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THE DEFERENCE DUE THE ORACLE: COMPUTERIZED TEXT ANALYSIS IN A BASIC WRITING CLASS

In an article titled "Monsters and Mentors: Computer Applications for Humanistic Education," Helen J. Schwartz recounts the story of Balaam, a Canaanite prophet who, despite God's warning, was riding to Balak, King of Moab, to curse the Israelites. On the road there appeared an angel, unseen by Balaam, but not by his ass, who turned from the way three times until at last Balaam's eyes were opened: he saw the Angel and gave up his journey. ". . . Just as it was Balaam, not his ass, who was responsible for his decision," writes Schwartz, ". . . so must writers proceed from [computerized] text analysis to the human hammering out of meaning. . . . Balaam's ass is still an ass" (142).

These things are indeed a parable, though my story is one in which Balaam's ass is sometimes mistaken for Balaam and sometimes for the Angel of the Lord. That may sound flippant, but it's actually a matter of some gravity: students' deference in the face of "what the computer says" (whether or not the computer is really doing the talking) is as important and consequential as the use of the computer itself. In fact, the great problem I find myself confronted with in trying to tell this story is not knowing which to

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emphasize more—computerized text analysis or the students' response to it—or, for that matter, how to separate them.

In any case, my story needs a bit of background first. Last year I used computerized text analysis in a section of English 0100 at Baruch College of The City University of New York (CUNY). English 0100 is a course for students who, upon taking the CUNY Writing Assessment Test (or WAT), receive combined scores of two or four out of a possible twelve. What does this assessment mean in plain, generally comprehensible terms? Well, here (from the official pamphlet on the WAT) is the score-level description for the higher-scoring students who were placed in 0100:

> The essay begins with a response to the topic but does not develop that response. Ideas are repeated frequently, or are presented randomly, or both. The writer uses informal language frequently and does little more than record conversational speech. Words are often misused, and vocabulary is limited. Syntax is often tangled and is not sufficiently stable to ensure reasonable clarity of expression. Errors in grammar, punctuation, and spelling occur often.

That's a fair description of most of the writing samples that call for placement in 0100, but a few of my students did worse on the WAT, turning in a performance that had to be rated at the lowest of six possible scoring levels:

> The essay suffers from general incoherence and has no discernible pattern of organization. It displays a high frequency of error in the regular features of standard written English. Lapses in punctuation, spelling, and grammar often frustrate the reader.

Students performing at the level *above* the two levels just described are what we call "high-fails": they still fall short, but not drastically short, of minimum writing competence as it is defined throughout City University. At Baruch, we find that a semester in English 0150, the course above 0100, is enough to bring more than half of these students up to snuff; the rest repeat that course. But the "low-fails" placed in 0100 know they have at least two semesters of developmental instruction—and an exit exam at the end of each semester (which they know that only about half the students pass)—before they can enter the credit-bearing composition courses. With attrition being one response to the prospect of this long, hard haul, most of the students assessed as this marginal at the outset of their college careers do not complete the composition sequence, much less earn college degrees.

It is not at all surprising that 0100 students are a demoralized, embittered lot. Nor is it surprising that these students who have been judged and found wanting, focus some of their bitterness on the assessment instrument, the WAT, and particularly on the time constraint. (A student has only 50 minutes to complete the WAT essay.) What did surprise me, in an air-clearing session we had at the beginning of the semester, was how much bitterness was focused on the teachers the students had had heretofore; even after they seemed to achieve some modicum of catharsis and I talked for awhile about what I call the you-can-lead-a-horse-to-water factor, it was evident that they felt more sinned against than sinning, the detritus of a system that did not work, at least in their cases. A clear corollary of this was that I stood before them as another teacher whose methods would be unavailing—all the more so because they had reached that age and stage where, not just in their minds, but in the minds of many teachers, the game is up as far as reading and writing goes (a despairing line of thought Hirsch's *Cultural Literacy* has sanctioned in its way (130, for instance). Measuring the challenge before me, I decided the great issue in English 0100 was really less the students' lack of writing competence than their lack of hope. Writing had ceased to be (and had perhaps never been) an act of communication for them, a process of putting thoughts on paper; instead, it was an onerous chore the object of which was to avoid making mistakes (or what they had learned to consider mistakes). This is to say that writing was not just a distasteful chore for them, it was one they were convinced they could not do, at least not well. Changing this conception of writing required not so much focusing on errors as bringing them into focus, putting them in perspective. My experience with basic writers has confirmed what Mina Shaughnessy said some time ago: "as long as the so-called mechanical processes involved in writing are themselves highly conscious or even labored, the writer is not likely to have easy access to his thoughts" (14). Too worried about what might go wrong within the bounds of the sentence to see the shape of the discourse as an evolving whole, these 0100 students needed to be assured, at the very least, that they were worrying about the right things (and at the right time in the composing process).

This is where computerized text analysis came in—not as a panacea but as an extra resource for someone who needed all the help he could get. Most text analysis programs apply some readability formula and evaluate texts on the basis of lexical sophistication, syntactical maturity, and so on. I needed something more basic; fortunately, our ESL supervisor, Gerard Dalgish, had created it: a program called Error Extractor that could "read" texts

that had been coded for errors, count the errors and kinds of errors, and indicate the incidence of kinds of errors in terms of percentages. In conjunction with this, I used a subprogram of the Macroworks program called the Analyst, which gave me a concordance and a word and character count for each text. Since Error Extractor could count sentences as well as errors, the results of the two programs could give me average sentence length, average word length, a repetition factor (indicating, as a percentage, the proportion of words in the text used more than once), and an error-to-word ratio. This last emerged as the single most important figure for me and for the students—the bottom line, as it were. Whereas figures like sentence length and word length said very little to my students or to me (there just didn't seem to be that much significant variation), that error-to-word ratio (simply the number of errors set over the number of words and reduced to a comprehensible fraction) seemed to say what needed saying most: "Check out that denominator: on average, that's how many words you let your readers get through before confronting them with a major mistake."

Coming up with the figures—and that especially important figure in particular—was really quite simple. Students would produce a text either in class or at home and turn it in to me. I would give it an extended general comment focusing on matters such as organization and development, but my marginal comments would focus exclusively on errors, which I would flag rather than edit. (By "flag," I mean that I would do no more than identify the general type of the error and the general proximity.) Once the papers were returned to the students, it was their responsibility to create, as a computer file, the text exactly as it was when it had been turned in to me. This done, they were to duplicate the file and correct it, cued by my marginalia. (Only once, the first time, did we use class time for this part of the process.) Later, I called up the files, copied them, created my own coded files to run through Error Extractor, and ran the students' files through the word-counting Analyst program. (All of this took twenty to thirty minutes per student.) Error Extractor printed the sentences with their coded errors and gave a tabulated list of the errors. The Analyst gave a word count at the end of an alphabetized concordance. I created my own record of the results, including the crucial error-to-word ratio, and turned over all the material to the students. (See the Appendix for an example of such tabulations.)

Logistics, in short, presented no real difficulty. Pedagogical issues were another matter. For one thing, I have been bandying about the word *error,* which is on any right-minded, composition teacher's list of words to use warily. I should say that I did not and

do not use the word unadvisedly; I spent quite a bit of time clarifying and contextualizing the word in class. Perhaps the most important means to this end was working with the students through the survey results published in Maxine Hairston's "Not All Errors Are Created Equal: Nonacademic Readers in the Professions Respond to Lapses in Usage." As Hairston's survey demonstrated, not all departures from the conventions of Standard American English bother folks, and I promised the students that I would point out genuinely distracting departures, not mere matters of preference.

Such procedural differences notwithstanding, the goals I wanted to help my students work toward were precisely those defined by Shaughnessy in *Errors and Expectations:* to discover a pattern to their errors and, once that had happened, to achieve, not perfection, but significant error reduction. I also wanted to communicate a sense of where editing for errors belonged in the writing process—as well as a distinction between editing and revising—and this is one reason why I had the students create duplicates of the word-processed "originals" before doing any correcting. (Another reason, of course, was that this helped to prevent new errors from creeping in as they would have if the students had done full-blown revisions rather than editing jobs.)

In reporting on the extent to which these ends were indeed achieved by computerized means, I want to be wary of generalizing too much from specific cases, especially because the temptation is so great. I need to tell you (and so remind myself) that I am talking about one teacher's experience with fourteen students, not about the uses and results of computerized text analyses in the abstract.

In the first two weeks of the semester, I had the students do one in-class WAT simulation and one out-of-class essay. The originals were word processed and duplicate files were corrected on the basis of my error-flagging. I then did text analyses of both the original and corrected versions. My expectation, largely realized, was that I would thereby find out about classwide as well as individualized patterns of error, about differences between in-class and out-of-class writing, and about patterns of error recognition and remediability as well as patterns of error.

This does not mean that there were not a host of surprises. The biggest surprise was that, for nearly half of the class, the incidence of errors was higher for the out-of-class writing than for the in-class—this despite the fact that I had given them a week to complete the out-of-class assignment and only 50 minutes to complete the in-class, WAT-like essay. Not much can be concluded from this. I saw little evidence of hypercorrection, and one student

volunteered that he had spent only 20 minutes total on the out-of-class essay. I resolved thereafter to suppose that I could draw conclusions about the effect of writing conditions only if those writing conditions were observed and controlled by me.

Conclusions about patterns of error recognition and remediability drawn from comparing original and corrected versions were also chastening as well as edifying. It soon became apparent that a reduction of errors in the neighborhood of 50% had to be deemed a significant reduction, even cause for rejoicing, and three students managed to increase the number of words-per-error by only one or two the first time around despite the flagging I had done. (When it came to editing the duplicate files, hypercorrection was indeed a problem—perhaps precisely because of my flagging. Students who couldn't find the mistake I had spotted sometimes resolved to fix something, anything in that line whether it needed fixing or not.)

As for the patterns of errors themselves, I cannot stress too much the number of home truths these confirmed. With two exceptions, misspellings accounted for the highest number of errors, with punctuation problems coming in a distant second. These were just the two most dramatic indications of a still more general pattern: a high frequency of a kind of error, as well as difficulty in spotting it and rectifying it, was most likely when there was no correlation to the student's competence as a speaker, when it was strictly a matter of the conventions of *written* English (spelling, punctuation, capitalization, and so on). Even and especially for students at this level, lack of familiarity with the printed word, not linguistic competence, seemed to be the real problem, and so I resolved to make reading a major focus of the course. Finally, individual patterns of error seemed more significant than those that could be treated on a classwide basis. In some cases, groups of students shared a particular pattern. (Speakers of certain dialects, for example, had more trouble with verb inflection than others.) In other cases, a pattern was unique to a particular student. (One student, for instance, used upper casing for emphasis, so that her writing looked rather like William Blake's, if only in this respect.)

Bartholomae has stressed that one of the virtues of error analysis is that, "rather than impose an inappropriate or even misleading syllabus on a learner, we can plan instruction to assist a writer's internal syllabus" (258), and the computerized text analyses did indeed have profound implications for the way the course was taught. For one thing, since patterns and incidence of errors had suggested that lack of familiarity with the printed word was an issue, some emphasis on reading in this basic writing course seemed called for. I'm a chronic bringer-in of photocopied articles

and things-on-hand, but some reading I had done on the interrelation of reading and writing skills (Horning, Tricomi, Smith) suggested that the students should also do all the "outside" reading they could; the research of Stephen Krashen in particular suggested that this needed to be self-motivated, truly interested reading (some Catch-22), so I told the students that, as long as they committed to doing at least an hour of outside reading a week (and kept a journal that, when I reviewed it, suggested they were actually doing that much), they could read anything that got past an editor. (For better or worse, everything from Marvel Comics to Harlequin Romances became grist to that mill.)

I confess that I was aware, much more than the students were, of the limitations of the method. I had no established norms to refer to—hence the importance of the error-to-word ratio as the bottom line. I couldn't say much about where the students were, beyond noting that making one distracting error every six words on average meant making too many errors. Nor could I say much about where the students needed to be, just that an error-to-word ratio of 1-to-12 was twice as good as one of 1-to-6. I'm inclined to think my ignorance worked to my advantage. Lacking norms as points of reference, I invited the students to set their own goals in error reduction. Everyone of them knew that a single error type accounted for at least a third of the errors, and no one doubted that his or her incidence of errors was too high, so each student gave special attention to at least one kind of error, and no one set a goal less ambitious than 50% error reduction. Not all such goals were met, though I was less disappointed with that than I was concerned about the self-enclosed nature of the endeavor. Happily, the results within that circumscribed context were impressive by other standards. All but three of the fourteen students passed the exit exam, which included a team-graded written component as well as an objectively scored component. The average pass rate for 0100 is 50%.

But all this is, in a sense, only half the story. I have yet to tell the students' side, and there the results were at once most impressive and most difficult to measure, bearing chiefly as they do on the affective dimension of this exercise in developmental instruction, particularly on what might be called the deification of the computer and the relegation of the instructor's role to that of Hermes, message-bearer, to that great god Zeus.

When it came time to communicate the results of the text analyses to the students, I had the class do an exercise so that I could meet with individual students about the results. Repeatedly, I was asked such questions as, "What does the computer mean by a

question mark?" And I soon gave up replying, "By a question mark *I* mean to indicate that one or more words have been left out," saying instead, "A question mark indicates an omission." In the students' minds, the computer produced the sacred text; I was only an interpreter.

I had good reason not to usurp the authority the computer had in the students' minds: we had a fine division of labor between us. When we worked on errors in class, I even developed a habit of noting what the computer had "said" about the incidence of a particular kind of error in the students' writing. So what if this was sleight of hardware—a case of Balaam being led by his ass? It got things done. And in those many matters the computer did not pronounce upon (paragraph coherence, for example), I acquired authority by default. We worked as a team, the computer and I. I supposed it helped that I occasionally reminded the students that down the road apiece their writing would again be subjected to the vagaries of human judgment.

I confess, though, that the computer was much more successful at motivating the students than I. In addition to essays and exercises, I had the students do reading, freewriting, and vocabulary journals. These were done and submitted in desultory fashion. But the students went to the computer lab (you'll pardon the expression) religiously. Instructional modules treating certain error patterns were worked through, and over half the class did corrected versions of the corrected versions or created entirely new files and asked me if I would "run them through the computer"—as if that was all it took. I once found a note in my box: "Dear Prof. Otte: I have a new file named Maserati on my diskette. Could you see what the computer says about it?" On another occasion, a student asked me if I would have the computer "proofread" a letter of application she was about to send off. At such times, feeling haunted by the ghost in the machine, I needed to remind myself that this above-and-beyond-the-call engagement on the students' part was a blessing, if not unmixed, and I had the spell the computer had cast to thank for it.

The uses of computers in developmental writing are various, ranging from workbook-on-the-screen to sophisticated interactive programs, but computers tend to be used least for what they have always done best: tabulating and quantifying. I hope I have said enough to suggest that there is much to be gained, particularly from the developmental students' perspective, in such use. As is not always the case with the use of computers in developmental instruction, this was one time that, in the eyes of the students, the initially radiant promise of a high-tech approach never seemed to dim.

Appendix

One Student's Tabulations for the Original and Corrected Versions of the 1st WAT Simulation and the 1st Outside Writing Assignment

WAT 1   14 Sentences; 18.5 Words per Sentence 259 Total & 136 Unique Words (Repetition Factor: 53%) Characters per Word: 4.4; 36 Errors (11 Different Types) Error/Word Ratio: 1/7

Type		Number	Percentage
#	(Number	2	5%
SP	(SPelling)	10	29%
A	(Article)	2	5%
C	(Capitalization)	14	41%
I	(Idiom)	2	5%
GS	(Garbled Syntax)	1	2%
PUNC	(PUNCtuation)	1	2%
WC	(Word Choice)	1	2%
R-O	(Run-On)	1	2%
VT	(Verb Tense)	1	2%
?	(Omission)	1	2%
11		36	100%

WAT 1–C   14 Sentences; 18.4 Words per Sentence 257 Total & 131 Unique Words (Repetition Factor: 51%) Characters per Word: 4.4;   19 Errors (10 Different Types) Error/Word Ratio: 1/13.5

Type	Number	Percentage
A	1	5%
SP	6	33%
C	5	27%
#	1	5%
GS	1	5%
S-V (Subject-Verb)	1	5%
I	1	5%
R-O	1	5%
VT	1	5%
?	1	5%
10	19	100%

Appendix *(continued)*

OWA 1   17 Sentences; 13.2 Words per Sentence 224 Total & 127 Unique Words (Repetition Factor: 57%) Characters per word: 4.2; 11 Errors (6 Different Types) Error/Word Ratio: 1/20

Type	Number	Percentage
SP	2	11%
IS (Incomplete Sentence)	3	27%
GS	1	9%
PUNC	3	27%
?	1	9%
S-V	1	9%
6	11	100%

OWA 1-C   16 Sentences; 14.1 Words per Sentence 225 Total & 127 Unique Words (Repetition Factor: 56%) Characters per Word: 4.4; 7 Errors (5 Different Types) Error/Word Ratio: 1/32

Type	Number	Percentage
SP	1	14%
IS	2	28%
PUNC	1	14%
?	1	14%
C	2	28%
5	7	100%

* Note: the Error Extractor program rounds off percentages so their total is not always exactly 100.

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