radiant textuality

literature after the world wide web

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palgrave

Note on the Text

The idea for this book took shape in 1998 to 2000, when most of it was written. The five chapters comprising Parts I and II were drafted earlier, however. Three of those were written between 1993 and 1995 as a related series of critical reflections on *The Rossetti Archive* and its initial theoretical goals. The two very different chapters titled "The Alice Fallacy" and "Deformance and Interpretation" were written in 1993 and 1996 (respectively). Framing the other three conceptually as well as historically, they define the interpretational issues that had been running through the work we undertook with *The Rossetti Archive*. The full elaboration of this book's arguments only emerged very late, however, when those interpretational topics and problems had been rehearsed and pursued. This happened in 1998 to 2000 when the rest of the book was written. At that point—the spring of 2000, when "The Ivanhoe Game" was conceived in conversations with Johanna Drucker and John Unsworth—I saw how important "The Alice Fallacy" had been for the development of the arguments being made in this book. I then revised and recast the chapters originally written from 1993 to 1995, and I wrote the introduction, "Beginning Again," as well as the series of critical reflections that introduce the different parts of the book. I played several iterations of "The Ivanhoe Game" with Johanna Drucker and some graduate and undergraduate students (May to November 2000) and finished the book by writing up several accounts of those events, including the last chapter of this book, "Beginning Again and Again."

Introduction

Beginning Again: Humanities and Digital Culture, 1993–2000

we're like the man who climbed on a chair and declared
he was a little closer to the moon.
—Hubert Dreyfus, What Computers Can't Do

Humanities computing is beginning again. It passed through one coherent period of historical development and, more recently, through an exploratory interlude of considerable importance. This book examines that interlude, the years 1993 to 2000, from the perspective of a project I undertook at exactly the same moment (fortuitously as it happened): *The Complete Writings and Pictures of Dante Gabriel Rossetti. A Hypermedia Research Archive* ("The Rossetti Archive").[1] Working on the archive during those years, I began to see more clearly the kinds of change that are coming to literary and humanistic studies. These changes will bring to the center of scholarly procedures theoretical models that have been perceived until now as odd, idiosyncratic, nonnormal.

Before 1993 the computerized future of our humanistic inheritance was apparent to a relatively small group of librarians and archival scholars and to very few other people in literary and cultural studies. I am speaking here not of loose and speculative cybernetic conceptions and imaginings, which have been widespread for some 15 years or so, but of practical and concrete understandings of the momentous changes that lay in store for our libraries and other archival depositories. Now, however, in 2000, the community of humanities scholars at large has also begun to see that future with greater clarity and to feel the pressure of its demands. In 1993 when projects like *The Rossetti Archive* sought funding for their work, the applications failed. Then the scholarly community was not prepared to

judge either the need or the adequacy of such projects. The situation in 2000 is different, for many educators now understand that our inherited archive of materials in libraries and museums will have to be re-edited with information technology (IT) tools. We see as well the kind of massive reorganization that will have to be carried out in these depositories in order to store, connect, and conveniently access their holdings. All this work is already well underway.

But also now in 2000 some are being pushed further by the inertia of the new tools being placed at our disposal. Ideas about textuality that were once taken as speculative or even imaginary now appear to be the only ones that have any practical relation to the digital environments we occupy every day. So that now all of aesthetic, literary, and humane studies appear brinked for major changes in the ways they will be studied, analyzed, and interpreted.[2]

This book tells a story of how we got to where we are now. The story describes how certain theoretical views of textuality once considered weird, impractical, and unserious discovered their moment of realization in the digital world of the late twentieth century. I first taught the works of Lautréamont, Jarry, and Roussel at the University of Chicago in the late 1960s and early 1970s in courses I then called "The Literature of Excess." Authors of their kind treated documents as scenes of *precise* imaginative possibilities. None approached their work in the spirit of a romantic hermeneutics: that is to say, under a horizon where multiple meanings are generated by readers working in and through texts imagined on an analogy with the Bible. Those kinds of text appear to us as massively authoritative and deeply mysterious, requiring devotional study to uncover their secret meanings. Reconnecting with certain performative and rhetorical traditions, however, writers like Jarry laid a groundwork for post-romantic procedural writing. They began to make clear once again the constructed character of textuality—the fact that texts and documents are fields open to decisive and rule-governed manipulations. In this view of the matter, texts and documents are not primarily understood as containers or even vehicles of meaning. Rather, they are sets of instantiated rules and algorithms for generating and controlling themselves and for constructing further sets of transmissional possibilities.[3]

How I came to write that previous paragraph constitutes the story being told in this book.

Points of Departure

In the fall of 1993 we began work on *The Rossetti Archive* and in July 2000 saw the public release of its first research installment: an online hyperme-

dia construction of some 10,000 image and text files organized for use (and experiment) by students and scholars with many disciplinary interests. (When the archive is completed it will contain more than twice that number of files.) During those initial seven years the archive—along with the whole field of humanities computing—was swept in directions no one foresaw in 1992.

The project was consciously begun as a pragmatically-based theoretical undertaking—in fact, an experiment in Ian Hacking's sense[4]—to explore the nature of textuality: in particular, book and paper-based textualities, as well as the editorial methods for marking and interpreting these kinds of texts. The archive was built under the auspices of the University of Virginia's Institute for Advanced Technology in the Humanities (IATH), which was founded the same year as *The Rossetti Archive* was begun. The humanities computing work sponsored by IATH—a large array of research projects in texts, media, images, and information—can now be seen to mark the end of a first and distinct phase in the history of humanities computing. Our experience in building *The Rossetti Archive* is an epitome of what happened at IATH between 1993 and 1999, when humanities computing began to move in very new directions.[5]

A brief historical note here will be helpful. The use of IT in humanities disciplines began in the late 1940s with Father Roberto Busa SJ, whose work on the corpus of St. Thomas Aquinas set the terms in which humanities computing would operate successfully for more than 40 years.[6] Two lines of work dominate the period: first, the creation of databases of humanities materials—almost exclusively textual materials—for various types of automated retrieval, search, and analysis; second, the design and construction of statistical models for studying language formalities of many kinds, ranging from social and historical linguistics to the study of literary forms.

Viewed from the perspective of a humanities scholar's interests, this work has had its greatest impact on the library, which began its extraordinary digital reconstitution during this period.[7] Because the library locates the center, if not the very soul, of arts and humanities studies, this transformation carries enormous consequences for humanities students and educators. Hand catalogues have virtually disappeared and libraries everywhere are offering larger, more varied, and more integrated bodies of electronically organized and connected materials.

While everyone is directly affected by these changes in the library at the general access level, and to an increasing degree in the area of reference works of different kinds, few people, including very few humanities schol-

ars, have been touched by more specialized work with stylometrics, cladistics, and tools for automated collation and author-attribution. This situation is especially clear in the United States, where New Criticism and its theoretical aftermath exiled nearly all kinds of statistical, editorial, and textual work to the periphery of humanities studies. Because humanities computing in its first phase was so closely linked to computational linguistics, on one hand, and to textual/editorial studies, on the other, the central lines of work in literary and cultural studies between 1950 and 1990 remained virtually untouched by developments in humanities computing. To the degree that IT attracted the attention of humanities scholars, the interest was largely theoretical, engaging the subjects of media and culture in either speculative and relatively abstract ways or journalistic treatments.

That situation has kept most humanities scholars in a state of invincible ignorance of one of the most remarkable achievements of this early phase of humanities computing: the design and development of systems for the structural description (or "marking") of textual materials. The parent of these developments is SGML (Standard Generalized Markup Language), which is a rigorously articulated logic for marking the structural parts and relations of textual documents (or bodies of material fashioned on a model of textual documents). So far as the humanities are concerned, the signal event was the development of TEI (Text Encoding Initiative). TEI is a specialized markup derivative of SGML, one designed to facilitate computer implementations of traditional humanities texts (literature, history, philosophy). By 1993, when IATH was founded, TEI was establishing itself as a professional standard for text encoding of humanities materials.[8]

These dates and events are important because of what happened in the larger world of IT between 1993 and 1994: the definitive appearance of the W3.[9] It is important to remember—not an easy thing to do at this distance—that the coming of W3 seemed to most scholars involved in humanities computing at that time as a trivial event so far as they were concerned. A hypermedia environment established on a global scale, W3 ought to have fed immediately into a number of long-standing theoretical interests in decentered and reader-oriented textualities. The scholarly meetings and journals devoted to humanities computing show with unmistakable clarity, however, that few people in those communities registered the importance of W3. Disinterest was perhaps to be expected from computational scholars, but even the hypertext community barely noticed this truly epochal event before 1995.[10] Hypertext was a playground clearly founded by the enthusiastic descendants of those earlier twentieth-century move-

ments called New Bibliography and New Criticism. While those children played around in their hypertextual fields, "serious" humanities computing remained located in library and archival technology, on computational analyses of various kinds, and on the closely related fields of textual editing and textual markup. And meanwhile W3 arrived on its own.

The period from 1993 to 1999 gains its peculiar shape and significance largely because of the crisis W3 brought to humanities computing. Critical discussion of hypertext and hypermedia explodes throughout cultural and literary studies, with interest now fueled in practical ways by various persons, including scholars like Jay Bolter and George Landow, who launched online hypermedia constructions of many kinds. Before W3, anyone interested in building computerized humanities tools or environments would have had to learn at least elementary programming. W3 ended that situation by making HTML (Hypertext Markup Language) the language of W3 documents. Developed by Tim Berners-Lee, HTML was a brilliantly simplified subset of SGML, whose basic rules could be mastered in a few hours. As a consequence, W3 quickly burgeoned, with people throughout the world putting up terabytes of web pages and documents of all kinds. Into that expanding universe of textuality moved a small army of literary students and scholars to create an array of sites designed for various scholarly and pedagogical audiences.

Nearly all of these materials were viewed with varying degrees of skepticism or scorn by "the humanities computing community." And with good enough reason since that community had been trying for decades to develop rigorous analytic tools within a traditional milieu of work controlled by careful standards and peer review. These new materials, by contrast, usually appeared from nowhere, the brainchildren of some spontaneous overflow of powerful feeling in a particular person here or there, even a particular scholar. Idiosyncrasy ruled the World Wild West, including its humanities subset. W3 encouraged people to make and send forth digital things on their own initiative and in their own ways.

The upside of these events was the coming of a large and diverse population of new people into digital fields previously occupied by small and tightly connected groups. More significantly, they came to build things with digital tools rather than simply to reflect abstractly on the new technologies. This general situation was replicated in humanities disciplines at large. In addition, because W3 was from the beginning of its public life strongly visual rather than textual in character, humanist scholars and students brought a multidisciplinary and multimedia set of interests to the sites they were building and visiting.

Humanities Computing at the University of Virginia: 1992–1993

Insofar as humanities computing existed at the University of Virginia in 1993, it was located at the periphery—in an initiative taken by librarians at the Alderman Library to found an Electronic Text Center. Because few faculty were involved in this initiative, and none directly, it began as a speculative institutional venture—a kind of bet made by the library that the center would attract interest and use by the faculty. This center, which flourishes today, was to be an instrument for creating and disseminating electronic texts of various kinds and in many disciplines for the use of students and scholars in class and in research work. The center began its work at a minimal level, all but invisibly to the campus at large, in 1992. It is now the largest disseminator of online humanities texts in the world.

Later that same year IBM approached UVA's computer science (CS) department with an offer of $1 million in equipment for educational use over a three-year period. Two CS faculty members, Alan Batson and Bill Wulf, contacted two humanities professors, Ed Ayers and myself, to see if IBM's offer might be useful to people in the arts and sciences division of the university. A small committee was formed of these four people plus Kendon Stubbs (the Associate Librarian and chief architect of the library's Electronic Text, or E-Text, Center) and two other CS people. Out of that committee was formed what would become the Institute for Advanced Technology in the Humanities (IATH).

Because IATH came into being fortuitously, its shape and focus evolved through a randomized state of affairs. To see this let me reset the scene at UVA in late 1992:

(1) The library's E-Text Center was begun as an independent initiative.
(2) The grant from IBM had not been sought by the library or by anyone in humanities.
(3) Ed Ayers and myself were only casually acquainted and neither of us knew, before the establishment of the committee that created IATH, that we each had some interests in humanities computing.
(4) The CS faculty who initiated the committee did not have in mind any clear plan for what to do with the IBM offer, nor did they have any close (let alone working) relations with Ed Ayers or myself. When I joined the committee I knew no one on it other than Ed Ayers.
(5) Kendon Stubbs joined the committee only after it was initially formed, and at my suggestion (because I had learned from him about the recent founding of the E-Text Center).

I give that list to emphasize the relatively atomized state of affairs when the committee was formed. That loose situation would prove an asset, for it ensured that the committee didn't begin its work in the context of a coherent institutional history or a strong set of prevenient ideas about humanities computing.

The Idea of IATH

The question to be answered by the committee was this: "What should be done with IBM's offer?" Ed Ayers and myself were invited to join the committee because the CS faculty, to whom IBM had made the offer, thought the equipment might be put to best use in the arts and sciences division rather than in the engineering school. As a result of this remarkable act of intramural collegiality (and imagination), this CS-run committee was charging itself only in relation to humanities educational needs. The object was to use the IBM offer to initiate a major change in humanities education at UVA.

The overwhelming initial answer to the central question was that the equipment should be made available as soon as possible to all arts and sciences departments for as long as possible. One person, Alan Batson, held out against that position. He argued that to move in this way would be to replicate a known history of 30 years of failure. A genuine engagement between humanities education and computer technology would not get beyond word processing if this model were adopted, Batson argued: "Throwing IT resources at people who have no special interest in them or desire to exploit them doesn't work. We know this because whenever we've done it during the past 30 years the results have been minimal at best." (Those are not exactly his words, but as Thucydides said of his *History*'s reported conversations, I'm giving the substance of what he said.)

Batson's model was different: to seek out projects with demonstrable intellectual importance for humanities scholarship and to fund those projects as completely as possible with the technical resources the projects need. His rationale: "Educational change at the level of the university is driven by the active research work of the faculty. Changes in pedagogy and classroom dynamics follow from research."

After an intense meeting in which Batson held his position against the rest of the committee, his view prevailed. Further meetings refined and modified Batson's general model. The idea of IATH thus became formulated in the following set of charges:

(1) Each year offer fellowships to UVA faculty who submit humanities research proposals to IATH. These should not be proposals for IT teaching initiatives but for scholarly research projects that use IT tools. Successful applicants become fellows of IATH for one year. They are given a one-year release from teaching plus complete technical support for their projects.

(2) Try to ensure a diverse, interdisciplinary set of research fellows (rather than a set of closely related projects).

(3) Require that the department of the successful fellowship applicants contribute materially to the fellow's work—specifically, by supplying the fellow with one or two graduate students to work on the research project and helping, if possible, with securing release time from teaching.

Two important ideas organize this plan for IATH. First of all, the plan assumes Batson's view that the educational work of a university is driven by its research activities. This idea does not imply that pedagogy is a secondary or less important university function—quite the contrary. But in a university environment students have to expect that their courses and classrooms will be organized in terms of the most up-to-date and adventurous scholarly work—work generated from research agendas that establish the standards and touchstones for a field. In the ideal university setting, a dynamic relation operates between the scholars' research work and the classrooms where it is tested, explored, and modified.

Thus one of our key expectations in founding IATH was that its research projects would become gravity centers drawing the attention of other faculty and the interest and work of students. The graduate assistants of the research fellows, it was believed, would themselves become gravity centers affecting other graduate students and undergraduates. In this way IT resources would begin to be exploited in all of the university's educational activities, in the instructional and in the research work of faculty and students alike.

Second, the plan for IATH assumed that IT tools would only be taken up by humanities faculty who had an active interest in using these tools in their primary areas of scholarly work. Simply giving equipment to faculty and offering technical support would have a minimal effect, as the dismal history of such efforts in the past has demonstrated. A steep learning curve defines the shape of one's involvement with these tools. Learning to use them is in one respect not unlike learning a new language. You may gain a certain minimal competence fairly quickly, but if your goal is more ambi-

tious—in this case, to exploit these tools for advanced research work—a deep and long-term investment is required.

The problem with developing serious work in humanities computing is complicated by two additional factors. IT tools are in such a volatile stage of development that to use them well one has to remain vigilant about the current state of a wide range of technical resources. This takes time, real effort, and, perhaps most of all, a collective environment. Given the institutional structure of higher education, indexed by the tenure system and its measures of scholarly work, scholars—even tenured scholars—may reasonably conclude that their interests are not served by these tools. It is a fact that right now one can function most efficiently as a university scholar and teacher by working within the paper-based system we inherit. (This moment, this "now," is quickly passing away.)

In face of such a situation, IATH was founded as a resource for people who had already made a commitment to humanities computing, a commitment defined practically by an actual project with demonstrable scholarly importance. There were to be no outright gifts in the arrangement. Everyone involved in a fellow's appointment to IATH would have to make some material commitment to the work.

The hope, the goal, of this plan was a transformation of humanities education at UVA. It didn't take five years before we knew that we had succeeded far beyond what we had expected or even, speaking for myself, what we had imagined as possible. In five years the two initial research projects proliferated into more than two dozen. These included projects begun by graduate students as well as regular faculty and library staff. Faculty from more and more university departments became IATH fellows and enriched the institute's work: projects in music, art history, linguistics, architecture, urban planning, religion, archaeology, and so forth. Important work being done by scholars outside UVA gravitated to IATH because of its resources and lively intellectual scene.

The hope that the institute's research orientation would catalyze important pedagogical initiatives was also realized. After a few years IATH moved to support certain teaching-oriented initiatives that were driven by serious research agendas. In addition, the institute worked hard to help its fellows exploit the classroom potential of its research projects—a potential that extended well beyond the university to include K-12 education as well. As a consequence of all this activity, in 1995 the university established its Teaching Technology Initiative (TTI), a program organized to provide IT resources and technical help to faculty and

teaching staff. Similar resources were being made available through the library's E-Text Center.

A crucial factor in UVA's involvement with humanities computing was the close liaison that was fostered from the start between IATH and the library. Nothing illustrates the depth of that liaison more than the library's decision to clear out more than 2,000 square feet of its floor space to make room for IATH's faculty and staff offices. This close working relationship expanded the university's research activities in remarkable and innovative ways. Some of the most important theoretical work in humanities scholarship is now being undertaken by faculty, graduate students, and library staff working in collaborative groups.

Finally, the remarkable success of IATH resulted in major part because its work from the outset was consciously developed in relation to W3. When John Unsworth was appointed as director in 1993, his first move was to ensure that the institute's projects were designed for web dissemination. Pursuing that direction in 1993 was to move against nearly every current in humanities computing scholarship, which was dominated by "stand-alone" ideas and technologies (epitomized in the early and short-sighted choice of CD-ROM as the venue for carrying humanities texts and hypertexts). In this situation we see once again the cultural influence of book paradigms on the new digital environments. Or, one should rather say, a certain view of books and book culture—a view defined, as I've already noted, by ideas drawn from New Bibliography and New Criticism. The convergence in 1993 of digital technology and W3 changed the shape of things, and not least the shape of humanities computing.

The Rossetti Archive and the Theory of Scholarly Editing

Under Unsworth's direction, then, the institute's work shifted in various ways from its initial conception and charges. Projects conceived by non-UVA scholars were invited to come to the institute if they brought their own funding, and certain interesting pedagogical projects were taken on board after several years. Most significantly, Unsworth invited important IT projects, especially web-based projects, to locate themselves, or instances of themselves, on the IATH server.

On the technical side, a major challenge for the institute and its fellows was to pursue long-term, large-scale humanities computing research projects with an almost ascetic rejection of the surface effects and short-term gains offered by proprietary software and proprietary data standards. In an apparently paradoxical way, IATH's W3 commitment drove its projects to

make rigorous logical design a fundamental goal. This pursuit reflected a dedication to portability and the abstraction that enables it—even if it also entailed doing without good tools for creating or disseminating the scholarly work in the short run. As it happened, that commitment was to induce a profound shift in the principal focus and goals of *The Rossetti Archive*—moving it, in fact, from an editorial project per se to a machine for exploring the nature of textuality in more general and theoretical ways.

The character of the two initial IATH projects—*The Rossetti Archive* and Ayers's *Valley of the Shadow*—would exert a continuing influence on the direction of IATH's work in general. Both projects operated with large datasets of textual and visual materials. In addition, the texts in these projects were often handled both as alphanumeric data and as digital images. The image-based approach to the data was especially marked in *The Rossetti Archive* because, of course, Rossetti was not only a painter and visual artist; he was a poet who wrote under a horizon of book design and book illustration.

But what precisely was involved in *The Rossetti Archive*'s image-based approach to its materials? I can pose this question now because the hindsight of seven years has exposed how loosely and unselfconsciously we undertook our work with digital images. To unpack the import of that question is to begin exposing all the issues and problems that are the subjects of this book.

The Rossetti Archive was conceived within the context of a technological tradition that stretches across more than two millennia. I speak of the period when scroll, book, and other textual instruments were developed as tools for communication, information storage, and critical reflection. Perhaps the most sophisticated of these machines were the ones invented and refined by so-called textual scholars: text machines—the best known being the book—for preserving and studying forms of cultural memory, including texts themselves. *The Rossetti Archive* was undertaken as a practical effort to design a model for scholarly editing that would have wide applicability and that would synthesize the functions of the two chief models for such works: the critical edition (for analyzing the historical relations of a complex set of descendant texts with a view toward locating accumulated linguistic error); and the facsimile edition (a rigorously faithful reproduction of a particular text, usually a rare work, for scholarly access and study). The purpose of marrying these two kinds of scholarly instruments was based in a theory of textuality that was seriously underdeveloped 20 years ago. The theory holds two positions: first, that the apparitions of text—its paratexts, bibliographical codes, and all visual features—are as important in the

text's signifying programs as the linguistic elements; second, that the social intercourse of texts—the *context* of their relations—must be conceived an essential part of the "text itself" if one means to gain an adequate critical grasp of the textual situation.[11]

That view of texts and the textual condition explains why the initial conception of *The Rossetti Archive* took shape well before we began our actual work on the project. In fact it came around 1983, when I was teaching at California Institute of Technology. That year I published *A Critique of Modern Textual Criticism*, which was the first in a series of works aimed at dislocating certain theories of textuality that dominated scholars' conceptions of their two principal disciplinary tasks: textual editing and textual interpretation. That same year I was introduced to UNIX computing systems and to hypermedia. With the convergence of these twain I knew that when circumstances were right I would undertake building a computerized hypermedia model for scholarly editing. Building the archive would articulate a powerful argument for the view of textuality I wanted to promote. The chance arrived when IATH arrived.

We spent the year from 1992 to 1993 theorizing the methodology of the project and designing its logical structure. Then in 1993 we built the first small demonstration model of *The Rossetti Archive,* which at that time I described in the following general terms:

> Like the work of Blake, Burns, and other important artists and writers, Dante Gabriel Rossetti's work is difficult to access or to edit for access. Expressive forms that work in or with visual and auditional materials do not lend themselves to the paper-based formats of traditional scholarship. Under such conditions, a more flexible medium is required.
>
> *The Rossetti Archive* has been developed in response to this situation. The scholarly models it builds have a particular applicability to artists and writers who seek to exploit and explore the expressive potential of more than one medium. We have been especially interested in developing critical tools for studying visual materials, as well as textual materials with a significant "visible" component. Concentrating on the linguistic codes of textualities, readers and even scholars regularly give scant attention to the physique of texts. But all texts deploy a more or less complex series of bibliographical codes, and page design—if not page ornament and graphic illustration—is a rich scene of textual expression.
>
> Computerized tools that deploy hypermedia networks and digitization have the means to study visual materials and the visibilities of language in ways that have not been possible before. This archive was built to harness

those capabilities, and Dante Gabriel Rossetti was chosen because the diversity of his work puts the goals of such a project to a serious test.

Rossetti's work was executed in two different media, visual and textual, and his work in each is intimately—and often explicitly—interconnected. The relations are clearest, perhaps, in those works where he made pictures for poems or other texts he had already written—like "The Blessed Damozel"—or in works where he made texts to accompany or comment upon pictures he had executed—for example, the sonnets he wrote as extensions of the meaning of his first important painting, *The Girlhood of Mary Virgin.*

That basic complexity in Rossetti's work gets deepened and elaborated because of the centrality of Rossetti's work in recovering the poetic culture of the "Early Italian Poets" of the twelfth to the fourteenth centuries. The connections between Rossetti's so-called original work, both written and pictorial, and his translations of Dante and his circle are pervasive.

Finally, Rossetti's work habits were such that these structural complexities of his art and writing get vastly extended. Rossetti was an obsessive reviser of his written work, and these revisions were carried out at every level of the writing: He worked and reworked words, phrases, passages, and he rearranged "finished" units into dizzying sets of variant organizational units. The difficulties come into sharp relief as soon as one considers any of Rossetti's works: say, the 1870 *Poems;* or "The House of Life," which was a subunit in that volume; or the introductory "Sonnet" to "The House of Life," which first appeared as part of the sonnet-sequence of "The House of Life" only in 1881. Rossetti followed the same kind of revisionary habits when he was painting and drawing.

All these features of Rossetti's work pose a complex and hitherto unsolvable editorial problem. One cannot properly study or appreciate Rossetti's work without having access to all of it. Even an introductory selection presents serious difficulties, because one needs to combine two media together and one also needs to present the materials so that the complex relations of all the parts are preserved. One easily understands why Rossetti's work has never been comprehensively edited and why the separate parts of his work are themselves available for general study only in the most limited ways. Virginia Surtees's standard catalogue of *The Paintings and Drawings of Dante Gabriel Rossetti* is excellent but quite incomplete. And to this day the "standard" edition of the writings is the 1911 *The Works of Dante Gabriel Rossetti,* edited by Rossetti's brother, William Michael. The writings have never been critically edited. As a result, their nervous structural features can only be encountered in scholarly periodicals and monographs.

A hypermedia computerized environment allows one to overleap these problems, which are a function of editing that has to be carried out in the framework of the book.

In *The Rossetti Archive* all the works are available for study in facsimiles of their original documentary forms. This means that the user has access to all his original manuscripts, printed texts, drawings, designs, and paintings. Since Rossetti designed his own books, one can appreciate the importance of reading his work in its original documentary states. And since the archive preserves these original materials in full color facsimile as necessary, one can see the great advance computerization makes in this case over Surtees's catalogue (which reproduces Rossetti's images in black and white). Furthermore, computerization allows the editor to connect all of Rossetti's documents to each other so that their relationships can be examined and better understood.

Finally, these authorial materials are embedded in a context of related documents, historical and critical, that help to illuminate the primary materials as well as their cultural context. The archive has incorporated, for example, various contemporary materials that are important for understanding Rossetti, pre-Raphaelitism, and the world in which they emerged and developed. The archive has included *The Germ*, William Michael Rossetti's early biography of his brother, as well as William Michael's 1911 edition of the works, H. C. Marillier's and Frederick Stephens's commentaries on the art, and other crucial contemporary documents (Swinburne, Buchanan, Pater, etc.). Also included is a large corpus of the photographs by which Rossetti's work was disseminated. As the archive is further developed, this body of material will be expanded. It is all marked for full electronic search and analysis. It is also supplemented by the present editor's critical essays, notes, and commentaries. The latter, of course, draw upon the considerable corpus of scholarship and criticism that has evolved over the past century on Rossetti, his circle, and their general historical milieu. (http://jefferson.village. virginia.edu/rossetti/introduction.html)

One can easily see, from this later vantage, how well that description reflects the state of humanities computing in 1993, when the TEI implementation of SGML markup was beginning to take serious hold, when hypermedia models were gaining widespread attention, and when W3 was scattering text and image constructions of many kinds across the globe.

Beginning Again

Because *The Rossetti Archive* was conceived and pursued, early on, as much as a kind of thought experiment in the theory of texts as an editorial project per se, it kept a constant focus on reflexive attention. I refer not only to the standard and highly pragmatic critical processes that regulate the design and building of any kind of tool or instrument. Of course we were constantly constructing the archive, testing what we had implemented, modifying what we had done, and then rescaling the level of implementation. Beyond those critical operations, however, the archive held our interest as a theoretical instrument for investigating the nature of textuality as such.

This inertia in the project broke out as a series of related texts. I wrote these reflexive pieces between 1993 and 2000 as expositions and critiques of our work, and all but one, the dialogue on "The Alice Fallacy," were originally published as online research reports. Writing the first set of these pieces between 1993 and 1996 brought a new level of clarity to what we were doing; and one of these, "Imagining What You Don't Know: The Theoretical Goals of The Rossetti Archive," marked a turning point in the project as a whole. It argues that to make anything is also to make a speculative foray into a concealed but wished for unknown. The thing made is not the achievement of one's desire; it is the shadow of that desire, the sign of what the poet spoke of as "something longed for, never seen." Writing that essay ushered the project of the archive to a new level of operation. It also initiated the project of this book: that is to say, the decision to draft careful written records of the critical stages in the making of the archive.

The work of those writings has been recomposed into the parts of this book, which is organized around a double vanishing point. In one perspective appears a set of related but independent explorations into the characteristics of different kinds of textualities. In another, one follows a kind of metanarrative or critical history projecting a map of future scholarly operations. We begin to explore that relatively unentered territory in the final section of the book, where the project of *The Rossetti Archive* mutates into an entirely different set of critical and scholarly demands.

These demands arise naturally—this is now clear, as it was not clear in 1993—from the way in which the project was first conceived. As a model constructed to reflect on its own process of development, the archive proved acutely sensitive in two directions at the same time: to changes taking place in the encompassing field of digital media, and to the traditional

needs of humanities scholars working out of paper-based models of textuality.

Because W3 browsers had just become available, John Unsworth urged me to build the first model of the archive in HTML for web dissemination. Doing that was essentially an act of handicraft, for in 1993 we were primarily involved in discussions about how to design an SGML structure for all of *The Rossetti Archive*'s materials, visual as well as textual. The latter was to be a complex logical structure—in contrast to the HTML-marked demonstration model. One wants to hold this initial situation clearly in mind, for the contradiction between the web demo model, a simple visual interface built in HTML, and the archive itself, a set of logical relations and determinants conceived in SGML, would surface repeatedly in all our work.

Briefly, then: As we built the archive we kept encountering variations on a pair of difficulties. Both are functions of the special character of humanities materials, which are not primarily informational materials. They are made for reflective and imaginative purposes—in Rossetti's case, textual and visual works made for such purposes. Hence came our recurrent set of difficulties. First, neither the SGML markup structure nor the hypermedia design were able to integrate the textual and visual materials beyond elementary connecting, sorting, and gathering operations.[12] Second, the archive's principal objects of study—Rossetti's works—were not being interpretively exposed by the computational tools in very interesting ways. Computerization made much more information (and much more varied information) available—vast amounts of data in forms, relational as well as facsimile, that were previously unimaginable. As a tool for rethinking these materials, however, whether through structured or randomized searches of the data, the computer continually disappointed the high hopes it had raised. The archive includes a great deal of critical and reflexive materials in itself, but these materials are simply linked to the primary materials in an elementary, if also elaborate and complex, hypertext organization.

Nothing illustrates the practico-theoretical weakness of this situation more dramatically than the brave new world of hyperfiction. Armed as they are with remarkable technical resources, the works of this new genre pale in complexity before their paper ancestors: early works like *The Metamorphoses, The Arabian Nights, The Saragossa Manuscript,* or recent ones by Joyce, Riding Jackson, Borges, and of course the whole OULIPO contingent and its numerous contemporary offspring.

The example of hyperfiction may well locate a temporary condition.

We have no reason to doubt—indeed, we have every reason to expect—that remarkable imaginative works will appear in digital forms. Traditional imaginative texts developed and mutated over a long period of time and in many different environments. Hyperfiction and video games are early explorations and experiments, and if they seem primitive next to analogous works we inherit through predigital traditions, the same cannot be said of digital art, which has already developed sophisticated forms. Success in this case comes, of course, because digital imaging procedures feed upon the rich fund of electronic media that has emerged over the past hundred and more years. Traditional textualities have not been in a position to exploit such media until very recently.

I bring up these matters not to pass out digital merits and demerits to people working in different areas of the arts and humanities but to locate that part of the field where we have advanced hardly at all—indeed, where we have made few serious efforts to advance. More than anything else, the making of *The Rossetti Archive* has exposed the gulf that stands between digital tools and media, on one hand, and the regular practices of traditional philosophy, "theory," hermeneutics, and arts/literary/cultural criticism, on the other. Digital culture is virtually (!) an obsessional topic in all these fields, but it is a topic addressed from a distance, as a kind of fascinating and/or threatening alien form. That distance gets marked with unmistakable clarity in one way: the discursive procedures in all of these fields remain to date resolutely paper-based.

Works like *The Rossetti Archive* or *The Perseus Project* or *The Dickens Web* are fundamentally archival and editorial.[13] They gather, sort, and make things accessible, and they link these things to related things. Unlike works imagined and organized in bibliographical forms, however, these new textual environments have yet to develop operational structures that integrate their archiving and editorial mechanisms with their critical and reflective functions at the foundational level of their material form, that is, *at the digital/computational level*. Although structural coding in SGML (or XML) mitigates this deficiency to a certain degree, it is not only difficult and time-consuming to implement, but its hierarchical principles and other design characteristics set permanent and unacceptable limits on its usefulness with arts and humanities materials. Thus, however primitive hyperfiction and video games may seem, we recognize their functional relation to their underlying digital processes. In this respect they are more advanced in a practico-theoretical point of view than any of the IT-based scholarly works mentioned above. This is particularly the case with video games.

The difference implicitly traced in this discussion, between the

scholar/editor, on one hand, and the critic/philosopher, on the other, was once far less sharply drawn than it is in our day. In ages and circumstances when hardly any distinction pertained between works of criticism/reflection and works of art/imagination—cultural conditions that produced the Bible, *The Book of Odes, Mahabarata,* and the works of Sophocles, Aeschylus, Lucretius, and Dante—the work of scholarship and learning was also much more integrated. Jerome, Augustine, Aquinas, Politian: All were figures of immense cultural authority. But then came the worlds of J. G. Eichhorn and G. W. F. Hegel and, later, Karl Lachmann and Friedrich Nietzsche. Two of those four names are forgotten except among circles of textual specialists; two maintain their cultural celebrity. That difference marks a notable shift in social and historical circumstances that has occurred during the past 200 years. Our digital culture is likely to reverse that difference. A hundred years from now, which of the following two names is likely to remain pertinent to traditions of critical thinking and which will seem merely quaint, if it is recalled at all outside pedantic circles: Vannevar Bush, Harold Bloom?

For historical scholars of any kind, figures like Bloom index a serious disciplinary and cultural crisis. The digital revolution has pushed us to the brink of a great age of editorial and archival scholarship. This is plain to see—if one cares to look at all. For the past 200 years, however, the central work of cultural reflection and criticism has grown increasingly divorced from that kind of editorial scholarship. Nietzsche's critique of philology and historicist method marks the point at which the original rapprochement between what philologists called the "Lower Criticism" and the "Higher Criticism" was destroyed.

In our day the authority of this Nietzschean break has greatly diminished. Modern computational tools are extremely apt to execute one of the two permanent functions of scholarly criticism—the editorial and archival function, the remembrance of things past. So great is their aptitude in this foundational area that we stand on the edge of a period that will see the complete editorial transformation of our inherited cultural archive. That event is neither a possibility nor a likelihood; it is a certainty. As it emerges around us, it exposes our need for critical tools of the same material and formal order that can execute our other permanent scholarly function: to imagine what we don't know in a disciplined and deliberated fashion. How can digital tools be made into prosthetic extensions of that demand for critical reflection? This is not a question to be addressed in speculative or conceptual terms. To count as adequate today, in this culture, responses to the question—most especially theoretical responses—require the deploy-

ment of computational instruments. Paper-based forms like this book can now, I think, only come to assist in a process of exploration and study that will henceforth be determined by digital forms. The next generation of literary and aesthetic theorists who will most matter are people who will be at least as involved with *making* things as with writing text.

These kinds of issues won't be usefully engaged without reconsidering certain fundamental problems of texts and textuality. The critical possibilities of digital environments require that we revisit what we know, or what we think we know, about the formal and material properties of the codex. We shall see that the advent of digital tools promotes this kind of critical reflection and leads to a view of books and of language itself that breaks with many common and widely held ideas. We shall see how, in a pragmatic as well as a theoretical perspective, the normative form of language is most usefully approached not as informational and expository but as poetic and polyvalent. Though informational and expository models of language have been taken as normative for more than three centuries, they are in fact specialized models, sophisticated derivatives. They were installed to facilitate certain instrumental tasks. We shall also see how texts deploy complex visible codes—how printed pages function both in semantical and imagistic ways—and how the executable codes (algorithms) of computational devices have much to tell us about the functioning structures of traditional textual devices. Finally, we shall trace in these investigations the discovery of a graduated series of critical moves that were generating unapparent consequences. These mutate under different topical conditions and then get reinvested as new critical opportunities.

The completed form of this essentially stochastic critical process comes in the final section of this book. At that point we lay out a model for a procedure of critical thinking that calls for digital implementation. This model appears in "The Ivanhoe Game," whose origins lie in the concealed pressures that drive and sustain the more immediate reflexive goals of this book's purely textual investigations. The game, which is procedural and structured for random turns of event, will be formally described, its prehistory will be documented, and its digital existence forecast.