situations aiming to develop a customizable web app for browsing and searching bibliographic data collaboratively collected.

Notes

1. We would like to thank our IT staff, especially Fabrizio Chiarello and Mattia Carli (both University of Verona) for all the technical work they have done on this project.

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Collaboration, Preservation and Sustainability in Digital Humanities: a question of time

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This paper discusses interdisciplinary collaborative practices based on the AdA project (meaning “Affektrhetoriken des Audiovisuellen” https://projectada.github.io/) in which institutionally situated research groups from computational sciences and film studies developed approaches for the analysis of the temporal dynamics of audiovisual expressivity by bringing together a theoretically informed methodology of film analysis and computational video analysis and semantic video annotation. A corpus analysis of audiovisual rhetorics on the financial crisis (2007–) required the groundwork for a collaborative annotation process and resulted in the structured vocabulary of the AdA Ontology (Bakels et al. 2020). The annotation process was carried out with the open-source-software Advene (Aubert et al. 2005, https://www.advene.org/). In an earlier publication (Aubert et al. 2021), we already presented how co-building a Digital Humanities tool could be seen as instrumental genesis. In it we concentrated on the iterative development of a visualisation framework (see figure 1) to highlight the need for a common language and for the consideration of time needed for collaboration.



Figure 1: Advene is used as a generic tool to manipulate data. Based on the experience, a dedicated web-based visualisation is designed and implemented.

We would like to pursue the reflection on the instrumental genesis (Rabardel, 1995) of collaboration tools along the time dimension. We saw that every step of tool development for such qualitative and exploratory research requires time: may it be for tool sketching, development, testing, or documenting its usage for manual annotation.

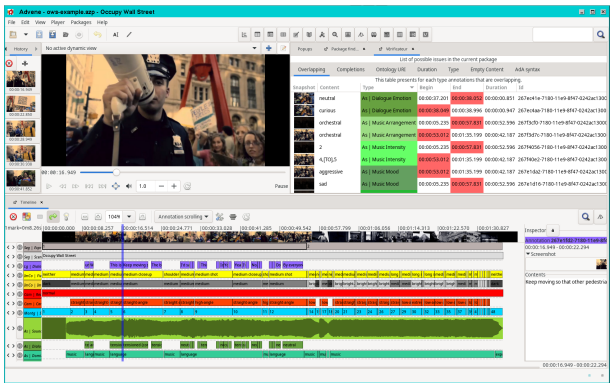

Figure 2: The Advene "data checker" component has been developed to constantly highlight data quality issues.

The instrumental genesis for Advene encompassed the development and integration of new feature extraction plugins as well as the extension of its UI for collaborative and time-efficient semantic annotation (see figure 2), which not only aimed a reducing labor time, but in turn helped the research practices (that can be seen as usage schemes) and related expectations to evolve. These practices and the tool development itself brought a need for different collaboration tooling which, as part of the distributed labor, required an acculturation to technical workflows. Especially in interdisciplinary projects, familiarity with different tools, environments and platforms such as GitHub can differ a lot and require adaptation efforts. For instance, we used GitHub as a way to collaborate as well to publish the open-source annotation data and its ontology (see figure 3).

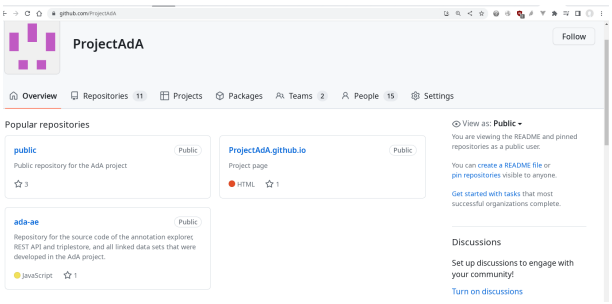

Figure 3: The AdA project data files and websites are available on the github platform.

A key point to consider during projects is that the time of a research project does not only cover the funded period. Community building around research methods and practices mobilising specific data and tools, that are in constant need for maintenance and evolution, requires more time. Long term preservation of valuable (annotation) data as well as the sustainable access to the tools that mediate them also needs to be considered. Compared to historical archives such as books that are essentially stable and continuously accessible, digital data access is not guaranteed if tools required to consult it are not accessible and in a working state. Even if FAIR principles, such as using open formats and stable identifiers, are used, dedicated tools are still required to allow to consult the data in the most appropriate form, which evolved along the research practices. Using open-source tools, like Advene in our case, is a first step into digital preservation. But open-source software must be maintained and adapted to changing digital environments. The AdA project was, in a collectively profitable way, an opportunity to update the Advene software to new environments. Both data and tools can be considered as Digital Commons (Dulong de Rosnay et al, 2020), available openly to the community. As such, their preservation and sustainability relies upon a shared concern and involvement from the community at large or specific communities of practice. One of the ways to participate in the maintenance and evolution of digital artefacts is to pursue their exploitation and development in new projects as well as their usage in scientific communication or teaching. These issues can be addressed through documentation of the methodical usage of the annotation software for a multi-annotator project-based film analysis that was produced as the AdA Toolkit. In the usage of a software such as Advene that allows for multiple-usage-scenarios the question of documentation points to a fundamental arbitration between generalityand specificity, an arbitration that can be described as a catalyst for processes of instrumental genesis. In this regard, a viable criticism of audiovisual rhetorics via digital tools requires ongoing practices of collaboration.

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Collaboration with citizens and its revolutionary potential in the digital humanities

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Collaboration with members of the public in (digital) humanities research enjoys increasing popularity in many disciplines, including lexicography, history or art. The contributions of citizens to the digital humanities in the form of citizen science (ECSA 2020) include data collection, transcription or annotation.

Based on the nature of a project, researchers may resort to the recruitment of participants on dedicated citizen science platforms. These platforms are particularly suitable for crowdsourcing small tasks that can be completed by a large number of people. These citizen science platforms usually feature different citizen science projects to which volunteers may contribute online. These include global platforms (*SciStarter, Zooniverse*), European (*EU-Citizen.Science),* national (*Bürger schaffen Wissen, Österreich forscht, Schweiz forscht*) or specialised platforms featuring only citizen science projects from a certain discipline, such as *LanguageARC* (Fiumara et al. 2020) for linguistics, *ARTigo* (Bry / Schefels 2016) for art history or *MicroPasts* (Bonacchi et al. 2019) for archaeology and heritage projects. In addition, there are platforms in the field of citizen science that rather focus on a certain type of activity, such as transcription and translation (*FromThePage*) or data collection with georeferencing (*SPOTTERON*).

Based on the analysis of these general and specialised citizen science platforms featuring projects that are rather crowdsourcing and collaborative projects (Bonney et al. 2009) and drawing from the literature on citizen science, this conceptual paper highlights the transformative and revolutionary potential of citizen science in the digital humanities, which may open up new ways of collaboration beyond academia. Nevertheless, it also assesses the risks and boundaries of citizen science in the digital humanities.

The revolutionary potential of citizen science can be found in opening up science, democratising science (Irwin 1995; Scanlon / Herodotou 2022), allowing for the consideration of a diversity of epistemologies in research (Jaeger et al. 2022), improving scientific literacy and education (Ceccaroni et al. 2017; Queiruga-Dios et al. 2020), increasing trust in science and having transformative