

Learned Love

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Traditional editorial standards and the digital edition

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Typology

The practices of editing texts from different periods are governed by different sets of dominant and challenging theoretical paradigms. This seems to be corroborated by a recent study on textual multiplicity and radical philology in editing classics by Sean Alexander Gurd (Gurd 2005). In *Iphigenias at Aulis. Textual Multiplicity, Radical Philology* Gurd focuses on the central question: how should a classical literary scholar approach a text characterized not by stability, but by variation and flux? Although this important theoretical question has been in the centre of many debates on modern textual scholarship applied to modern texts over the last decades, very few of the theorists who, say, publish in *Studies in Bibliography*, *Variants*, *Text*, *Genesis*, or *Editio* – yearbooks and journals that are mainly concerned with textual scholarship of modern and early modern texts – and in the anthologies that have appeared since the mid-1980s, are quoted in Gurd's bibliography. On the other hand, Dirk Van Hulle's *Textual Awareness*, a genetic study of late manuscripts by Joyce, Proust, and Mann, includes a seminal part on traditions in editorial theory but hardly mentions any theorist of classical textual criticism (Van Hulle, 2004a). The same absence of cross-fertilization can be observed in studies concerning the edition of texts from other periods such as, for instance, the Middle Ages or the Renaissance.

Given the central aim of textual scholarship, that is providing the humanities with the foundational data for any sensible statement about texts, it is not surprising that these different theoretical paradigms correspond more or less with the conventional organisation of the literature departments at our universities. From the point of view of the analysis and the interpretation of the text, scholarly editing is an auxiliary discipline to literary scholarship and thus follows the latter's specializations with their own theoretical and methodological evolutions. However, the intensity of contacts between literary and textual critics can hardly be underestimated (Van Hulle 2004a, 2).

Textual scholarship is further fragmented by the development of different theories and methods based on author-, language-, audience-, and text-specific criteria. As a consequence, there is no single theoretical paradigm for textual scholarship across all traditions, periods, languages, and authors. Also, there is no universally applicable taxonomy of editorial types. This issue that is discussed in the first part of this essay leads to a discussion about the nature of the digital edition later on.

As Heinrich Meyer has argued in his study on *Edition und Ausgabentypologie* the 'ausgabentypologische Terminologiewirrwarr' (Meyer 1992, 17) is the result of a methodological pluralism both inside and across editorial traditions. In

this book, Meyer surveyed the literature on textual scholarship in Germany in the twentieth century and listed more than forty names for different types of editions that were used.

The perception in the Dutch school that German editorial theory, apart from the archive edition, is concerned with a neat three-part hierarchic typology consisting of the (1) historical-critical edition, (2) the study edition, and (3) the reading edition is an opportunistic reduction of the reality of German editorial theory and practice. This selective perspective has been firmly established by Marita Mathijssen's *Naar de letter. Handboek editiewetenschap* (Mathijssen 1997) to which editors in the Dutch speaking countries often refer. In this book, which has been used as a textbook in university courses on textual scholarship, the author presents a deliberate simplification of several types of scholarly editions and proposes a simple and unified terminology for Dutch speaking academics that is mainly based on the writings of only two theoreticians, namely the German Klaus Kanzog (Kanzog 1970) and the Swiss Hans Zeller (Zeller 1985). This handbook also speaks briefly of the Anglo-American editions that are produced in compliance with the copy-text theory and presents them as a virtual unified type which carries the approval of the Committee on Scholarly Editions of the Modern Language Association of America (Mathijssen 1997, 73-74). The reality is, again, much richer – and much more complex – than represented by Mathijssen's book. David Greetham, for instance, describes nine possible types of scholarly editions in his book *Textual Scholarship. An Introduction* (Greetham 1994, 347-372).

The negative comment another Dutch textual scholar, Fabian Stolk, made on the typical Flemish 'text-critical edition' may serve as an illustration of the impact of Mathijssen's handbook in the Netherlands. The *text-critical edition* presents itself explicitly as a reading edition, but contains elements which are traditionally found in a study edition, for instance concise annotations and the textual essay containing chapters on the genetic history of the text, on the transmission of the text and the bibliographic description of the extant witnesses, and on the editorial principles. The textual essay is written from the perspective of the reader who wants to be informed about the reading text rather than from the perspective of the textual scholar who wants to demonstrate the results of his research. The editor who prepares a text-critical edition makes eclectic use of Anglo-American theories for the theory and concept of the critical text which is the reconstruction of the historical state of a document, German theories for the establishment of the text and the genetic component of the justification of the emendations from the sources, and French theories for the genetic study of the textual history.¹ According to Stolk there is no such thing as a text-critical edition because, he argues, neither Marita Mathijssen nor Gerrit Dorleijn (another Dutch theorist) nor Hans Zeller

1. Again, see Van Hulle (2004a, 15-47) for a concise overview of these three traditional schools.

mention this edition type in their writings.² But others do. Waltraud Hagen in his *Handbuch der Editionen*, for instance, defines the critical edition as a light version of the historical-critical edition and calls it one of the four ‘Grundtypen’ (Hagen 1979, 8) of editorial praxis. The text-critical edition in use in Flanders from the late 1990s onwards, however, more closely approximates the ‘Textkritische Leseausgabe’ mentioned in Heinrich Meyer’s study as one of the types in use in German editorial praxis.³

A further problem with the typologies in use in editorial theory is the mixing of several perspectives in one taxonomy.⁴ Historical-critical, for instance, refers both to the method used to create the edition as to the format in which that edition comes before the user. The study-edition and reading edition, on the other hand, address the intended audience in their naming. Whereas the copy-text edition refers to a specific theory of establishing a text, the types of scholarly editions Greetham mentions mainly refer to the format or appearance of the edition, such as ‘parallel print edition’, ‘variorum edition’, or ‘type facsimile edition’, or to a combination of format and method such as ‘Eclectic Clear-Text Edition with Multiple Apparatus’ (Greetham 1994, 383). Further possible typologies can be drawn from the extension of treatment of the material (complete works, regest edition, archive edition) or from the publication medium. The latter results in the least useful typology of scholarly editions. Here we have print edition, hybrid edition, and electronic edition.

Especially this last one – the electronic edition – is often presented as a meaningful class. In *Editionen zu deutschsprachigen Autoren als Spiegel der Editions-geschichte* (Nutt-Kofoth and Plachta 2005), for instance, Rüdiger Nutt-Kofoth and Bodo Plachta as editors of this volume arrange twenty discussions of editions of different authors alphabetically and conclude the book with a chapter on electronic editions. Although this essay on electronic editions by Fotis Jannidis (Jannidis 2005) presents a useful overview of the history of electronic editions in Germany, its function in the structure of the book is nonsensical. Moreover, electronic edition as a type is widely used to name almost anything which is available in electronic format. It is true that ‘[t]exts on screen look remarkably alike, despite profound differences in quality’ (Shillingsburg 2006, 87). A sad example is the *édition électronique* of the correspondence of René Descartes which is nothing more than a 35 page MSWord file which has been made available online.⁵

2. Stolk (2005) and my personal communication with Fabian Stolk.

3. The text-critical edition is mainly practised by the Royal Academy of Dutch Language and Literature’s Centre for Scholarly Editing and Document Studies. Published examples are the text-critical editions of Stijn Streuvels *De teleurgang van den Waterhoek* (1999); Hendrik Conscience *De leeuw van Vlaenderen* (2002); Stijn Streuvels *Levensbloesem* (2003); and Johan Daisne *De trein der traagheid* (2004).

4. See also Göttsche (2000) on this issue.

5. http://classiques.uqac.ca/classiques/Descartes/correspondance/descartes_correspondance.doc

Method or tool?

The danger of a normative typology and hence a rigid theoretical frame for textual scholarship is that it establishes its principles firmly without allowing the advancement of its theories, methodologies, and practices. However, as a scholarly discipline, scholarly editing should be interested in both its own establishment and its continuous advancement. This seemingly paradoxical attitude may lead to the perception and treatment of the use of computational techniques in scholarly editing as a mere application of a specific methodology involving the digital paradigm to the established foundations of the discipline. In other words, this may lead to the assessment of electronic scholarly editing as offering just another publication medium to textual scholarship. It is in this sense that we should read Roland Kamzelak's rejection of some years ago of a new theoretical framework for scholarly editing in view of the digital edition and his suggestion that the use of computers in the production and publication of a scholarly edition only requires an adapted editorial practice:

Die Frage, ob wir eine neue Editionswissenschaft angesichts von Hypermedia brauchen, kann man verneinen, wenn man das Edieren von Hypertexten ausschließt. Doch angesichts von Hypermedia ist eine neue Editionspraxis gefordert, die sich den neuen Präsentationsmöglichkeiten stellt und die damit verbundenen Probleme löst. (Kamzelak 1999, 125)

This stance suggests that electronic or digital scholarly editions are simply electronic appearances of scholarly editions and that the changed medium needs to be addressed only in terms of publication technology from the side of the editor – Kamzelak says 'Präsentationsart' (Kamzelak 2000, 65) – and probably reading technology from the side of the user. G. Thomas Tanselle, in his recent introduction to the MLA volume *Electronic Textual Editing*, agrees with Kamzelak's belief that printed and electronic scholarly editions are not ontologically different. This stance is in fact an extrapolation of his conception of text whose '[p]rinted and electronic renderings are thus not ontologically different; they may be made of different physical materials, but the conceptual status of the texts in each case is identical.' (Tanselle 2006, 6).

What must be considered in the ontological question, however, is not the rendering of the author's text or the edited work, but the text of the edition as scholarly product. Therefore, Tanselle's claim that '[p]rocedures and routines will be different; concepts and issues will not.' (Tanselle 2006, 6), or in other words that editorial theories will maintain the same even if the electronic future of scholarly editing will change the editorial practices is dubious. This is true, surely, when the electronic edition as rendered pixels (*Präsentationsart*) is compared to the printed edition and as long as these procedures and routines obey the conventional editorial theories and their rigid taxonomies of types of editions.

In what follows, I explain why I believe Roland Kamzelak and Thomas Tanselle are fundamentally wrong in their analysis of electronic scholarly editing and I illustrate my points with a couple of examples from my past and my ongoing editorial research and products.

Modelling

From the point of view of humanities computing, scholarly editing constitutes an interesting case in which a cluster of interdisciplinary computational methods and tools is developed and used to further the traditional goals of textual scholarship and to rethink textual scholarship from a digital reality. In the application of computational techniques to the humanities, the computer is not *just* a tool but a modelling and communication device that incorporates many tools (McCarty 1994, 275-276; 1999; 2001, 2; 2005, 26-27; Unsworth 2000; 2002). Overemphasizing the computational aspect of using the computer in textual scholarship 'Computergestützte Text-Editon' (Kamzelak 1999a) developed at the end of the 1990s as a neutral term for both the computer assisted edition that appears in print and on screen (Kamzelak 1999a, 2). What is interesting, however, is not the degree to which the computer can assist the editor in creating and publishing an edition, but the intentional artefacts which are built by using the computer as a modelling tool. They are instrumental in two crucial activities of humanities research, that is, the discovery of meaning and the making of meaning.

Willard McCarty defines modelling as 'the heuristic process of constructing and manipulating models.' A model, McCarty takes to be either 'a representation of something for purposes of study' (denotative model) or 'a design for realizing something new' (exemplary model).⁶ (McCarty 2003c; 2004, 255; 2005, 24). The purpose of modelling is never to establish the truth directly, but it 'is to achieve failure so as to raise and point the question of how we know what we know' (McCarty 1999), 'what we do not know', and 'to give us what we do not yet have.' (McCarthy 2004, 255): for instance, a theory of electronic scholarly editing.

Before we elaborate on the function of the computer as a modelling tool in scholarly editing and its theoretical implications, I first need to introduce what I believe are the three possible ways to produce an electronic scholarly edition:

- *Digitizing* an existing print edition.

6. The relationship between the two kinds of models is circular, as McCarty (2003c) observes: 'Thus the model of something [*denotative model*, EV] becomes a model for a new form of it [*exemplary model*, EV], when exploration of the modelled object leads to an altered understanding of what it is, hence toward a new object for exploration. Similarly, the model for becomes a model of when the thing is realized.' On modelling in humanities computing, see especially McCarty's recent contributions on the subject which reference and discuss much of the available literature (McCarty 2003a; 2003b; 2003c; 2004; 2005, 20-72), and Beynon *et al.* (2006) for an elaboration on McCarty's writings. For the original concept of *models of and for*, see Geertz (1973, 87-125, esp. 93-94).

- *Creating* an electronic edition e.g. by recording some or all of the known variations among different witnesses to the text in a critical apparatus of variants.
- *Generating* electronic editions from encoded transcriptions of the documentary source material.

Digitizing

When *digitizing* an existing print edition, the digital product will indeed only establish a digital appearance of the printed edition, as Kamzelak and Tanselle argue, and apart from the added hypertext functionality there will be no difference between the two products except in materiality. Here, the electronic edition is a denotative model, not of the documentary textual material presented by the printed edition, but of the corresponding printed edition itself, that is the presentation of the documentary material. As such it alienates us of what the real object of study in textual scholarship should be, namely the text(s). This is problematic when the digitised edition boasts its scholarly status.

Creating

When *creating* an electronic edition, however, the editor or creator of the edition can opt for one of two choices. The first choice is the digitisation of the *virtual* print edition that only exists in the mind of the creator. This virtual edition often mimics an existing type of scholarly edition and obeys the governing editorial theories. The second choice exploits the electronic medium as an experimental modelling device that can challenge and combine conventional theories and create something which could not have existed outside the electronic context. The first choice again results in a denotative model, the second in a much more interesting exemplary model that does not need to correspond with any conventional type of scholarly edition.

With the electronic-critical edition of Stijn Streuvels's *De teleurgang van den Waterhoek* published in 2000 (De Smedt and Vanhoutte 2000), Marcel De Smedt and I chose to do the latter. In this edition, we combined two critical texts – a sociological choice (Vanhoutte 2000) – with an archive of six versions of the text, three of which were presented in full text, and the other three were presented in digital facsimiles. According to the Anglo-American theorists of that time such as Jerome McGann, Peter Shillingsburg, or Thomas Tanselle, this could have been called an electronic archive or a documentary edition.⁷

However, we included not one but two critical reading texts. For their constitution we did not follow the Anglo-American copy-text theory, but introduced the

7. Whereas Tanselle in 1991 still argued that editors always have to make a choice for a critical or a documentary edition (Tanselle, 1991, 143), the technological possibilities for scholarly editing made him revisit this statement in 1995 when he pleaded in favour of the 'inseparability' of both supposedly excluding choices (Tanselle, 1995, 581). This evolution in Tanselle's thinking is also noticed by Van Hulle (2004a, 43).

German theory that only allows justified corrections of manifest mistakes in the edited text. But we diverted from this tradition by not including an electronic version of a traditional apparatus variorum that presents and orders the archive from the point of view of one text only. Instead, each paragraph of all of the versions of the text included in the edition, whether represented in full text or in digital facsimile, could be consulted on their own or in any combination with what we called 'the orientation text'. By doing so, we offered the users the possibility to organise their own visual collations of the versions they were interested in from an orientation text of their own choice.⁸ The underlying rationale was to enable the reading and study of multiple texts and corroborate the case for textual qualifications such as variation, instability, and genetic (ontologic/teleologic) dynamism.

Further, with this edition, we aimed to put together a *dossier génétique* by including the digital facsimiles of the complete manuscript, and the author's copies of the prepublication and the first print edition with lots of authorial alterations, plus an edition of 71 letters from Streuvels's correspondence about the writing and publishing history of this novel. This material was supplemented by a detailed genetic reconstruction of the novel's history, bibliographical descriptions of all of the extant sources in the textual tradition, and a glossary list to the text.

This edition presented itself to the user as a convenient package to which they could add and exchange user-controlled hypertext links and annotations to and across all of the material included in the edition. Together with the publication of the electronic edition on CD-Rom which aimed at students and academics, a text-critical reading edition in print was published in order to reach a larger readership and make this classical title of Flemish literature available again.

Confronted with the theoretical eclecticism we had employed to build our model of another kind of edition and with new concepts such as 'orientation text' and 'linkeme' the reviewers of our edition ran against the limitations of the rigid theories and typologies of scholarly editions (De Bruijn 2001; Stolk 2001; Verkruijsse 2001; O'Donnel 2002; Van der Weel 2002). They lamented, for instance, the fact that it was not a historical-critical edition because it lacked an apparatus variorum, or they 'degraded' our edition to a reading edition because some of the typical constituent parts of a study-edition as described by the Dutch handbook by Mathijssen were absent.

In parallel with the unease the reviewers feel with the term 'text-critical' the critics of this 'electronic-critical edition' felt this was a nonsensical term in the light of the contemporary editorial theories. Also, according to these critics, it could not qualify as an electronic scholarly edition for which they called upon the writings of Peter Shillingsburg and Thomas Tanselle. In a couple of descriptive essays and guidelines for electronic scholarly editing which were based on utopic ideals or visionary insights rather than on real editorial practice, these theorists required such an edition to provide both a full accurate transcription and a full digital image of

8. In creating this edition we opted for a single collation unit (i.e. the paragraph) instead of doing multiple collations at different levels of granularity.

each source text (Tanselle 1995, 591; 1996, 54; Shillingsburg 1996, 27-28). Our edition did not do this exhaustively.

What our edition did do, however, was challenging the conventional frame of mind with which the reviewers, all of whom had a traditional editorial background, perceived the edition. The edition was far from perfect, but I still believe it was the closest approximation to an exemplary model of an electronic edition we could create, given the budget, the time, and the available technology back in the late 1990s. By provoking the reviews mentioned here, the model succeeded in demonstrating its failures and it served us well in pointing at what we did not know, both about the text and about the electronic edition.

As an intentionally created product of experimental modelling, this edition allowed us to liberate ourselves from the yoke of conventional theories and it offered us the opportunity to explore *creating* an electronic edition as a step towards *generating* one.

Generating

When *generating* an edition, the editor can again choose between two options. In the first choice, the editor explores the possibilities of the computer as an experimental modelling device in the research phase preceding the publication of the edition. The content, format, and interface of that edition is not deliberately created by the editor, but generated from the source data by procedures⁹ that model the editor's theory of the text and the edition. The difference between these two modes – creating and generating – is not purely a technological one, but has some theoretical implications for textual scholarship that I address further on. This kind of pre-generated edition is clearly a denotative model.

The second choice provides *the user* of the edition with the opportunity to explore the computer as an experimental modelling device after the publication of the edition. The scholarly status of such an edition is not its specific function, form of appearance, method, or compliance with one conventionally defined type, but the scholarly status of its text for which the encoding and procedures are responsible together with the publishing environment used. This means that the technical documentation of the DTD, schemata, transformations, stylesheets, and software become essential parts of the scholarly edition.¹⁰ This also means that the scholarly status of such an electronic edition is independent of whether it is arrived at by critical or non-critical editing or transcription, or whether it is presented as a sequential or a non-sequential text.¹¹ A further consequence is that the editors,

9. By procedures I mean the set of instructions formalized as XSLT and XQuery scripts that drive the generation process of the scholarly edition.

10. The latest version of the MLA's 'Guiding questions for vetters of scholarly editions' includes questions on the presence of such documentation (questions 23.2; 26.1; 26.3; 26.4; 27.3) (CSE-MLA, 2006, 23 - 34).

11. It is tempting to take Kanzog's basic criterion – whether the text is critically established or not – as the real distinctive feature of a scholarly edition but this is in contradiction with my

although they remain responsible for the scholarly content of the whole edition, cannot claim anymore that they checked everything the user will generate, read, and use.

With respect to this latter consequence, a brief discussion of the electronic edition of Johan Daisne's *De trein der traagheid* (The train of inertia) (Van den Branden *et al.* 2007) may serve as an illustration. Just as the characters of this surrealist novella experience the consequences of the weird application of the law of inertia to life by living on in a setting where time has stopped, the users of the edition can go on experimenting and generating their own perspective on the textual history after the editors have stopped doing so.

The edition presents a critically established reading text and nineteen versions of the novella from its print history. The result of the collation of all versions is documented according to the TEI parallel segmentation method inside a master XML file that also contains all editorial annotations. This guarantees the completely equal treatment of each version of the text in the generating processes invoked by the user. Through the interface of the edition, the user can exploit the underlying TEI encoding by selecting any version and generate three possible views of the texts: XML for analysis, XHTML for consultation on the screen, and pdf for printing out as a reading edition. Any version can also be combined with any combination of any number of witnesses. The variation can be displayed in a lemmatized apparatus variorum which can be reoriented from the point of view of any included witness.

This allows the user to generate 10,485,760 possible editions of the complete text of the novella and when taken into account that editions for each separate chapter can be generated as well, this figure is multiplied by 35 which gives a total of 367,001,600 possible editions.¹² These editions can again be exported to XML, XHTML, or pdf. Any number of versions can also be displayed in parallel with each other¹³ and the respective lists of variants can be generated on the fly.¹⁴ The editions are fully searchable, and the search results can be displayed in multiple renderings amongst which a KWIC concordance format. One does not need to be a nuclear scientist to understand that maintaining in control of each and every possible edition, view, or perspective the user can generate, becomes an impossible task for the editor.

views on non-critical editing as explained elsewhere. Whether the edition presents additional con-text-ualizing materials gathered and researched according to articulated methodological principles and presented in one or other typological model are in my opinion not decisive. Neither is its orientation towards a scholarly or a non-scholarly audience.

12. The formula to calculate the possible editions one can generate from n number of witnesses given that there is always one witness that functions as the orientation text and that the orientation text can never be collated against itself, is $n \times 2^{n-1}$.

13. This technological possibility is constrained by the limited dimensions of the screen.

14. The edition is powered by MORTEL, a dedicated suite of open source XML-aware parsers, processors, and engines combined with appropriate XSLT and XSLFO scripts.

Theoretical implications

The electronic edition of *De trein der traagheid* deliberately puts some central concepts and issues of conventional textual scholarship in crisis. Amongst them the base text, the edited text, the textual apparatus, and the variant. All of these concepts are dependent on the static perception of the scholarly edition.

As Dirk Van Hulle explains in his essay 'Compositional Variants in Modern Manuscripts': 'Traditional scholarly editing focused on a text's afterlife, choosing a copy-text in order to edit and use it as the 'invariant' against which all other versions could be compared; the variants were presented in an apparatus variorum' (Van Hulle 2004b, 514). This traditional perspective is still present in the recently published *Guidelines for Editors of Scholarly Editions* of the MLA's Committee on Scholarly Editions. According to these guidelines, the basic task is 'to present a reliable text' and the edition commonly includes 'appropriate textual apparatus or notes documenting alterations and variant readings of the text' (CSE-MLA 2006, 23-24). In this general perspective, the 'reliable text' as invariant preconditions the textual apparatus.

To overcome the argument in mainly genetic criticism that one cannot use the term 'variant' when there is no 'invariant' to differ from, Van Hulle introduces the idea of *relative calibration* by which 'one does not need an invariant to compare a variant with another variant.' (Van Hulle 2004b, 514) This new concept of relative calibration frees the scholarly edition from stringent formal expectations considering the textual apparatus and creates the opportunity to explore generation as a valid production mode of electronic scholarly editions.

In the edition of *De trein der traagheid*, the master TEI compliant XML file results from a collation procedure and documents all readings from all transmissional versions using the parallel segmentation method.¹⁵ This allows us to consider all variants equally as location variants on a vertical axis. As can be observed from the quoted markup fragment, there is no preferred reading documented in this encoding as the critical text (*leestekst*) proposed by the editors is treated as yet another transmissional variant.

```
<app id="d0e601">
<rdg wit="61D 63P 63Pm 63D 64D 68P 68D 70D 72D 74D 75D 76D 77D lees
tekst ">ik er een hele tijd alleen</rdg>
<rdg wit="48P 48Pm 48T ">ik een hele tijd alleen er</rdg>
<rdg wit="50P 50Pm 50D ">in een hele tijd alleen er</rdg>
</app>
```

15. See chapter 19 'Critical Apparatus' in Sperberg-McQueen and Burnard (2002) (esp. '19.2.3 The Parallel Segmentation Method').

This critical text is included in order to provide the readers and users with a reliable and quotable text, not to provide the edition with an invariant text around which all possible variants could be organised by the editor. The decision of the invariant is completely left to the user who can select any historical state of the text as orientation text and any combination of versions of the text for inclusion in the dynamic collation. As a result of this request, the MORTEL system that drives the electronic edition generates the chosen orientation text and renders it as a palimpsest hiding all other selected versions and unveiling them on request through the generated linkemes which are the location variants. From this rendering, an apparatus variorum including only the selected witnesses can be generated on request. The orientation of the generated electronic edition can be changed from within this apparatus. Therefore, a variant version in this apparatus is selected to become the invariant orientation text around which the other witnesses, including the former invariant, are organised as variants.

This dynamic feature challenges the concept of the scholarly edition as a stable documentation of variation and undermines any conventional typology of absolute classes of variation such as punctuation, orthographic, semantic, typographic, or case variants. A variant in the textual apparatus of one selection disappears or changes classes in the textual apparatus of another selection or in a reorientation of the text-apparatus paradigm. Consider, for example, the following variant lines of text:

- A: Here are the bells ringing.
- B: Hear are the bells ringing.
- C: Hear are the bells singing.
- D: hear are the bells singing.
- E: here are the bells ringing.

When A is the invariant, then 'Hear' in B and C are two orthographic and semantic variants, 'hear' in D is an orthographic, semantic, and case variant, and 'here' in E is a case variant. When the invariant is B, however, 'Here' in A is an orthographic and semantic variant, 'Hear' in C is not a variant anymore, 'hear' in D is a case variant, and 'here' in E is an orthographic, a semantic, and a case variant. In the case of the last word ('ringing' or 'singing'), when A is the invariant, B and E do not have variant readings, whereas C and D have an orthographic and semantic variant. When D becomes the invariant, A and B have an orthographic and semantic variant, and C does not have a variant reading.

In order to be useful, the conventional absolute classification of variants has to be replaced by a relative classification which depends on the specific moment of calibration. This means that the class to which a variant belongs is no property of the variant proper, but of the orientation of the set of witnesses in the collation. When this orientation and/or the set of witnesses change, the relative classification

changes as well. Recording each class for each possible relationship each location variant can have with all corresponding location variants from the other witnesses is therefore the closest approximation to an explicit classification one can aim for.

As noted before, in the edition of *De trein der traagheid* the function of the supplied edited text is not to provide the invariant that determines the orientation of the apparatus variorum. The apparatus changes dynamically according to the choice of the orientation text which is no fixed base anymore, but a temporary peg on which to hang the variants. The variants are calibrated relatively depending on the choices of the user.

This also has implications for the contents and organisation of the textual essay accompanying the electronic edition. According to conventional editorial theories, this edition would at least need twenty editorial statements, one for each possible orientation text with its maximal textual apparatus. Instead, it gives editorial principles for the critical text and for the non-critical texts which can be generated by the edition.

Classification

Considering all this, is it correct to assume that the advent of the computer in scholarly editing has just altered the ways textual data are processed and do not have any influence on the governing theories of scholarly editing and textual scholarship? Or by extrapolation, is it true that humanities computing, to which electronic scholarly editing belongs, is a mere application of the computer as a tool to traditional scholarly disciplines and their problems? I have argued here on the contrary that the computer as an experimental modelling device *has* altered editorial theories and modes, even for non-digital scholarly editing.

Accepting this does not impose a threat on traditional disciplines. On the contrary, it reaffirms these disciplines in their importance, but calls for a modernization and adjustment from new theoretical insights. This is best illustrated by the gradual shift in interest in textual scholarship over the last decades from bibliographical authority and editorial control to dynamic concepts of creation, production, process, and collaboration, and from the 'definitive' edition to the socialized textual multiplicity demonstrated by current products of textual scholarship. Further, as a condition for an interest in variation, the invariants have to be defined and studied meticulously, which results in a renewed interest in the material manifestations of texts and works and in an increase of the importance of book history and historical reception studies as we experience it nowadays. Eventually we will see a return to analytical bibliography as a means to both describe the sources on which an electronic edition is built and the electronic edition proper (Lavagnino, 1996; Dahlström, 2002; Kirschenbaum, 2002; Van der Weel, 2005). The latter application of analytical bibliography could profit, as John Lavagnino (1996) and Matthew Kirschenbaum (2005) have suggested, from computer forensics.

As Marilyn Deegan has argued, 'the electronic edition is itself another version of the text [...] it is merely another witness in the life of a text, not the final witness, and must be preserved in some form as that witness.' (Deegan, 2006, 358). If the electronic edition wants to fulfil the central aim of textual scholarship cited at the beginning of this essay, then it should provide stability of citation over time or reproducibility which is fundamental for scholarship. This has two further implications. First, the libraries and memory institutions entrusted with the care for our cultural heritage should find operable solutions for the preservation and useful classification of these electronic editions, so that access to them is guaranteed over time. If we consider the electronic edition a cultural artefact consisting of data, metadata, links, programs, and interface, as Deegan proposes (Deegan, 2006, 366), we can imagine the complexity of the procedures involved in this preservation, for instance in the case of constantly updated on-line or networked editions or when Shillingsburg's idea of 'knowledge sites' (Shillingsburg, 2006) would become the default mode for electronic editions. Second, the editor or publisher should find a system to validate the authenticity of every publication or (re-)release of an electronic edition. For that purpose there is a need for some integrated scheme by which editors of electronic editions can describe their edition according to several parameters.

Consider an on-line tool which allows the publishing authority – being the editor, the publisher, the supervising scholar or someone else – to input details of the electronic edition by means of filling out a form that atomizes the characteristics of the electronic edition in five classes of infrastructural, functional, social, structural, and technical subclasses.¹⁶ This way, a description of the electronic edition can be constructed with information on Deegan's five constituent parts of an electronic edition next to a documentation of the edition's method, intended audience, content, format, encoding, technology, function, and functionality. Once the edition is described according to these parameters, two results are displayed. First a descriptive classification code is generated that can be included in the published edition. This classification code is an alphanumerical string that exactly describes the electronic edition from multiple perspectives. Second, metacode is generated which can be used for inclusion in the edition. The metacode is a well-formed XML instance in a dedicated namespace. Alternatively, a given notation can be input and decoded to a representation of its contents in the form of a filled out form. This way, it is possible for users of an electronic edition to know exactly what kind of edition they are dealing with and what they may expect from the edition.

The classification generator can be accessed freely for the decoding of notation schemes. For the coding of notation schemes, however, there is a registration procedure which attributes an authority code to the registrant. This is a unique authority ID which identifies the authority in the system. Upon logging in, the

16 These classes are based on a taxonomy and controlled vocabulary that has to be agreed on by a wide community.

registrant sees an overview of their registered editions and has the option to revisit registered editions' descriptive notations, or to register a new edition. Upon the latter choice, the bibliographical details of the electronic edition must be submitted. On submission of these details, an accumulated number based on the amount of registered editions by this authority is added to the bibliographical description. The authority ID and the accumulated number together form the authority code that identifies the edition's title description and publishing authority. Users of the classification generator can then look up the corresponding authority and bibliographical description of the edition from the database.

Since current bibliographic classification schemes are suited for the classification of electronic editions, and since the descriptive classification proposed here does not deal with the subject of the text, an existing bibliographic classification notation can be added to the full notation. This notation is, however, not interpreted by the classification generator. Bliss Classification (BL), Dewey Decimal Classification (DDC), Library of Congress Classification (LCC), or Universal Decimal Classification (UDC) notations can be used and are preceded by their respective abbreviation in the full notation which then includes the authority code, an existing bibliographic classification code, and a descriptive classification code.

The classification generator serves at least five goals. First, it liberates the field of electronic scholarly editing from the conventional text-editorial theories with their rigid and inconsistent prescriptive typologies. Instead the classification generator atomizes the different facets of the electronic edition and presents the sum total of this documentation as a description of the product. Second, the user confronted with an electronic edition gets a detailed description of the kind of electronic edition they are using on inputting the classification code in the classification generator. Third, the generated metacode can be inserted in the electronic edition and may serve data harvesting enterprises when input in on-line editions. Fourth, the codes derived from the classification generator can be of use for an (analytical) bibliography of electronic editions. The description of an improved re-release of an electronic edition will generate a different classification code which could be collated against the codes of other releases of the same edition. Fifth, an analysis of the database will not only allow theorists of electronic scholarship and bibliographers of new media to perform interesting forms of analysis on its contents, it will also provide the field with data about what they are about.

Conclusion

With respect to electronic scholarly editing, there is a need for well-described and diverse new theories, for instance concerning generated editions. Over the last decade or so, editorial theorists have started to generate theoretical insights from case studies and production processes in the digital world that concern digitisation and creation, not generation, as a way to produce electronic scholarly editions. This leads to the unbalanced situation in which conventional editorial theory,

which is primarily designed as prescriptive theory for print editions, is used as a theoretical basis for electronic editions, which then form case studies for descriptive analyses of editorial practices in the electronic paradigm.

These new editorial theories must move away from the far too static concept of absolute calibration in the organisation of the edited text and the record of variation, and instead embrace concepts such as relative calibration, orientation text, location variants, and linkemes.

Together with the development of these new editorial theories, we have to think about ways to preserve the cultural and scholarly function of the electronic edition as a digital-born artefact. This implies the development of strategies for the preservation, maintenance of access, bibliographical description, and validation of its authenticity, for which this essay describes some proposals.

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