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From codex to apps: the medieval manuscript in the age of its digital reproduction

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Abstract

Scholarly digital edition (DSE) projects of the last few years have enhanced the role of the digital facsimile as a standard and necessary part of the edition. This is the result of a well-known discussion, which started with the questioning of traditional editorial theory and practice and led to the need to reassess the material and historical dimension of texts. In the meantime, big GLAMs' digitization projects produced a proliferation of primary sources and the first attempts to exploit the digital facsimile in DSEs saw daylight. Manuscript surrogates can be integrated in different ways in edition projects: often handled as merely 'accessory' materials, they generally function as 'additional', i.e. enriching, components of the DSEs. Although most editions are still text-centred, in few but very remarkable cases digital images can become a truly 'constitutive' part of a project. This happens thanks to standardization efforts (TEI, IIIF) resulting in new forms of editing that revolve around the potentiality of digital manuscripts: paradoxically, the more immaterial the edition becomes, the more it seems to be able to focus on the material quality of texts. This article seeks to investigate the reasons and purposes of the *material shift* by providing a series of examples from edition projects.

I progetti di edizione scientifica digitale (DSE) degli ultimi anni valorizzano il ruolo del facsimile digitale, ormai diventato una componente standard e indispensabile dell'edizione. Questo è il risultato di una nota discussione, iniziata con una critica alla teoria e alla pratica editoriale tradizionali e con l'urgenza di rivalutare la dimensione materiale e storica dei testi. Nel frattempo, i grandi progetti di digitalizzazione delle istituzioni GLAM hanno prodotto un proliferare di fonti primarie e hanno visto la luce anche i primi tentativi editoriali di sfruttare le possibilità offerte dal facsimile. I surrogati digitali vengono integrati nei progetti di edizione in modi diversi: spesso sono gestiti come del materiale 'accessorio' oppure, più comunemente, come dati 'aggiuntivi' delle DSE.Nonostante molte edizioni siano ancora incentrate sul testo, in pochi casi ma degni di nota le immagini digitali possono diventare una parte 'costitutiva' di un progetto. Ciò si verifica anche grazie all'impegno verso la standardizzazione (TEI, IIIF) che ha portato alla creazione di nuove forme editoriali imperniate sulle potenzialità del facsimile: paradossalmente, più le edizioni sono diventate immateriali, più sembrano in grado di focalizzarsi sulla qualità materiale dei testi. Questo articolo mira a sondare ragioni e

finalità di questa *svolta materiale* attraverso una serie di esempi da progetti di edizione.

Material perspectives on texts

Digital scholarly editing seems more than ever focused on the materiality of texts, which has become a crucial aspect both in the process of creation and in the moment of fruition of an edition. In Robinson's words, the primacy of the document in digital scholarly editing is due to three main reasons. First, the availability of the material documents in the immaterial digital medium has led to questioning of notions like text and document with profound consequences on editorial theory and practice. Second, the edition of documents has been facilitated by the abundance of digital images. Third, in the new medium editor and user can be involved in the study, analysis and exploitation of documents as never before ([34], 109). But what do we mean exactly by the materiality of texts? How can documents be integrated in an edition and with what consequences to both the theory and process of editing and the user's experience?

The (medieval) text as a wheel

For the purpose of analysis, it is useful to start with Sahle's *Textrad* or 'text wheel' ([36], 45-48). This often-quoted text model was developed to outline the possible perspectives on a text from the standpoint of digital scholarly editing. Sahle's proposed pluralistic model tries to arrange in a circle the textual focuses an editor can have when creating an edition. For example, does the editor aim at reproducing the text of a work or the text of a document, or both?[1] The six spokes contained in the wheel can be seen as a way to conceptualize the passage from the *one-text model*, typical of print culture, where an edition could offer only a single text (diplomatic *or* critical or whatever) to a *pluralistic text model*, typical of digital editing, where more than one text can be presented simultaneously in the edition (diplomatic *and* critical or whatever). Although this model is non-hierarchical, three core textual dimensions can be recognized: these are *Text I* (idea), *Text S* (language), *Text D* (document). One can say that these correspond to a pre-scholarly notion of text, according to which an *idea* is expressed through the written *language* in a *document*.

1 On this topic see also Pierazzo 2015, chap. 2, par. 2.

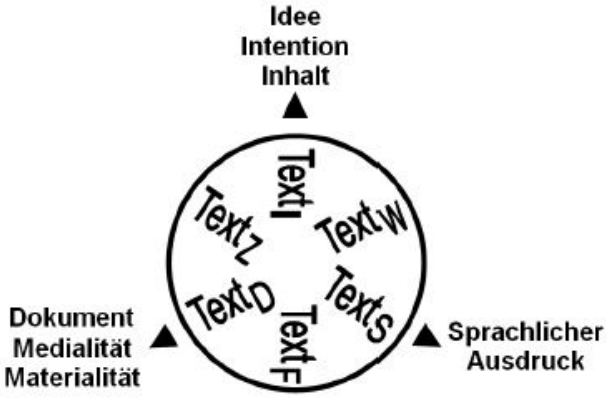

Figure 1: Patrick Sahle's text wheel (Sahle 2013, 47)

It is interesting that out of six postulated dimensions (text *I* = idea, *W* = work, *S* = language, *F* = version, *D* = document, *Z* = sign), three of them are bound, at different levels, to the materiality of a text: *F*, *D*, *Z*. Applying a document perspective (*D*) on a text means to recognize that texts are material objects with a visual character (there is actually no text without a document) and that each document (and consequently each text) differs from other documents. This is proven also by the fact that, if the outer form of a text is changed, as a result the meaning construction is altered too ([36], 28). Inside the wheel, the text as a document (*D*) is embedded between the view of a text as a version (*F*) and as a sign (*Z*). A version (*F*) derives from the linguistic dimension of a text (*S*), but is fixated in its documentary evidence (*D*): any variation in language expression produces a different text version necessarily preserved in a document. To see a text as a (visual) sign (*Z*) is interesting because this perspective is placed after the documentary (*D*) and before the ideal (*I*) manifestations of a text, that is between a very material and a very abstract dimension. Indeed, there are several cases in which the intention, content, or meaning of a text are produced through the (visual) signs carried by the document, e.g. concrete poetry, medieval charters or contemporary postcards.[2] The difference between the text as a document and the text as a sign is basically a perceptive one: the document bears material features, the interpretation of which by the reader creates ideas, intentions and meanings.

Compared to textuality in general, medieval textuality requires some more clarifications on the categories connected to the material dimensions of a text (*F*, *D*, *Z*). Text as version (*F*) is in need of further explanation, because in medieval philology there are two similar expressions, that is *version* and *redaction*: the threshold between a *text version* and a *text redaction* (Ger. *Fassung*, It. *recensione*) is that the former mainly concerns *textual variants* in the strict sense of philological usage, whereas in the latter case the same work is recognizable under a significantly different linguistic expression. This is how Bumke defined the concept of *Fassung* in his research on the *Nibelungenlied*. To him, the versions of a work vary so much that the

2 On the semantics of the page see [4].

differences cannot be accidental, in fact they have to be seen as the result of somebody's intention of reconfiguring the text ([5], 32). In the Middle Ages a text can be handed down in more redactions, any of which can be transmitted by one or more witnesses displaying a higher or lower degree of textual variation.[3] It is true that no manuscript is perfectly identical to another (and as a consequence any text *D* is a different text), but despite possible variations one cannot say that each manuscript necessarily bears a different text. As for documentary (*D*) and visual (*Z*) perspectives on texts, they are fundamental in medieval manuscript culture. Often aspects connected to the merely documentary dimension, such as the size of a manuscript, layout, writing, presence of decorations, annotations or glosses function as codified visual signs (*Z*) which produce the ideal (*I*) dimension of a text in a specific context. This is not to mention manuscripts which display a substantial interaction between word and image, sometimes in very creative ways. In those cases the visual dimension of the document plays an essential role in both the creation of a text and its reception, and qualifies as a challenge for digital scholarly editing, as will be demonstrated below.

Codex and context in scholarly editing

In a very influential publication, Busby ([6]) complained the neglect of codicology in the scholarly study of old French narrative. By means of sound arguments he invites all his medievalist colleagues to stick to the nature of the physical artefact, as it can open up the social dimension of a text, which otherwise could not be tackled ([6], 58):

> For the production of the manuscript determines in large part the reception of the text or texts it contains in the Middle Ages and its transmission to us. The professional of the book trade manipulated the response of medieval listeners and readers just as modern editors are capable of manipulating ours by the presentation of texts in a particular way.

This is the reason why reading a text in modern printed editions is completely different and somehow misleading compared with reading a text in manuscripts ([6], 3). Just like medieval book professionals could intervene in the perception of a text by altering its physical nature, modern editors of medieval texts can influence the reception by editing texts in different ways. This is not to say that editions are useless, rather that it is necessary to bring scholars' attention back to the codicological and palaeographic dimension of texts, which for a long time had been absent or considered a secondary aspect in editing medieval literature. And yet codicology and palaeography have extensively profited from the availability of digital images and from technological developments. Since the early 2000s palaeography has become 'digital' and in this context projects such as *DigiPal* (http://www.digipal.eu/) have dramatically contributed to the exploitation of digital methods for the study of ancient scripts through the digital facsimile. Codicology also provided digital solutions for representing specific material aspects of books (cf. [7]): a tool such as VisColl (https://viscoll.org/), developed for visualizing quires and

3 There are many examples: Pfaffe Lamprecht's *Alexanderlied* (1150 ca.), for instance, is handed down in three different redactions (V, S, B) each one handed down in one manuscript only.

binding structure according to XML/TEI standards, can be easily integrated in digital edition projects and is a good example of an attempt to rejoin the textual and the material dimension.

The digital facsimile and the digital edition

This material shift in the study of medieval texts is the latest development of a profound and well-known discussion within traditional editorial theory which culminated in the 90s with the findings of so-called *material* or *new philology*. Within this approach, a more idealistic and neoplatonic perspective on medieval texts was gradually combined with a reassessment of the history of tradition ([27]). This ultimately developed into the idea of text fluidity (*mouvance*), not only with respect to the supposed text authors (quite a hazy concept in the Middle Ages), but also towards readers and editors ([14], 63). Consequently, textual scholars started to feel the urgency to read unstable medieval texts in the context in which they belong, that is in manuscript culture, and to think about forms of scholarly editing that could mirror this newly acknowledged textual status.

The need to enhance the value of single witnesses within a manuscript tradition produced a revival of all those editorial endeavours where the material dimension of a text was at the centre. This includes diplomatic, ultra-diplomatic and genetic editions, and the exploration and development of new approaches thanks to the digital transformation in scholarly editing. Indeed, in the same period this process was fostered by the huge digitization initiatives by the GLAMs, which enabled scholars to access an incredible number of primary sources proliferating on the web. The availability of facsimiles favoured the study of manuscripts and moved it from the margins of scholarship to the centre of academic (and non-academic) trends ([21], 54).[4] In 2003 Hockey even talked about the production of digital images as a new kind of "digital fever": images alone, however, do not amount to much, if they are not accompanied by contextual materials in order to be referenced and employed in a productive way ([18], 51-53).

Some (discouraging) data

And yet often the presence of digital surrogates simply functions as additional material and does not really make a difference in the editorial experience, from both the creator's and the user's perspective. The presentation of a facsimile in a digital edition project has surely become an unavoidable standard to such a degree that if it is not available, editors are supposed to justify its absence. In this context it is worth deriving some useful data from Franzini's *Catalogue of Digital Editions* (CDE), which offers a good and quite detailed survey on the different parameters concerning the presentation of images in current digital edition projects (both scholarly and not, [16]; [2]):

4 The acronym GLAM is currently used to refer to Galeries, Libraries, Archives, and Museums.

Category	Description	Yes	No	Partially	No information provided
Images	The project comes with (high definition) images	165	106	26	12
Zoomable images	Projects providing zoomable images	142	152	-	15
Image manipulation	Projects providing the option to manipulate images (e.g. rotation, brightness, etc.)	15	276	-	18
Text-image linking	Projects providing text-image linking	15	273	3	18

Table 1: facsimile functionalities in DSE projects (CDE, last access: 2020-08-10)

The data contained in the table above refers to a total amount of 309 editions (out of which 85 cover the Middle Ages and 90 the Early Modern Period). Evidence shows that the most common functionality concerning digital surrogates is image zooming, available in about 50% of the editions. Conversely, more advanced functionalities such as image manipulation and text-image linking represent only about the 5% of the total amount and therefore are still an exception.

By browsing the editions listed in the catalogue one can see that, despite the effort of creating high resolution and standardized formats of digitized manuscripts, there is still a lot of work to do in trying to find effective ways to integrate the facsimile in digital edition projects. Indeed, few projects make the digital facsimile the core of the edition and exploit the current possibilities of image annotation and presentation. Even in those cases where the need of a digital edition arises from the uniqueness of one single document, it is not common to find projects which focus on the truly physical nature of the text and consider it an integral part of the edition.

Things are slightly different but no less varied in the edition of modern authors. In the *Jane Austen Fiction Manuscripts* project, for instance, the facsimile and the diplomatic transcription appear side by side and the documentary focus offered in the project has resulted in opening up Austen's writing habits and consequently in producing novel hermeneutic assumptions about her poetics ([31], 13-22). In the *Nietzsche Source* the edition of the philosopher's literary remains appears as two separated resources. The first is the *Digitale Faksimile Gesamtausgabe* (DFGA), a facsimile edition of the whole estate in high-resolution images which can be browsed, enlarged, printed, downloaded, and properly quoted. The other is the *Digitale Kritische Gesamtausgabe Werke und Briefe* – eKGWB, according to the editor "the most corrected version of the Colli/Montinari critical edition" ([12], 42). Although images are stored in a different section of the edition, their quality and presentation allow for quite a high degree of exploitation. The *Samuel Beckett Digital Manuscript Project* displays text and image alignment as well as image annotation in advanced presentation and browsing functionalities

(see for instance *Krapp's last tape* demo, [43]). The *Proust Prototype* is about a genetic edition of Proust's notebook 46: here writing and transcription can be simultaneously visualized on the document through different paths. Although the prototype represents just a preliminary work to the edition of Proust's manuscripts, it is undoubtedly relevant for the central role the digital facsimile plays. Indeed, the transcription is not placed at one side of the document as usual, but it emerges directly from the identification of surfaces and zones in the document according to the user's need to follow writing or reading sequences in a dynamic model ([1], 54).

Levels of document integration

Remarkable efforts have been made to create standards for the annotation of digital images and for the improvement of image interoperability. One of the most significant developments was surely carried out by the TEI, through the creation of a module for facsimile annotation and for image and text alignment in 2011. This allowed for a thorough representation of the facsimile in the digital edition (through the <facsimile> module) and the connection between this annotation and the text transcription (see TEI P5, [40]). According to Pierazzo, this had a crucial effect on the idea of text, "breaking de facto with the idea implied by the OHCO that only structural and immaterial features determine 'what texts really are'" ([30], 84).[5]

As concerns image standards, a huge standardization attempt is the *International Image Interoperability Framework* (IIIF), an initiative driven by the GLAM community that can be defined as an "interoperable technology and community framework for image delivery".[6] IIIF promotes access to resources hosted around the world, defines APIs to support interoperability between repositories, and aims at the creation of shared technologies to work with images. A possible integration between IIIF and TEI annotation is being currently addressed by scholars working on the development of DH projects, although they claim that integration is still at an experimental stage ([24], 151):

> The TEI approach has always been text-centric, and only more recently the TEI editors have included a document-based approach in which the digital images of a textual source have equal dignity as its textual representation, via the <facsimile> / <surface> / <zone> encoding approach. On the other hand, IIIF is overtly and intentionally image-based. The TEI/IIIF integration thus looks very promising and productive for DSEs aiming to combine textual representation and digital images. However, at this point this is very much an open field of experimentation.

It is now worth taking a closer look to the DSEs dealing with the medieval period: out of 85 projects listed in the catalogue, 49 display digital facsimiles, but they are employed in quite different ways. The first kind of integration is what one could define as merely 'accessory': this

5 OHCO = Ordered Hierarchy of Content Objects.

6 *International Image Interoperability Framework* (IIIF) - home page: https://iiif.io/about/ (last access: 2020-08-10).

means that digital surrogates are part of the material available in the edition, but there is no actual focus on it. A more advanced exploitation of images is linked to functionalities like zooming and manipulation and is what I would call 'additional': images usually appear next to the transcriptions, even though the two levels of text representation do not really interplay. There is a third 'constitutive' way to make use of the facsimile in a DSE, which occurs when digital surrogates of the document and text transcription are combined in producing the text at a more substantial level.

Traditional editorial practice has produced several kinds of editions focused on the levels of reproduction of the source, among which we have the so-called facsimile or archive edition, the various degrees of diplomatic i.e. documentary edition ([28]; [29]) – ultra-diplomatic, diplomatic, and semi-diplomatic – and the synoptic or genetic editions.[7] Pioneering genetic editions both in analogue and digital form gave impulse to a rethinking of editorial theory and practice focused on the documentary evidence of a text. However, genetic editions are not really suitable for editing medieval texts, because it is almost impossible to identify the process of creation and texts are usually characterized by a so-called *Autorferne*, that is an unbridgeable distance between the moment of creation of a text and its concrete appearance in manuscript culture. Or, from another perspective: in medieval manuscript culture the process of creation only stops when the act of copying manuscripts is finished.

Accessory, additional, and constitutive facsimile

An example of 'accessory' integration is *Christine de Pizan. The Making of the Queen's Manuscript*. This project is centred on London, British Library, Harley MS 4431 (dated 1414), a codex of the largest surviving collected manuscript of Christine de Pizan's works (1365-ca.1431).[8] The editorial goals are on the one side to study the place of the manuscript in Christine's works and coeval book production and on the other side to investigate the language of the text (through glossary and OCP concordance). Christine supervised all material aspects connected with the making of the book, such as the copy, the decoration, and the correction. Even though the edition is focused on a single witness bearing a high degree of authorial intervention, the images are unfortunately separated from the transcriptions. As a result, this produces a shift also in the user fruition of the edition, which is still mainly centred on the text to the detriment of the document analysis. Another project belonging more or less to the same years is the edition of the *Auchinleck Manuscript* (Edinburgh, National Library of Scotland, Adv MS 19.2.1, dated 1330s), one of greatest treasures for the study of the English language and literature, as it hands down many unique texts (or unique versions of texts). This edition displays a higher level of integration of the digital facsimile, which can be opened at need through hypermedia links and placed next to the transcriptions. However, despite the uniqueness of the document it is based on, the user experience is again focused on the text and

7 For the various *nuances* that a diplomatic edition can have browse the *Medieval Nordic Text Archive (MENOTA) – Public catalogue*: http://clarino.uib.no/menota/catalogue (last access: 2020-08-10).
For a more theoretical perspective see [17].

8 *Christine de Pizan: The Making of the Queen's Manuscript (London, British Library, Harley MS 4431)*: http://www.pizan.lib.ed.ac.uk/ (last access: 2020-08-10).

the facsimile remains a secondary feature of the edition.[9]

In most cases the digital surrogate of a manuscript appears next to the transcriptions, with the purpose to enable the user to orient her-/himself in the manuscript and to check editorial decisions directly against the document. As Schillingsburg pointed out, transcriptions are useful, but no textual scholar would be happy to rely only on them, for s/he would not be able to verify the text. Transcriptions without images demand an act of faith, whereas transcriptions with images rely on verifiable trust ([37], 74). This is the current standard form of the edition and the quotable examples where the facsimile plays an 'additional' role are several. In this context I would like to mention the *Armer Heinrich Digital* (2008), an outstanding DSE project which displays a higher level of enhancement of the digital facsimile. The history of tradition of this text consists of few manuscripts and fragments and "all sources display a comparatively high degree of text variation, including numerous verse switches, reductions, additions and alterations" ([15]). Because it is not possible to identify with any certainty which version of the text is closer to the original, the editors opted for a synoptic display of all extant documents and transcriptions and for the possibility to check the text against the facsimile, which can be opened alternatively to the text.

But the first pioneering project about medieval literature entirely centred on the material dimension of the text is certainly the *Electronic Beowulf* now at version 4.0 ([20]). It is not an exaggeration to state that this document-centred edition has changed the parameters of digital scholarly editing by virtue of the fact that the role of the facsimile is truly 'constitutive'. The edition is addressed to a wide audience including the public at large or students of English (which was the *primum movens* of a Beowulf electronic edition),[10] and scholars who can access the critical apparatus. The relevant shift provided by this project is that not only do transcription and high-resolution images appear side-by-side by default, but also that each image is endowed with highlighted areas (hotspots) leading to further critical commentary directly on the surface of the digital document.

Following the *Electronic Beowulf* more editions started to be conceived in a similar way. This tendency was promoted not only by this very inspiring project, but also by the easier availability of digital facsimiles. Another relevant point for the increasing number of digital editions based on the facsimile has been the creation of pieces of open source software enabling editors to publish good quality editions, usually in a reasonable amount of time and with moderate resources. Indeed, a recent tendency in digital scholarly editing is to make a clear distinction between projects with an experimental ambition, usually big undertakings with a significant investment in terms of human and financial resources and long-term editorial goals, and smaller projects usually managed by small teams aiming at publishing good quality editions without experimental features, but complying with current scholarly standards ([21], chap. 5, par. 4).

Open source solutions like *Versioning Machine 5.0* or *Edition Visualization Technology (EVT)*

9 *The Auchinleck Manuscript*: https://auchinleck.nls.uk/index.html (last access: 2020-08-10).

10 See Conner's ([10]) *Beowulf workstation*.

allow the relatively quick publication of XML/TEI files and the possibility to customize the edition according to specific needs.[11] EVT, which was largely inspired by Kiernan's project, offers two versions: EVT 1 (now at version 1.3 released in December 2019) is suitable for editions displaying an annotated facsimile next to more levels transcriptions (usually diplomatic and interpretative); moreover, it allows a thorough exploitation of the digital surrogate thanks to the possibility of image manipulation, hotspots, or the functionality of image-text alignment achieved through the annotation according to TEI standards. In addition, it includes the visualization of the manuscript collation thanks to the integration of VisColl.[12] EVT 2 is more centred on the publication of critical editions, but the software also allows the presentation of diplomatic or semi-interpretative editions (single manuscript or synoptic visualization), as well the presentation of the material structure of the document. EVT can handle both facsimiles stored locally or IIIF images stored on the server of institutional repositories all over the world, and even 3D models of cultural artefacts, as in the case of the *Ruthwell Cross*.[13] Born as a DH pedagogical initiative in the bachelor for DH at the University of Pisa by Rosselli del Turco for the presentation of the old English *Vercelli Book* (Vercelli, Biblioteca e Archivio Capitolare, ms CXVII), this software is still evolving through its increasing employment in scholarly edition projects, which has made it into a kind of standard for publication.

As for critical editions, although their main goal is the creation of a critical text, it is now common practice to make all the transcriptions available, as the statement of Robinson's *Canterbury Tales Project* makes clear: "Electronic transcription of all the manuscripts and early printed versions of Geoffrey Chaucer's Canterbury Tales, thus providing clues as to the textual tradition of the poem".[14] This project requires the integration of all the sources at the base of the edition also because transcriptions are handled by software for automatic collation and for producing phylogenetic trees ([3]). A similar pioneering editorial undertaking is the *Parzival Project*. Wolfram's *Parzival*, a best-seller of Middle High German literature, is handed down in 16 medieval manuscripts, more than 70 fragments, and a print dating from 1477. In this project the editorial perspective on the text is double and for Stolz, the editor in chief, the project represents both New Philology and New Phylogeny. It means that, on the one hand, editors focus on both the instability of medieval texts – that is on the enhancement of single witnesses – and manuscripts interrelations and groupings for the construction of a critical text:[15]

11 Home page *Versioning machine 5.0*: http://v-machine.org/ (last access: 2020-08-10). Home page *Edition Visualization Technology - EVT 1.3* and *EVT 2*: http://evt.labcd.unipi.it/ (last access: 2020-08-10). On EVT 2 see [35].

12 For more information on VisColl see: https://github.com/KislakCenter/VisColl (last access: 2020-08-10). See also [32].

13 *The Ruthwell Cross*: http://evt.labcd.unipi.it/demo/evt2-beta2/rc/#/tdhop?d=doc_1&s=RC_ES&e=critical (last access: 2020-08-10).

14 *The Canterbury Tales Project*: https://www.dhi.ac.uk/projects/canterbury-tales/ (last access: 2020-08-10).

15 *Wolfram von Eschenbach, Parzival. A New Critical Electronic Edition*: http://www.parzival.unibe.ch/englishpresentation.html (last access: 2020-08-10).

> A new critical edition of *Parzival* will have to come to terms with the abundance of variant readings and the not inconsiderable problems of establishing a text against the methodological background of the polarity of New Philology and New Phylogeny […] Thus digital display enables a synthesis of philological positions, which might at first sight appear contradictory.

Editing illustrated manuscripts

Far from being exhaustive, the examples mentioned above provide an idea of how the digital facsimile can be employed and exploited in DSEs. In this context, however, there is surely another typology of medieval documents which needs to be considered ([30], 59). There are numerous examples of texts of which the idea, content and meaning is primarily produced by the visual features of the document. These are texts that carry a very strong visual rhetoric and for this reason need a specific form of editorial endeavour capable of doing justice to their complex multimodal nature ([36], 42). Although one could think that this kind of 'material textuality' belongs to the modern or contemporary times, there is an huge number of examples from the Middle Ages. For instance, Hrabanus Maurus's *Liber de Laudibus Sanctae Crucis* in Vienna, ÖNB, Cod. 652 (9th century, Fulda), contains a series of *carmina figurata* in which two semiotic levels are combined with each other, as in the following example:

Figure 2: Wien, Österreichische Nationalbibliothek, Cod. 652, page 22

Figure 3: Tomas Anshelm, Magnencii Rabani Mauri (Pforzheim 1503)

The question of how to edit such documents is not a new one and often occurs. The *editio princeps* of the Fuldan codex above was prepared by the theologian and humanist Jakob Wimpfeling (1450-1598) and was printed in Pforzheim by Thomas Anshelm in 1503 with the title *Magnencii Rabani Mauri. De laudibus sancte Crucis opus. erudicione versu prosaque mirificum*. It is interesting to notice that the editor reproduced the text as it was in the original

document: I believe that this is a good example to help us understand that, when confronted by documents like this, it is almost impossible to create an edition which does not take into account the material dimension of the text. Where exactly does the boundary between the two different semiotic expressions lie, given that letters become images and images bear text? How is it possible to extract the text from the document without a loss in intention, idea and meaning? It is difficult to state what is the best way to envisage good editions based on this kind of source, but surely none of the traditional solutions, except maybe for the facsimile edition – in so far as a facsimile edition is considered an edition in its own right – seem to provide a satisfactory manner.[16]

There are many other cases in which texts are handed down in manuscripts along with iconographic cycles, which is quite a common practice also in the book culture starting from the 13th century. In this respect I would like to mention only what I consider to be the best example of an edition which combines critical work on the text with an effective exploitation of the documents: the *Welscher Gast Digital* ([39]). This is an edition project focused on the work of philologists and art historians for creating the digital scholarly edition of a 13th-century didactic treatise by Thomasin von Zerklaere. The peculiarity of the manuscript tradition is that many witnesses display a quite stable iconographic apparatus envisaged by Thomasin from the very beginning. Editorial goals include the creation of a new critical text and the critical analysis of the iconographic apparatuses of all the witnesses. The project, an interdisciplinary undertaking between Middle High German and Art History scholars, is based on the combination between *image criticism* and *textual criticism*. As illustrations are a constitutive part of the documents, it is useful to treat image variants in the same manner as textual variants, in order to be able to compare witnesses and to identify analogies and differences in the whole tradition ([39]). This double critical endeavour is reached at different levels. Because the project is still ongoing, for the time being the editors decided to reproduce the canonical 19th century edition of the text, the so-called *Rückert-Ausgabe* (1852) until a new reading text is established (based on all witnesses). It is also possible to browse a beta-version of the new synoptic edition, which is achieved through a specific edition viewer and enables the direct comparison of available witnesses.[17] Image criticism is carried out in two ways. On the one hand, by browsing the available reading text, the user can identify the parts corresponding to an illustrated motif (marked in red) and then access the corresponding image apparatus. On the other hand, the user can browse a section of the project which is completely dedicated to illustrations. Within this section, images are grouped into recurrent motifs (such as 'unfaithfulness', 'wickedness', etc.), and each motif lists all the possible realisations of it within the manuscript tradition, in other words all variants. In each image, all relevant components (actors and texts) can be highlighted and seen in all the manuscripts at the same time, so that one can easily detect correspondences and differences (see screenshot below).[18]

16 For a discussion on the same topic and other examples see [29] and [30].

17 https://www.ub.uni-heidelberg.de/helios/digi/dwork.html#viewer (last access: 22 September 2020).

18 Zone annotation in achieved by means of *Semantic Topological Notes* (*SemToNotes*) is a Topological Image Annotation and Image Retrieval System written in JavaScript.

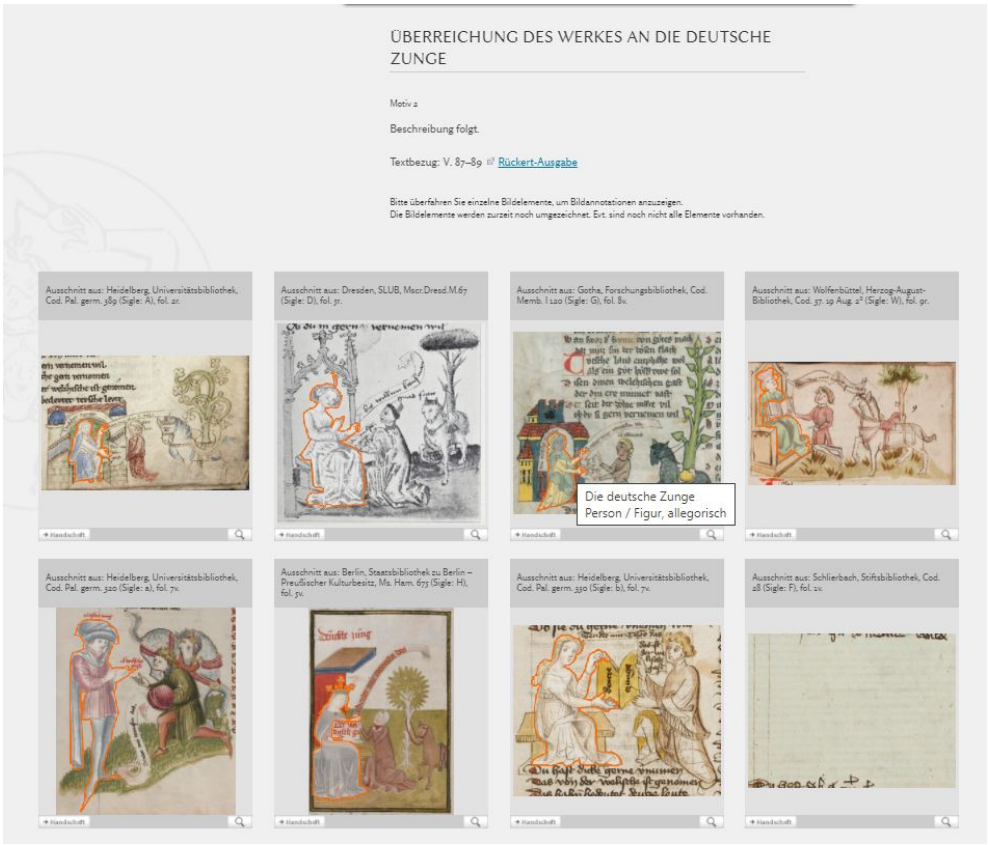

Figure 4: Welscher Gast Digital - image apparatus

The facsimile and the social(ized) edition

The digital facsimile finds alternative ways of exploitation also in the so-called 'social editions'. To borrow Siemens' words, a social edition "blends traditional scholarly editing practices and standards with comparatively recent digital social media environments" ([38]). In social edition projects, willing users can collaborate in producing the edition by taking responsibility of mechanical tasks such as OCR post-processing or even the transcription of primary sources. Willing social editors can also participate in other tasks like digital facsimile annotation or text encoding. This can be slightly more challenging, because it requires a higher degree of expertise in matter such as XML on the participants' part, and a higher degree of control on the editorial side. Nevertheless, this is what usually happens on a small scale within the development of DSE projects and for this reason one might also say that every digital edition is a social undertaking.

Social editions are, whether consciously or not, a new product of the digital shift and one of the results of developments of the Web 2.0 in digital scholarly editing. And yet they have provoked

criticism from the scholarly community, based on the conviction that ordinary people cannot improvise as philologists: because they cannot, social editions simply would not exist. Philologists would not be able to qualify as simple 'facilitators', as editions are always governed by the unavoidable authority of a professional scholarly editor ([34]).

The social edition, as envisaged by Siemens "further extends this concept of textual production by arguing for the significance of the material form of a text and its ability to affect the text's meaning" ([38]). Surely one of the best-known projects (chosen here also for a chronological contiguity with the Middle Ages), is a *Social Edition of the Devonshire Manuscript*, published on Wikibooks, in the editors' words the example of an intersection between academic and wiki culture. Ordinary people can participate in the making of the projects, which responds both to the latest findings of editorial theory and practice (the 'social text') and to the original shape of the manuscript, which was since the time of its creation a collective undertaking (Siemens 2016).

The last editorial product I would like to discuss is Geoffrey Chaucer's *CantApp: The General Prologue. An Edition in an App*, that was published in February 2020 ([25]). It includes a new edition of the General Prologue and other scholarly content such as Terry Jones's translation, notes, glosses, etc. Not only does this app try to make the public at large access one of the monuments of English (and world) literature in its material context, but in the editors' words it also lets people experience the text as it was in Chaucer's time, thanks to the audio performance of the prologue which is available in the app (Medievalists.net [23]). The default app visualization offers high resolution facsimile of the well-known *Hengwrt manuscript* (or *Hengwrt Chaucer*, Aberystwyth, National Library of Wales, Peniarth MS 392 D, 1400 ca.), regarded as the best source for the *Canterbury Tales* (North et al. 2020). Digital surrogates, transcription, translation and audio performance are strongly integrated with each other: the user can follow each manuscript line by listening to it and at the same time by reading the transcription and the modern English translation. However, if one is more interested in a reading text, other visualization options can be selected without losing information about the facsimile, the lines of which are displayed next to the text or translation.

Some conclusions

This essay has tried to show that a long discussion of scholarly editing, along with the latest digital transformation in the humanities and the development of the Web 2.0, triggered a rethinking of editorial theories and practices towards a *material shift*. This turn was primarily produced by the general reassessment of a material, that is codicological, dimension of the text that needed to be taken into account while studying and editing texts for scholarly use. Philologists began to bring the text back into the codex and they are still searching for novel ways to integrate both in the edition effectively.

An extraordinary drive for this material shift in editing was the proliferation of digitized primary sources, which has made editors develop new standards for the digitization (IIIF) and annotation of digital surrogates (TEI). Even though most of the projects offer the facsimile as

'accessory' or 'additional' material, there are various outstanding examples of a more productive and 'constitutive' integration of digital surrogates in DSE projects. In this context, the *Electronic Beowulf* is surely one early pivotal project which fostered the exploitation of the facsimile and made it become at the centre of editorial undertaking. Critical editions like the *Canterbury Tales Project* or the *Parzival project*, despite being grounded on different editorial principles and aiming at different editorial goals (to provide one or more critical texts), enhance the value of each single manuscript which is included in the edition. Not to mention those editions in which the visual component of the text is prevalent, such as illustrated manuscripts, where the need to represent the document is fundamental for the creation of a good edition, but much work still needs to be done to find satisfactory solutions.

The Web 2.0 provides other examples of editions where the role of the facsimile is at their core: the social editions, where the collaboration between philologists-facilitators and public at large is based on the work on the document, or *The General Prologue* app, entirely based on the exploitation of the digital image. In conclusion, the more the edition loses its materiality – from manuscripts to apps – the more texts are appreciated in all their materiality in new forms of editorial endeavours.

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