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Author(s): Rosanne G. Potter

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# Literary Criticism and Literary Computing: The Difficulties of a Synthesis

Rosanne G. Potter

*Department of English, Iowa State University, Ames, Iowa 50011*

**Abstract:** Currently most literary critics reject the use of science and technology to gain information about texts, while most computer text-analysts have become absorbed in science and technology and forgotten they were seeking information about literature. Whether these two trends will continue into the 1990's remains to be seen; that they explain a good deal about the world we work in now can, I think, be demonstrated. This essay looks at the questions of what literary computing could offer to literary critics, why computer users get lost in scientific jargon, what happens when text becomes input and, most importantly, what happens when text becomes output; it closes with a discussion of why the synthesis will be so difficult.

**Key Words:** literary computing, literary criticism, text input, statistical methods, textual analysis, polemics.

Practitioners of literary computing must consider whether we wish our work to be taken seriously in the larger field of literary criticism or whether we are by default simply opting out of criticism. Our current situation is clear. Most traditional literary critics remain blissfully ignorant of literary computing. They may have heard of the older analyses of vocabulary richness used in authorship detection studies by researchers with historical interests, e.g., Mosteller and Wallace (1964) and Morton (1966, 1978), and they surely know that computer concordances can be found cluttering up library shelves<sup>1</sup>, but beyond these pinpoints of information, most critics are about as likely to quote a computer study as a biochemical one.

Thus, not being "taken seriously" is the least of

our problems; for the most part, our labors might as well be going on underground. Computing, in the form of Computer-Assisted Instruction, has made it into the fields of composition and technical writing research, but inroads into *PMLA*, *Critical Inquiry*, and *Signs* remain to be made. We publish in our own journals, give papers at our own conferences, and, for all intents and purposes, might as well be linguists as far as the Stanley Fishes, Harold Blooms, Elaine Showalters, Sandra Gilberts and Susan Gubars are concerned.

To emerge from the welcome and, for years, necessary shelter of *CHum* and the proceedings of our various conferences would open our work to testing in the marketplace of literary critical ideas. Are we ready? After all, what have we to gain (except safety!) from continuing to talk mostly to each other? Admittedly, "each other" grows more numerous each year, but gradualism, whatever its merits may be, does not address the conceptual issues facing computer-using or computer-ignoring students of literature. Writers on both sides of the dichotomy may wish to consider what it would take to achieve a synthesis between these oppositions and whether the anticipated gains are worth the effort.

As I see it, two factors have prevented computer analysis of literary texts from being taken seriously by literary critics: (1) the utter lack of training in, or appreciation of, scientific methods among mainstream literary critics, and (2) the almost universal tendency of computer analysts to get lost in the jargons of programming and statistics. What we need is a principled use of technology and criticism to form a new kind of literary studies absolutely comfortable with scien-

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*Rosanne G. Potter is associate professor in the English Department at Iowa State University, Ames, Iowa 50011.*

tific methods yet completely suffused with the values of the humanities. The synthesis will, needless to say, be very difficult to achieve and may not be worth the trouble to the writers who are “doing very nicely, thank you” on their opposite sides of the fence.

### **The Theses of Intuitions/The Antithesis of Facts**

Many literary researchers moved to scientific approaches to texts because they were unconvinced by the high-wire, speculative balancing acts that passed for criticism during their years of graduate education. The staple diet during the 1960's and 1970's consisted of critical assertions based on insight and intuition which, spectacular as they sometimes were, appeared to be acts of sorcery. They were not tied to rational and therefore learnable methods, but were the effulgencies of brilliant theoretical minds, no more imitable than personal style is. Studying with these high-wire artists was like watching Sherlock Holmes solve crimes without hearing his explanations to Watson; the mysteries were resolved, but the detectives never expatiated on the clues and the trails of inferences that led to their deductions.

The “dancing on the ceiling” literary criticism of their elders made many new Ph.D.s long for a new kind of “just the facts, ma'am” literary criticism. Certainly, the desire for a fact-based criticism was not the only response to professors who were mental Fred Astaires nor the only route to computer studies of texts; rather it was just one of the many paths to the palace of numbers and provability. However, careful collection of data and the precise statement of earned generalizations only, though well-grounded and learnable, can get boring, especially if these methods result mainly in essays dotted with correlation tables or chi square charts. A synthesis of these two extreme strategies of explanation, if it is possible, would offer a more intelligible approach to the study of literature than has usually been attempted.

If those of us on the computing side really think that the future is ours — all literary studies will be scientific by the year 2000 — we can, I suppose, afford to stalk away from the unenlightened, figuring that they soon will be scrambling to catch up with us. Certainly, recent history encourages that kind of avant-gardism. A simple comparison

of the number of professors who in 1986 routinely composed their scholarly papers on microcomputers with the number who in 1980 wouldn't type on anything more advanced than an IBM Selectric points to a 1990's world of “statistics for everyone” via the personal super-computer. On the other hand, if we note: (1) that we are *not* the first generation of computer users who have pursued literary critical insights, and (2) that the changeover to scientific methodologies has not completely succeeded even in a social science like psychology (in the 50 years since Watson changed the terms of the discourse), we may be less sanguine about our imminent triumph over all other criticisms.

### **Why have Literary Critics not Taken up Literary Computing?**

My answer here goes to the root of the university system within which we function: a world of segmentation, specialization, and isolation. Truisms by the score document the many negative consequences of the division between the humanities and the sciences. For decades, the scientific disciplines (including the social sciences) have been developing, modifying, and refining tests, measurements, rules, standards, and methods, while we in the humanities have managed to keep ourselves and our students untrained in the use of these generally useful tools. As a discipline, we have bought the “verbal-versus-quantitative” division of human brains and have, as a result, incapacitated ourselves for an entire range of possible understanding through our studied ignorance of basic intellectual skills and experimental methods. Most Ph.D.s educated in literature departments find that their lack of training in scientific methods unfits them for using the intellectual tools provided by statistics, while their lack of patience with technological challenges unfits them for using the electronic tools provided by computer science. Despite the ubiquity of microcomputers on contemporary campuses, most literary scholars would dismiss using a computer, micro or mainframe, as a tool for solving their literary critical problems for a variety of good and not-so-good reasons.

Those of us who have been working in this general field would be less than honest if we did

not admit that, regardless of the humanists' dyed-in-the-wool ignorance, the people and the machines are really not ready for each other. The newness of literary computing as a discipline means that its discoveries are as yet poorly publicized; the existing software packages have been designed to meet the research goals of individuals rather than of all literary scholars; and, probably most important of all, the primitiveness of mainframes on the one hand (still so user-unfriendly), and of microcomputers on the other (still so incompatible, infernally slow, and lacking in appropriate applications) restricts their use to those with unlimited tolerance for frustration, those who are challenged rather than stopped by constant, newly-arising technical difficulties. But even these explanations appear excessively theoretical when compared to the most practical impediment to the application of high-level computer methods to literary texts: the lack of a truly easy method of text entry. Although teaching a Kurzweil machine to "read" a text sounds a great deal easier than typing whole texts into some computer's memory and much less onerous than the old key-punching of cards, most scholars simply do not see the value of doing, or even overseeing, this kind of labor. Until everything has been encoded, or until encoding is a trivial part of the work, the everyday critic will probably not consider computer treatments of texts. Only when those of us in literary computing make our results accessible and compelling will we lure others into facing the technological challenges.

### **What Can Literary Computing Offer to Literary Critics?**

While methods have varied, the same motive, the desire to account for texts, has guided criticism for several generations of literary scholars. Accounting for texts, using historical scholarship, new critical, structuralist, deconstructionist or feminist criticism, means bringing as much useful information and insight as can be assimilated to the coherent reading of literary documents. Literary computing does not replace historical scholarship, though it can sometimes aid in the collection and orderly presentation of historical information. Literary computing does not replace new criticism's emphasis on the text as central focus of

study; in fact, it permits the closest possible examination of textual surfaces. Literary computing so little disputes structuralism that it creates whole new vistas of structures previously invisible to the unaided human eye. To all of these other types of critical discourse, what literary computing offers is evidence, precision of measurement, and universally-accepted standards of validity. All of these services or supports should, on the face of things, be of interest to traditional criticism; they are not replacements or supplantings of other methods but aids to the more convincing implementation of those methods.

A basic difference separates this import from earlier borrowings. In the past, literary criticism has been enriched by new ideas from related humanistic fields — philosophy, psychology, sociology, even religion. Literary critics have been glad to borrow terminology from anywhere and everywhere and occasionally to follow alien methodologies as well, as long as they came from culturally-accessible fields. In our own day, professors of literature indulge in what John Ellis (1974) somewhat mockingly called "wise eclecticism" — a general tendency to believe that if you can compose an interesting argument to support a position, any well-argued assertion is as valid as the next one. A scientific literary criticism would not permit some of the most widespread of literary critical practices. For instance, a commonplace in non-scientific criticism, the practice of comparing the style of two characters from different works, reveals itself as methodologically invalid within the rules of statistical analysis, since the two characters do not share a common context for comparison.

The vast mass of literary criticism takes texts for granted, cites earlier critics as precedents (rather like lawyers citing early decisions, not because they prove anything, but because they support the argument needed for this case), and rarely considers repeating or rechecking earlier "discoveries" (usually simple assertions). Making verifiable statements and/or re-verifying the statements of earlier researchers remains the province of the historical scholar and the bibliographer. Our profession, if the program for the Modern Language Association Convention can be taken as any guide, does not center around

"research" in the sense of replicable, scientific, controlled analysis. Literary critics tend to assert new models which are either accepted as "fruitful," rejected as "far-fetched" or, more commonly, ignored. In the field of literary criticism, the truth of assertions is not valued. Most generalizations proceed from hunches, develop from cogent examples, and do not require testing or proof. Those who have moved over to a scientific approach to research would have no trouble proving these indictments of standard literary criticism. On the other hand, a similar string of equally damning indictments could be leveled against the scientific researchers by literary critics, if they were even aware of our existence.

### **Why do Computer Users Get Lost in Scientific Jargon?**

Those who have, for whatever reasons, overcome the common obstacles on the path to literary computing usually find themselves so far from standard literary criticism that they no longer care whether they have a place in this area of literary studies. As anyone who has struggled to learn a new technical vocabulary knows, the use of those new words (no matter how they once alienated one's own understanding) becomes so second nature to those who understand their references that it is almost impossible to hear them as anything other than the "right" words. Getting back to the time when one did not know what other people were talking about when they mentioned "the mainframe" is like getting back to the time when one did not know how to use the word "metaphor." Defining each term whenever it appears before a new audience seems pedantic, even if one could keep track. So getting lost in a jargon is nothing more than a clear sign of feeling comfortable in that field. Should one write for other specialists, or to influence those who are as yet not specialists? This question arises, of course, for every writer, but in the field of literary computing remarkably little attention has been paid to the consequences of writing for adepts only.

The short history of literary computing has consisted of an almost unbroken stream of literature Ph.D.s who, having retrained themselves in computer science and statistics in order to

accomplish some literary task, find themselves moving bag-and-baggage into linguistics, natural-language processing, or database design (to name just three of the extremely common career paths) and thus decamping entirely from the field of literary criticism. Their adopted disciplines have brought more power to them; they in turn have brought their training to bear in significant ways in these distant fields. A gain all around, one might think, except for literary criticism, which has great need of the scientific methods that can be learned in the quantitative disciplines.

More serious than the fall into jargon, the wholesale acceptance of the values inculcated by statistics leads students of literature to begin to doubt the validity of the concepts they learned with their oh-so-unsystematic literature professors. When that begins to happen, these researchers, rather than increasing their scope by adding tools to the tool kit, simply trade one set for another. To my way of thinking, at least some of those humanists retrained in quantitative fields need to employ the new focus that different sets of eyeglasses can give to gain new perspective on their work, instead of using those glasses to blink out the values of their own training.

Literary criticism could be at a new crossroads, a moment when vision is extended into scientific areas, not just to ransack them for useful metaphors, but to use their ways of seeing in order to see better *what literary critics are interested in seeing*. This last point is crucial, crucial because it is so often lost in the excitement of seeing what the statisticians see.

In order for either the literary critics or the computer text-analysts to change, we must all get very clear about what happens when a computer has a go at a literary text.

### **What Happens When Text Becomes Input?**

When text becomes input, new sets of rules dictated by the two remote disciplines assert themselves. Computer Science contributes the rules defined in the text-editing program, which in turn are dictated by the realities of computer string-manipulation. Statistics contributes the norms and standards of "reliability" and "significance" which govern all statistical analysis. As literary critics, we are no longer dealing with just



the words on the pages as left to us by the collaboration of the author, editor, printer, and publisher, but with segments of those words, frequently tagged with markers not part of the original text, and edited to exclude accidentals or other features that the user does not want to analyze. First, line-length restrictions in most text-editing programs necessitate the segmentation of the text. Then, certain obvious facts about the text can only be made easily recognizable to the computer program through the addition of markers. Finally, many indifferent details need hardly be entered if they will neither be counted nor output at any later stage. Thus, before we even start to use the computer's power to categorize the text, we have modified the text to suit our needs. At this point many traditional, "the-text-is-sacred" scholars might feel that their ideas of *the* text have been violated. Scholars of this persuasion might have to do some changing of their definitions to accept computer text-handling.

Needless to say, computer studies of literary texts base themselves on different definitions of "text." The text for a concordance compiler is every word in the work to be concorded, arranged in a chronological string from the first word to the last. The text for a database builder consists of all the words that are to form the database (from one work or many) arranged by category (types and/or tokens, lemmatized or unlemmatized, parsed or unparsed) and retrievable from lists. The text for a user of my COMP STYLE package consists of speaker-identified lines of dialogue in no more than 500-character-long speeches. Every computer treatment redefines the text (structures the input) to create the output, textual and/or numerical, most useful to researchers (i.e., what we want to see). Once these basic realities about what happens when text becomes input have been accepted without flinching, one can move on to the much more serious question of what happens when text becomes output.

### What Happens When Text Becomes Output?

Instead of answering this question in general terms, I will give an illustration from my own research and then draw some generalizations from my own experience. The knottiest problem at the core of my own research concerns what to do with

all of the output. I can decide how to prepare the text for computer analysis; I can, with professional assistance, understand and get the appropriate statistical analysis applied to my texts; and I can report the large-scale results with a fair degree of clarity (Potter 1980, 1981, 1982, 1985), but so far I have not devised a method for arriving at and reporting the mid- and close-range discoveries that are currently buried, waiting to be made, in the mounds of output.

The ideas of mid-range and close-range have to do with how much can be covered by the generalization. A large scale generalization asserts about Modern Drama, a mid-range generalization asserts about Shaw or *Major Barbara*, and a close-range generalization asserts about scene 4 of Act 2 in *Mrs. Warren's Profession*.

Statistics gives many tools for reporting the long-range, large-perspective information, for reporting with clarity and certainty results that could be, and have been, replicated (Merideth, 1985). Among other things, my study of the use of syntax to define characters in modern drama has shown that: dominance is the character trait most easily recognized by readers; dominant characters use a consellation of syntax which includes high use of questions, imperatives, and definitions and low use of fragments; and high use of adverbs have been on the decline in the period between the 1890's and the 1970's while in the same period fragment use has increased. These assertions about modern drama would not have been possible without the scientific study of this sample. The twenty-one literary texts I worked with (and their relations to one another) have certainly been illuminated by a precise statistical accounting of their syntactic features, but a problem remains. After all the scientifically valid, significant, and reliable descriptions have been made, even the specific output created by my own applications has not been exhausted.

Like many researchers in all scientific fields, I know that the most exciting discoveries may still be buried in piles of printouts or on many different computer tapes, simply waiting to be uncovered. Scientific discoveries proceed frequently from nothing more than someone's decision to focus on the exact parts of the data that make a certain inference possible. The fundamental problem for

the literary critic turned computer text analyst, like the fundamental problem for research scientists in general, remains the wealth of gathered data that goes unreported. The embarrassment of riches is both psychologically frustrating and methodologically confusing, especially for the literary critic who is not trained in taxonomical methods of classification. One has gone to great lengths to gather data, and to analyze it using the proper tools, then writes, and publishes papers about the generalizations that can be drawn from the gathered data; yet one has only begun to investigate, much less reveal, the mysteries still buried in the mountains of output.

The tools for reporting the higher-level generalizations have already been calibrated by mathematicians and statisticians; so, though it may be difficult for humanists to learn how to use these tools, the task can be accomplished with dogged resolve. Quantitative methods can reveal to humanists answers that they would never have sought but that, once found, make possible new insights about how literary texts work. My initial work on first acts of plays was not designed to show changes across the period of modern drama, or differences between Irish writers of English and American writers of English, but once the numbers were there and the standard ANOVA tests had been applied, patterns began to emerge. The tools for reporting the middle and smallest level of generalizations, however, cannot be calibrated by outside scientific fields, because they must measure qualitative differences between literary works, within parts of works, within the whole output of one author, or between different authors. Some of these comparisons can be made using quantitative means, others cannot; but regardless of what quantitative analysis can contribute, the point finally comes at which all that is quantifiable has been quantified, and yet output remains to be described, classified, and understood.

At this point, the apparently easiest thing is to try to find a new statistical test that will account for more of the data. This expedient will certainly sound absurd to anyone who has not worked on a large statistically-analyzed project; the lure and temptation of better numbers and new tests can only, I am certain, be felt by those who have

successfully mastered these tools and wrung unexpected, yet intuitively confirming, results from them.

But rather than new tests, I must next begin a series of inductive leaps, leaps justified by years of careful play reading, and leading to the assertion of new critical terms. Once these have been formulated, their validity can be checked by repetitive testing against the already-collected data. These tests will be critical, not statistical, measurements of how much the newly-calibrated tools account for in the overall scheme of character definition in dramatic texts. It is time now for me to come up with my equivalents of the "reliable and unreliable narrator" (Booth, 1961), and though computing methods will have made it easier for me to marshal evidence to support the terms I come up with, the computer will not come up with the terms, no matter how well it is programmed. My situation is not unique; other computer text analysts, Paul A. Fortier, C. Ruth Sabol, and John B. Smith to name the ones who come most immediately to mind, each in his/her own area faces the same problem. They too must come up with valid, transferable, middle-range tools that will work not only on the subjects of their own literary investigations, but on other works in the same genres or on the works of other related writers. It is only when each of us makes this generalizing step that we will rightfully move out of our specializations and into the larger world of literary criticism.

### **Why Will the Synthesis be so Difficult?**

Gathering information takes skill, analyzing it from the telescopic perspective takes discipline and rigorous adherence to standards, analyzing it from the microscopic perspective takes clarity of focus and that much maligned quality, insight, and all of this takes a long time! One must figure out how to focus the microscope using the exact degree of magnification necessary to make the related features emerge while making the unrelated ones merge into the background. One might also have to figure out which segment of the slide merits detailed study; years of trial and error may be required before that "click" of discovery happens.

Knowing when to go to quantitative method-

ologies and when to walk away from them, that is the trick. If we are to remain literary critics, to have some impact on our own profession, we cannot transform ourselves into students of artificial intelligence or of natural language processing. We must know when to stop using technology, when the products of technology must be brought back to the library carrel or solitary study for the kind of analysis that only the unaided human mind can apply.

Computing, like any other engrossing, self-reinforcing, and habitual behavior, usually becomes addictive. Those of us who are addicted are in the very delicate position of wanting to "hook" others with our habit at the same time that we are realizing that we must "unhook" ourselves. What we are up against is the need for moderation in all things, computational and critical. Either extreme decision, to launch oneself into interstellar computer studies or to reject computers completely, proceeds from the desire for choices between black and white realms. The moderate choice of using computational methods for as long as they are relevant can only be made if we remember, and do not devalue, our own skills as humanists. The world of literature is full of ambiguities, of categories that are not mutually exclusive, and of conclusions that are inclusive rather than exclusive. Exactly because the texts we care about analyzing do not meet statistical norms and have to be juggled around to fit the computer's string-handling conventions, we must resist the temptation to apologize for literature. If we stay firmly in control of the electronic tools, the scientific disciplines *can* bring a higher truth value to the practice of literary criticism. When scientific methodologies lead us into publishing lists of tiresome and meaningless details, we mistake the accidental for the essential. Let us reclaim the brilliance of Holmesian deduction by being solidly rooted in evidence; then our intellectual discoveries will seem "Elementary, my dear Watson."

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### NOTE

<sup>1</sup> The Library of Congress lists 179 published between 1968 and 1985.

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