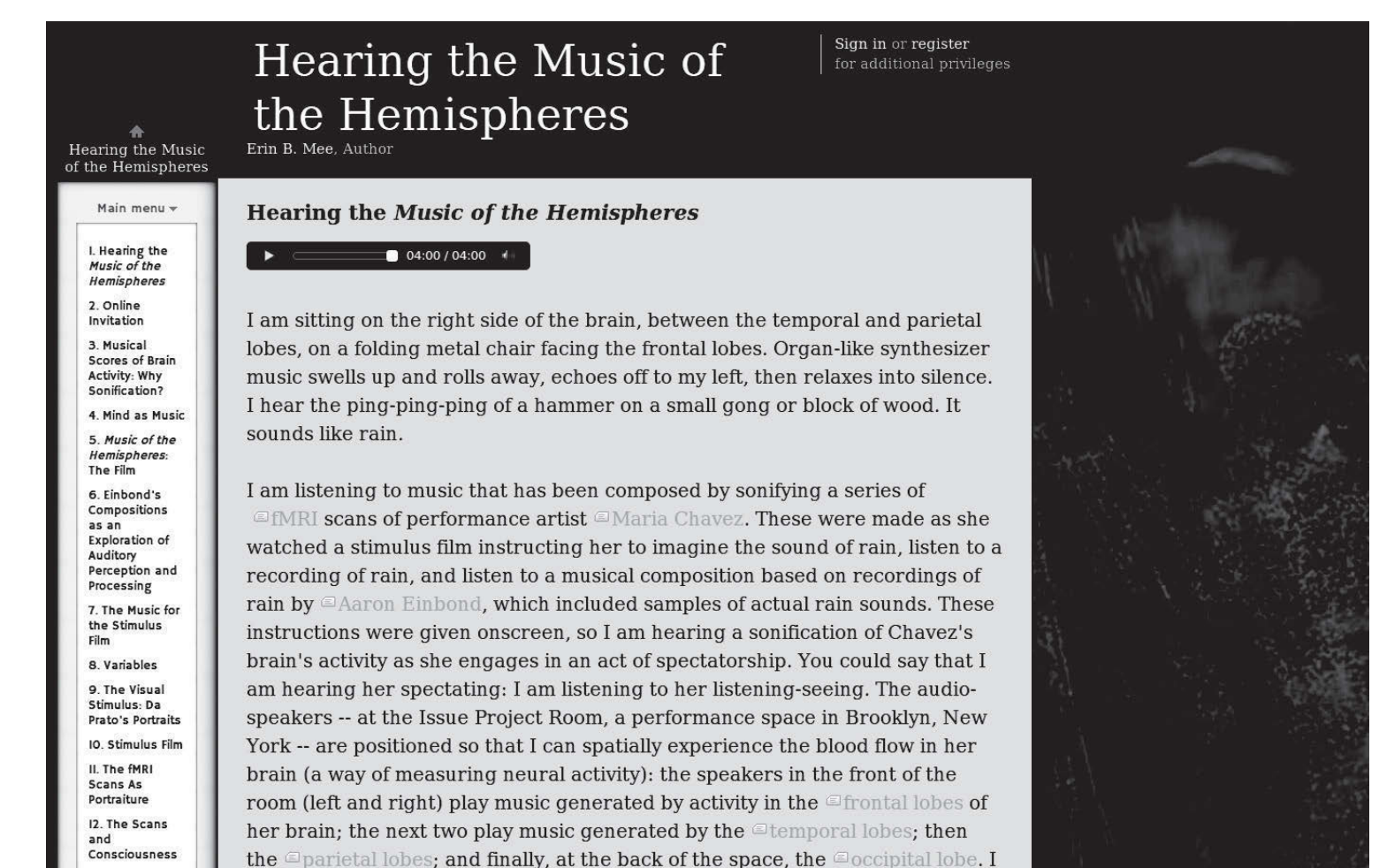


Scalar wants to offer a hosting platform and authoring tools for media-rich publications

```
In [11]:  # EXERCISE: plot a line of the AAPL moving average data with the legeng 'avg'
          line(aapl_dates, aapl_avg, color='red', legend='avg')

Out[11]:  <bokeh.objects.Plot at 0x105acc9d0>

In [12]:  # EXERCISE 7: style the plot, set a title, lighten the gridlines, etc.
          curplot().title = "AAPL One-Month Average"
          grid().grid_line_alpha=0.3

In [13]:  show()
```

Pan   Wheel Zoom   Box Zoom   Reset View   Preview/Save



An IPython Notebook which combines a REPL with multimeda capabilities of modern browsers

## Benefit: How Multimodal Analysis may contribute to Digital Publications

The design of digital publications may benefit from Multimodal Analysis in several ways: Its grammatical and systemic-functional contents are very useful to model structural and descriptive metadata. The sociocultural perspective is suitable to approach digital publications in a sustainable way. This will promise to improve conditions for long term preservation and for authoring tools. Multimodal Analysis and the realization of multimodal digital publications will help to advance digital literacies, thus the capacities to write and read multimodal texts in a publicly understandable, that means rule oriented way. Finally, Multimodal Analysis will support the adoption of digital technologies and computational methods in the Humanities because they are contextualized in a way which is integrative and not exclusive.

The approach described on this poster is part of a PhD project at the KU Leuven under supervision of Stefan Gradmann and Frederik de Truyen. The focus of the PhD is to evaluate new forms of publications from a multimodal point of view, to define a conceptual framework to model digital publications and to improve the conditions for their creation and long term preservation. I intentionally aim at cooperation with and for projects that are active in one of the areas just mentioned alongside my PhD.

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