

The Material Digital: Strategies of Making and Reading the Early Music Edition, Then and Now

THEODOR DUMITRESCU

The lure of the digital: we live in an ‘information age’; academic research and all manners of publication will be revolutionized. *Sirenum scopuli*: decades or even centuries of vital intellectual-cultural traditions and developments will be dashed to pieces against the rocks of the forbidding, alien landscape of the virtual. *Plus ça change...:* one may need reminding that this caricature of two diametrically opposed attitudes toward the social role of new media is cut from a pattern as old as writing itself, a pattern applicable and applied to every manner of technology. Plato’s reaction against the introduction of writing into the intellectual world (ironically known to us today because it was transmitted in written form), posing a threat to the art of memory; the sixteenth-century art of printing quickly overtaking and supplanting the manuscript culture which it had originally imitated; the book as destroyer of the cathedral (the famous ‘ceci tuera cela’ of Victor Hugo), as a cultural metaphor but eventually even materially in the form of the French Revolution.¹ In the many discussions which imply a binary opposition between old and new technologies there is a recurrent theme in their character of myth-making, the presentation of culturally specific developments and circumstances as though they were self-evident or inescapable, the covering of the ideological with the concept of the ‘natural’.² Typically in the case of media change, such as concerns us in considering the role of modern information technology in humanities research, one chooses one of two sides (let us call them ‘tradition’ and ‘progress’), and asserts its historical status and inevitability. With the recognition of these arguments for what they are, intellectual *topoi* employed in ideologically loaded scenarios, there comes a need for less one-sided reflections upon this presumptive technological shift; it is a transformation which, as will be discussed below, is actually first and foremost a *social* phenomenon.

In musicology as in other humanities fields, the writing on new media will necessarily exhibit a certain bias: those who adopt a ‘conservative’ hesitation with regard to the utility and intellectual weight of new technologies in their disciplines do so largely through silence and avoidance of the subject. Academics and others involved in developing or theorizing new technology-heavy projects—among whom I must count myself, as will become clear—are predisposed on the other hand to incorporating an

¹ ‘Most persons are surprised, and many distressed, to learn that essentially the same objections commonly urged today against computers were urged by Plato in the *Phaedrus* (274-77) and in the *Seventh Letter* against writing.’ Walter Ong, *Orality and Literacy: The Technologizing of the Word* (London, 1982), 79. ‘This will kill that’ (‘ceci tuera cela’) from Hugo’s *Notre-Dame de Paris* is cited no fewer than five times in the essay collection *The Future of the Book*, ed. Geoffrey Nunberg (Berkeley-Los Angeles, 1996): 10, 65, 66, 143, 295.

² Roland Barthes, ‘La Mythologie aujourd’hui’, in *Esprit* (April 1971); reprinted in *Oeuvres complètes*, ed. Éric Marty, 3 vols. (Paris, 1993-95), vol. 2, 1183-85.

element of salesmanship into their discussions, attempting to persuade a sometimes skeptical audience of the desirability or even social necessity of such endeavours.³ For these advocates, the pathways of the digital open out on to attractive and radical new terrains: a ‘post-textual’ conception of writing and authorship,⁴ interactive webs of knowledge standing in for dictionaries and encyclopedias, realms of communal and quasi-anonymous intellectual labour, the blurring of the lines between the scholarly and the popular. We may be ‘behind the times’ in the world of historical western art music—and early music is in an especially difficult position due to its conceptual distance from the ‘common practices’ which dominate music-computing—but this appears to be little more than a case of slow adoption, as scientific funding bodies and scholarly fashion increasingly encourage the introduction of new technological elements into musicological projects.

There can be little doubt anymore: changes are afoot with the potential to shift forever how we understand such a basic act as ‘reading’, but it cannot be a simple story of ‘ceci tuera cela’, a fairy tale of the computer replacing the book, deftly sidestepping the latter’s technological limitations in one view, viciously assassinating a unique and irreplaceable cultural artifact in another. In pondering the possibilities and transitions ahead, one is well served by setting a number of perspectives against each other, and the present discussion will need to touch upon subjects often treated only marginally in musical studies: the changing status of the ‘book’ and of written information; the material context of past and present information organization and retrieval; the role of scholar and musician in explicitly shaping future musico-textual practices. Attempting to understand certain material aspects of our present and past interactions with written musical matter will leave us in a better position to recognize the contextual and historical factors affecting the nascent online, digital music edition—not only when these factors initially seem fundamental or inalterable, but also when it becomes our responsibility to influence and control them.

The Myth of Trans-Digitization

Only ten years ago, a discussion of technological applications for music philology and ‘classical’ musical performance might have seemed necessarily to involve advocacy and prediction in equal measure. Today, indeed, there can be little doubt anymore: musicology is already hurtling along this trajectory, ineluctably transposing its research toolsets into the realm of the digital. Ever-multiplying database projects and online versions of earlier publications are indeed the true reference works of the twenty-first century, and these play an increasingly vital role in the working methods which our students are learning: consider only the current ubiquity of two pricey subscription-based resources, JSTOR (academic journal archive) and Oxford Music Online (music encyclopedias including

³ See, for one example chosen more or less arbitrarily, William J. Mitchell, ‘Homer to Home Page: Designing Digital Books’, in *Rethinking Media Change: The Aesthetics of Transition*, ed. David Thorburn and Henry Jenkins (Cambridge, MA-London, 2003), 203–15. For the sake of disclosure, I can point likewise to the introductory text on the website of my CMME Project (on which more below): see <<http://www.cmme.org>> (accessed 15 April 2009).

⁴ On the idea of the ‘post-textual’ in connection with understanding medieval literary thought, see Bernard Cerquiglini, *Éloge de la variante: Histoire critique de la philologie* (Paris, 1989).

the text of the *New Grove Dictionary of Music and Musicians*), and it will be clear how far the infiltration has already progressed in a matter of several years.⁵ The last thing the present scholarly environment needs is a set of triumphalist proclamations about the entrance of computing on to the stage of humanities research. We should cherish no illusions of technological determinism: the specific ways in which models of electronic information have developed over the past few decades mirror unabashedly the current intellectual fetishes and economic obsessions of our culture. In the words of sociologist Daniel Bell, ‘technology does not determine social change; technology provides instrumentalities and potentialities. The way these are used involves social choices’.⁶

Only two years ago, the mortal remains of Jean Baudrillard began decomposing in the *cimetière du Montparnasse*—‘Baudrillard’s death did not take place’ on 6 March 2007⁷—but even in his final years the French theorist could continue to describe a ‘fatal strategy of the trans-digitization of the world into pure information, of cloning of the real by Virtual Reality, of substitution of a technical, artificial universe for the “natural” world’⁸—that is, the emergence of a new conceptual plane to parallel that of the created Real, where the distance between signified and signifiers is abolished or reduced, indeed where signifiers become objects in every sense. Already our engagement with primary materials takes place chiefly in the realm of ideas: it is not a roll of calfskin marked with ink seven hundred years ago that interests us, but rather the ideas and values which we imprint upon it conceptually.⁹ What is a book then? It can be a physical object only in the most abstracted sense, distilled beyond the point of usefulness as an idea; what distinguishes a book from any other material unity is located in the social practices surrounding it. The book has always been immaterial. In the information age, this fictional entity becomes indeed an existing player on the plane of the Virtual; not the physical object itself but our ideas about it and our interpretations of it are represented digitally, and with the same underlying electronic makeup which is the physical basis for all our informational traffic.¹⁰

Some, especially those with a pragmatic economic stake in technology, see no cause for concern or even interest in these seemingly abstract conceptual revolutions. There is not a hint of irony in the Google corporation’s advertising of jobs for a project ‘aimed at nothing less than making the entire world’s information accessible from anywhere for free’;¹¹ indeed hardly an acknowledgement of the enormously complex

⁵ <<http://www.jstor.org>> and <<http://www.oxfordmusiconline.com>> (accessed 15 April 2009).

⁶ Daniel Bell, *The Coming of Post-Industrial Society* (New York, 1999), xxxviii, cited in John Seely Brown and Paul Duguid, *The Social Life of Information* (Boston, 2000), 254.

⁷ Steven Poole, obituary of Jean Baudrillard, in *The Guardian*, 7 March 2007 (<<http://www.guardian.co.uk/news/2007/mar/07/guardianobituaries.france>>; accessed 14 April 2009).

⁸ Jean Baudrillard, *The Intelligence of Evil or the Lucidity Pact*, trans. Chris Turner (Oxford-New York, 2005), 32.

⁹ A fundamental (if abstract) modern consideration of the role of semiosis in academic thought (generalized to all metaphysics) is Jacques Derrida, ‘Structure, Sign and Play in the Discourse of the Human Sciences’, in *Writing and Difference*, trans. Alan Bass (Chicago, 1978), 278–93.

¹⁰ Even something as seemingly straightforward as a facsimile must operate within these conceptual constraints: witness the changing policy of the project DIAMM (Digital Image Archive of Medieval Music) with regard to the presentation of manuscript images retouched for legibility: ‘In presenting digital restoration it is actually much more profitable, rather than darkening existing colours, to replace a “found” colour with a completely unlikely colour, such as green, blue or purple. The effect is very dramatic: not only are the notes extremely clearly readable, but there is no question in the mind of the viewer that this is a restored image, as it cannot be natural.’ (<<http://www.diamond.ac.uk/restoration/samples.html>>; accessed 15 April 2009).

¹¹ Brian Caulfield, ‘How to Spy on Google’, in *Forbes* (March 2007) (<http://www.forbes.com/2007/03/19/google-hiring-ads-tech-cx_bc_0320google.html>; accessed 15 April 2009).

socio-political issues surrounding the company's activities as it encroaches ever further not only into the territory of modern private life, but also into the wealth of historical materials considered a cultural heritage by foreign states.¹² This strategy of trans-digitization might appear thus to be the beginning of a straightforward and unprecedented positivistic effort in data mining. The printed reference books which fill library shelves are scheduled to be among the first to attain the status of relics from a past age,¹³ replaced in the Google world by a simple translation into bytes and incomprehensible abstract software entities which need not concern the practitioner.

Or should the layperson actually take a close interest in these electronic abstractions? The implicit idea that there can be any such thing as a simple or straightforward translation of information from one medium to another, after decades of intensive study of media and materiality, would now appear naïve beyond the point of utility.¹⁴ The users of music editions, whether performers, scholars, or curious amateurs, will find that the electronic versions with which they will eventually come into contact cannot in any satisfactory way duplicate the printed edition which for centuries has dominated musical transmission. Social and material conditions make this act of facile conversion an impossibility; more importantly, technological development, as we will see, shows faith in this goal to be symptomatic of a squandered opportunity.

Reading Practices: Three Scenarios

We proceed by way of example: three ideas about what it means to use (or to read) early music editions. It is a simple matter when one unquestioningly observes the strict, yet unwritten, parameters of traditional practical usage: there is a score, it must represent a 'work', the musician sits or stands before it and performs by reading its notes... As with the Google 'myth of universal knowledge', however, there is call for ample suspicion of this scenario. Never mind the jarring disconnection with pre-modern approaches to written musical materials; we are not attempting to replicate slavishly and fetishistically (and impossibly) the original conditions of performance. But how much of our innate reaction to written matter must be understood as a learned response based upon the specific forms of past publication—as opposed to the converse formulation, the presumption that traditional publication practices reflect or grow out of natural proclivities of the linguistically endowed *homo sapiens*? If the current work-based/composer-centric approach to musical authorship can be read as a fairly recent paradigm which would have been foreign to sixteenth-century practitioners, one cannot help wondering how this specific disconnection has impacted the modern editing of early

¹² See in particular the extended polemical response to the Google Books project by Jean-Noël Jeanneney, president of the Bibliothèque Nationale de France: *Google and the Myth of Universal Knowledge: A View from Europe*, trans. Teresa Lavender Fagan (Chicago, 2006).

¹³ Umberto Eco was not alone in welcoming the digital transformation of encyclopedias and unwieldy reference volumes long before such online resources had reached their present level of comprehensiveness and ubiquity. Umberto Eco, 'Afterword', in *The Future of the Book*, ed. Nunberg, 295–306 at 299–300.

¹⁴ From McLuhan's celebrated dictum 'the medium is the message' onwards, media studies has grown into a vital academic field (regardless of well-founded criticisms of McLuhan's approach and style, or even because of these criticisms), which musicians and musicologists would do well to follow more closely. Marshall McLuhan, *Understanding Media: The Extensions of Man* (New York, 1964; reprinted in Cambridge, MA, 1994).

repertories.¹⁵ In what manner are the approaches to modern editions dependent upon very specific environmental factors? To what extent does this ‘environment’ necessarily consist of local or physical surroundings, to disappear consequently in the case of digital publications? There is no escaping context, no such thing as a text or edition in a vacuum, and this remains valid in any ‘virtual environment’; but outlining or even identifying the overriding contextual elements in numerous interrelated reading-performing scenarios remains one of the subject’s most difficult basic propositions.

I. Hunting and Gathering

Step with me into the Mendel Music Library on the Princeton University campus (see Figure 1). It could be any academic music library at a wealthy liberal arts university, which means that it boasts numerous individualistic traits, while conforming to certain general patterns observed communally in modern institutional libraries. Only one among thousands of such portals granting and controlling access to music editions which would be otherwise unavailable today, it offers one particular ritualized environment where students, researchers, and private visitors together follow both formalized and implicit procedures to enter into first contact with these materials.

Fortunately, Princeton’s music library follows the Library of Congress classification for labelling and arranging its items, offering visitors a certain measure of interchangeability with the arrangement of other libraries. Fortunately, the Mendel Music Library has an open-stacks policy for most of its printed items, so that users generally can and must search out the books on the shelves for themselves. This requires an entirely different interaction with the library’s architecturally defined areas than, say, the music reading room at the Bodleian Library in Oxford, where readers must explicitly request specific items to be called up, increasingly brought in from offsite storage. The standardized external call numbers at Princeton’s libraries only provide limited guidance for the new user; the process of learning the music library remains a physical one, an act of navigating and familiarizing oneself with spaces and locations. The floor-plan given in Figure 1 is not easily accessible throughout the library, and the majority of users will not need it to be, after internalizing a few basic paths and processes. The seeker of scholarly music editions will quickly learn how to duck down the inconspicuous narrow corridor on the right side of Figure 1 to come to the collections of non-circulating ‘reference’ scores, where treasure troves such as *Corpus Mensurabilis Musicae*, *Das Erbe deutscher Musik*, and the New Obrecht Edition reside as closely as possible to the library’s only photocopier (situated beneath a warning sign about copyright law, but conveniently out of sight of library staff).

A riot of scholarly productions awaits the user in this back corner, an entire history of modern edition-making. Textbooks and musicological monographs are to be found elsewhere, as are encyclopedias and recordings and seminar rooms, but one

¹⁵ The most extended recent treatment of the ‘work’-concept in western music situates the idea historically much later than has been traditionally assumed in musicology, arguing that the occasional hints of the concept before the nineteenth century do not indicate that music was coherently conceptualized in these terms in earlier periods. Lydia Goehr, *The Imaginary Museum of Musical Works* (Oxford-New York, 1992).

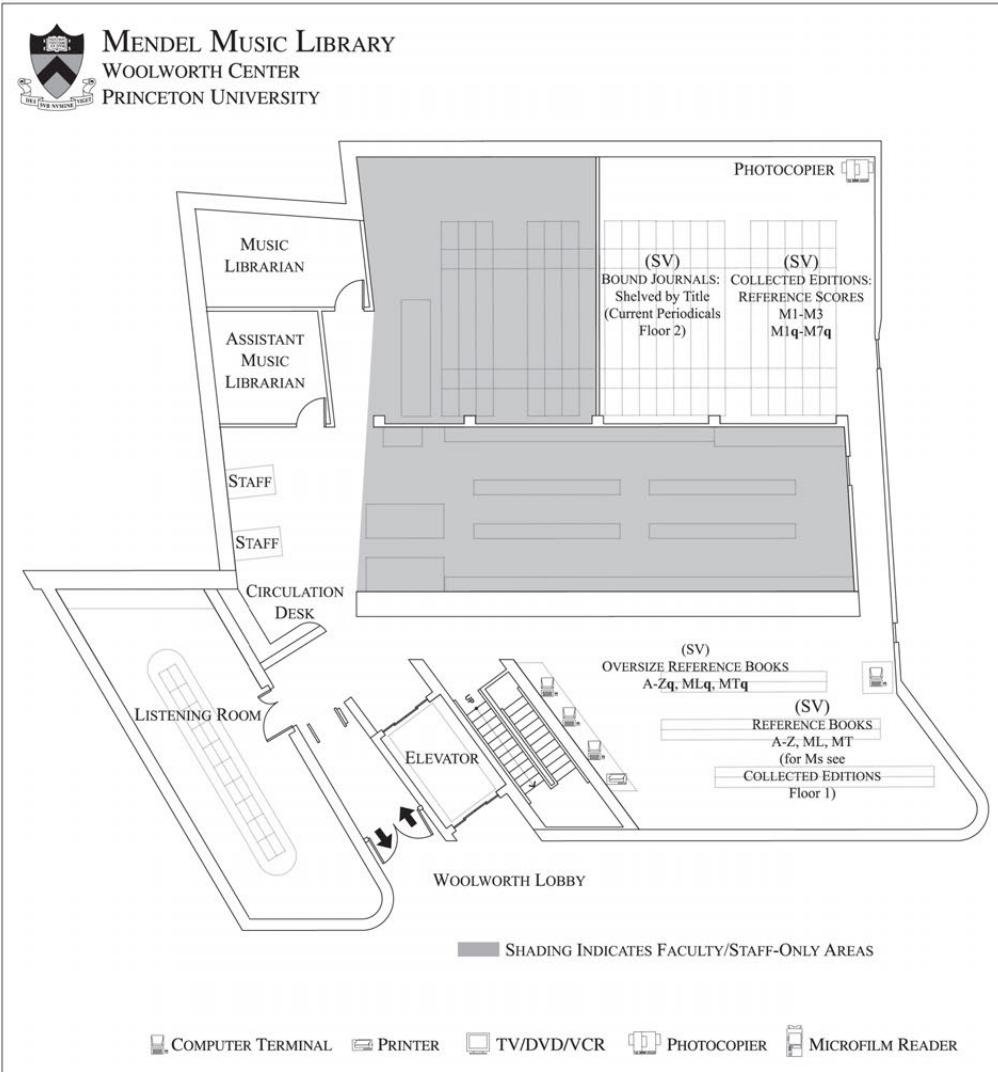


Figure 1. Mendel Music Library, Princeton University, ground floor

expects to find here printed scores of every sort and approach: editions from the 1920s rubbing shoulders with books fresh off the printing presses in 2009, volumes of every different paper format and thickness and heft, the beloved and the detested packed into a single homogenizing space.

Not only the seemingly superficial elements of these editions speak to the diversity of social-academic contexts informing their production. The responses of so many scholars to past working conditions, as reflected in their approaches to matters concerning philology, presentation, and performance, form a veritable kaleidoscope of influential intellectual attitudes. Consider, for instance, the crucial early publication by Théodore Gérard of monophonic chansons from the Bayeux Manuscript, so important to our understanding of secular polyphony of the late fifteenth century (see Example 1a).

Unabashed in offering fully modernized notation that would give no trouble to any nineteenth-century singer, it was such scores which pushed other specialists toward alternative ideas about appropriate translation decisions. The fifteenth-century specialist cannot yet forget the inimitable Caron edition of the 1970s, presenting the fifteenth-century composer's creations in a form linking them unmistakably to avant-garde notations of the twentieth century (see Example 1b); all in the name of specifying editorial rhythmic configurations at odds with a regularized system, attempting to widen the conceptual gulf between the early music score and Classical/Romantic notational models. In case a reminder is necessary: this remains even today the only published score of Caron's complete compositions.

The earlier monophonic chansons in the edition of Bédier and Aubry (see Example 1c),¹⁶ based upon notation with no universally accepted rhythmic interpretation, hang upon another approach which is equally interesting for its interface of modern and early forms. Although Aubry championed one particular rhythmic reading of this notation, the transcription offered here does not follow the model of enforcing that interpretation, retaining instead a semblance of the original notational symbols. For all that they may appear flexible and in a certain way 'neutral' today, these transcriptions are not to be confused with diplomatic editions—they offer critical redactions representing an editorial conception of a presumed authorial original, and the notation is likewise entirely comparable to another living modern notation, that found in the twentieth-century printed plainchant books, which offered the fruits of another major editorial effort at Solesmes.

Three examples from the English editing tradition, represented in the series Tudor Church Music and Early English Church Music, are instructive. Example 1d comes from the 1928 edition of Tallis's music, noteworthy today for its retention of original note-values and mensuration signs, while translating other notational elements (note the modernized clef configuration and notes tied across modern barlines). The editions of Early English Church Music, on the other hand, traditionally translated unapologetically into modern notation (see Example 1e), following what had become standard conventions of early music editions: brackets and angle brackets to show ligatures and coloration, prefatory staves indicating original clefs and mensuration signs, etc. In recent years, however, the series boldly adopted a new editorial stance, converting mensural notation to score format but retaining original note shapes and notational features such as non-additive dots and note coloration (see Example 1f); the performer is expected to come at the edition with a certain amount of knowledge of the notational conventions of the period, rather than simply reading off of a traditional score. Ironically, the edition's 'look and feel' now begins to approach that of the old Tudor Church Music editions again (compare Example 1d and Example 1f).

¹⁶ This is, incidentally, the one edition reproduced here not found among the music editions in the Mendel Library; apparently Bédier's literary status helped to ensure the edition's categorization in Princeton among text editions. This edition ought to be found therefore in Firestone Library as a circulating item, but at the time of this writing, the university's online catalogue reports that the book has been noted missing since 2005, with the suggestion that patrons acquire it through the interlibrary loan system.

Example 1.a. *Le manuscrit de Bayeux: texte et musique d'un recueil de chansons du xv^e siècle*, ed. Théodore Gérolde (Strasbourg, 1921), 1

The musical notation consists of three staves of music in common time (indicated by 'C') and treble clef. The lyrics are written below the notes:

C'est à ce joly moy de may Que tou-te cho-se
re-nou-vel-le Et que je vous pre-
sen - tay, bel-le, 4 En-tie-re - ment le cuer de moy.

b. *Les œuvres complètes de Philippe (?) Caron*, ed. James Thomson (Brooklyn, c. 1971-76), v. 1, 1

The musical notation shows two staves of music in common time (indicated by '2'). The first staff starts with 'O domine Kyrie' and the second with 'Kyrie eleison'. The notation includes various rhythmic patterns and rests. The lyrics are:

O domine Kyrie eleison. Kyrie eleison.

c. *Les chansons de croisade*, ed. Joseph Bédier and Pierre Aubry (Paris, 1909), 30

The musical notation consists of four staves of music in common time (indicated by '2'). The lyrics are:

He! Amours, con dure departi- e Me couvra faire de la meilleur
Qui onques fust ame- e ne servi- e! Dieus me ramaint a li par sa douçour.
Si vrai-ement que m'en part a dou-lour! I qu'ai- je dit? et ne m'en part

d. Thomas Tallis (c. 1505-1585), ed. P. C. Buck et al., Tudor Church Music 6, (London-New York, 1928), 64

Musical score for Thomas Tallis' 'Exultate, Spiritus' for four voices: MEDIUMUS, CONTRATENOR, TENOR, and BASSUS. The music is in common time, key signature one sharp. The lyrics are: Et ex-sul-ta-vit spir-i-tus me-o. The vocal parts are shown with their respective staves and note heads.

e. Early Tudor Magnificats I, Early English Church Music 4 (London, 1964), 1

Musical score for an Early Tudor Magnificat. The voices are: TREBLE, MEAN, COUNTER-TENOR, TENOR, and BASS. The music is in common time, key signature one flat. The lyrics are: Ma-gni-fi-cat a-ni-ma-me-a Do-mi-num. Et ex-sul-ta-. The vocal parts are shown with their respective staves and note heads.

f. The Gyffard Partbooks II, ed. David Mateer, Early English Church Music 51 (London, 2009), 141

Musical score for The Gyffard Partbooks II. The score includes a Soloist (Decani) and a Choir (Decani). The choir consists of four parts: TRIPLEX (I), MEDIUMUS (II), CONTRA-TENOR (III), and BASSUS (IV). The music is in common time, key signature one flat. The lyrics are: Mag-ni-fi-cat a-ni-ma-me-a do-mi-num. Et ex-sul-ta-. The vocal parts are shown with their respective staves and note heads.

One might only too easily spring upon the shortcomings of some of these editions from the point of view of modern academic and performative exigencies. Numerous valid criticisms offer understandable reasons for undertaking the new, revised edition projects which scholars are constantly proposing. Many arguments remain, however, for the continued value of the older editions as historical artifacts in their own right,¹⁷ and clearly in at least some cases the idiosyncratic decisions of isolated early editorial projects are finding a resurgence in popularity in the present environment. Nothing goes out of fashion faster than authenticity.

This constant connection with historical editions, kept alive for practical reasons much longer than most musicological prose, leaves us in an excellent position to think about the social conventions and parameters of the editing sub-discipline. It will still be quite a while before anyone needs reminding that these editions are physical, material items. Our understanding of them is based not only on what stands printed inside in some abstract sense, but really quite concretely on how they feel and act: their size and heft; the wear and tear of their covers and most-consulted pages; where they are positioned in libraries; the annotations, corrections, and occasionally puzzling marginalia left by previous users. Hereby the indignant fears of a society of book readers turned fetishists, faced with the increasing momentum of electronic publishing: fears that these truly integral aspects of reading—physical, tangible, oddly communal—will disappear into an immaterial, virtual realm.¹⁸

II. The Over-acknowledged Revolution?

Let's go online. This is what the eager new-generation musician has been waiting for, the converse reaction to the suspicious anxiety described just above: the promise of limitless unrestricted interactions and manipulations, the text freed from its static, fixed form, become the flag-bearer of a post-capitalistic anti-authoritarian society of ideas. Recall Umberto Eco's character Belbo, whose first exposures to the new art of word processing provoke such lyrical flights of fancy:

Oh gioia, oh vertigine della differanza, oh mio lettore/scrittore ideale affetto da un'ideale insomnia, oh veglia di finnegan, oh animale grazioso e benigno. Non aiuta te a pensare ma aiuta te a pensare per lui. Una macchina totalmente spirituale. Se scrivi con la penna d'oca devi grattare le sudate carte e intingere ad ogni istante, i pensieri si sovrappongono e il polso non tien dietro, se batti a macchina si accavallano le lettere, non puoi procedere alla velocità delle tue sinapsi ma solo coi ritmi goffi della meccanica. Con lui, con esso (essa?) invece le dita fantasticano, la mente sfiora la tastiera, via sull'ali dorate, mediti finalmente la severa ragion critica sulla felicità del primo acchito.

¹⁷ See, for instance, Andrea Lindmayr-Brandl, 'Early Editions of Early Music: The Trent Codices in DTOe', in *Authority, Historiography, Technology: Critical Perspectives in Early Music Editing*, ed. Theodor Dumitrescu and Karl Kügle (forthcoming).

¹⁸ See, for instance, the many current newspaper and magazine articles debating the feasibility, sustainability, and other issues surrounding the handheld 'e-book' device the Kindle; e.g., Authors Guild president Roy Blount Jr.'s editorial essay concerning the application of copyright/royalty legislation to the automated text-to-speech functions of the Kindle 2: 'The Kindle Swindle?', in *New York Times*, 24 February 2009 (<<http://www.nytimes.com/2009/02/25/opinion/25blount.html>>; accessed 15 April 2009).

E d ecc cosa faccio ora, prend questo bloco di treatologie ortografiche e comando la macchian cdi cipiarlo edi srstarlo in memoria ditransto e poi di farloiaffioriare da uel limbo sullo schema, in conda a s stesso,

Ecco, stavo battendo alla cieca, e ora ho preso quel blocco di teratologie ortografiche e ho comandato alla macchina di ripetere il suo errore in coda a se stesso, ma questa volta l'ho corretto e finalmente esso appare pienamente leggibile, perfetto, da spazzatura ho tratto Pura Crusca.

Avrei potuto pentirmi e buttar via il primo blocco: lo lascio solo per mostrare come su questo schermo possano coesistere essere e dover essere, continigenza e necessità. Però potrei sottrarre il blocco infame al testo visibile e non alla memoria, conservando così l'archivio delle mie rimozioni, togliendo ai freudiani onnivori e ai virtuosi delle varianti il gusto della congettura, e il mestiere, e la gloria accademica.¹⁹

A brave new conception of the ‘text’, perhaps in the 1980s—but one could forgive younger readers if they adopt a puzzled or bemused stance in response to this passage, having been trained in computer-based writing skills already in elementary school. ‘Is that all?’ one imagines them saying. ‘The virtual revolution brought us copy, paste, and track changes?’ Certainly this is far from the endpoint of the shifts which were afoot then and which continue today, but there has been at all times a conceptual gap between the expectations/desires of information technology’s intellectual cheerleaders and the implementation of these ideas in actual practice.

The situation only becomes more precarious when we turn from alphanumeric operations to the digitization of notated music. It is not particularly surprising that the electronic medium shift is commonly likened in largely textual/literary terms to the introduction and spread of printing in fifteenth- and sixteenth-century Europe. Consider which types of academics were most likely to be theorizing about such shifts in the early days when home computers were much more obviously alphanumeric devices than now: literary theorists, historians of the book, the occasional philologist.²⁰ It is not irrelevant to these analogies that in the days of *incunabula*, dedicated music printing lagged decades behind text, its true cultural impact beginning when polyphonic music printing began

¹⁹ ‘O joy, O new vertigo of difference, O my platonic reader-writer racked by a most platonic insomnia, O wake of finnegans, O animal charming and benign. He doesn’t help you think but he helps you because you have to think for him. A totally spiritual machine. If you write with a goose quill you scratch the sweaty pages and keep stopping to dip for ink. Your thoughts go too fast for your aching wrist. If you type, the letters cluster together, and again you must go at the poky pace of the mechanism, not the speed of your synapses. But with him (it? her?) your fingers dream, your mind brushes the keyboard, you are borne on golden pinions, at last you confront the light of critical reason with the happiness of a first encounter.

An loo what I doo now, I tak this pac of spelng monnstrosties an I orderr the macchin to copy them an file them in temrary memry an then brring them bak from tha limbo onto the scren, folowing itsel.

There, I was typing blindly, but now I have taken that pack of spelling monstrosities and ordered the machine to copy the mess, and on the copy I made all the corrections, so it comes out perfect on the page. From shit, thus, I extract pure Shinola.

Repenting, I could have deleted the first draft. I left it to show how the ‘is’ and the ‘ought’, accident and necessity, can co-exist on this screen. If I wanted, I could remove the offending passage from the screen but not from the memory, thereby creating an archive of my repressions while denying omnivorous Freudians and virtuosi of variant texts the pleasure of conjecture, the exercise of their occupation, their academic glory.’ Umberto Eco, *Il pendolo di Foucault* (Milan, 1988), 33; *Foucault's Pendulum*, trans. William Weaver (San Diego, 1989), 24–25.

²⁰ Eco in a 1996 publication can still describe computers as ‘eminently alphabetic tools’ (‘Afterword’, 295). This characterization can only apply to a very restricted subset of what can rightfully be called computers, and even there (in the realm of consumer-level ‘personal computers’) the status of intermediality in interface is constantly shifting, typically by improving non-alphanumeric control elements.

in the sixteenth century. Thus, in the present day, the infiltration of the digital into the humanities has been seen first through the lens of text, later also of image, reflected in the interfaces designed for human-computer interaction during the rise of home computing. If, as noted above, these developments were not technologically determined, but rather reflect social usages, the fact remains that historical symbolic music notation has never played any significant role in shaping interface practices. ‘Music’ in general is increasingly prevalent in the networks, but this is a question largely of recorded audio on file-sharing systems, bursts of rapid technological development and standardization driven by a huge ‘market’ for such material. Such levels of standardization have never existed for musical scores in electronic forms, and are still a long way away if they are ever to exist.

Where does this leave us with regard to the nascent online music score? Notated music has of course not been absent from the networks, despite the lack of any real standardization or formalization and a general disconnection from academic practice. Whether billed as such or not, online music editions have existed throughout the entire history of the World Wide Web (and indeed longer). The forms these have taken are manifold, situated in relation to widely divergent audiences, and even the seemingly superficial differences between them can have a profound impact on their uses both now and, more importantly, in the future.

Where we are right now, from a technological point of view, is still in the cradle.²¹ Interestingly, one of the most widespread and longest-running forms of online music notation—despite the virtual absence of musicological writing on the subject—is guitar tablature, overwhelmingly of the best-known western pop music and created by individual fans, transmitted as plain-text files, originally transferred frequently on modem-based Bulletin Board Systems and internet newsgroups before the rise of the Web (see Figure 2a). These are symbolic, visual scores meant to simulate commercially printed tablature in an entirely straightforward manner: every character has a fixed place in relation to every other, and the result is a finished page for reading/playing. The typographically crude appearance of these items is related directly to practical considerations: through their format as simple ASCII text, the files use extremely little storage space and network bandwidth, a factor which was once of central importance (much as it is today for highly compressed streaming video and audio); and the format still holds on to its popularity even for newly created tablatures due largely to convention.

More graphically sophisticated (and relevant to the early music specialist) are the offerings on the Choral Public Domain Library (CPDL) and other providers of ‘sheet music’ on the internet (see Figure 2b). Although no single standard format is enforced within the communal contribution model of the CPDL, an overwhelming number of the scores available there today are in PDF or formats similarly dedicated to typesetting (and usually created with commercial engraving software such as Finale and Sibelius), i.e., files

²¹ I will leave aside discussion here of the progressing development of electronic lectern/music stand displays (e.g., the Italian MOODS project: <<http://www.dsi.unifi.it/~moods/>>; accessed 15 April 2009), which can eventually promise performers a truly non-print-oriented live interaction with electronic scores. The specialized hardware and current lack of public availability of such systems mean that they have not yet begun to impact performance culture to a considerable extent, although much as with ‘e-book readers’, their potential over the long-term as a major step away from paper culture is significant.

to be used for printing, in which one can guarantee a particular page layout and the exact appearance/placement of virtually every element of the score. This is both the greatest strength and most debilitating weakness of this approach. The performer receives a veritable print-simulation of a Baudrillardian order, with a page-based structure and fixed text offering a single central reading. Socially, such projects suggest intriguing shifts away from commercial and institutional control: materials can be submitted by anyone and are freely available to anyone. What has disappeared in exchange within this quasi-anonymous framework? Quite often: scholarly arbitration, quality control, critical apparatus, explanation of rationale; in other words, editorial responsibility, as known within the institutional context of academic edition-creation.

Although one could conjure up further examples of systems with similar design goals and implementation styles, an important portion of online score material is not so graphically oriented as these sample cases. A now-venerable tradition within musicology-computing projects concentrates on symbolic encoding of musical data, an idea to be discussed further in the following section.²² If representation systems such as *MuseData* (the primary format used in Stanford's Center for Computer Assisted Research in the Humanities) have for decades offered formats for musically-intelligent presentation of online *corpora*, their separation from the visually oriented, user-friendly world of the non-specialist digital score has been a serious obstacle to adoption outside specialist circles. Although the *MuseData* 'Electronic Library' at present offers hundreds of (mainly Baroque and Classical) compositions in a form useful for computer-aided research,²³ the lack of easily usable (what one might call lowest-common-denominator) interfaces for this data means that most users will only turn to the occasional PDF file offered within the set. There is still a formidable gap to bridge between academic computational interests (stretching back to days long before the existence of graphical computer displays) and the needs of those who use music *editions*.

In its current state then, the presence of musical scores on the internet for the interested amateur is ironically dominated by the formats which tie themselves most closely to the printed page. Is this the promise of the digital fulfilled? The text ripped out of the codex-book, transported and reconstituted on the other end as though it had been sent down a twenty-first-century version of the pneumatic capsule pipeline?²⁴ In 2009 we can look back with amusement on Jacopo Belbo's reaction to a word processing program (no harm, this is a fictional character, and it was intended to be bad writing anyway)—a type of tool now so ubiquitous, especially in academia, that operations such as deleting, copying, pasting, even basic version control, feel like second nature to the younger generations. This is no longer the marker of a major shift in textual notions. In a similar vein, the scholarly world has by now lived with computer-based network technology for long enough that the availability of such communication frameworks is essentially taken for granted. Academic research and organizational activities are

²² See Eleanor Selfridge-Field (ed.), *Beyond MIDI: The Handbook of Musical Codes* (Cambridge, 1997).

²³ <<http://www.musedata.org/>> (accessed 15 April 2009).

²⁴ Recall the ill-fortuned remarks of American senator Ted Stevens describing the internet as a 'series of tubes' (widely derided because it demonstrated the woefully insufficient technical understanding of the lawmakers who decide how the networks and profit-hungry telecommunications corporations will be regulated). Dan Mitchell, 'Tail Is Wagging the Internet Dog', in *New York Times*, 8 July 2006 (<<http://www.nytimes.com/2006/07/08/business/08online.html>>; accessed 15 April 2009).

a.

Artist: Cat Power
Song: The Moon
Album: The Greatest

Tabbed by Julen Arellano (julenarellano.com)

chords
C: 032010
D: xx0232
F: 133211

picking/strum pattern:

```

    C           | D           | F
e-----0-----|-----2-----|1---1-
B-----1-----|-----3-----|1---1-
G-----0-----|-----2-----|2---2-
D-----2-----|-----0-----|3---3-
A---3-----|-----3-----|3---3-
E-----|-----1-----|1---1-

```

C D F
the moon is not only beautiful

C D F
it is so far away

C D F
the moon is not only ice cold

b.

Lupus Hellinck

Aliases: Wulfaert Hellinck, Hellinc, Helling

Life

Born: c. 1493
Died: c. 1541
Biography
View Wikipedia article for Lupus Hellinck.

List of choral works

Legend: BROKEN LINK = PDF FILE = MIDI FILE = POSTSCRIPT FILE = Music Program = NOTATION FILE
= EXTERNAL SITE (DISCLAIMER) = EXTERNAL PDF FILE = EXTERNAL MIDI FILE = SCORE = HELP
ERROR = HELP

* Compt alle voort by twee by drye (PDF, MIDI) Finale 2002

Click here to search for this composer on CPDL

Figure 2a. Plain-text online guitar tablature in web browser window (http://www.fretplay.com/tabs/c/cat_power/the_moon-crd.shtml, accessed 15 April 2009)

b. Choral Public Domain Library page for one composer with link to score in PDF, MIDI, and Finale 2002 formats (http://www.cpdl.org/wiki/index.php/Lupus_Hellinck, accessed 15 April 2009)

increasingly reliant on these technologies, and a straightforward electronic distribution model for print-based scores thus becomes as natural as it is stagnant, a prolongation of the nineteenth-century text in stasis.

III. Developer's Dilemma

I am a biased party, and I come now to the chapter of the story in which I am most personally engaged, a consideration of some issues encountered in designing and implementing a new early music edition system. I am paid at present primarily for scholarly activity centring around software development. I have, since the end of my undergraduate studies in computer science, shamelessly advocated the creation of new forms of digital editions, entities which might offer not only new solutions to crises of financing and distribution but also new conceptual approaches, deliberately attempting to step away from the formats and characteristics of traditional print. I have criticized past attempts at online music publication and encoding schemes, deeming some of them unfit for a truly scientific engagement with the mensurally notated repertoires which interest me as a musicologist.²⁵ I have observed with quiet satisfaction the growing acceptance of computing technology in the most basic aspects of humanities research. I remain convinced that information technology will play an indispensable role in the future of musicology, and not merely in the guise of an immaterial postman. This concludes my confession; the reader may consider herself duly forewarned.

The CMME Project (Computerized Mensural Music Editing; see Figure 3), an ongoing effort to introduce modern informational techniques into the field of early music editing,²⁶ stands or falls at this stage with its basic usability for a specialist public reared on the traditions treated in the foregoing sections: printed pages, brick-and-mortar libraries, editions which cling to the presentation of an 'authoritative' or somehow objective text. Advocacy is not the purpose of the present essay, so I will quickly pass over some simple practical advantages of encoded digital editions, for instance, ease and immediacy of distribution; lack of significant reproduction costs; automation of repetitive processes such as statistical investigation; flexibility of presentation form. A library of editions accessible freely on the project website, currently focused on Franco-Netherlandish polyphony c. 1500, can be updated instantaneously, and the musical scores (whose forms and ontological status will be discussed below) find themselves embedded in a wider hyperlinked network of meta-data (non-musical information about the editions, the music, the sources, composers, etc), creating an explicit, if only vaguely bounded, critical academic environment. These are basic elements common to many types of electronic encoding and publication, by no means limited to music, and it may even seem that such characteristics can be taken for granted in a virtual

²⁵ Theodor Dumitrescu, 'Corpus Mensurabilis Musice "Electronicum": Toward a Flexible Electronic Representation of Music in Mensural Notation', in *The Virtual Score: Representation, Retrieval, Restoration*, ed. Walter B. Hewlett and Eleanor Selfridge-Field, Computing in Musicology 12 (Cambridge, MA, 2001), 3–18.

²⁶ <<http://www.cmme.org>> (accessed 15 April 2009). The present discussion is not intended to provide an introduction to the CMME Project, for which see the introductory texts on the project website and the (somewhat outdated) essay cited in n. 25 above.

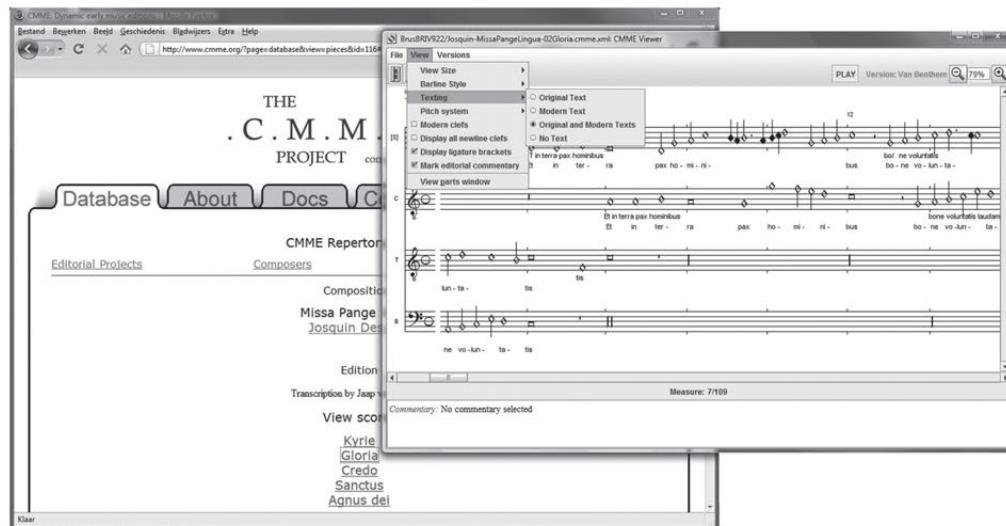


Figure 3. CMME Project score and website
(<http://www.cmme.org/?page=database&view=pieces&id=116>, accessed 15 April 2009)

environment. Therein lies one of the main misconceptions blurring the critical distinctions between different forms of digital publications.

It is only too easy for the central musicological core of a project such as CMME to hide silently, to recede into the shadows of a fictional self-evidence which suppresses the entirely individual, non-universal, indeed often arbitrary decision-making underlying system design. This is an aspect of edition-creation which hardly affected the worlds of the print edition and the simulated-print editions mentioned above: their purely graphical nature allows one to sidestep many major conceptual problems deftly and silently (one example: to what extent is a fifteenth-century round b sign functionally equivalent to the modern flat? Does the unequal conceptual mapping of the former to the latter argue that the typical accidental-marking systems of modern editions produce unsignalled theoretical distortions?). This cannot be the case with the essentially data-based *symbolic* representation of the CMME. Despite the employment of visual software environments for production of and interaction with CMME editions, the purpose of the system is not primarily to reproduce a set of graphical tokens on a two-dimensional surface. Rather, the electronic representation format at the base of CMME encodes the presumptive meaning/interpretation of the notational elements observed by an editor (see Figure 4, which offers an excerpt from CMME v. 0.9 formal grammar, syntactically defined following the XML Schema format).²⁷

²⁷ It is no coincidence, in the context of the continuing development of web technologies, that this contrast-based relationship between CMME editions and what I would term 'data-poor' online music editions displays many superficial parallels with the relationship of XML and HTML: HTML as the widespread *de facto* standard until very recently for web documents, widely used and abused, the majority of its functionality concentrating on how text should be displayed, typically in some static form (bold, italic, positioned here or there, etc.); vs. XML (including XHTML), increasingly employed in more interactive so-called 'Web 2.0' frameworks because of its more rigorously observed syntactic rules and its capability to separate the semantic content of data from the form in which it is displayed.

```

<xs:group name="MensurationData"><xs:sequence>
  <xs:choice minOccurs="0" maxOccurs="unbounded">
    <xs:element name="Sign"><xs:complexType><xs:sequence>
      <xs:element name="MainSymbol"><xs:simpleType><xs:restriction base="xs:string">
        <xs:pattern value="O|C"/>
      </xs:restriction></xs:simpleType></xs:element>
      <xs:element name="Orientation" minOccurs="0"><xs:simpleType><xs:restriction base="xs:string">
        <xs:pattern value="Reversed|90CW|90CCW"/>
      </xs:restriction></xs:simpleType></xs:element>
      <xs:element name="Strokes" type="xs:unsignedInt" minOccurs="0" maxOccurs="1"/>
      <xs:element name="Dot" minOccurs="0" maxOccurs="1"/>
    </xs:sequence></xs:complexType></xs:element>
  </xs:choice>

  <xs:element name="Number"><xs:complexType><xs:sequence>
    <xs:group ref="Proportion"/>
  </xs:sequence></xs:complexType></xs:element>
</xs:group>

<xs:element name="StaffLoc" type="xs:integer" minOccurs="0" maxOccurs="1"/>
<xs:element name="Orientation" type="Orientation" minOccurs="0" maxOccurs="1"/>
<xs:element name="Small" minOccurs="0" maxOccurs="1"/>

<xs:element name="MensInfo" minOccurs="0" maxOccurs="1"><xs:complexType><xs:sequence>
  <xs:element name="Prolatio" type="MensBinTerChoice"/>
  <xs:element name="Tempus" type="MensBinTerChoice"/>
  <xs:element name="ModusMinor" type="MensBinTerChoice"/>
  <xs:element name="ModusMajor" type="MensBinTerChoice"/>
  <xs:element name="TempoChange" minOccurs="0" maxOccurs="1"><xs:complexType><xs:sequence>
    <xs:group ref="Proportion"/>
  </xs:sequence></xs:complexType></xs:element>
</xs:sequence></xs:complexType></xs:element>

<xs:element name="NoScoreEffect" minOccurs="0" maxOccurs="1"/>

<xs:group ref="EventAttributes"/>
</xs:sequence></xs:group>

```

Figure 4. CMME-XML schema (excerpt)

The details of this encoding format are beyond the scope of the present discussion, and there is no need for a musicologist or performer to have to read and understand the syntax of Figure 4. Awareness of the basic principle represented by such an approach, however, is invaluable. Everything encoded in this manner is fitted within a defined formal structure, which is simultaneously the greatest strength and weakness of current encoding schemes: one gains the ability to perform countless manipulations and automatic operations on the data, but the price is the confinement of that data into one particular conceptual form. The CMME scheme, for instance, divides a composition into *sections*, which are further divided into *voices* containing lists of *events*, whereas the encoding form of the software Finale breaks the music into measures/bars, each containing data for all voices; each idea projects different conceptual values onto the score and presupposes different goals and working methods. These are the constructive aspects of music-encoding systems traditionally created by computer experts, often without specialized musicological knowledge, and it is imperative that musically engaged parties—both creators and users of editions—be brought to participate in this process, even if principally in an informal manner through critical scrutiny of encoding structures and publicly available feedback.

Matters of representation, as noted just above, remain easily hidden from the end user and can be difficult to pin down without a ready graphical manner of understanding them. The visual forms of the virtual edition can at least give a face to these issues, but more importantly, the act of visualization through software highlights one of the major properties distinguishing a ‘dynamic’ digital edition from a paper or paper-modelled

edition: there is no one inherent graphical presentation of the former (see Figure 5). Theoretically susceptible to rendering in any number of forms (and not just limited to the visual), the data which makes up the electronic representation of a CMME score thereby begins to open the door to new conceptions of the edition, precisely by dissolving the fixed identity between the edition and its presentation. The arguments concerning the proper way to translate early notations into forms suitable for modern audiences—presentation decisions concerning cleffing, barlines, note values, manners of notating accidentals, the list goes on *ad nauseam*—all of these can begin to loosen their grip on the scholarly discourse surrounding edition-making when they are no longer fixed, static elements of the edition as required by print.²⁸ This experimentation with introducing dynamic, user-configurable aspects begins to move us toward the concept of multiple states of a single edition, not only challenging the traditional author-editor-reader power dynamic but also offering alternatives to the textual fixity of the *Urtext*-style critical edition. The ease with which a dynamic edition can present multiple redactions, parallel source-based versions, and user-configurable critical apparatus (see Figure 5a)—there is no real financial/physical constraint preventing it from holding this information as with a printed edition—suggests that deeper changes are hereby made possible within the philological understanding of pre-modern textuality.²⁹

The New Philologist's elation at freeing the medieval (musical) text from its nineteenth-century shackles by means of Information Technology may be short-lived. Are we trading one hegemonic framework for another? Make no mistake: materiality is just as crucial an issue for digital editions as it is for understanding the social underpinnings of printed matter. If books, newspapers, and journals are necessarily embedded in a network of social resonances—indeed cannot exist outside a conceptual plane (see above)—then how can it be otherwise with computers, reliant on an even more extensive combination of communal processes: hardware design, manufacturing and transport, kernel programming, software development and ongoing support, to say nothing of basic infrastructure for electricity and network communication, and so on. There is no true divide one can realistically posit separating the many elements which make up a user experience of a current digital resource: hardware/technological underpinnings (processors, screens and visualization devices, input devices, operating systems, etc.); software interfaces specific to individual resources (the design of a web portal, a program to be installed on one system); and, certainly not least, myriad social conventions (often entirely implicit) informing how a user is expected to interact with any virtual application.³⁰ All of these exist in a sort of symbiosis which escapes simple terminological encapsulation; certainly it extends far beyond the idea of 'interface', and

²⁸ Since the adoption of the current Early English Church Music style, it seems virtually every journal review of new volumes has needed to address its graphic aspects; see most recently: Edward Wickham, 'Foibles of Format' (review of EECM 47 and 48), in *Early Music* 37 (2009), 125–26.

²⁹ A suggestion made already twenty years ago in Cerquiglini, *Éloge de la variante*.

³⁰ For a more specific discussion of how some of these factors come into play in CMME development, see Theodor Dumitrescu and Marnix van Berchum, 'The CMME Occo Codex Edition: Variants and Versions in Encoding and Interface', in *Digitale Edition zwischen Experiment und Standardisierung: Paderborn, December 2007*, ed. Peter Stadler (Tübingen, forthcoming), 113–30. An interesting generalized discussion of these issues in the broader context of media theory is Friedrich Kittler, 'There Is No Software', in *CTheory* 32 (1995), <<http://www.ctheory.net/articles.aspx?id=74>> (accessed 16 April 2009).

a.

This screenshot shows a digital music edition interface. At the top, there's a menu bar with File, View, Versions, and a toolbar with various icons. The main area displays a musical score with four staves. A callout box highlights a specific measure (V2, m. 11) with the variant type "Rhythm". Below the score is a "Variant display options" panel with checkboxes for "All variants", "No variants", and "Selected variant types", along with sub-options for Non-substantive, Rhythm, Pitch, Text, Accidental, Clef, Line-break, Coloration, Ligature, and Mensuration. To the right, a "Voices" panel lists multiple voices with their corresponding readings from different manuscripts: Van Berchum, Occo Codex, Jenal 5, and Tolef 23. The manuscript "VielNB Mus. 15497" is also mentioned. The bottom left contains a "Display version" panel with checkboxes for Van Berchum, Occo Codex, Jenal 5, Tolef 23, and VielNB Mus. 15497.

b.

This screenshot shows a separate parts view of the musical score. It displays five staves, each representing a different voice or part of the composition. The voices are labeled: Contratenor, Tenor, Alto, Bass, and Organ. The lyrics for each part are written below their respective staves. The lyrics include: ET tibi reddetur votum in iherusalem, Exaudi deus orationem meam, ad te omnis caro veniet, Eternum dona eis domine, et lux perpetua nesciat eis, Te doce hymnus deus in syn. luceat eis, Et ti bi reddetur votum in iherusalem, Exaudi orationem meam, meam ad te omnis caro veniet, eis, Et tibi reddetur votum in iherusalem, Exaudi deus orationem meam, Ad te omnis caro veniet.

Figure 5. Two views of a CMME edition, produced from the same data

a. Score with variants and critical apparatus

b. Separate parts view

has been conceptualized in film theory under the rubric *dispositif* (only poorly susceptible to translation as ‘apparatus’).³¹

Crucial to the media theorist’s understanding of *dispositif* is the connection to ideology: the hardware/software components of a digital critical edition are hardly a neutral physical agent for transmitting intellectual matter, no more than the printed book in codex form is a self-evident natural receptacle housing pure information. If the ‘medium’ and the ‘message’ are inseparable, the designers and the users of digital editions find themselves in a quandary. The development of the World Wide Web up until quite recently has been modelled closely on the printed/fixed-text forms which inform our culture’s basic understanding of formal written communication; some might argue that this continues even today to serve as the dominant paradigm of web design. No matter what the case may be, socially learned reading practices play a critical role in shaping the user experience of any digital academic resource. There is an almost built-in tension in the CMME’s current experimental platform for textual versioning and critical apparatus: the designers’ explicit desire to de-centralize the notion of a single authorial original vs. the uncritical reader’s equation of whatever is visible on-screen with ‘the work itself’ (i.e., whichever version the editor offers as the first one to appear when a CMME score is opened will be treated as the central composition/edition by a public trained to hierarchize—when they even care at all about these matters of readings and variants).

What this contradiction may mean ultimately for the system’s usage by different target audiences is at this point impossible to specify, nor should prediction be one of the tasks of the developer. The utility of such projects at this stage is as a platform for experimentation which can lead to informed and practically-tested future implementations, rather than unrealistically providing a short-circuit ‘solution’ intended to last for decades.³² Where we are right now, from a practical point of view, is still in the cradle. Anyone will agree that the technology will change, but it is equally important to bear in mind that reading practices and conventions of interactivity will also change. The responsible project manager walks a tightrope, pushing practice in certain directions but simultaneously scrutinizing and reacting to current conventions. When readers have had longer exposure to these systems for research purposes, when musicians have had occasion to offer critical reactions to digital editions and to see their ideas affecting ongoing development and updating, then it will no longer seem rash to theorize these usages confidently and to feed this theoretical framework into the next generations of digital resources.

A Communal Act: The Responsibility of the Musician

There is thus good news and bad news for the indolent player or singer who turns to the digital hoping for a panacea after the frustrations of the idiosyncratic printed early music

³¹ Jean-Louis Baudry, ‘Ideological Effects of the Basic Cinematographic Apparatus’, trans. Alan Williams, in *Narrative, Apparatus, Ideology: A Film Theory Reader*, ed. Philip Rosen (New York, 1986), 286–98.

³² This is one of the reasons I am personally reluctant to encourage any particular music-encoding standard such as MEI (Music Encoding Initiative) until various possibilities have been put into actual software implementations and can be compared from both practical and musicological/music-analytical perspectives.

score. First the bad news: the arrival of dynamic music editions will by no means diminish the personal responsibility of performers to engage closely with the early repertoires and musical cultures they are involved with. In fact, the crucial developmental state in which the field now finds itself calls for the critical feedback of users to a greater extent than in the past, and the increasingly facile technological aspect of multi-way immediate communication within the context of online publishing makes this a realistic goal (at least from a purely practical standpoint). Editions themselves are not necessarily becoming 'easier' for the amateur performer: the increased facility of access to critical notational and philological data is a tool which for many non-specialist users could come as a landslide of overwhelming information with no clear immediate purpose. Is the performer an afterthought in the fantasies of the virtuosi of variants?

The good news springs from the very fluidity and malleability of our digital frameworks, putting the performer in a better position than ever before to direct the flow and form of the edition both now and in the design of future systems. With a carefully created dynamic edition system, the influx of specialized complex information and its concomitant interfaces need not intrude into the experience of the user who has no interest in it; the presentation of music/apparatus is no longer a pre-determined expression of the editor's symbolic interpretation of source materials. Editors relinquish some of their authorial control over their scholarly product, and in return can push the intellectual enterprise of early music transcription into a wider hermeneutic perspective, less profoundly immersed in the physical immediacies of the graphical.

In this connection, can the rise of the digital in early music studies mean that the twilight of traditional positivistic research is descending upon us? The field of musicology has lived through decades of ongoing labour in bringing lost and forgotten early repertoires to light through the creation of modern editions, a formidable activity leading to not only commercial printed scores but also a tremendous host of doctoral dissertations and other academic studies. These were not always the most critically engaged examples of scholarship; it has often seemed that the accumulation of facts and figures had become a central goal, that the means had become the end. Joseph Kerman lashed out at this single-minded obsession decades ago when he stated that 'American musicology ... seems to me to have produced signally little of intellectual interest'³³ and that an emphasis on positivistic research has engendered an enormous neglect of criticism and more penetrating musical engagement.

It might seem, in this light, that the considerable effort required to set up digital editions as a viable musicological and performative tool—particularly the sheer amount of encoding required to create new *corpora* of scores and apparatus—represents a giant step backward, retreading the path of the twentieth century in a doomed historical cycle. The simplest response, however, to the value-laden accusations against the 'old musicology' character of such endeavours concerns the fundamental necessity of this labour: it is extremely difficult to direct a critical interpretative eye towards music which is simply not available. There is no getting around the fact that the development and expansion of digital datasets, in the flexible, intelligent forms advocated here, will require a sustained and communal effort, often superficially duplicating previously published work—if we desire a searchable, visually and analytically manipulable edition of the

³³ Joseph Kerman, 'How We Got into Analysis, and How to Get Out', in *Critical Inquiry* 7 (1980), 311–31 at 319.

compositions of Regis, for instance, the old CMM edition by Lindenburg cannot help us and must be frankly superseded.³⁴ This yeoman's work of producing electronic datasets, concomitant with the production of software tools and interactive environments, is the cost of the transition in media, but it leads ultimately toward new interests in early music research. The field's long struggle for comfortable intellectual control of primary materials is far from over, but it has a vastly different character today than a hundred years ago and the situation will be further removed yet when digital resources can reduce currently complex and tedious bibliographical operations to mere child's play. At a certain point, the basic positivistic work which has driven so much musicological endeavour so far cannot continue to sustain its level of activity: when the hunt for sources is no more than a straightforward database query, when a statistical analysis of musical features within a large *corpus* requires minutes of human labour rather than months or years, then these activities will cease to be noteworthy in their own right. When a statistical graph or perhaps forbidding analytical equation can seem perfectly in place in a historical musicological essay, because it is a means and not a laboriously produced end, this will be another step on the path out of the 'analysis' derided by Kerman.

None of this will happen automatically, without a concerted effort. It will not help to try to suppress the ideological component of digital edition design and implementation; the attempt will at best lead to an abandonment of editorial liability under the guise of inevitability, i.e., precisely the myth-making noted at the outset of the present essay as characteristic of the naïve doctrine of 'supersession' of media.³⁵ If it is worth rejecting the technologically deterministic idea that a digital edition will always have certain universal properties, then the need becomes all the more urgent for users and designers to consider explicitly how such editions can be usefully implemented, from the level of overall design down to the admittedly technical but hugely consequential details of representation. This is a communal responsibility of our field. More than at any previous time, the line between 'communication' and 'publication' is blurred in the twenty-first-century environment of the virtual, and likewise a social model separating performers and academics and editors into individual roles is less congruent to these surroundings than was the case even thirty years ago (*pace* Boethius). This is a moment when patterns are being and will be developed which will resonate for a long time throughout digital academia and new performance traditions.³⁶ Let us take advantage of the day and take care when planting the seeds for a future growth, recognizing full well the impossibility of predicting its form and even its function decades down the line; whether the fruits of this planting fulfil the expectations and desires which we project today is immaterial.

³⁴ Johannes Regis, *Opera omnia*, ed. Cornelis Lindenburg, Corpus Mensurabilis Musicae 9 (s.l., 1956). For some more specific remarks on the shortcomings of this edition, see Theodor Dumitrescu, 'Reconstructing and Repositioning Regis's *Ave maria ... virgo serena*', in *Early Music* 37 (2009), 73–88 at 74.

³⁵ On debunking the notion of 'supersession' in particular, see Paul Duguid, 'Material Matters: The Past and Futurology of the Book', in *The Future of the Book*, ed. Nunberg, 63–101.

³⁶ '...We are looking at entities that are likely in the early—if not initial—stages of formation.' Robert Latham and Saskia Sassen, 'Digital Formations: Constructing an Object of Study', in *Digital Formations: IT and New Architectures in the Global Realm*, ed. Robert Latham and Saskia Sassen (Princeton-Oxford, 2005), 1–33 at 2.

Abstract

'Media change' is increasingly vital in musicology, as institutional and financial pressures encourage exploration of potential tools for research, teaching, and publication based in modern information technology. Musical research could accordingly profit greatly from a closer engagement with developments in other humanities fields, which have long grappled with the issues of virtuality and concrete implementation of electronic resources. The lessons learned from decades of media studies allow one to avoid naïve technological determinism which posits an opposition between book and computer. The real issue is not whether one format or medium is superior, but rather how future forms of publication can be responsibly designed by those who will rely most heavily upon them.

To facilitate informed judgments concerning existing and potential editorial/publication approaches, early music editions are historicized and contextualized in three case studies: the ritualized physical space of the academic library; the strongly print-/book-influenced models of editions in the popularizing network context of the World Wide Web; and the conceptual quandaries and limitations involved in developing new 'dynamic' online editions. In each case—including digital publication—'materiality' can be seen as an overriding factor in how editions are discovered, acquired, read, performed. The new digital edition thus treads a fine line. Physical, conventional, and social aspects of interactivity play an important role in shaping online publication, but this is not the same as the simplistic idea that electronic editions have intrinsic characteristics determined by their status as virtual entities. Rather, the fundamental elements of online music editions are shaped in the process of design and implementation, too often in practice without regard to their musicological integrity and future usability. It is imperative, therefore, for practitioners and scholars to become more actively engaged in the ongoing development process of such edition systems.