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Review of: *Kirschenbaum, Matthew G. Track Changes: A Literary History of Word Processing. The Belknap Press of Harvard University Press, 2016.*

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Abstract. What is a *Literary history of word processing*? The importance of this book and its innovative nature is brilliantly summarized in its title. Matthew Kirschenbaum's essay «seeks to narrate and describe in material and historical terms how computers, specifically word processing, became integral to literary authorship and literary writing» (p. xiii). The book follows a diachronic path, in particular a «reverse chronological trajectory [...], sometimes identified with what is called media archaeology » (p. xv). The focus of each chapter is however mostly thematic. This review will go through all of them, some more superficially than others.

Abstract. Cosa si intende per Literary history of word processing? L'importanza e l'innovatività di questo libro è sottolineata dal titolo. Il saggio di Matthew Kirschenbaum «seeks to narrate and describe in material and historical terms how computers, specifically word processing, became integral to literary authorship and literary writing» (p. xiii). Il libro segue un percorso diacronico, «reverse chronological trajectory [...], sometimes identified with what is called media archaeology» (p. xv), anche se ogni capitolo è tematico. Questa recensione ripercorre tutti i capitoli, ponendo maggiore accento su alcuni.

Keywords: literary history, word processing, word processor, writer, writing

1 Review

What is a *Literary history of word processing*? The importance of this book and its innovative nature is brilliantly summarized in its title. Matthew Kirschenbaum's essay «seeks to narrate and describe in material and historical terms how computers, specifically word processing, became integral to literary authorship and literary writing» (p. xiii).

The scope of this analysis is limited to literature, which is a small percentage of what is and has been "word-processed". A second restriction that Kirschenbaum imposes is cultural and linguistic: «this book is overwhelmingly biased toward Anglo-American authors writing

prose fiction (to a lesser extent poetry) in English» (p. xiii). Even within these well-defined borders, the topic might include a vertiginous amount of single stories. Kirschenbaum is attentive to this individual dimension and he succeeded in conveying «the rich variety of writers' experiences with computers, and the deep and abiding individuality of the act of writing – a quality no different in a digital medium than in any other» (p. xvi). The second element contained in the title, «word processing», refers to a technology extensively explored in the book (details found in notes would appear fundamental to those interested in the technical aspects). But word processing is also a concept, referring to the labor division in discrete units, something specific to any computational treatment. It is probably this characteristic that «proved so contentious», even today, and that causes new forms of resistance (as could be pain or broken tools, when writing longhand) in relation to the act of writing.

A central question of the book is in fact «Where can we locate the resistance and where might we locate the materiality of word processing?» (p. 6). The author does not accept the scholarly understanding of word processing as «dematerializing the trace of writing» (p. 5). On the contrary, he engages in a study of writing's interfaces «in the fuller sense of a complete, embodied relationship between a writer and his or her writing materials». Materiality, as defined in book history and bibliography, is certainly a key concept here: «the materiality of both word processing and of writing more generally. This materiality often has implications for interpretation, and it always has implications for preservation and documentation, for history and for memory. This is the scholar's art. But materiality also grounds us. It demystifies. Materiality is where – is how – our knowing begins» (p. 13).

The book follows a diachronic path, in particular a «reverse chronological trajectory [...], sometimes identified with what is called media archaeology» (p. xv). The focus of each chapter is however mostly thematic. It appears that the book has been written over a long period of time, reassembling *disiecta membra* of different objects of research and study. This review will go through each chapter, some in more detail than others.

The first chapter, *Word processing as a literary subject*, offers theoretical premises: writing is said to be «a medial process» and «a power technology» (pp. 29-30). The role of computers is at stake here. In particular, whereas studies have privileged those authors who have been using computers as a «labor making device» (p. 24) for literary experiments, or have analyzed the influences of computers on the «art and act of composition» (p. 25), this book explores the daily interaction of writers with computers, as varied and peculiar as it can be. Authors mentioned in the book include, in no particular order, Jerry Pournelle, Stephen King, Isaac Asimov, Amy Tan, Arthur Clarke, John Updike, Charles Bukowski, Harold Brodkey, William Gibson, Anne Rice, Len Deighton.

The title of the second chapter, *Perfect*, refers to the clean drafts that a word processor is able to produce. We are so used to editing texts (insert and delete, copy and paste) that we need to make an effort to visualize what Jerry Pournelle – the author of possibly the first ever fiction novel entirely written with a word processor, published in 1978 (p. 96) – recalled: «In order to make a living at writing I had to write a lot, and writing is hard work. Actually writing wasn't so bad: it was *rewriting*, particularly *retyping* an entire page in order to correct half a dozen sentences» (quoted p. 97; italics in the original, as for the following quotes). The fascination for «pliable, malleable» language found its narrative counterpart in a number of literary fiction works, as Stephen King's *The Word Processor* or Umberto Eco's

Il pendolo di Foucault (and the computer Abulafia). The change is paradigmatic: «in a word, writing became *processed*» (p. 79).

The "perfection" of the copies produced on a word processor is not a positive characteristic *per se*. Imperfection, in fact, seems to ensure authenticity and «publishers sometimes shunned manuscripts that were self-evidently prepared on a word processor» (p. 129). John R. Harsey, for instance, who revised and prepared the layout of his 1974 novel *My Petition for More Space* on a mainframe text editor at Yale (the Yale Editor), did not mention the role of computers when handing the novel to his publisher: «He was afraid his readers would think a machine had written the book» (p. 138). This is not surprising, considering that in the same years the film Tron, written by Bonnie MacBird (on the *Alto* computer at Xerox's PARC, with the technical supervision of Alan Key) was rejected from the special effects category by the Motion Picture Academy «because the use of computers was seen as cheating» (p. 130). Nevertheless, MacBird was satisfied about the writing process: «Working with the Alto was gold and I wrote and rewrote, cutting and pasting, drafting like the wind in writer's heaven» (quoted p. 129). Word processors and personal computers were not the only new technologies employed by writers. Modem connection enabled pioneering remote work and collaboration, as is the case of the co-authored novel *The talisman* by Stephen King and Peter Straub, finished around 1983; or Arthur Clarke's *2010. Odyssey 2*, written in Sri Lanka, whose floppy disks were mailed to the US, but whose final corrections traveled via modem connection.

The adoption of the new techniques is not only a story of enthusiastic authors «writin in light» (Brathwhaite, quoted p. 201) or «writing with light on glass» (Codrescu, quoted p. 70). Hardware and software issues caused daily headaches, and user groups dealing with them were common (also) among writers, such as *Bad sector*, co-founded by Amy Tan, one of the first women to have a prominent role in the field. The difficulties began already at the time of buying a machine, because of the variety offered by the nascent industry. The choice was between a dedicated word processor (such as Lexitron, Vydec, Wang, Nexus, etc.) or an "integrated" system (such as the Altar 8800, the IBM PC, the Kaypro, etc.), which is a micro computer – or, as we call it nowadays, a personal computer. This dilemma took the shape of a debate between Barry Longyear and the already mentioned Jerry Pournelle, contributor of a regular column in *Byte* magazine. The debate opposed those authors (as Stephen King, John Updike and many others) who were satisfied with a machine «designed for secretarial work by someone who understood that not everyone in this world needs or wants to become a computer programmer» (Longyard, quoted p. 141); and those (as Brodkey, Straub, Clarke and many others) who, in order to enjoy larger freedom, accepted a steeper learning curve. The motivations for such a choice might be concrete and precise; in the case of Pournelle himself, author of hard science fiction, the computer could be of help for making calculations necessary to the realistic allure of his novels.

The reasons behind the early adoption of computers by science fiction authors are explored in chapter five, *Signposts*. Kirschenbaum is reluctant to accept Gerrold's explanation of predisposition and specific connection between science fiction writers and computers. A number of singular cases are taken into account, among which Frank Herbert and Max Bernard, authors of a computer guidebook entitled *Without me you are nothing* (the title is addressed to the computer), and Douglas Adams, probably the first person in England to have an Apple computer, record contended by Stephen Fry. Important exceptions are also

mentioned: William Gibson wrote *Neuromance* on a type-writer, because he could not afford a computer. Gerrold's interpretation – «These are the people who've been living with the idea of home computers ever since Asimov wrote his first robot story» – falls short, as there are evidences that the inexperience with computers helped in romanticizing them: «Gibson has often stated in interviews that his ignorance about the actual workings of computers was an asset in conceiving the notional technologies of cyberspace» (p. 115). Kirschenbaum's reading is fittingly complex: early adopters are in general those people «working in various forms of genre fiction», but not the «writers who perceived themselves to be engaged in the craft of *belles lettres*» (p.117). The adopters «believed word processing was a way to write more books more quickly»[1] and «to write them better, as Pournelle, Longyear, and others would testify. [...] Whether or not the prose really did get "better" (by whatever standard) is a question I leave for readers of particular authors to debate» (p. 118). Similarly, to nuance the «commonly held belief [...] that novels became noticeably longer after the advent of word processing» the author considers the changes in the marketplace, including bookstore chains and the popularity of movies and television adaptations. The case of Vonda N. McIntyre, author of a number of *Star Trek* and *Star Wars* novels, is exemplary: one of her most productive periods were the five years following the acquisition of an Osborne 1: «Was all of this activity a function of the word processor? Was it a function of changes in the business of selling books? Or did it result from other, less obvious circumstances idiosyncratic to McIntyre's life and career?» (p. 118).

Chapter six, *Typing on glass*, focuses on those researchers and writers who could glimpse the future of word processing already in the late 60's. It all started, also in this case, with Engelbart's Demo in 1968, and the HES (Hypertext Editing System) created by Andy Van Dam and Ted Nelson at Brown University, «something recognizable as word processing, using metaphors like cut and paste to manipulate and edit text on a video display screen» (p. 121). A central figure was Charles Simonyi, who developed the text editor Bravo for the Xerox's Alto from 1972 and almost one decade later moved to Microsoft for giving birth to *Word*. People like Engelbart, Tesler (affiliated to the Stanford Artificial Intelligence Laboratory, he then moved to Xerox's PARC and developed *Gypsy*, a modeless evolution of Bravo), Nelson, Van Dam and Simonyi «were coming to a more or less common set of ideas at about the same time» (p. 125). Among the features of the word processors they contributed to was the WYSIWYG paradigm (later become «the cornerstone of Rubinstein's marketing strategy» for the software *WordStar*, p. 3, and p. 126); but also something which would appear obvious to us, and which was not: writing free-form on-line (p. 124), where "free-form" is opposite to code, and "on-line" is the status of the terminal connected to the central processing unit: «Even actual program code was ideally meant to be edited offline [...]. Investment in systems for editing "free-form" text while a terminal was in its "on-line" status was thus a considerable conceptual leap as well as a professional risk» (p. 125).

Unseen hands, the title of chapter seven, refers to the hands of the numerous secretaries dedicated to word processing. Word processing, as well as the type-writer, had a clear «gendered status» at least up until the 80's (a symptom of the change is the 1983 advertisement for the TRS-80 and *Scripsit*, featuring Isaac Asimov, fig. 15 and p. 141). The paperwork and

[1] Cf. Moravia's opinion in [1]: "Secondo me il computer è più utile per i giornalisti: per loro il tempo conta molto, no? Ma lo scrittore ha altri problemi e potrebbe scrivere benissimo ancora sulle tavolette di Ninive, incidendo la creta"

data explosion of those years needed a different kind of management and, with around 6% of the US workforce employed as secretaries, the new organization implied a concrete «regulation of female bodies» (p. 146). The "social office" was at this point considered a disease and secretaries were relegated in dedicated word-processing centers (mostly places without windows, full of noise and heat). Word-processing itself does not refer to a technology but to a concept, entailing «discrete, operational units subject to formal, algorithmic manipulation; words that were fully atomized and fungible demanded bodies that were equally modularized and interchangeable» (p. 148). But *Unseen hands* refers also to the technologies seeking to make possible an inscription without the use of a physical tool, thus without the intervention of the hands. An «aspiration of total disembodiment» (p. 162), which was already present in the well known Vannevar Bush's paper As *we may think* (1945), foretelling a system that takes input directly from the human nervous system. Research in the field is still in progress and solutions are expected to be revolutionary: indeed, they might be useful for disabled people, as is the case of writer Stanley Elkin and his computer, the «domesticated [...] Bubble Machine» (p. 163).

In chapter eight, *Think Tape*, a prominent role is played by the IBM Magnetic Tape Selector Typewriter (MT/ST), which is «the first mass-market general-purpose typewriting technology to implement something we can identify as suspended inscription» (p. 168). In practice, the IBM MT/ST worked as a type-writer while recording on a magnetic tape storage unit. If we accept it as part of the history of word processing, then the first novel written on a word processor is Len Deighton's *Bomber*, published in 1970; this war novel was written by Deighton and type-written on the IBM MT/ST by his secretary Ellenor Handley. The machine is first of all an office device, much less invoked in literary contexts than in connection with the already mentioned «paperwork explosion», as depicted in the commercial video by Jim Henson released in 1967, with the strong message «machine should work, people should think». For using the word processor IBM MT/ST, people – and more particularly, secretaries – should not only think, but «think tape» (fig. 4 and p. 177): a long string of characters, as opposed to the line units of the type-writer. In this respect, secretarial and office work was close to the artistic avant-guarde; also "thinking tape", «slice and splice the tape cut-ups» is what William S. Burroughs, Brion Gysin and Ian Sommerville were experimenting with (p. 179), and something similar to what Nanni Balestrini did back in 1961 (p. 180).

Computers and word-processors soon became a literary device of their own, as explored in chapter nine, *Reveal codes*: each of the works discussed here strives «to reveal the perennial artifice of the literary, now deeply imprinted by a postmodern poetics of word processing – copying and pasting, finding and replacing, deleting and overwriting» (p. 206). The cases of study include the use of the layout-control features in the first Macintosh, or through software like Quartz; the products of text processing, such as the Autosummary function in Word, re-contextualized in a literary dimension; but also the "mere" practice of word processing, whose influence is visible in the work of different writers, such as Henry Roth, Jesse Kellerman, Italo Calvino, Haruki Murakami, Seth Grahame-Smith.

In chapter ten, *What remains*, examples are provided of writers' computers which died (obsolescence) or were destroyed (fire, hurricanes, etc.); some of them, luckily enough, are still "alive" and have been moved to university libraries and the like (as the well-known digital archive of Salmon Rushdie at the Emory University Library). Doing textual criticism

on born-digital archives requires a set of changing skills, including the digital equivalent of disciplines like codicology (on residual and new media) or paleography (on digital typography). Ethical issues are also considered: is it acceptable to use forensic techniques to recover files with rejected passages that, for instance, David Foster Wallace erased from his hard drive «so as not to be tempted to restore them to the manuscript later on» (p. 221)? Is it not the same operation undertaken by The *Other Updike Archive*, collecting pieces (as floppy diskettes and paperwork) from the much analogical trash outside the author's door (p. 224)? Furthermore, digital objects confront us with a paradox: they are fragile, but make possible to record a great amount of information, both actively and automatically. Features like Track Changes may enable the complete record of the genesis of a work. But – Kirschenbaum reminds us – it is important to consider all the information we do not have: «we do not know [...] whether the clock on the computer was set correctly» and if the author «saved even earlier work to a diskette, now lost», or «if he first began drafting longhand» or kept revising that way (p. 229). Thus, as for fragments and witnesses of a work in any other format, digital objects should be evaluated taking into account the context in which they are produced and "executed". An interesting case of text tracking, equivalent to versioning control, is Max Berry's *Machine man*: the author used Subversion to manage his work and made all concurrent versions of the novel available on his website. «In this model text becomes less like an object or an artifact and more like an event» (p. 230); as Vikram Chandra explains, «There is no enduring object state, there are only events» (quoted p. 231). The model used in Subversion (or Git) only stores a change to the object; thus «to retrieve a given version from a given moment in time [...] means re-creating the text – on demand – from the manifest of events documenting its evolution» (p. 231). These experiments may also give us a glimpse of «dystopian scenarios», opposed to the perception of a digital dark age: those of «perfect memory and total recall» (p. 232), as narrated in the novel *The Circle* by Dave Eggers.

The book's last chapter, *After word processing*, offers a panorama of the present situation: «as for word processing nowadays we mostly just write, here, there, and everywhere, across ever-increasing multitudes of platforms, services, surfaces» (p. 243). If the future of word processing is expected to be varied, we are already experiencing the maximum diversity since the 1980's. As the book documented, the early 1980's saw a number of concurrent products in the world of word processing, firmly overcome by Microsoft Word; its first version is released in 1983 for DOS and in 1987 for Macintosh. Today, a number of solutions for writers are available, including software like Scrivener and those following the model of the Write Room; at the same time, media platforms, webservices and mobile devices (all often supporting MarkDown syntax) offer alternatives. If we accept that «our writing technology do shape our thinking» (p. 243), new practices will stimulate new questions: it is the case of Japanese novels written on cellphones, or of online public writing (for instance, Silvia Hartmann who writes online on GoogleDocs with «thousands of people» watching «the letters taking shape one by one from the keystrokes of her otherwise invisible fingers», p. 239). Dedicated word processors are also coming back, with speaking names like Hamingwrite, as well as virtual keyboard emulating typewriters, as the Hanx Writer. The story of word processing started with a world of alternatives, not always easy to navigate; it has been dominated by Microsoft's software, which defined it, for decades; and it is now back to enjoy a relative variety of possibilities and solutions.

Already in the introduction, Kirschenbaum writes: «Any analysis that imagines a single technological artifact in a position of authority over something as complex and multifaceted as the production of a literary text is suspect in my view, and reflects an impoverished understanding of the writer's craft» (p. 7). On the same lines, towards the end, he explains: «I prefer to err on the side of individual circumstances and plurality rather than hard determinism» (p. 247). This is exactly what happens in the book, which presents a multitude of stories about writers and their use of word processors, accompanied by twenty two images: all these stories create an extraordinary literary history. This richness is also the most difficult characteristic to convey in a review, and the present one falls indeed short in doing so. The stories recounted tell us of innumerable acts – as in the case of a key that when pressed produces an electrical charge causing something to happen on the screen: «This is an extraordinary act, and it is a trivial act. And in that material act lives history, a history that is part of what literature now is» (p. 247). With this essay, Kirschenbaum has widened the borders of literary history. Thinking about the richness of Italian literary and research history in relation to computing and word processing, it is impossible not to hope that a similar endeavor will appear in the field of Italian digital studies.[2]

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[2] See [2], cap. 2.