

Stylistic Variants in the *Roland*

IF THERE IS ONE QUESTION that has dominated medieval epic scholarship during the past one hundred fifty years, it must be "What was the origin of the chansons de geste?" And if the terms most often used in this debate have changed from "traditionalist" and "individualist" to "oral tradition" versus "literary creation," the question still remains unanswered: What was the origin of such a work as the *Roland*, the earliest surviving version of which dates from at least three centuries after the events upon which it is based? How does one explain such a silence des siècles?

As every medievalist knows, nineteenth-century scholars generally believed that a purely oral tradition kept alive and embellished poetic versions of the legend of Charlemagne through the years until certain extant versions were written in manuscripts, some of which survive today. This explanation, so admirably defended by Gaston Paris in his *Histoire poétique de Charlemagne*,¹ has, for many scholars today, been supplanted by another. Joseph Bédier, in his *Les Légendes épiques*, argued that the chansons de geste were not derived from oral tradition, but that were the written creations of individual poets who lived long after the events they described.²

One of the major arguments used by Bédier to justify this individualist hypothesis is the aesthetic coherence, the unity of thought found in the structure of the Oxford *Roland*. Ever since Bédier—and indeed throughout the entire debate—most scholars have preferred to use aesthetic justifications for the conclusions they have advanced. Larry S. Crist, for example, recently presented a structural analysis of variations in a formulaic line in the *Roland* in order to conclude that the artistry shown here is so great that the poem had to have a written origin.³ Similarly, in a paper presented at this conference, William Calin has questioned the oralist hypothesis in order to defend "literature."⁴ But however much such presentations as these add to our knowledge of the aesthetic principles that govern the *Roland*, they really do not resolve the question of its origin.

Perhaps the problem lies in the attempt to use aesthetic considerations as a basis for making factual judgments. That can lead to problems, as the debate over the so-called "authenticity" of the Baligant episode shows. Was that section part of the earliest version(s) of the *Roland*? On the one

hand, one can argue that without the Baligant episode the poem would show a perfectly balanced tripartite structure devoted to a single theme, treason: its preliminaries, its execution, and, finally, the poetically inevitable punishment of its perpetrators. Each section is so closely linked to the other two sections that they form a sort of literary triptych focussing on the central episode, the martyrdom of Roland and the other members of the rear guard. Such an interpretation would lead one to conclude that the Baligant episode is out of place here, that it is a later addition to what was originally a more aesthetically unified Roland. That interpretation would also, of course, imply multiple authorship.

On the other hand, aesthetic considerations can similarly lead to an opposite view of the Baligant episode. If we consider the *Song of Roland* to be nothing more than the story of a family quarrel in which Ganelon is punished for having plotted the death of his stepson Roland, then the Baligant episode adds nothing to the poem. But if we consider that the epic deals with a much broader question, the triumph of Christianity through the defeat of Evil, then the Baligant episode becomes an integral part of the poem. Charlemagne, emperor of Christianity, proves the superiority of that religion by his vanquishing and killing his pagan counterpart, Baligant. It is only by that act that the death of Roland and his 20,000 men can be truly avenged. The battle of Roncevaux foreshadows—indeed requires—the cataclysmic engagement between Charlemagne and Baligant, an encounter which, in turn, confirms the righteousness of Roland's martyrdom. The relationship between those two sections is then counterbalanced by the relationship between the first and last sections, the plotting of treason by Ganelon and his poetically inevitable punishment.

The authenticity or inauthenticity of the Baligant episode is important in this debate over the origin of the Roland, for if that section can be shown to have been an integral part of the first version of the poem, it will imply a unity of authorship and a consequent weakening of the oral/traditionalist position. The converse is equally true. Yet if aesthetic considerations lead to contradictory conclusions, perhaps a different approach to a solution needs to be tried. It was in this light that several years ago I began a statistical analysis of the Roland, the initial results of which showed that the poem without the Baligant episode had a consistency of style which changed significantly in the disputed section.⁵ Moreover, the feature analyzed which gave this result—the distribution of high frequency vocabulary—is something impossible to imitate intentionally, and the probability that such a distribution could have occurred by chance can be

calculated to be on the order of one out of a hundred. Statisticians usually consider a one out of twenty probability as significant and a one out of a hundred probability as highly significant. The most logical explanation for the results of my analysis, then, is to assume either different authorship or, at a minimum, a single author composing at different points of his life. In either case, the evidence makes it difficult to argue in favor of the idea that a single poet wrote the *Chanson de Roland* at a single moment in time: the traditionalist interpretation seems to be the most probable explanation of what actually happened.

Other recent studies have also tended to confirm those initial conclusions. In her work, *Les Enumerations des personnages dans "La Chanson de Roland,"*⁶ Kerstin Schlyter has argued that not only is the Baligant episode different from the rest of the epic but that the only way to explain the impossibility of making a coherent stemma of the Roland is to assume an oral tradition. More recently, D. J. A. Ross has concluded that in the Digby 23 manuscript "all the muddle and confusion in the account of events before the battle [of Roncevaux] can mean only one thing: a revisor has been at work... recasting and adding elements to the story." Ross sees in the surviving manuscript the framework of an older version of the poem, a work "in which the course of events differed relatively little from what Einhard tells us actually happened on that fatal August 15, twelve hundred years ago."⁷ Finally, there is the evidence derived from linguistic analyses made by Robert A. Hall and Alice Colby-Hall. Between 1959 and 1963, Hall published three articles in which he demonstrated that, on the basis of phonetic change revealed in different assonances of the Roland, it is possible to detect at least two different moments of composition in the poem.⁸ In 1977, Colby-Hall succeeded in pushing this analysis even further: she detected a third linguistic level in the Roland, or three moments of composition for different parts of the epic.⁹ Of particular interest to us is the fact that while the two strata detected by Hall are found in both the Baligant and the non-Baligant sections, the stratum detected by Colby-Hall is found only in the non-Baligant section. That implies at least four stages in the composition of the Roland as we know it in the Digby 23 manuscript:

1. An early version which did not include the Baligant episode. Vestiges of this version are seen in those laisses of the Digby 23 manuscript which show Colby-Hall's third stratum.
2. Another version which included the Baligant episode. This text must have been composed before the two subsequent versions

listed below, since the linguistic features of those texts are seen in both the Baligant and non-Baligant sections of the Digby 23 manuscript.

3. A third version which included the Baligant episode and other *laissez* revealed by Hall's oldest stratum.
4. A subsequent version which contained traces of all the versions described above, but with additional *laissez* the presence of which is shown by Hall's second (newer) stratum.

The complete analysis of these different versions will have to await the publication of the Colby-Hall study which, it is to be hoped, will show which *laissez* have been so dated. Yet, at the same time, the contradictory results which have sometimes been seen in the dating of medieval texts by historical linguistic analysis¹⁰ make it desirable to consider additional evidence.

It is in that context that I should like to describe some further computational analyses I have made of the Roland, analyses which not only tend to confirm the results previously obtained but which also give us insights into the structure of the poem. In so doing, I shall also be describing a series of computer programs which might well be used by other scholars in research into new areas.

The most common type of objective study of written style is an analysis of an author's lexicon, for the obvious reason that such work requires little preparation of the data and no mathematical or statistical analysis of the results. A computer concordance, such as Joseph J. Duggan's concordance to the Roland,¹¹ is easy to make, yet it provides a very useful research tool. At a higher level, however, it is sometimes also profitable not only to know where certain words can be found in a text but how they are distributed between various characters and the narrator. It is interesting to know, for example, that both Roland and Ganelon use a form of the verb "to love" five times each (Roland in vv. 1092,1208,1377,1591,2001; Ganelon in vv. 306, 323, 325, 397, 560), while Charlemagne uses the verb only twice (vv. 3406, 3598), and then only after Roland's death. The verb "to hate" on the other hand appears just once in the poem (v. 1244), as the poet describes an emotion felt by the Archbishop Turpin. This information can, of course, be obtained from a concordance with a bit of effort, but a program WORDSPEK, written by Stephen V. F. Waite at Dartmouth College and adapted for use at the University of Manitoba, produces this information much more easily. A normal run of the program gives an alphabetical list of

words as they appear in a text, printed down the side of a page. Across the top of the page are the names of the various characters in the work. Under the names are then printed the line references to places where a given character says the words listed at the side. The different references thus form a sort of bar graph showing the distribution of vocabulary among the characters in a given work. (See Table I, an excerpt modified to exclude characters which do not speak the words listed.)

Such a chart is useful for making literary analyses of works like the Roland, but the chart cannot help to determine multiplicity or unity of authorship. A simple modification to the original data, however, can give new information. If one presumes different authorship for the Baligant episode than for the rest of the poem, it is also possible to assume that the lexicons of the two authors would be slightly different. By using WORDSPEK not to indicate the vocabulary of different characters in a text but rather to indicate which words appear in different sections of the text, it is then possible to determine what lexicon is unique to a given section. When this was done at the University of Manitoba, we added a further refinement in that the analysis was performed on a lemmatized version of the Roland, that is, a text in which the 29,352 words of the Digby 23 manuscript were replaced by dictionary forms, to group together spelling and paradigmatic variants. (A lemmatized version was also used to generate the excerpt given in Table I.) The results showed that out of a total vocabulary of 2,043 words in the whole of the Roland—that is, 2,043 dictionary entries, each one of which might have more than one form—only 783 words are found in both sections. The Baligant section has 307 words exclusive to it, while the rest of the poem has 953 words exclusive to it. To put this in another way, 38% of the vocabulary of the Roland is common to both parts; 15% is found only in the Baligant section; 47% is found only in the rest of the poem.

To a certain extent, this separation is due to context. For example, critics have pointed out that there is no mention of Baligant outside of that section, and it is easy for anyone to make a list of several other characters found exclusively in one section or another. But how do we explain the fact that while one-word for "horn," *olifant* is found in both sections with the same relative frequency (Baligant: 6 occurrences in 7430 words; non-Baligant: 17 occurrences in 21,929 words), another word for "horn," *cor(n)* is found exclusively outside of the Baligant section, eight times. It seems that the person or persons responsible for the Baligant section simply did not have the word *cor(n)* in their current productive vocabulary and,

| Ael | Bra | Bla | Mar | Bal | Sar | Gan | Cha | Rol | Tur | |
|------|------|------|------|------|------|------|------|------|------|-------------|
| 1195 | 2719 | 0047 | | 2678 | 2701 | 0597 | | 0770 | 0331 | destre |
| | | | | 2809 | 2781 | | | | 0340 | |
| | | | | | 2795 | | | | 0466 | |
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| | | | 2743 | | | | | | | destreindre |
| | | | | | | 3759 | 0741 | 1010 | 0809 | destreit |
| | | | | | | | 3456 | | 0815 | |
| | | | | | | | | | 3126 | |
| | | | | | | | | | 3417 | |
| | | | | | | | | | 3420 | |
| | | | | | | 0399 | | | 0347 | destrer |
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| | | | | | | | | | 0792 | |
| | | | | | | | | | 1001 | |

Table I: Sample distribution of vocabulary by character.

instead, used the word *olifant*. That hypothesis is strengthened by the fact that the verb *corner* is also exclusive to the non-Baligant section, where it appears nine times. In the Baligant section, the same idea is expressed with the verb *soner*. Other examples of a choice between two words to express an idea could be cited where the selection is influenced by the section in which it occurs.

If one examines the whole of the vocabulary that is exclusive to one section or the other, one finds more general distinctions. The Baligant section is characterized by a sense of materialism or, perhaps, harshness. Numerical adjectives such as *terce*, *quarte*, and *disme* are exclusive to that section, as is *laidement*. The military division, *eschele*, is used twenty times in the Baligant section but only twice in the rest of the poem. On the other hand, words of friendship and human interaction, such as *ami*, *assembler*, *culpe*, *entendre*, *juindre*, and even the modifiers *tendre* and *dulcement* are exclusive to the non-Baligant section, as are such less interesting words as *argent* and *isnel*.

The general impression thus furnished by the WORDSPEK program is that the style of the Baligant episode is dissimilar to the style of the rest of the epic. The extent to which that general impression can be quantified by other, more statistically valid measurements, is the goal of another set of programs created specifically to provide information for distinguishing authorship. The programs were written for this study by David R. Young at the University of Manitoba under a grant provided by the Canada Council, and they are based on programs developed by Robert S. Wachal to distinguish authorship of certain of the Federalist papers.¹²

In any computational analysis, a basic requirement is that one count the frequency of similar features in a given text. My initial analysis of the Roland, for example, counted the relative frequency of the nine most common function words in different sections of the text, but there are hundreds of other things which could equally well have been measured: the average word length measured in letters, syllables, vowels; the percentage of words used once, twice, and so forth; the ratios between verbs and adverbs or, indeed, between any two grammatical classes; the list is almost endless. In all such measurements, one groups items into classes. Word length, for example, was used almost a century ago, in 1887, by T. C. Mendenhall in a successful discrimination between English authors,¹³ but my own experience has not found this measurement to be particularly sensitive in discriminating between Old French texts. Another possible

class distinction easily implemented is spelling, but this immediately raises the problem of homographs. Surely the Old French definite article *li* has more in common with such alternate forms as *le*, *lo*, *la*, and *lu*, than it has with the indirect object pronoun *li*, yet an analysis based purely on spelling distinctions would separate the different forms of the definite article but fail to distinguish between *li* (pronoun) and *li* (article). A similar example in English would group the metal lead with the verb to lead but separate to lead from he led.

A further problem in grouping words together on the basis of spelling is that it also gives such low frequency counts that large amounts of text must be analyzed to produce any meaningful results. For example, while the initial study I did of the Baligant episode solved the problem of homographs by manual intervention, the measurements could be done only on the highest frequency words found in large, thousand-line segments of the text.

A better way of grouping words together is by grammatical class, but here one runs into yet another difficulty. When one distinguishes between a minimal number of basic categories (such as noun, verb, adjective, adverb, preposition, conjunction, article), then features which distinguish two different authors may well be submerged. One author might tend to use the subjunctive more than another, but this distinction would be lost in an analysis which puts both modes under the general category of "verb." The decision as to how many categories should be included in a given analysis and what those categories should be is a subjective one and is often difficult to change once a text has been analyzed. My first study of the Roland required an inordinate amount of time to classify the 29,352 words of the text into forty-five different grammatical categories. Fortunately, work such as that will never have to be done again on the Roland, for Brian Woledge and a number of his students at the University of London have now completed a most thorough analysis of each word of the Roland and several other medieval texts, all based on some six hundred different grammatical classifications, a degree of sophistication rarely found in computational analysis.¹⁴ While that number of categories is too large to be used in an authorship study directly since it produces such low frequencies of occurrence for most classifications, a simple program can amalgamate the various distinctions into limited numbers of grammatical groups, and these groups can be continually redefined at will. That was done for the present study.

The most interesting aspect of the programs developed at Manitoba is, however, the manner in which they examine data, in whatever form it may appear. The general goal is to make our system of textual analysis as sensitive as possible. To use an analogy, my initial analysis of four different thousand-line segments of the Roland could well be compared to looking at something with a crude telescope from afar; the result is that only large areas can be distinguished. A next step would be to move closer and, so to speak, look at the same material with a microscope. In the case of a textual analysis, that is accomplished by looking at several different stylistic features simultaneously, to see how they interact against each other. The greater the number of features analyzed, the smaller the amount of text needed for the analysis. In the present study, a total of 182 different stylistic features were examined in the Roland, each one of which could serve as the basis for an article on the style of that poem. In short, almost every possible statistical measurement used in previous authorship studies was written into these programs.

That, of course, would produce far more information than most persons would ever want to know about the style of the Roland. Obviously some method of analyzing this data is necessary, in order to determine the relative importance of the various stylistic features measured and thus come to some conclusion about the whole of the material.

These steps are accomplished in another series of programs which analyze the relative ability of each stylistic trait to distinguish between authors. The details of how this is done can be found in the Wachal study cited earlier.¹⁵

In brief, if one has at least two samples of similar textual material from each of two known authors, then any stylistic measurement made on those texts can be assessed mathematically as to how sensitive it is to the style of the two different authors. This will show how much each particular measurement may be trusted to distinguish the style of each writer. The assessment is based on two criteria: how consistent the particular feature is within the works of each author and how different it is between the two authors. The formula used in determining this discriminatory power looks imposing but is essentially quite simple:

$$\text{Discriminatory value} = \frac{M_a - M_b}{R_a^2 + R_b^2}$$

where M_a is the median measured in the works of author A; M_b is the median for author B; R_a is the range measured in the various samples of Author A; R_b is the same for author B. In other words, the numerator tests how different the measurements are between the two authors. If the feature being tested shows quite different values for the two authors, that will increase the numerator in the formula and thus increase the importance assigned to that feature. On the other hand, it is also important that a feature used in discriminating the style of writers be relatively consistent within the works of the individual authors. That is measured in the denominator of the formula: the greater the range of values found in the works of a single author, the smaller the value assigned that trait by the formula.

An indication as to how well this system isolates characteristics of style of a given group of texts by different writers can then be obtained by multiplying, in each sample of text, the different measurements by their respective discriminatory values determined by the formula and then adding the results. The advantage of using this method is that it enables one to use all of the stylistic features measured to reach a conclusion. If those features have been able to distinguish the style of two authors, the total scores will tend to cluster together for each writer, with each writer's scores quite separate from those of the other writer.

These steps were performed on three samples of text from the Baligant episode and three from different sections of the rest of the poem. Each sample was approximately ninety lines long. The results were, for the Baligant texts: 5.056, 5.969, and 6.554. The other texts measured 10.23, 11.85, and 13.33. Slightly better clustering can be obtained by taking the scores of only the eighty-six most significant variables.

The next step is to see how these same traits, linked to the same discriminatory values, perform when applied to another set of texts from the same authors. Here, with respect to the Roland, we run into a problem, for if that poem belongs to an oral tradition (as the evidence now seems to indicate), we then do not know what parts of it can be assigned to individual authors. In other words, if the discriminatory value assigned to each variable in order to produce good clustering in an initial set of texts do not produce the same clustering when applied to a second set of texts, this indicates probable multiple authorship: the style is not consistent, for the original clustering is due only to the mathematics of the formula, which favor certain traits in the original passages, traits which do not remain constant when other passages are chosen.

This is precisely what we found with the Baligant episode in the Roland. The second test on three new samples from outside the Baligant episode produced values of 7.996, 9.159, and 9.335, while three new samples from the Baligant section produced 8.385, 10.12, and 12.18. Those figures, then, show an inconsistent style, which is not found when these same tests are applied to works of known authorship. Further tests on other samples from the Roland produce the same results. Moreover, we may say that in general the Roland without the Baligant shows less variation in style than does the disputed section.

Now what may we conclude from the above? In the first place, I must say that, given the present evidence, I would feel rather uncomfortable if I had to defend the view that the Oxford Roland is the work of a single poet. Regardless of how much we may appreciate the literary appeal of that work and the unity we find in its composition, there is little of a statistical nature which will allow us to conclude that the poem is the work of a single person. Secondly, it seems clear that further research is needed in this area. At a minimum, I would suggest that the authorship programs used in this analysis should be applied to other works of known authorship in Old French; I would feel more confident if they were shown to distinguish between, say, the style of Chrétien de Troyes and Jean Renart. If so, the programs might well be used to analyze the linguistic strata of the Roland discovered by Professors Hall and Colby-Hall, to see whether their conclusions can be confirmed.

Finally, I would venture to say that the kind of work such as I have described here is consistent with a healthy trend in modern scholarship. Several years ago, C. P. Snow lamented the development of what he called "Two Cultures" in academia, that is, science and the liberal arts. At the time Snow's book was published, I felt there were far more than two mutually unintelligible cultures at most universities: how many chemists or biologists could state the second law of thermodynamics, and how many specialists in medieval French literature could read a text of Old English? Our present tendency towards over-specialization makes us stand in contrast to that ideal we know as the Renaissance man or, for that matter, the eighteenth-century philosophe. Yet it is through studies such as the ones presented here that we, as humanists, can help bridge the gap between cultures which have, in the past, divided us from our colleagues.

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¹Gaston Paris, *Histoire poétique de Charlemagne* (Paris: Franck, 1865; Second edition, 1905).

²Joseph Bédier, *Les Légendes épiques: Recherches sur la formation des chansons de geste*, 4 vols. (Paris: Champion, 1908-13; second édition, 1914-21; third edition: 1926-29).

³Larry S. Crist, paper presented at the 1978 Société Rencesvals Congress, Santiago de Compostela, Spain, forthcoming in the Acts of that meeting.

⁴William C. Calin, "Is the Song of *Roland* an 'Oral Epic'? Some Polemical Remarks in Defense of Literature," paper presented at the Roncevaux 1978 Conference. A version of this paper in French will be published in a forthcoming issue of *Olifant*, along with a reply by Joseph J. Duggan.

⁵John Robin Allen, "Du Nouveau sur l'authenticité de l'épisode de Baligant," in *Société Rencesvals. VIe Congrès International, Aix-en-Provence, 29 août - 4 septembre 1973*, ed. Jean Subrenat (Aix-en-Provence: Université de Provence, 1974), pp. 147-56. A slightly revised English version of this paper was also published under the title "On the Authenticity of the Baligant Episode in the Chanson de Roland," in *Computers in the Humanities*, ed. J. L. Mitchell (Minneapolis: University of Minnesota Press, 1974), pp. 65-72.

⁶Kerstin Schlyter, *Les Enumerations des personnages dans "La Chanson de Roland": Étude comparative*, *Études Romanes de Lund*, 22 (Lund: Gleerup, 1974).

D. J. A. Ross, "Before Roland: What Happened 1200 Years Ago Next August 15?" *Olifant*, 5 (March 1978) 3, pp. 171-90.

⁸Robert A. Hall, Jr., "Linguistic Strata in the Chanson de Roland," *Romance Philology*, 13 (1959-60), 156-161; "On Individual Authorship in the Roland," *Symposium*, 15 (1961), 297-302; "The Individual in Relation to his Society: The Chanson de Roland," in *Cultural Symbolism in Literature* (Ithaca, N.Y.: Cornell University Press, 1963), pp. 17-32.

⁹Professor Colby-Hall's study has not yet been published.

¹⁰E.g., Eduard Koschwitz dated, by linguistic analysis, the Pèlerinage de Charlemagne to be from the late eleventh century. (See his "Über die Chanson du voyage de Charlemagne à Jerusalem," *Romanische Studien*, 2 [1975], pp. 1 ff. and the introductions to his various editions of the poem: *Karls des Grossen Reise nach Jerusalem und Constantinopel: Ein altfranzösisches Heldengedicht des XI^{ten} Jahrhunderts*, *Altfranzösische Bibliothek*, 2 [Heilbronn: Henninger, 1880; 2nd edition, 1883; 3rd edition, 1895; 4th edition, 1900; 5th edition 1907; subsequent editions reproduce the 1907 introduction].) In 1955, however, Ronald N. Walpole successfully challenged the Koschwitz dating and, on the grounds of both linguistics and thematics, dated the poem in the twelfth century. See his "The

Pèlerinage de Charlemagne: Poem, Legend and Problems," *Romance Philology*, 8 (February 1955), 173-186.

¹¹Joseph J. Duggan, ed. *A Concordance of the "Chanson de Roland"* (Columbus: Ohio State University Press, 1969).

¹²Robert Stanley Wachal, *Linguistic Evidence, Statistical Inference, and Disputed Authorship*. Ph.D. Dissertation, The University of Wisconsin, 1966.

¹³Thomas Corwin Mendenhall, "The Characteristic Curves of Composition," *Science*, 9 (1887), 237-249.

¹⁴Brian Woledge, J. Beard, C. H. Horton, and Ian Short, "La Déclinaison des substantifs dans la Chanson de Roland: Recherches mécanographiques," *Romania*, 88 (1967), 145-174. Brian Woledge, H. M. Erk, P. B. Grout, and I. A. MacDougall, "La Déclinaison des substantifs dans la Chanson de Roland: Recherches mécanographiques (2ème article)," *Romania*, 90 (1969), 174-201. I am grateful to Professor Woledge and his assistant, Sally Burch, for their kindness in furnishing me with a copy of their analysis in machine-readable form.

¹⁵Wachal, pp. 237-250.