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THE DIGITAL EDITION: NEW POSSIBILITIES AND CHALLENGES

Traditional philology has not yet found good solutions for the edition of texts that have loose boundaries and a fuzzy transmission history, such as marginal texts. In this paper, it is explored how the digital edition could perhaps help to find new strategies to tackle their complexities.

La philologie classique n'a pas encore trouvé de bonnes solutions pour éditer des textes qui sont fluides et ont une transmission obscure, par exemple les textes inscrits dans les marges du manuscrit. Dans cet article, on explore comment l'édition numérique pourrait aider à trouver de nouvelles stratégies pour faire face à de telles difficultés.

The digital scholarly edition is no longer a distant future: more and more experiments are available on the World Wide Web, and they often show a promising array of new possibilities for the research and analysis of larger corpora of texts. The web makes it possible to share resources and research, which has already boosted the creation of communities of scholars collaborating in online projects.[1] Moreover, a digital presentation and exploration of medieval written sources free us from the constraints of the traditional diplomatic or critical edition, in which they often do not quite fit. In this paper I will explore the new possibilities this might offer to students of medieval texts.

In order to do this, I start with the example of eLaborate, a digital editorial tool developed at the Huygens Institute for the History of the Netherlands (Huygens ING – KNAW). The core business of Huygens ING is the editing of sources relevant to the literary and socio-political history of the Netherlands, ranging from the correspondence of Hugo Grotius, the famous seventeenth-century diplomat and scholar who fun-

1. J. VAN ZUNDERT and P. BOOT, 'The Digital Edition 2.0 and the Digital Library: Services, not Resources', in L. Spiro, *Examples of Collaborative Digital Humanities Projects*, Houston 2009. Accessed online, January 2012, http://digitalscholarship.wordpress.com/2009/06/01/examples-of-collaborative-digital-humanities-projects/. G. CRANE, 'Give us editors! Re-inventing the edition and re-thinking humanities', in *Online Humanities Scholarship: The Shape of Things to Come*, ed. by J. MCGANN, Houston 2010, p. 81-97. Accessed online, January 2012, http://cnx.org/content/col11199/1.1/pdf.

10.1484/J.APOCRA.1.103244

damentally changed international law, to the diary of Anne Frank, the iconic Jewish teenage girl who kept a diary during her days of hiding from the Nazi regime. In its mission statement, Huygens ING explicitly states that it strives to give the digital humanities a primary role: it wants to be at the fore front of the development of new editorial and analytical tools for textual scholarship, and invests accordingly in a comparatively large department of IT specialists working in the area of humanities computing.[2]

eLaborate

eLaborate's first prototypes sprang from the wish to collaborate in online projects in order to create quick transcriptions of large volumes of text. The first version of eLaborate was developed in 2003-2005, and turned out as a digital tool that can be used to set up an online working environment for the transcription of a manuscript or early-printed text. Its lay-out is deliberately simple, offering the bare essentials for an effective, collective transcription process, with only a minimal amount of instruction or IT-knowledge.[3] It allows a scholar to upload photos or scans of a manuscript or printed book, and shows a set of windows underneath: one in which the user can make transcriptions, and another in which he can make annotations. The environment is online, hosted by a local server of the Huygens Institute, and accessible to anyone who is invited by the moderator of the project. This online accessibility is crucial, for it makes it possible to collaborate with a group of researchers, perhaps because one is working on a set of material which is too large to tackle on one's own, or, as was the case in my own project, when one wishes to involve an international network of scholars and to profit from its collective specialized knowledge, even when they happen to be spread all over the world. Anyone with internet access can be asked to contribute, even for a small contribution to the

2. See http://www.huygens.knaw.nl/en/over-ons/missiecorporate-story/ (accessed January 2012): "Huygens ING researches texts and sources from the past with the aid of new methods and techniques. The Institute champions innovation in research methodology" (…) "… researchers engaged in the humanities collaborate closely with a completely different type of expert, such as specialists in informatics, authorities in digital humanities, and a large team of software developers, all under one roof on a daily basis. As such, we regard ourselves as a humanities laboratory in which we develop, test and apply new methods in order to extract more and different information from the sources than has been possible until now."

3. K.H. VAN DALEN-OSKAM. 'Please elaborate!', *Madoc* 23, 2009, 1, p. 36-41; A. BEAULIEU, K.H. VAN DALEN-OSKAM, J.J. VAN ZUNDERT, 'Between tradition and Web 2.0: eLaborate as social experiment in humanities scholarship', in T. TAKŠEVA (ed.), *Social Software and the Evolution of User Expertise: Future Trends in Knowledge Creation and Dissemination*, Hershey, Idea Group, 2013 (forthcoming).

project. Moreover, the whole community of scholars thus created can immediately profit from the work done by its individual members. It is possible to exchange questions, post comments, make observations, et cetera.

One of the first projects to experiment with eLaborate was the one I coordinated myself, focussing on the oldest commentary tradition on Martianus Capella's *De nuptiis Philologiae et Mercurii*. *De nuptiis* is a late antique treatise on the seven liberal arts, dressed in the rich clothes of ancient mythology. Two introductory books set the stage for the allegory of the marriage between Mercury and Philology, Wisdom and Knowledge, Language and Number, and then seven books for the seven liberal arts (the three arts of language, and the four arts of number) follow. This means that the making of an edition requires a profound knowledge of Greek mythology, philosophy, Pythagoreanism, number symbolism, Neoplatonic ideas, technical terminology in the fields of the arts, and at the same time a deep familiarity with both the ancient and the medieval learned tradition on the *artes liberales*, ranging from grammar, rhetoric and logic, to geometry, arithmetic, astronomy and music. The oldest commentary tradition dates back to the first half of the ninth century, possibly incorporating even older layers. It is so large and varied that since its discovery in the 1930's no scholar succeeded in delivering a complete edition, even though several great scholars played with the idea.

In order to overcome this problem I brought together a team of editors with enough specialist knowledge to tackle the interpretative problems. Together with the software developers of the Huygens ING, I filled an online working environment with material. A single manuscript (Leiden, University Library, VLF 48), central to the transmission of the oldest commentary tradition on *De nuptiis*, was shown, page by page. A full transcription of the main text of that manuscript was added, and as a team we began to complement this transcription with a full transcription of the marginal and interlinear annotations found in that manuscript. For correction and comparison, full sets of photos of four additional manuscripts were also made available in the working environment. The working environment was secure, and each person involved needed to register at Huygens ING and was issued a password. The project coordinator (me) decided who would have rights to 'just read' in specific parts of the environment, and who could 'write and overwrite' material in specific parts.

The team that was thus put together consisted of scholars who had already studied parts of the commentary tradition or similar texts, and published on them. In several cases they already had collected notes on and transcriptions of part of the material, and used those in papers and articles. However, since these notes and transcriptions were just loose fragments of a large commentary tradition, they didn't have the right framework in which to publish them. Thus the benefits of our collabo-

ration were mutual: the scholars involved contributed to my project, and I offered them a framework in which to publish their study materials. Besides myself, the team included five scholars, and I involved two students to check and correct the material. Sinéad O'Sullivan, familiar with commentary traditions because of her edition of a tenth-century commentary tradition on Prudentius' *Psychomachia*, started to work on the edition of the commentary attached to the two introductory books.[4] I provided first transcriptions of the glosses on most of the remaining books on the arts, and involved the specialists in my network in different ways. Mary Garrison was involved in the transcription of the glosses added to the books on the trivial arts: Grammar, Dialectic and Rhetoric (books 3-5).[5] Natalia Lozovsky had already explored Martianus's commentary tradition for her book on geographical knowledge in the early medieval West, and used her experience to transcribe and interpret the glosses added to book 6, on Geometry.[6] Jean-Yves Guillaumin, a specialist in the ancient learned tradition on arithmetic, commented extensively on my initial transcription of the large amount of commentary added to Martianus's book on arithmetic (book 7).[7] Bruce Eastwood, the great specialist on Carolingian astronomy, focused on the book on astronomy (book 8).[8] I myself took care of the edition of the glosses added to the ninth and final book on Music.[9] All these specialists thus contributed material to the transcription-environment: some

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4. S. O'Sullivan, *Early Medieval Glosses on Prudentius' Psychomachia, The Weitz Tradition*, Leiden-Boston, Brill, Mittellateinische Studien und Texte 31, 2004.

5. Mary Garrison published several articles on intellectual life in the Carolingian period, e.g. 'The Emergence of Carolingian Latin Literature and the Court of Charlemagne', in R. McKitterick (ed.), *Carolingian Culture: emulation and innovation*, Cambridge, CUP, 1994, p. 111-140; 'The social world of Alcuin. Nicknames at York and at the Carolingian court', in L.A.J.R. Houwen and A.A. MacDonald (eds.), *Alcuin of York, scholar at the Carolingian court*, Groningen, Egbert Forsten, Germania Latina 3, p. 59-79; 'Alcuin and Tibullus', in M.C. Díaz Y Díaz and J.J. Díaz de Bustamante (eds.), *Poesía Latina Medieval (Siglos V-XV)*, Florence, SISMEL Editione del Galluzzo, 2005, p. 749-759.

6. N. Lozovsky, *The Earth is Our Book. Geographical Knowledge in the Latin West ca. 400-1000*, Michigan, University of Michigan Press, 2000.

7. J.-Y. Guillaumin (ed., transl., comm.), *Martianus Capella, Les noces de Philologie et de Mercure, Livre VII, L'Arithmétique*, Paris, Les Belles Lettres, 2003.

8. Many articles by Bruce Eastwood deal with Martianus' teaching on astronomy and its reception in the Middle Ages, but the book that brings many of his earlier findings together is *Ordering the Heavens. Roman Astronomy and Cosmology in the Carolingian Renaissance*, Leiden, Boston, Brill, History of Science and Medicine Library 4, Medieval and Early Modern Science 8, 2007.

9. I had already published an edition and study of the commentary tradition added to this book: M. Teeuwen, *Harmony and the Music of the Spheres. The 'ars musica' in ninth-century commentaries on Martianus Capella*, Leiden-Boston-Köln, Brill, Mittellateinische Studien und Texte 30, 2002.

provided transcriptions, others comments, or corrections, or interpretations and translations.

When all this work was done, and the edition more or less complete, a new version of eLaborate was developed: eLaborate2. This included an online publication platform for text-editions, accessible to anyone. In the case of the Martianus Capella project, a lay-out in vertical panels was developed, with one panel for each set of data of the edition. In standard view, there are four panels: 1. for navigation, 2. for the photo (facsimile), 3. for the transcription of the main text, and 4. for the transcription of the annotations. Since the splitting up of a normal-sized computer screen into four horizontal slices results in very narrow views of the information involved, this basic view can be customized according to one's own wishes. Panels can be clicked shut, so that the screen can be used to see more of the photo, or more of the transcription of the annotations, and so on. Its lay-out, in other words, is up to the user to a certain extent. The site shows all the photos from the central Leiden manuscript with zooming and navigating functionalities, and a basic search-function has been developed. A search produces a list of results which acts as a navigation-list, so that one can click from one result to another. It also has the clever option of 'fuzzy search', with which one can easily work around the problem of orthographical variation, declension and case-endings. It is thus possible to search the whole commentary tradition for a name (*Pythagoras*), or a concept (*sapientia*), and the result is a fine list of material on the subject at hand.

The first result was thus a first complete edition of the oldest commentary tradition of *De nuptiis*: http://martianus.huygens.knaw.nl, published in November 2008, and regularly updated with corrections and new material since then. A second, equally important result was a symposium organised towards the end of the project, in which the network gave an account of what they found when working with the material. The papers of this symposium have been published.[10] Moreover, Sinéad published a cumulative edition of the commentary on the first two books of *De nuptiis*,[11] and I plan to make the book-edition complete with another volume in the series, containing an edition of the commentary added to books 3-9, but more or less restricted to the Leiden VLF 48 manuscript.

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10. M. Teeuwen and S. O'Sullivan (eds.), *Carolingian Scholarship and Martianus Capella: Ninth-Century Commentary Traditions on 'De nuptiis' in Context*, Turnhout, Brepols, CELAMA 12, 2011.

11. *Glossae Aevi Carolini in Libros I-II Martiani Capellae De nuptiis Philologiae et Mercurii*, ed. by S. O'Sullivan, Turnhout, Brepols, CCCM 237, 2010.

Flexible text and variation

Apart from the content of the commentary, which requires a wide array of specialist input, there is another aspect to this material which makes the making of an edition very complicated. It would be stating the obvious to say that no two manuscripts offer the same text, that there is always a certain amount of variation, through scribal errors, the use of different abbreviations or orthographic practices; however, in the case of individual glosses and commentary traditions, the truth of this statement gains a whole new dimension. The contours of a commentary text are vague, and the status of a commentary text is fundamentally different from that of a 'regular' text. The copyists have much more freedom to leave glosses out, to change them, or to add new ones. They even feel compelled, so it seems, to complement an earlier layer of annotations with a new one, if a manuscript which has new material comes into their hands. A commentary text was never seen as a finished, closed text: one could and should always add new insights, newly found glosses from other manuscripts, or newly composed annotations. Layers of annotations are added to the main text, and these are moulded together to form new commentary traditions. Variation is not an accident, but an essence.[12]

How to edit these flexible texts is a problem to which the scholarship of editing has not found answers yet. It may be clear that a traditional critical edition, based on a stemma which points out the oldest or most reliable manuscripts, is impossible. Even if one would want to approach a commentary text in such a way, then in most cases the apparatus would grow disproportionately large, drowning its student in endless lists of variants. But at the same time the comparison of manuscripts and the study of variants is hardly ever more useful than in the case of commentary texts. Often commentary texts are characterized by a certain lack of care, a certain disarray. The text is often cramped into a space which is too small, written in a hand which is tiny, in a manner which is not preoccupied with grammar and style. It is not difficult to find examples of glosses which have been so mangled in the trans-

12. During the Apocrypha-meeting it became clear that this statement is not only true for commentary texts, but in fact for many others as well: collections of saints stories, liturgical text collections or sermons, for example, are as prone to variation as commentary texts. Yet marginal commentary does have a unique aspect of inviting others to add more, new or contrary material, which the project I am currently running, 'Marginal Scholarship: the Practice of Learning in the Early Middle Ages (c 800-c 1000)', wishes to explore. See 'Marginal Scholarship: Rethinking the Function of Latin Glosses in Early Medieval Manuscripts', in *Rethinking and Recontextualizing Glosses. New Perspectives in the Study of Late Anglo-Saxon Glossography*, ed. by P. Lendinara, L. Lazzari, C. Di Sciacca,, Porto, FIDEM, TEMA 54, 2011, p. 19-37.

mission process that they lost their meaning entirely.[13] Careful comparison with other, better sources is often the only way to reconstruct their meaning and their error. Moreover, an analysis of variants offers a good starting point for grasping the relations among manuscripts, and the contours of the commentary tradition as a whole. There are glosses, for example, which clearly form part of a corpus of glosses, and there are individual ones, unique for a single manuscript. How would one be able to tell the difference, if not by studying multiple manuscripts of the same text with their marginalia?

So, even if we (that is, we scholars who are interested in aspects of medieval texts that traditional textual edition methods cannot accommodate) do not want to phrase our observations in Lachmannian terms of 'originality', 'sincerity', 'error' and 'corruption',[14] we still want to use the method of text comparison in order to gain insight in our texts. But is it even possible to make an edition of a text which has such vague contours? How can we edit these texts in such a way that we do justice both to the individual sources, and to the aspect of comparison between sources, relations between them and overlap between them? Preparing a traditional critical edition for these flexible, fuzzy texts, it seems to me, is not only barely possible but also undesirable in some respects. What is interesting about these texts is not always their content, or the solution of their philological problems. Sometimes, the more interesting questions are the ones that concern the shape of a text at a certain point in time, or in a certain manuscript used by a certain community, or its place in the setting of a collection of texts, or the mapping of the changes a certain text underwent in the course of its transmission. The glosses, attached to the main text in layers, more or less loosely assembled into set corpora but always open for improvement and additions, are an excellent point in case.

Again, the digital environment offers new possibilities here – as was signalled already twenty years ago by the French textual scholar Bernard Cerquiglini in his *Praise of the Variant*.[15] In eLaborate 1 and

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13. M. Lapidge, 'The Study of Latin Texts in Late Anglo-Saxon England: the Evidence of Latin Glosses', in N. Brooks (ed.), *Latin and the Vernacular Languages in Early Medieval Britain*, Leicester, University Press, 1982, 99-140; J. Zetzel, *Marginal Scholarship and Textual Deviance: The 'Commentum Cornuti' and the Early Scholia on Persius*, London, Institute of Classical Studies, Bulletin of the Institute of Classical Studies Supplement 84, 2005, 144-161.

14. Zetzel, *Marginal Scholarship*, 161: "The assumptions of Lachmannite textual criticism are not wrong, but they are a part of the culture that produced them – Christian, romantic, industrial – while the ancient books we read as well as the medieval copies in which we read them came from a very different world."

15. B. Cerquiligni, *In Praise of the Variant. A Critical History of Philology*, transl. B. Wing, Baltimore, John Hopkins University Press 1999. Originally published as *Éloge de la variante: Histoire critique de la philologie*, Paris, Éditions du Seuil, 1989.

2, it was not possible to work with multiple manuscripts. I chose, for practical reasons, to work with a single, central manuscript. Three other manuscripts and editions of other commentary traditions were used to complete and correct the readings of this single manuscript, and to create a critical apparatus for them. The result is a hybrid text which is neither a proper critical edition, nor a bare diplomatic transcription. We could perhaps term it a 'critical transcription'. The ideal would be for a digital environment to show the user multiple manuscripts, and to allow the user to set them next to each other to his own liking, and not only according to the ranking and order chosen by the philologist. In this comparison of sources, the visualisation of similarity and deviance would be crucial.

Experiments with this kind of textual editing have in fact been carried out at Huygens ING for a project involving an edition of the complete works of Willem Frederik Hermans, a modern Dutch literary author, famous for his continuous fiddling with his text for each print run. An electronic edition of one of Herman's short stories, *Paranoia*, was made, in which all the variants, encoded with a programme specifically developed for text comparison, are shown.[16] The programme Collate, developed by Peter Robinson for his work on the Canterbury Tales, was used to encode more or less automatically the variation.[17] This was converted to a XML-TEI file, and this file was imported in the eLaborate edition-tool, so that it could be structured in the architecture of eLaborate. It makes an interlinear presentation of variants possible, so that all the variants from all the different prints can be viewed simultaneously. The user of the digital edition can thus choose, for example, the first edition, and can still see all the variants from the second, third, and later editions, just by ticking a single box. It is possible to switch views by choosing a different edition as one's 'central' one.

Of course, variants in modern printed books are a different matter than variants in hand-written codices, and the kind of variation medievalists encounter is certainly very different from what the Hermans-scholars may encounter in a print run. Still, along similar lines, it will be possible to show multiple manuscripts, multiple texts, and their relations to one another in a more dynamic way than the traditional critical

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16. Online, http://hermansdigitaal.huygensinstituut.nl/path, unfortunately in a secure environment which is password accessible only (because of copyright issues which have to be settled with the inheritors of the W.F. Hermans material): *Paranoia*, Willem Frederik Hermans, electronic edition. Ed. by J. Gielkens, P. Kegel, with assistance of E. Kamp, B. Oostveen and M. van Zoggel, and the software developers of the Huygens ING. First published online in 2009, last visited on 17 February 2012.

17. CollateX, the successor of Collate, is in development at Huygens ING and will be used in future editions of Hermans. For more information, see the description at http://collatex.sourceforge.net/ (visited 17 February 2012).

edition apparatus allows, possibly also in a clearer way. The traditional critical apparatus, moreover, was not designed to show the relations among the sources, but rather to account for the choices made by the philologist, or to provide a 'proof' of an editor's work.[18] It hides the differences rather than pointing them out, by measuring them against the yard stick of 'proper Latin', or a 'pure text'. If presented differently, however, the apparatus has the potential to show the overlap and the deviance among different sources, and then we could give it a more satisfactory place in the whole of an edition. And if we combine the new ideas about presentation with the ideas of flexibility and potential customization of the material for individual readers, we could produce a much more informative apparatus which – to my mind – is vital to our understanding of text and context.

The nature of glosses

Another important observation about the form of an edition of marginal texts is prompted by the nature of these texts. To grasp the flexibility, the variation and the overlap of commentary traditions or corpora of glosses, it is not enough to analyse the relations among several manuscripts of a single text tradition. Rather, each gloss should be viewed in the light of a much larger cluster of texts. The oldest commentary tradition on *De nuptiis* will serve as a good example to explain this.

All too often manuscripts with glosses are easily classified as school texts,[19] but in the case of Martianus Capella's *De nuptiis*, the classification does not fit so well. *De nuptiis* is not a text which one would expect in the curriculum of a monastic school. First, the text is full of subjects which are problematic in a Christian context: Greek myths, full of love, lust and adultery, ideas about the creation which do not concur with Christian doctrine, about life after death, or about fortune telling.[20] Second, Martianus' Latin is not the kind of Latin one would try on average students. It has been characterized as the most difficult Latin there is, full of neologisms, odd grammatical structures, Graecisms, and exploring as many poetic meters as one can possibly do in one work (and then a few more). All these aspects, which make the text so excessive in modern eyes, were attractions in the eyes of our Carolingian scholars, but it must have been read only by the brightest

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18. Anthony Grafton makes this point about footnotes, but it fits the critical apparatus very well. See A. GRAFTON, *The Footnote. A Curious History*, Cambridge, MA, Harvard University Press, 1999 (first published in 1997), p. 15-16.

19. G. WIELAND, 'The Glossed Manuscript: Classbook or Library Book?', *Anglo-Saxon England* 14, 1985, p. 153-173.

20. M. TEEUWEN, 'Seduced by Pagan Poets and Philosophers. Suspicious Learning in the Early Middle Ages', in C. GILIBERTO and L. TERESI (eds.), *The Limits of Learning*, Paris, Louvain and Dudley, MA, Peeters, Storehouses of Wholesome Learning III, Medievalia Groningana, forthcoming.

minds, at the highest level of study.[21] A third point is the lay-out of the manuscripts themselves. These do not at all strike us as books made for the schoolroom. Glosses tumble over each other; the seams of the lay-out are coming apart because of the overload of annotations. Both in lay-out and in content, these texts do not come across as suitable for teaching purposes because the annotations are very often highly associative. A schoolmaster would need oceans of time just to read one page with students in a structured way, even if he addressed only one or two students at a time.[22] Fourth, some of the annotations are written in Tironian notes, the medieval shorthand system. These notes not only suggest that these texts are perhaps personal, and unfinished (still to be revised), but they could also indicate, perhaps, a deliberate screening off of material that was meant to be read only by the best educated elite.[23]

Putting all these observations together, I suggested that these manuscripts of Martianus Capella's *De nuptiis*, with their extensive glossing should not be characterized as schoolbooks, but rather as scholarly works – books used for scholarship.[24] Time and again, the glosses show how *De nuptiis* was used by the Carolingian readers as a stepping stone to other authorities. When they explain something about the nature of the number three, they step to Augustine's *De doctrina Christiana*, or to the last of his six books *On music*. When the theme of the harmony of the spheres, the music of planets, surfaces in Martianus's text, they bring in Chalcidius and Macrobius, and their views on Plato's *Timaeus* and Cicero's *Dream of Scipio*.[25] In this way a new, medieval encyclopedia of learning was created, wrapped around the late-ancient one, and this new layer of learning deeply influenced medieval learned traditions. This new collection is fed by all kinds of texts (Augustine, Boethius, Macrobius, Pliny, Isidore, etcetera), and in turn it feeds commentary traditions on other texts – for example Prudentius's *Psychomachia*, or

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21. M. Teeuwen, 'The Pursuit of Secular Learning. The Oldest Commentary Tradition on Martianus Capella', *Journal of Medieval Latin* 18, 2008, p. 36-51, esp. p. 42-43; S. O'Sullivan, 'Obscurity, Pagan Lore, and Secrecy in Glosses on Books I-II from the Oldest Gloss Tradition', in M. Teeuwen and S. O'Sullivan, *Carolingian Scholarship*, p. 99-120.

22. M. Teeuwen, 'Glossing in Close Co-operation: Examples from Ninth-Century Martianus Capella Manuscripts', in R.H. Bremmer Jr. and K. Dekker (eds.), *Practice in Learning: The Transfer of Encyclopaedic Learning in the Early Middle Ages*, Paris, Leuven and Walpole, MA, Peeters, Storehouses of Wholesome Learning II, Medievalia Groningana, 2010, p. 85-100.

23. D. Ganz, 'On the History of Tironian Notes', in P. Ganz (ed.), *Tironische Noten*, Wiesbaden, Harrassowitz, Wolfenbütteler Mittelalter-Studien 1, 1990, p. 35-51.

24. M. Teeuwen, 'Writing between the Lines: Reflections of Scholarly Debate in a Carolingian Commentary Tradition', in *Carolingian Scholarship*, p. 11-34.

25. *Ibid.*, p. 22-28.

something as far removed from ancient myth as Arator's *Historia Apostolica*.[26] They use the same sources, they use each other as sources, and they react upon each other. In order to get a grip on what really happens in these margins, we should try to map these connections to other texts. We would have to create a carefully chosen corpus of texts, which would give us the contours of the backbone of learning of the Carolingian learned elite. In that corpus we would have to include, for example, the early medieval glossaries, and the overlap between these and commentary texts would have to be analysed. This will become possible, of course, only when more editions are available to us, preferably in easily searchable formats that allow for complex comparisons and the detection of parallels.[27]

Future horizons

The technique with which we worked to shape the edition of the oldest commentary tradition is not powerful enough to enable such complex undertakings. eLaborate in its present shape cannot be used for text comparison in that sense, or for the drafting of complicated relationships among texts. But the technologies that could help us address these questions are already out there in the digital world.[28] The basic workings of programmes that screen theses on plagiarism, for example, could perhaps be used to find relationships and parallels between texts. This may not be as far-fetched as it sounds; programmes have been developed to map relations among manuscripts using computer techniques from evolutionary biology and exploiting the analogy between the transmission of manuscripts and the transmission of genetic information and the development of species.[29]

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26. *Ibid.*, p. 28-31.

27. M. Teeuwen, 'The Impossible Task of Editing a Ninth-Century Commentary. The Case of Martianus Capella', *Variants. Annual Journal for the European Society of Textual Scholarship* 6, 2007, ed. W. van Mierlo, p. 191-208.

28. On the idea that the digital edition of the future will be using data sources and functionalities from different origins, see J. van Zundert and P. Boot, 'The Digital Edition 2.0'.

29. P. Robinson and R.J. O'Hara, 'Report on the textual criticism challenge', *Bryn Mawr Classical Review* 3.4, 1992, p. 331-337; B. Salemans, *Building stemmas with the computer in a Cladistic, Neo-Lachmannian, way: the case of fourteen text versions of Lanseloet van Denemerken*, diss. 2000, http://www.neder-l.nl/salemans/diss/salemans-diss-2000.pdf; C. Macé, P. Baret, A. Bozzi and L. Cignoni (eds.), *The Evolution of Texts: Confronting Stemmatological and Genetical Methods*, Pisa, Roma: Istituti Editoriali e Poligrafici Internazionali, Linguistica computazionale XXIV-XXV, 2006; T. Roos, T. Heikkilä, 'Evaluating methods for computer-assisted stemmatology using artificial benchmark data sets', *Literary and Linguistic Computing* 24.4, 2009, p. 417-433.

At present, the Huygens Institute is developing a new version of eLaborate (eLaborate 3), and one of its aims is to bridge the gap between the diplomatic transcription and the critical edition. The lines along which eLaborate is adapted are dictated by the notion that the material in the edition can be enriched with structured metadata, at different levels of the edition. An experiment with categories of annotations has already been carried out, for example in the digital edition of the Arthurian romance 'Walewein ende Keye', published online by Marjolein Hogenbirk in 2009.[30] In this edition, three categories of annotations have been distinguished: 1. (green) annotations concerning codicological and/or paleographical remarks, 2. (pink) annotations on vocabulary and language, and 3. (lilac) observations of a literary nature, or sketching a (literary-)historical background. The splitting up of the mass of observations into these three categories makes it possible for the visitor of the online edition to see the text according to his own interests: he can read the text with some help in terms of language and translation, and select a view in which only the annotations of category 2 are visible. He can also sift out all observations on codicology and paleography, to figure out where the text stands in that respect, and perhaps to match these data to a different manuscript on which he himself is working.

In eLaborate 3, this basic functionality of creating the possibility to sort through layers of material in the digital edition of a historical document by assigning them different categories, is further developed.[31] The scholar will be able to add metadata to the project in general, to the objects (transcriptions, facsimiles) within the project, and to the annotations on these objects. In this way, it will be possible to create a more complex web of objects that are linked to each other in some relational way: the codicological and paleographical data of one object could be linked to those of another one, Latin texts can be related to vernacular translations, main texts can be related to commentaries or interpretations, or to sources or parallel texts. The more complex the mark-up, the more different kinds of representations can be generated in the end, and the more connections and comparisons between the material at hand can be made. But while complexity is the key here, it will also be one of the pitfalls of the (future) digital edition: the more complex the material is, the harder web designers will have to work to reduce it so as to avoid visual overload without losing efficiency. Types of metadata can be shown or hidden as a group, according to the wishes of the scholar using the edition. As long as they are recorded,

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30. M. Hogenbirk (ed.), in cooperation with W.P. Gerritsen, *Walewein ende Keye. Een dertiende-eeuwse Arturroman overgeleverd in de Lancelotcompilatie*, first published online in November 2009, at http://www.waleweinendekeye.huygens.knaw.nl (last accessed on 23 February 2012).

31. www.elaborate.huygens.knaw.nl (last accessed on 23 February 2012).

however, they are available for a further pursuit of research on aspects of the edition, or to compare them to other editions or to subject them to specific searches.[32]

A problematic side to all these promising panoramic views into the future is the reality of the work floor. At Huygens ING, we are blessed with a particularly large department of software developers, but even they are always struggling with an overload of work. Also from the technical point of view, the problems are large – all the photos are saved on our own servers, and this creates capacity problems and financial problems, for contrary to what one might think digital space is not without cost. It has become urgent, therefore, to make arrangements with image providers and agree on a protocol that would allow a scholar to display photos from a different server, instead of saving them on his own. More and more libraries have websites with databases of photos from their special collections – the e-codices project is an exemplary model.[33] But in order to accomplish this, deals have to be made with manuscript holding institutions and universities or research institutions. These are a matter of years rather than months. Nevertheless, further possibilities for cooperation have to be explored, and now is the time, so it seems, as there are indeed a number of initiatives in that field: they create European online collections of manuscripts,[34] and they explore, in a European collective, the possibilities for cooperation in preparing digital tools to facilitate text editions, text comparison, and text analysis.[35] These initiatives will perhaps offer good opportunities

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32. K. VAN DALEN-OSKAM, 'All in one, one for all? A possible world of digital editions', unpublished lecture held at the *LECTIO Round Table Series* in Leuven, 21 November 2011: "Digital or critical/Digital and critical?".

33. See the website 'e-codices. Virtual Manuscript Library of Switzerland' (http://www.e-codices.unifr.ch/en), but also, for example, the recent project to reconstruct the medieval library of Lorsch online: http://www.bibliotheca-laureshamensis-digital.de/de/index.html, For a good inventory of similar projects, see Albrecht Diem's site 'Monastic Studies Resources – Internet Resources for the Study of Early Medieval Monasticism', http://albrechtdiem.org/research/mmp/listoflinks.html#Digital (last accessed on 23 February 2012).

34. See, for example, the project Europeana Regia (http://www.europeanaregia.eu/en, last accessed 23 February 2012). The project runs from January 2010 to June 2012, and its goal is to digitise 874 rare and precious manuscripts from the Middle Ages and the Renaissance, with the collaboration of five major libraries: the Bibliothèque nationale de France, the Bayerische Staatsbibliothek, the Historic Library of the University of Valencia, the Herzog August Bibliothek in Wolfenbüttel, and the Royal Library of Belgium. The project focuses on three distinct periods in history: the Bibliotheca Carolina (8th and 9th centuries), the Library of Charles V and Family (14th century) and the Library of the Aragonese Kings of Naples (15th and 16th centuries). These manuscripts will be fully accessible on the websites of the partner libraries.

35. See, for example, the project Interedition (http://www.interedition.eu/, last accessed 23 February 2012). This COST project (coordinated by Joris van Zundert, funded by the ESF from 2008-2012) aims at promoting the interoper-

for the philologists of the 21st century, but they demand a rather drastic shift in the organisation of our work. Editors of historical texts used to work alone, bent over some manuscript in some remote library, as modern monks doing the slave's work of transcription. Now our projects have blossomed into co-operative ventures, involving not only several scholars, but also software developers and technical staffs. It is not always easy to communicate our research questions to complete outsiders in order to make them understand what technology we need, what will help us and what stands in our way. To take such a road is not like taking the highway to success, but rather to travel along muddy off-road routes at a discouragingly slow speed. And time is of essence when one is living on external funding with just a few years to show results.

There are, in fact, more downsides to digital editions than I care to mention here: a digital edition dooms someone to a lifetime of work, just to keep it up and running; it is more vulnerable than one would perhaps think, and will easily die from neglect; the digital world changes so fast that one would not only need a lot of time but also a considerable amount of money just to keep up; a digital publication is still not acknowledged as a proper edition, even though its usefulness clearly exceeds that of a paper edition, and therefore it does not fully count in one's publication list. However, I do not see how we can choose not to take this digital road when our texts are what they are: flexible texts, with a material reality that tells us just as much about our history and culture as about the meaning of their words, structured not along the lines of the modern day book, but often along completely different lines that reflect their genesis, their transmission history and their function in medieval intellectual life. These aspects were hidden by traditional textual criticism in apparatus and foreword in Latin, but the digital approach offers new opportunities to explore these aspects of medieval texts. I suggest we rise to the occasion.

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ability of the tools that are developed in the field of digital scholarly editing and research.