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# Digital Scholarly Editions as Interfaces

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# Discussing Interfaces in Digital Scholarly Editing

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## Abstract

Interfaces define how research material is presented. They shape the view recipients acquire from historical sources. Since the digital medium is more open to variations than the once traditional form of presenting Scholarly Editions in printed book form, discussions on how to deal with the new possibilities started at a very early stage after the emergence of digital scholarly editions. In the beginning these were strongly influenced by traditional presentation practices but have shifted to aspects more associated with the digital paradigm. Theoretical approaches towards interfaces, however, were only sporadically published and have been continuously demanded by the scholarly community. This introduction attempts to summarize the scholarly discussions on interfaces and provides an overview of the papers presented in these proceedings: they offer both theoretical approaches and discussions of practical implementations together with studies evaluating interfaces.

Early 2016, a heated discussion sparked off at the Centre for Information Modelling at the University of Graz about the role of interfaces in digital scholarly editions (DSE) and the question of whether the DSE itself takes up the role of an interface between documents, users and machines. This discussion led to the decision to hold a conference about the topic in September of the same year - entitled "Digital Scholarly Editions as Interfaces". The aspired format for the conference was a moderate setting to provide a stage for early career researchers and the fellows of the Digital Scholarly Editions Initial Training Network DiXiT, a European Commission Marie Skłodowska-Curie Action, to present their projects, ideas and ongoing research on the relationship between interface and DSE. The overwhelming response to the call for papers revealed the strong interest in this topic of the Digital Humanities (DH) community. The result was a densely packed two day symposium with an international audience and speakers. Accounts of the event can be found on the DiXiT blog (Bleier et al., "Report") and on H-Soz-Kult (Bleier et al., "Tagungsbericht").

The conference programme was framed by two inspiring keynote presentations by Dot Porter of the Schoenberg Institute for Manuscript Studies at the University of Pennsylvania and Stan Ruecker of the School of Art and Design at the College of Fine and Applied Arts at the University of Illinois. Porter opened the conference. In

her presentation “What is an edition anyway?” she discussed different definitions of edition and revealed the results of her latest survey on the usage of editions (printed, digitized, and digital). She related the survey results to her earlier surveys (from 2002 and 2011) and showed that a certain inhibition threshold exists towards using the digital medium as means of presentation. Her bold closing statement “Data over Interface” provided plenty of grounds for lively discussions throughout the conference whether the data or the interface are the integral part of a DSE, and in consequence, whether the machine or the human user is the primary addressee of a DSE.

In contrast, Stan Ruecker set the focus of his keynote on the aspect of the design process in general and the design of creative and experimental interfaces for Humanities and Cultural Heritage purposes in particular. He emphasized his arguments with examples from various research and design projects strongly focusing on the experience of scholarly readers. He concluded that the social and dynamic aspect of scholarly reading should play a more important role in the designing of DSEs.

According to the Oxford English Dictionary interfaces are:

A means or place of interaction between two systems, organizations, etc.; a meeting-point or common ground between two parties, systems, or disciplines; also, interaction, liaison, dialogue.

This rather general definition still hints at the complexities the concept of “the interface” incorporates. In DH it not only contrasts humanities with computer sciences and design aspects but also human to human with machine to machine communication as well as human computer interaction. The role of the interface and along with this role, its definition varies according to the person, domain, interest, use (etc.) it is associated with. Interface research deals with a vast complexity of the research topic, the amount and particular structure of humanities’ data, as well as the diverse collection of affected research domains. Equally demanding are the rapidly evolving technology, with the ever changing demands on both publishers and recipients of editions and interfaces. Additionally, over hundreds of years the distribution of knowledge has been associated with the form and feel of the book (Burdick et al. 139). The Scholarly Edition has a long tradition in print and, hence, these experiences and associations with the printed edition strongly shape the way how DSEs are designed today. However, is it indeed necessary for editors to use a skeuomorphic design approach, trying to mimic the book? Are only DSEs that follow the in order to be accepted and used by the scholarly community? To what extent does such an approach hinder innovation and the development of more efficient solutions for DSEs? (Pierazzo 170–175)

Understanding the DSE itself as an interface means understanding it as a connection point between historical documents and the user, whether a human being or a machine.

Accordingly, we are usually confronted with two types of interfaces in DSEs: the Graphical User Interface (GUI), and the Application Programming Interface (API). GUIs are a central means of communication between human users and machines. They are central to research as many researchers are not accessing the data produced by a digital scholarly edition directly, but prefer a graphical layer that presents research data for reading, studying and analyzing. The GUI lets the user navigate through the research material and the web presentation built around it. However, it has to be remembered that an interface (GUI or API) of a DSE is always closely linked to the data model of the underlying data and the editorial principles expressed in this data model, in that regard it is a form of pre-selective data management. Interfaces are an interpretation of knowledge and provide users with a more or less “guided tour” through the data and its general presentational setting. Furthermore, they allow the user to answer research questions and aim at supporting the generation of knowledge. Over the last decade the already mentioned APIs have gained importance for DSEs as editors increasingly see their editions not only as static texts published online, but as data that can be linked to other data to answer interesting research questions. The API allows data exchange on a machine to machine level which results in a “guided tour” from DSEs that can be aggregated, interlinked with each other and used to address further research questions by other agents.

As early as the turn of the century, Bethany Nowviskie aligned the highly technically connoted term “interface” to digital scholarly editing, demanding in the middle of the initial enthusiasm a stronger theoretical reflection of the possibilities the (then) new media posed. A critical examination of the topic has also been demanded very early by Jerome McGann in 2001 (171): He witnessed the slow change from a bibliographical to an interface culture. McGann argues for a meaningful exploitation of the familiar media and an aesthetic digital conversion process since, according to him, scholarly book and digital culture do have much in common. What he is missing, however, is the reflective capacity of the digital tools and it is here that he would anchor the potential of the interface. Years later, the critique that the user interface is broadly neglected in the conception of the DSE was verbalized by Hans Walter Gabler in 2010 (48). For him, the user of an edition is still trapped in the traditional receiving role. Editors do not see the user as an equal or peer, and participation in or interaction with a digital edition is not a task available for the user. Envisioning the DSE as the future medium of scholarly editing, Gabler considers the active user involvement to be highly significant. The challenge of social editions, however, lies not in the technical difficulties, as interfaces and workflows are already available, but revolves around theoretical and methodological questions (Brumfield; Robinson, “Theory of Digital Editions” 122).

Similarly, Michael Sperberg-McQueen (30) sees editors migrating from an unruly but well-known (print) to a chaotic, unpredictable environment (digital). One of his

solutions to get back a solid user base is to provide problem-solving interfaces. In order to meet these needs of humanities scholars Roberto Rosselli Del Turco (“After the Editing”) was one of the first to introduce a set of design elements DSEs should provide beyond general interface functionalities: these include for example hypertext functionalities, special character handling, image manipulation, advanced search, and complementary data manipulation tools. The demand for a theoretical approach towards the roles the interfaces of a digital edition have to offer was taken up more recently by Patrick Sahle (“Scholarly Digital Edition” 159f.) who points out that as a digital presentation an edition is no longer just data but also design and program code, and in a digital edition one cannot live without the other. A theory of digital editing would have to assess the importance, define the relationship, and estimate the interdependency of data and interface(s), i.e. content and form. It would also have to consider the interaction between historical source, editor and user. Sahle, like others before him, strongly calls for systematic research into this field and expresses the need for a steady development from practise towards theory building. In this context Elena Pierazzo (186-192) points out the importance of digital preservation of DSEs: archival storage of an edition’s data is technically no problem at all, but in relation to interfaces this statement proves much more problematic as it not only involves data standards but also diverse and potentially conflicting versions of different software or even hardware architecture. Since interface designers, and not the editors themselves usually make the interface, they emphasize aesthetic aspects. Pierazzo also investigates the role of aesthetics in GUI design for usability of DSE and concludes that both stability of data and a GUI designed with a certain uniformity are the most cherished factors for a user-oriented presentation. Insecurity in embracing the new possibilities often results in a poor interface and in an annoying user experience (Rosselli del Turco, “Battle” 230). To free the user from the passive consumption of the GUI Johanna Drucker suggests that the interface should not be seen as an object. She promotes instead a sustained, interpretative engagement with the data, the purpose of which is to inspire thinking and generation of knowledge. Therefore, she suggests:

...multiple points of view, correlatable displays, aggregated data, social mediation and networking as a feature of scholarly work, and the qualities of games with emerging rule sets. (§35)

For her an

Interface is a space of affordances and possibilities structured into organization for use. An interface is a set of conditions, structured relations, that allow certain behaviors, actions, readings, events to occur. (§31)

A solution that would free the editor of the burden to provide a GUI, according to Sahle (*Digitale Editionsformen* 37), could be the provision of the editorial output as

mere data via APIs - it would be up to the user to access and analyze this data by her own means, or third party organizations to offer structured forms of access. In the context of interfaces, DH researchers nowadays discuss working with the data at hand, visualizing text and meta information, analyzing and exchanging data, and, of course, the edition as a socially collaborative effort (e.g. Siemens et al.) and also a research commodity (Robinson, “Collaborative Digital Editions”).

The conclusion from this historical overview seems to be that the book paradigm, which was strongly discussed in the early treatises, and the book itself which was often stylized as a feared opponent to early DSEs are no longer the main concern of the digital editor. The digital edition seems to have fully embraced the possibilities of the new media. Even if this is no longer so strongly problemized in scholarly discourse, in the assessment of Joris van Zundert (103-106) the problem still persists and the majority of contemporary DSEs are mere metaphors of books a long way from even utilizing the possibilities of hypertext. He relies on Peter Robinson’s (“Theory of Digital Editions” 123) distinction of editorial approaches “text-as-document” vs. “text-as-work” to contrast recent developments. Like Nowviskie or McGann at the beginning of the century, and so many others in the years to come Zundert again strongly calls for an intensified methodological discussion.

The contributions in this volume build on these conflicting perspectives. Experts of DSEs and Interface Design, editors and users of editions, web designers and developers discuss the relationship between digital scholarly editing and interfaces. In this context the conference team provided a broad selection of topics as intellectual incentive. The discussion was meant to include the critical reflection of the (graphical/user) interfaces of DSEs as much as conceptualizing the digital edition itself as an interface.

- How can DSEs take full advantage of their digital environment without losing the traditional affordances that make an edition “scholarly”? What is the role of skeuomorphic tropes and metaphors like footnotes, page turn and index in the design of DSEs and concerning the user interaction?
- Do interfaces of DSEs succeed in transferring the complexity of the underlying data models?
- Plurality in representation is a core feature of DSE. How do interfaces realize this plurality? Do we need different interfaces for different target audiences (i.e. scholars, digital humanists, students, public)?
- How can user interfaces of DSEs succeed in transmitting Human Computer Interaction design principles like “aesthetics”, “trust”, and “satisfaction”?
- Citability and reliability are core requirements of scholarly work. Which user interface elements support them? How can we encourage the user to critically engage with the DSE?



- What are the users of a DSE actually doing: are they reading the text or searching and analyzing the data?
- Can we conceptualize machines as users? How can we include Application Programming Interfaces (APIs) in the discussion on DSEs as interfaces?
- Does the development of user interfaces for DSEs keep up with the rising distribution of small handheld devices? Will interfaces on tablets greatly differ from those on computer screens and perhaps encourage a larger readership?

These and other questions on the topic “Digital Scholarly Editions as Interfaces” were vividly discussed during the conference. This volume aggregates twelve of the presented papers that contribute to the debate above and provides a wide range of case studies that highlight the current state of interfaces in DSE. The edited volume is structured according to three methodological perspectives or approaches towards interfaces in textual scholarship: theory, practise and empirical (user) studies. The volume starts with the section ‘Theorizing the Interface’ that includes papers discussing various aspects on the role, importance and needs of interfaces from a theoretical point of view, it continues with the section “The Interface in Practise” containing papers reporting on practical work on the interface of editions. The volume concludes with the section “Evaluating the Interface” in which two papers describe the concrete results and insights derived from user studies.

The first section “Theorizing the Interface” is opened with a contribution by *Tara L. Andrews* and *Joris van Zundert*. In literature about DSE the interface is often seen as being secondary and the data is moved to the centre of attention and sometimes this even results in quite hostile remarks about the interface. Andrews and Zundert use this hostility and critique as a starting point to discuss the relevance of GUIs and the key function they play communicating editorial information correctly. Looking at a number of case studies, they carefully assess the arguments and statements editors make about the GUIs of their editions. By carefully using interface elements editors can support an argument, and a clumsy interface design and careless use of interface elements can have negative consequences for the argumentative point an editor wants to make. Therefore, a well-argued and well-arguing GUI is central to the communication between an editor and the user of a DSE.

*Wout Dillen* continues this line of thinking and elaborates on how the editors can, and should, make a statement using an edition’s GUI. He suggests that the GUI may be seen as the new paratext of a digital edition. Using the Beckett Digital Manuscript Project (BDMP) as a case study, he shows what impact the GUI can have on how an edited text is read. A central point in Dillen’s argument is that depending on what the user is looking for in an edition and to what extent she is immersed in the texts and data, different levels of guidance are needed. Using Dante’s *Virgil* as a metaphorical guide through a maze, he describes how an editor assists a user to find

her way through the maze of digital texts and data provided by a DSE. Without a GUI a user is lost in texts and data, as Dante would have been in the Inferno without the assistance of Virgil.

*Shane A. McGarry* discusses the issue that digital scholarly editions still follow too closely the printed book in design and functionality. He emphasises the need to consider the interactivity of the interface, which is an advantage over the printed book. In his analysis he focuses on a number of components of digital editions that have been developed originally in a book context and are still used in digital editions. In contrast to the linear reading of the book, the digital medium supports a number of alternative reading modalities. Exploring key literature about digital texts and digital reading, interaction design and information architecture, McGarry suggests that the role of the interface is not only to lead the user to the information she is looking for, but also to engage the reader, to retain and help to recall information. He highlights that in contrast to some arguments that suggest data is important and the interface is not, it has to be kept in mind that attraction is an essential component in a reader's consideration to use an edition and, hence, of its success.

*Ginestra Ferraro* and *Anna-Maria Sichani* take a closer look at project management and design processes used for the development of GUIs for digital scholarly editions. The authors have observed that few DSE projects use project management and product development strategies that are used in the commercial world. This is considered an issue as they could be beneficial for the development of DSEs too. Ferraro and Sichani suggest the integration of design, both as a conceptual framework and as a methodological awareness, early in the development process, in order to assure a better quality product. They outline different software design principles, highlight the relevance of user testing, and discuss an agile-oriented workflow for digital scholarly editing projects. Ferraro and Sichani emphasise that interactions generated by users are an important asset that should be used for future development and can contribute to developing better interfaces for digital editions.

In the final chapter in this section *Stefan Dumont* discusses the important role of GUIs and APIs in the context of digital editions of correspondence. The editing of correspondence has benefited greatly from digital methods in the past fifteen years. On the one hand, the GUI provides a flexible means for a user to interact with edited letters, much better than printed editions of letters would ever allow, for example, correspondence networks can be visualized and explored. On the other hand, the API provides access to highly-structured data, that can be used for research, shared and connected to other data on the internet. In that context, using the project *correspSearch* as an example, Dumont emphasises the important role metadata standards play when making data from different editions interoperable and accessible via a single platform.

The second section of the book – The Interface in Practice – looks at practical aspects of interface design. It starts with a report by *Roberto Rosselli Del Turco* and *Chiara di Pietro* about the user interface design of the new EVT (Edition Visualization Technology) 2.0, a tool that uses a TEI/XML source document as input to produce a digital edition. In the development of the software tool emphasis has been placed on design of an intuitive user interface. The authors give insights into the design process, discuss problems they faced and what decisions they made to increase the usability of EVT. Besides the design process they also discuss technological challenges and how the software stack changed for the new EVT.

*Joshua Schäuble* and *Hans Walter Gabler* discuss interface design in the context of a genetic edition of Virginia Woolf's "A Sketch of the Past". The chapter focuses on challenges in the encoding of certain features of genetic editions with the TEI and visualization strategies in regard to the interface. The visualization as such must be realized through (sets of) visualization software. From the construction-in-progress of one such set of modules, the essay demonstrates the design and describes the operation of one modular interface, a Diachronic Slider.

The chapter by *Elly Bleeker* and *Aodhán Kelly* also focuses on interfaces of genetic editions. Using a digital museum exhibit, Brulez Digital Exhibit (BDE), as a case study they explore how user interfaces of genetic editions may be designed to communicate complex research results to non-expert audiences. Additionally, the chapter discusses what can be learned from the collaboration between the university and the GLAM sector and how this impacted on the development of the user interface and dissemination strategies of the project.

In his chapter *Jeffrey C. Witt* argues that too many editions still focus on the GUI and are rooted in the "text-as-document" paradigm. Following the idea of the semantic web, texts can be seen as a series of data points and relationships between them and between data points of other texts. He argues that digital editions should move towards a "text-as-network" paradigm and a clear distinction between the data that can be reused by machines and connected to other data and the presentational layer, i.e. the interface(s) for the human user. The first step to this development has to happen in our heads: instead of thinking first how we want to publish and present the edited texts, we have to think of texts as data first. Using the *Scholastic Commentaries and Texts Archive* (SCTA) as an example Witt shows the potentials of such a paradigmatic shift. His paper illustrates further how an edition inspired by the "text-as-network" paradigm could look like and that this could result in a plurality of interfaces for various research interests.

*Hugh A. Cayless* discusses the challenges of user interfaces for critical editions of classical texts and uses the example of the *Calpurnius Siculus' Bucolica* edition, which was created as a pilot for a series of new born-digital editions of classical texts by the Digital Latin Library (DLL). The chapter highlights that an edition's data model

and structured data play a central role and form the basis for interfaces. He proposes a web interface using a JavaScript library with the name CETELcean that directly uses the data model of the edited text. It aims at rich reading environments of digital critical editions and increased usability for scholars.

*Federico Caria* and *Brigitte Mathiak* open the last section of the book – Evaluating the Interface – and evaluate the results of a survey and user tests with open task scenarios on three digital scholarly editions: Saint Patrick’s Confessio, Walden: A Fluid Text Edition, and the Emily Dickinson Archive. The goal of the survey and user tests was to gain insight into how end users benefit from DSEs in contrast to paper editions and which kinds of interfaces are more successful than others. Another issue the survey uncovered was that in some editions the user has the feeling of getting lost. Therefore, a minimalistic interface that focuses on the main tasks a user wants or might want to execute could be preferable in terms of usability over an overly complex user interface.

The final chapter also focuses on user studies, but in a different context. *Elina Leblanc* conducted a user survey on the user interface of the digital library Fonte Gaia. In her contribution she presents the survey results and uses them as a starting point to discuss similarities and differences between the user interfaces of digital libraries and digital scholarly editions. She argues that the three roles of people accessing DSEs (the reader, the user, and the co-worker) can also be translated to the digital library context.

The various exciting contributions to this book and the lively discussions at the conference in autumn 2017 convince us that in order to accommodate as many recipients as possible, DSEs require both a carefully designed, user-centred and task-oriented GUI and a well-documented API that provides access to the data in the edition for further research. In regard to GUI design much can be learned from existing processes and strategies from the design and media industry, even though this certainly requires an even closer integration of the various areas of competence (textual scholarship, digital humanities, design) than is currently the case. As Rucker mentioned in his keynote: the interface design of DSEs has to be a collaborative and interdisciplinary task, that brings together knowledge and skills from different domains.

Many of the projects presented here are ongoing research and highlight the urgency of the topic. These proceedings show the great variety that exists in the approach to and study of this topic. It is to be hoped that the discussion will continue towards a humanities inspired line of thinking about the theory of DSE interfaces.

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