theories and methodologies

Learning to Read in the Digital Age: From Reading Texts to Hacking Codes

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READING IS STILL OFTEN PERCEIVED AS THE DECODING OF A MESSAGE, AS IF THE TEXT WERE MEANT TO BE MERELY RECEIVED, AS IF IT HAD been composed in a known and invariable code, and as if the meaning were determined solely by the author. Since at least the 1960s, however, theories of interpretation have constructed (literary) reading in a more elaborate and inventive fashion: while each author was supposed to invent a singular language against the background of the common language, each interpreter had to create something new, even interpreters reading the same text, because each interpreter understood the text and its singular language within an ever-changing context of actualization. The model of interpretation nevertheless remained indebted to the activity of deciphering: the ever-changing meaning was to be found in the text itself.

Both the Common Core State Standards Initiative (CCSSI) and the guidelines periodically imposed on European teachers by ministries of education register this evolution from decoding to interpretation. Whether in the form of ambitious (although often hollow) preliminary declarations about critical thinking or in the form of more precise assessment criteria, most of these administrative documents recognize that reading involves more than merely deciphering an unequivocal message. The CCSSI displays insight when it asks high school students, in the standards for English language arts, to "determine the meaning of words and phrases as they are used in a text, including figurative, connotative, and technical meanings [and to] analyze how an author uses and refines the meaning of a key term or terms over the course of a text (e.g., how Madison defines *faction* in *Federalist* No. 10)" (40). In such statements, literacy is clearly defined in terms of interpretation rather than reading: students cannot simply apply a proper knowledge of "the" English language on a text to extract its correct meaning; they must (re)construct a singular version of the language drafted by the singular author to make sense of the text's potential signification.

The presence of such formulations in these types of regulatory documents should be celebrated by literary scholars, since they imply

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PMLA 130.3 (2015), published by the Modern Language Association of America

https://doi.org/10.1632/pmla.2015.130.3.743 Published online by Cambridge University Press

that there can be no real literacy that is not literary. The quasi-obsessive insistence of the CCSSI on "cit[ing] strong and thorough textual evidence to support analysis of what the text says" should also be welcome (38), given the significance of close reading for literary studies. As we enter the digital age, however, a new postinterpretive configuration seems to emerge, not to replace but rather to supplement our traditional conceptions of reading and interpretation. As Lev Manovich (*Language* and *Software*), Lawrence Lessig, and many others have shown, variability, modularity, hybridization, recombination, and remixing are crucial properties of new media. Their main consequence is to explode the very notion of the text. Through the extensive use of the copy, search, cut, and paste functions and the practices of sampling, inserting, transferring, syndicating, and editing, it is not only the integrity and the borders of the text that are altered and need to be reassessed; the reader's relation to readable data is mutating as well. Data (texts, slogans, keywords, tags, tweets, images, icons, logos, sounds, videos) are given only to be reprocessed: to read is no longer only to decipher, nor merely to reconstruct or deconstruct, but also to reuse, reshape, and overcode. The recontextualization that in the age of interpretation altered the meaning of the text (its content) now reconfigures its signs (its form). In this digital context, it is significant to see literary scholars describe literary interpretation by emphasizing the notion of "use" (Felski), by adding "distant reading" (Moretti) and "hyper-reading" (Hayles) to the traditional close reading, and by valorizing (rather than stigmatizing) "continuous partial attention" as "a digital survival skill," against the dogma of attentiveness equated with focalization (Davidson). In the digital age, learning to read means learning to properly and inventively use the (overwhelming) context of whatever is accessible through search engines—that is, of whatever resonates through the dense and unpredictable web of hyperlinks.

This new mode of reading calls for new modes of teaching. As David M. Berry has suggested, we are entering a third wave of the digital humanities, where the greatest challenge consists in collectively constructing sustainable and desirable "computational subjectivities" (*Understanding* 14). Just as this third wave elaborates on (rather than replaces) the two previous ones, the new demands of digital literacy supplement the previous demands of deciphering and interpretation inherited from the twentieth century.

Far from denouncing the emphasis put by the CCSSI on close attention to textual evidence "as a conservative return to New Criticism," as some English teachers have (qtd. in Ferguson), literary scholars could welcome it as promoting a form of intellectual discipline—emanating from and nurturing a valuable sensitivity to the letter of the text—that needs to be supported throughout our various semiotic experiences. Because so many stimuli constantly demand our attention, the capacity to concentrate our minds on strings of characters, humbly to submit our understanding to the logic of their syntax and semantics, is more important than ever. Close reading (as a mode of deciphering) rightly deserves to remain at the core of literary studies—against certain tendencies, prevalent with the dominance of cultural studies, to pay more attention to ideologies, imaginaries, and stereotypes than to the signs themselves. This implies that texts have to be somewhat closed on themselves—artificially but nevertheless necessarily. From kindergarten through grade 12, reading texts (or film sequences or pictures or sounds) provides a basic lesson in humility: the semiotic data are a primary form of otherness; readers must begin by opening themselves to their alterity.

Of course, one cannot approach semiotic data without bringing along one's personality and culture, as well as the idiosyncratic fantasies or common stereotypes often built into language. Even in the artificial context of a

https://doi.org/10.1632/pmla.2015.130.3.743 Published online by Cambridge University Press

classroom, each reader looks at the same text from a different perspective, constructing meanings with relative freedom and creative invention (Citton, *Lire* and *Avenir*; Felski). If the text is necessarily closed on itself by the very act of reading, interpretive activity is generally geared less toward bringing it back to its original truth than toward sharpening its possible uses for present purposes. Reading deciphers (past) signs only to invent (ever-self-renewing) meanings. While signs are data, meanings are always to be updated.

There is another activity that is intensely engaged in reading texts and updating meanings but is less well accounted for by the Common Core standards and similar administrative documents produced around the world. By overlooking or willfully neglecting this other aspect of reading, we miss important opportunities to plug our literary traditions into the current craze for new media and the digital humanities. This silence tells us about the biases (social, political, and anthropological) that permeate pedagogical guidelines and administrative standards—and it invites a consideration of another reading practice.

If indeed reading a literary text consists, as Roland Barthes taught us half a century ago, in learning a new language elaborated by its author as a singular appropriation of our common language, the skills developed by literary studies are also intimately linked to hacking code. Hacking is to be understood here in the broad sense devised by McKenzie Wark in his *Hacker Manifesto*. Wark opposes a "hacker class," made up of all the people who produce the content that feeds the Internet, to a "vectorialist class," those who own the means of accessing and valorizing this content. New forms of class struggles between content providers and access providers must therefore be identified—with the much discussed issues of intellectual property, open-source software, free labor, gamification, and "playbor" as the new hot political topics of the day (Terranova; Pasquinelli; Scholz; and *Luttes*).

One can describe hacking as a form of reading that does not merely use, verify, and reproduce codes as they come but that—in the tradition of Barthes's definition of literature—questions every message, altering, twisting, and updating the meanings one can extract from a set of data and the code that generates these meanings. And since codes generate signals, hackers alter data by overcoding the generative protocols. While reading texts provides an encounter with alterity, hacking the codes provides opportunities for alteration.

In this broad sense, hacking refers less to technical skills than to a form of bricolage (like the tinkering involved in home improvement): while one tends to envision programmers and software designers on the scientific model of the engineer, hackers typically operate on the savage model of tinkering, meeting practical needs with the limited toolbox of whatever is at hand, bending and reappropriating uses rather than engineering products (Lévi-Strauss 20; Citton, "From Theory"). More important, against the economic model that underlies the rhetoric and conception of the CCSSI (as well as the similar regulations inspired by the competition induced by the Programme for International Student Assessment [PISA] for more efficient education among the countries in the Organisation for Economic Co-operation and Development), hacking is geared toward the irruption of exploits rather than the production of commodities.

Alexander Galloway and Eugene Thacker define the exploit as a mode of action (and of activism) adapted to the current diffusion of power through "protocols" (Galloway), which are codes governing the syntax rather than the semantics of what is allowed to circulate in a network (Berry, *Philosophy*). Hacking characterizes an age when "protological struggles do not center around changing existent technologies, but instead involve discovering holes in existent technologies and projecting potential change through these holes. Hackers call these holes 'exploits'"

https://doi.org/10.1632/pmla.2015.130.3.743 Published online by Cambridge University Press

(Galloway and Thacker 81). This mode of behavior resembles what has been performed for decades (and indeed centuries) by literary interpreters, who make it a rule not to change an iota in the texts they read but instead attempt to discover polysemic holes in the texts' explicit message, in order to project potential changes of meaning through the holes.

As mentioned earlier, the main difference among the hacker, the reader, and the interpreter is that the last two refrain from altering their object of attention (the sacralized text), whereas the first modifies not just the meaning extracted but also the form and substance of the code (or protocol, vector, or network). This has countless consequences for the status of the work, which should be understood no longer as a particular text, painting, film, or performance (a work created once and for all) but as a permanent human activity of making sense of our ever-changing world by constantly adapting the work to new needs, new contexts, new struggles (a work in progress).

Just as Alan Kay defined the computer as a "metamedium" (qtd. in Manovich, *Software* 101–06), the hacker deserves to appear as a metareader: an interpreter who reconditions not only meaning but also the work she or he is interpreting. This model of agency is better expressed in the French language, where *interprète* can refer polysemically to a scholar who interprets a text and to an actress or actor who plays the protagonist in a play. Both are readers, and both engage in a hermeneutic experience. But they can also be seen as hackers, insofar as they (discreetly or ostentatiously) overcode the generation of potential meanings by the text: they somewhat alter the text's social existence, the scholar by influencing further readings and the performer by giving the protagonist, for example, brown eyes, short hair, a singular tone of voice, and so on.

What concerns us here most directly in this collective work in progress is that all readers are potential hackers—*if only they are taught to read according to the higher potentials of digital literacy*, which include most prominently variability, hybridization, and remixing. And here we can measure precisely the shortcomings of the Common Core standards and comparable other regulatory documents: they want to program our children to be (well-subjected) readers, not (potentially subversive) hackers. There are good reasons for these principles. But there are equally good reasons to challenge them—namely, a need to enable the *Bildung* of what have now become our computational subjectivities.

Reading texts, updating meanings, and hacking codes are the three main layers and components of the computational subjectivity called for by our digital age. Berry suggests that the brief history of the digital humanities can be mapped in three successive strata, which happen to correspond fairly neatly with these three activities. The first wave attempted scientifically to digitalize existing corpora in order to apply to texts the quantitative superpowers of "machine-reading" (Hayles)—providing merely an augmented way of reading texts. "Digital humanities 2.0" mobilized the metamedium of the computer playfully to generate types of multimedial objects never encountered before—allowing interpreters and artists to update meanings by creatively rearranging and reinventing data. With the computational turn brought about by the emergence of software studies (Fuller) and of "cultural software" (Manovich, *Software*), Berry foresees a third wave of the digital humanities for which the central issue will be the exploration of the computational subjectivity that may define future generations. The computational subjectivity, one could argue, should constitute the main focus for those who devise present and future standards for educational institutions:

> [T]he computational subject would know where to recall culture as and when it was needed in conjunction with computationally available others, a *just-in-time* cultural sub-

https://doi.org/10.1632/pmla.2015.130.3.743 Published online by Cambridge University Press

> ject, perhaps, to feed into a certain form of connected *computationally* supported thinking through and visualised presentation. . . . *Bildung* is still a key idea in the digital university, not as a subject trained in a vocational fashion to perform instrumental labour, nor as a subject skilled in a national literacy culture, but rather as a subject which can unify the information that society is now producing at increasing rates, and which understands new methods and practices of critical reading (code, data visualisation, patterns, narrative) and is open to new methods of pedagogy to facilitate it. (Berry, *Understanding* 14–15)

The Italian critic Arturo Mazzarella has convincingly argued that although computational subjectivity—with its reliance on protocols, data processing, remixing, networks, and virtual reality—seems radically new, its main features have been explored and enacted in literary experimentations for more than a century. It may be shrewd for literary scholars and teachers to reclaim this heritage, in order to show that their field is in the best position to develop the new *Bildung* of reading, interpretive, and hacking skills called for in the digital age.

Literary experience, however, should not be reduced to mental gymnastics. Apart from nurturing certain skills, literature also consists in an ethos—that is, respect for a certain relation to signs and to the people with whom we share them. In the light of this ethos, the discursive genre exemplified by the CCSSI falls short. Let us raise, as a conclusion, two causes for concern about the administrative formulation of the Common Core standards supposed to account for the teaching of reading skills.

1. *The transmission of reading, interpretive, and hacking skills is more akin to weaving a basket than to programming a computer.* In a series of studies devoted to the traditional skills of weaving baskets and tying string bags, the British anthropologist Tim Ingold described how it takes a village to teach young girls how to tie knots with dexterity and efficiency. "It cannot be through the transmission of formulae that skills are passed from generation to generation" (*Perception* 353): computers may be programmed through commands and information, but human beings build skills by imitating gestures and through what Ingold calls "an education of attention" ("From the Transmission"; see also Citton, "Reading Literature"). Critics of the CCSSI are right to denounce the artificial extraction of certain skills from their socioenvironmental contexts, which has the appalling consequences of ignoring the obvious "relation between class size and students' success as readers and writers" and of hoping that guidelines and standardized testing will improve education, while PISA studies show that "mitigating inequities of 'social background' among students' families and . . . allocating extra resources to 'socio-economically disadvantaged' schools" may be much better ways to promote reading skills (Ferguson).

But the problem goes deeper. It is to be located in the very form of the guidelines: the inherently bureaucratic "formulae" of the guidelines constitute an obstacle to the effective teaching of skills—especially since, as we all know, they are administratively linked to the nefarious machinery of standardized testing (Davidson 105–31). One should not forget that CCSSI guidelines are directed not to students but to teachers (and to their evaluators): their main issue is not so much learning to read as teaching to read. Teachers should be encouraged to weave the basket of reading and interpretation through fluid, dexterous, and passionate gestures that pupils could imitate and progressively internalize, moved by a contagious love for inspiring cultural works (Steiner). Instead, the formulaic apparatus of administrative standards and guidelines promotes a miseducation of attention, focusing all eyes on abstract standards and test results rather than on the intuitive attunement of gestures to concrete environments.

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2. *Learning to read in the digital age means learning to operate simultaneously with and against apparatuses.* The true challenge of hacking (as of literary criticism) consists in reaching a difficult and fragile balance between a necessary respect for the code, without which the exploit will not work, and a subversive drive, without which the necessary transgression advocated by Vilém Flusser and Pierre-Damien Huyghe will not occur (necessary because our becoming human depends on it). Learning cannot be equated with conforming to predefined rules of engagement. It must include playing beyond the limits set by existing rules; it requires the somewhat defiant posture characteristic of the "hacker ethic" (Himanen). A most important skill pedagogues should promote, among teachers and students alike, is a creative distrust of the bureaucratic apparatus of standards and guidelines (not to mention standardized testing).

Our populations have been thinking with paintings and books for several centuries, with moving pictures for a hundred years, and now with computers for a few decades. As algorithms geared toward profiling and data mining increasingly compute our minds from the inside, the new *Bildung* must generate computational subjectivities capable of counterreading and countereffecting the way we are read and affected by our new machines.

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