

Research paper titles in literature, linguistics and science: dimensions of attraction

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Abstract

Although it is a very small part of the research paper, the title plays an important role as the first point of contact between writer and potential reader and may decide whether or not the paper is read. Research paper titles in the widely differing fields of science, literature and linguistics are studied in detail with a view to showing what researchers from each discipline implicitly feel are important features in the succinct knowledge transmission required in title design. Three basic types of titles in the three disciplines are analyzed: full sentence, compound and a remaining group made up largely of noun phrases with or without postmodification. Very clear-cut differences in frequency and form were found across the three disciplines reflecting fundamental differences in pragmatic intention inherent in the disciplines concerned. Analysis focusses on the role of titles in informing the reader as to what the paper is about and also in attracting him/her to read the paper. Discussion of how these functions are met rests on techniques involved in both information packaging and advertising.

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1. Introduction

The above title has been chosen with more than usual care since it serves not just as a title for this paper, but as an illustration of what is now a common research paper title structure: two noun phrases separated by a colon. Research article titles have been equated with newspaper headlines (Berkenkotter and Huckin, 1995) but

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this particular format is not usually seen in headlines. Thus, while such titles may share certain pragmatic functions with headlines—to provide an initial introduction, to attract attention, to inform, and sometimes to startle—even this very simple example illustrates the fact that they do not fulfil these functions in the same way. Both are subject to the same constraints of limited space and the resulting need to be brief and succinct, so how different can they be from each other and yet still comply with their common requirements? Is it possible, in fact, to extract characteristic features of research article titles? The following analysis looks at this question on an empirical basis by examining titles from research papers in linguistics, literature and science. The three areas were selected on the basis that science and literature may be regarded as representing opposite ends of the genre-based intellectual spectrum. Fahnestock and Secor (1982, 1989) have expanded on this by referring to the classical concept of stasis (a system of rhetorical invention leading to a taxonomy of the types of argument). They point out that, whereas the rhetoric of science articles rests on the stases of fact, classification and cause, articles in literature rest on the stasis of a value that their readers already accord to the work being studied and may be seen as 'celebrating and reinforcing the values shared by their readers' (Fahnestock and Secor, 1982). Linguists are also concerned with matters relating to fact, classification and cause. However, in a study comparing introductions to research articles in science, literature and linguistics, Haggan (1998) has shown that linguists depart from the strictly scientific model in the way the organization of their papers is indicated and in their use of the personal point of view. It would, therefore, be of interest to know how far linguists follow the scientific model as far as the research article title is concerned. Do contemporary titles therefore, in spite of their miniature form, encapsulate something of the inherent disciplinary differences with regard to the presentation of knowledge in these three fields?

2. Corpus

The titles in the analysis were drawn from the holdings of academic journals at Kuwait University, which are selected and ratified by academic committees of the departments concerned and are subject to periodic review. As such, they may be assumed to represent the journals held to be important by researchers in the respective fields. The only restriction for the present study was that the journals should be published in the United States or the United Kingdom. Otherwise they were simply picked at random from the current periodicals shelves with some attempt being made to ensure a reasonable balance of sub-disciplines, the aim being to obtain a snapshot of contemporary practice in title formulation. In almost all cases, each journal was represented by two, usually consecutive, editions which were the most recent on the day of data collection. Since journals vary considerably in the number of articles they carry per edition, the titles selected may have represented all the articles in a particular edition or up to the first ten in the list of contents where many articles are carried. This yielded a sample of 237, 207 and 307 titles from 40 literature journals, 44 linguistics journals and 40 science journals respectively. The complete list of journals is presented in the [Appendix](#).

Table 1
Basic statistics

	No of journals	No of titles	No of words	Title length (words/title)
Literature	40	237	2230	9.4
Linguistics	44	207	1823	8.8
Science	40	307	4249	13.8

A preliminary analysis was made to derive some quantitative information regarding titles in the three areas. The figures obtained are presented in Table 1.

It shows that literature and linguistics titles are of about the same length, averaging around nine words per title. Science titles, on the other hand, are nearly half as long again, averaging almost fourteen words per title, a finding which may be viewed alongside that of Berkenkotter and Huckin (op.cit.) that there has been a growth in the information content of science titles over the 45 year period they studied.

3. Full-sentence titles

The same researchers have also commented on a parallel development whereby scientific titles increasingly take the form of a full sentence expressing the results of the study. Thus, in 1989, the last year in their study, they report that 21%, or 25 out of the 120 titles they analysed, were in the form of a full sentence. The first question to be addressed in the present analysis was, therefore, whether this trend was supported by the present corpus. In fact, out of the 307 science titles in the sample, only 26, or 8.5%, were cast in this way, a considerably lower figure than that obtained by Berkenkotter and Huckin (ibid.). They point out that full-sentence titles are particularly a feature of biology papers, and, interestingly, all the cases occurring in the present analysis did indeed fall under the wide umbrella of biology. However, the discrepancy in numbers between the two studies indicates that some care must be exercised before making generalisations about trends. The tendency for scientists to provide full-sentence titles may be noticeable and growing, but perhaps not to quite the degree as was thought.

Turning to the other two disciplines, counts showed that only 10 out of the 237 literature titles (=4.2%) and 9 out of the 207 linguistics titles (=4.3%) involved full-sentence construction. Taking into consideration the differences in total number of titles in each group, a Chi square test was conducted on frequencies and reached significance ($\chi^2 = 6.2$, $df = 2$, $P < 0.05$) indicating that the null hypothesis could be rejected. The greatest contribution to χ^2 came from the science full-sentence titles which proportionately were twice as common as those in linguistics and literature. Apart from these differences in frequency, there are, however, quite striking differences in the form that such titles take. According to Berkenkotter and Huckin, the main point regarding full-sentence titles is that they are an illustration of the growth

in informativeness of research article titles. This may be the case as regards the science full-sentence titles in our sample, but it does not appear to be so with those from the other two disciplines.

3.1. *Science full-sentence titles*

Six of the twelve full-sentence titles extracted are given below.

1. *Biphasic kinetics of Zn²⁺ removal from Zn metallothionein by nitrilotriacetate are associated with differential reactivity of the two metal clusters*
2. *Cu²⁺ ions interact with cell membranes*
3. *Mlc1p is a light chain for the unconventional myosin Myo2p in *Saccharomyces cerevisiae**
4. *Barstar has a highly dynamic hydrophobic core: evidence from molecular dynamics simulations and nuclear magnetic resonance relaxation data*
5. *The activity of oxidized bovine spleen purple acid phosphatase is due to an Fe(III)Zn(II) 'impurity'*
6. *Exposure to context may contribute to within-session changes in responding*

The pragmatic features underlying the scientists' writing are clearly reflected in these titles. The situation in science now is that the pace and volume of publication means that there is ever more pressure placed on the individual who wishes to keep up with the reading in his field. The reader needs to know as early as possible in the reading process whether or not the paper contains anything that is of relevance to his own work. The title is the earliest point of contact between writer and reader, and it has been established by Bazerman (1985) that academics decide on the basis of the title whether or not to read further. The writer, therefore, must try to design the title in such a way that it will attract the attention of other scientists working within his own narrow specialisation. Hence, the over-arching pragmatic aim must be to inform, and to inform quickly. If he fails to do this, his work may sink into oblivion. The full-sentence titles in our science sample clearly illustrate this: the noun phrases employed indicate the area within which the researcher is working, while the sentence as a whole presents the general findings of the study. It is as if the entire study had been condensed into that one sentence, thereby combining informativeness with economy. On the other hand, although much is conveyed in relatively few words, these titles are in fact the longest in the whole group, averaging 16.5 words per title as compared to the mean length of 13.8 words per title in science titles over-all. Closer inspection, however, reveals something rather surprising. It is generally held that scientists are cautious in their research-paper writing and surround their pronouncements with qualifications and hedges (Crompton, 1997). However, these titles make confident, unqualified assertions, presented as statements of fact. In only one is there a hedge (Title 6), where the use of the modal *may* injects a note of reservation. Interestingly, all are written using the simple present tense. A common feature of newspaper headlines is the use of the simple present tense where normal usage would require the present perfect or the present continuous (Swan,

1980). However, this is also accompanied by other features of what is known as “block language” (Quirk and Greenbaum, 1973) involving omission of articles and the verb *to be*. This is certainly not the case here, where the full sentences are precisely that i.e. complete sentence forms. Thus, the use of the simple present tense here cannot be taken as evidence of these titles fulfilling the role of headlines. Nevertheless, the exclusive use of this tense is a significant point. According to Quirk et al. (1985), the meanings of the present tense vary depending on whether the verb is stative or dynamic. Stative verbs (such as *be* and *have* used in titles 3, 4 and 5 above) used in the simple present indicate the “timeless present” where there is no time limitation on the states concerned (i.e. they are eternally true), whereas dynamic verbs used in the present tense (as in the remaining titles above) indicate the habitual present (p. 179). In either case, the use of the present tense here emphasizes the note of confident optimism being projected by the writer that what he is reporting stands true for all time or is not simply a one-off occurrence. One might, for instance, have expected that, since the scientist is reporting the results of his particular experiment or study, he might have used the past tense, thereby in a way limiting the application of his pronouncements to his particular experiment. Compare, for example *The [KIL-d] cytoplasmic genetic element of yeast results in epigenetic regulation of viral M double stranded RNA gene expression*, with (*In our experiment we found that*) *The [KIL-d] cytoplasmic genetic element of yeast (always) resulted in epigenetic regulation of viral M double stranded RNA gene expression*. The former sounds much more positive, while in the latter there is the implicature that the findings are restricted to a particular study, leaving open the possibility that other studies might not agree with them. In this, there seems to be a parallel with a certain style used in advertising, where we might see *Kleenso washes cleaner* rather than (*We found in our tests that*) *Kleenso (always) washed cleaner*. In fact, the analogy with advertising seems particularly appropriate. Just as the product manufacturer cannot allow any doubts to enter the minds of the public as to the unassailable supremacy of their product, so also must the scientist convey the certainty that the method, measurements, calculation etc. employed have yielded impregnable findings. The certainty that is communicated may, in itself, be a feature attracting a fellow scientist working in the same area. This view of the title as advertisement gains further credence in the light of the comments of a scientist reported by Rymer (1988: 235) on the composing processes of eminent molecular biologists: “I want to give it a title that’s catchy, that’s very informative. . . . Gotta sell the stuff. Doesn’t mean that you gotta be dishonest. But it’s gotta be something that really catches people’s eyes so they stand up and pay attention.”

3.2. Linguistics full-sentence titles

Six of the nine linguistics full sentences titles are presented below for illustration

7. *Theories are buildings revisited*
8. *I blame the government'*
9. *Why are some verbs learned before other verbs? Effects of input frequency and structure on children's early verb use*

10. *Does grammaticalization need reanalysis?*
11. *“Yes, I agree”*
12. *Who’s next? The melodic Marking of Question vs. Continuation in Dutch*

It is obvious that there are some differences between these and the full-sentence science titles. Title (7) is the only one that seems to approximate the statements found in the full-sentence science titles. Titles (8) and (11), although in simple active declarative form, are also contained within quotation marks. Title (10) is in the form of a question, while Titles (9) and (12) contain a complete question followed by a complex noun phrase. Title length is also obviously shorter. If we consider only the full sentences in all the linguistics full-sentence titles, the mean length is 5.4 words and even if we calculate the over-all mean length of title (i.e. including any subsequent noun phrases) the figure becomes inflated to only 7.6 words. Thus, unlike the case of the science full-sentence titles, linguistics titles involving a full sentence are shorter than the average title length for all linguistics titles (8.8 words).

However, perhaps the most striking difference comes when we consider how the pragmatic aims of the two types of researchers are achieved. In both cases, the researcher obviously wants to attract people in the field to read the paper. As we have seen, the scientist achieves this in the full-sentence titles by packing in information about what has been found in the research study. Strikingly, full-sentence titles in linguistics do not make assertions about the results or findings of the paper. Instead, the writer makes an attempt to intrigue the reader by presenting a clever, arresting title which catches the attention and acts as a lure into the article itself. Title (7) is, in fact, deceptive. The first line of the paper reveals that the topic is a re-examination of the conceptual metaphor: THEORIES ARE BUILDINGS suggested by Lakoff and Johnson in their book *Metaphors We Live By* (1980). However, the capitalization is missing in the title so that this allusion could be lost, particularly if the reader is not familiar with the work in question. Thus, *revisited* could be interpreted as a truncated relative clause modifying *buildings*, which does alter the reader’s preliminary expectation of the subject matter somewhat. Title (8), on the other hand, presents a deliberate play on words. There is the possibility that the reader might think that, given the wider emphasis of the journal it was published in (*Language Sciences*), the subject-matter might relate to, say, an analysis of the language of political opinion, although many other linguists reading it would presumably be primed for it to deal with its actual focus of government (in phonology in this case). The short but mysterious Title (11) is quickly explained (in the first two lines of the paper) by the statement that the subject is the idea that an affirmative response to a Yes–No question constitutes an agreement with the question. Title (12), however, is perhaps a little more playful since it deals with conversational turn keeping as signalled by certain intonation contours.

The use of the question form is another well-known rhetorical device to draw the reader in by identifying the topic (Kane and Peters, 1966). This is illustrated in Titles (9) and (10) above where the research focus itself is presented in question form. Sacks et al. (1974) have pointed out how question and answer work within conversation as an adjacency pair where the question has a role in raising expectations

concerning the contents of the answer. In the present context, we do not have a face-to-face conversational situation, but there is nevertheless an implicit interaction between writer and reader. The reader in this situation is not the one who will answer the question- although the mere fact that it has been raised may set his mind working along possible answers. Instead, he has a reasonable expectation that it will be answered by the writer in the paper that follows. The very fact that he has himself already started to try to answer the question in his mind may encourage him to read the paper to see how the author deals with the question. This attention-grabbing aim is especially illustrated by Title (12), where a particularly arresting question stands at the beginning of the title to serve as an illustration of the type of sentence the paper will analyse. Even in titles where there is a narrowing of the focus by a subsequent noun phrase (as in Titles 9 and 12), the answer to the research question is not divulged. The reader must read the paper to find out the conclusions to be drawn from the paper. This is unlike what we saw in the full-sentence titles in science, where the researchers were at pains to present their results. In the linguistics examples, even where the title is in the form of an assertion, there is still this attempt to titillate the reader. Title (7), for example, presents the reader with an unusual metaphor which, by very reason of its strangeness, virtually necessitates further reading of the paper in order to understand it, while the three-word Title (11) presents a brief statement which would be difficult to make anything of without establishing some kind of context through reading the article.

It is worth noting that, in Gricean terms, there are very clear-cut differences between the full-sentence titles in the two disciplines. The scientist's pragmatic aims are best served by adhering to all of Grice's Maxims. (Grice, 1975) Although the maxims represent the implicit rules speakers follow when engaging in spoken conversation, they could almost be seen as prescriptive rules for scientific writing in general. On the other hand, the linguist in his full-sentence titles appears to flout the maxims. Such titles are not informative in the sense of indicating clearly what the article is about, and hence they do not adhere to the Maxim of Quantity. They may flout the Maxim of Relevance by referring to something which- apparently- has nothing to do with the subject matter. They may deliberately introduce something obscure or ambiguous and hence flout the Maxim of Manner. Since they are not reporting facts in their full-sentence titles, however, the Maxim of Quality does not really apply. It appears that linguists in their full-sentence titles do not adhere to the Co-operative Principle as scientists do.

3.3. Literature full-sentence titles

The following titles serve as illustrations of literature papers involving full sentences:-

13. *Was Spenser a Republican?*
14. *'Here is my space': the politics of Appropriation in Shakespeare's 'Antony and Cleopatra'*
15. *'Virgins all beware': 'To his coy mistress' Revisited.*

16. “*Thou seest mee striue for life*”: *Magic, Virtue and the Poetic Imagination in Donne’s Anniversaries*
17. *Speak, Memory, But in a Whisper*
18. *Time’s Up*
19. “*I fought the Law (and I cold won!)*”: *Hip-hop in the Mainstream*
20. “*Forget those damnfool realists!*” *Salman Rushdie’s Self Parody as the Magic Realist’s “Last Sigh”*

As can be seen, the majority of such titles actually begin with a quotation in the form of a full sentence, usually from the work that is being analysed or, in the case of Title (19), presenting a sample of what is to be analysed in the paper. The form of the sentence quotation in all but two instances is that of a statement, the two exceptions being Titles (15) and (20), which are in the form of the imperative. Title (17), also using the imperative form, looks like a quotation but is not contained within quotation marks. Only the remaining two titles are full sentences which are not quotations and are not supported by any noun phrase coming after. Of these, Title (13) asks an intriguing question, while Title (18) presents a short, colloquial statement, enigmatic in its brevity. In each case, it is obvious that there is a straightforward attempt to intrigue the reader. The mean length of literature titles involving full sentences is 9.7 words, only marginally longer than the mean length (9.4 words) of all the literature titles in the sample.

Turning to how the pragmatic aims of attracting the reader to read the whole article are served in literature full-sentence titles, it is immediately obvious that the scientific convention of packing in as much information as possible within the confines of a title does not apply. There are no experimental findings to be reported and, apart from matters of biography, any new information contained in the paper is not usually of the factual type. Rather, the emphasis in literature papers is to lead the reader to new insights and appreciation of the works being studied, a process which appears to be initiated at the title-reading stage. However, after reading the article, one can see that these titles themselves have aesthetic merit that adds to the reader’s appreciation of the paper. To pick out only one example, Title (18) becomes clear on the fourth page of the article when one realises that it deals with the publication of Norman Mailer’s book *The Time of our Time* to mark his 75th birthday. The writer of the article does not feel that the standard of the book is very high, but it has been accepted on the basis of Mailer’s reputation. The whole article is, in effect, a negative review of the book. Once this is realised, the reader can appreciate the word-play and pungent conciseness now revealed in the title. It will also be noted that the five titles which begin with a quotation could all stand quite adequately without the quotation. It is the non-quotation element that provides the information as to the paper’s contents — a fact which may be tacitly realised in the practice of dispensing with the quotation in the title heading on each page of the article.

Standing back and looking at the differences in full-sentence titles across these three disciplines, it can be seen that they illustrate in cameo the underlying differences referred to in the introduction distinguishing the disciplines themselves from each other. Thus the full-sentence titles in science are very bare presentations of

facts, as discovered by the researchers, while those in literature tend to be aimed at the aesthetic sensibilities of the reader. Linguistics falls between these two extremes, combining elements of the two. On the one hand, the subject matter is factual and most linguists would regard themselves as ‘scientists’, but the essential fascination for language that must lie at the heart of any linguists means that there is an element of the celebratory there too. Thus, true to his trade, the linguist within the microcosmic scope of the full-sentence title is more likely to play with the language. If we subscribe to the idea that these titles function as advertisements, then it is clear that the copywriters (i.e. the researchers) have done their market research very well.

Interesting as these full-sentence titles have proven to be, they constitute a very small percentage of titles in the three disciplines chosen, with over 90% of the titles in all three disciplines being incomplete syntactic units. In general terms, these titles could be described in terms of the types and arrangements of C-units (small independent grammatical units) of the “stand-alone non-clausal” variety described by Leech (2000). Interestingly, Biber et al. (1999) have found that such units make up about a third of conversational language. Leech (2000) makes the observation that such phenomena occur much less frequently in written grammar, and cites titles as one area where they are routinely found. However, our figure of above 90% shows that they are much more frequent in titles than in speech. The reason given by Biber et al. (op. cit.) for the appearance of these reduced structures in speech is that they relieve pressure on the working memory. In the written medium, there is not the same load on memory, but there is still load on the reader in the form of information processing. Leech’s interpretation of these C-units as performing a streamlining role in conversational speech (p. 699) may, therefore, be just as applicable here, but with the economy of expression being aimed at eliminating elements that are nonessential in terms of the information being transmitted. The remainder of the paper aims at exploring how this is done.

4. Compound titles

As indicated at the beginning of the paper, one of the most common forms of title is where two noun phrases (or non-clausal C-units) are juxtaposed on either side of (most usually) a colon, a full stop or a dash. The figures for this type of title in the three disciplines are presented in Table 2.

Table 2
Compound Titles

	Total no of titles	No of compound titles	As % of total	Mean length (words/title)
Lit	237	144	60.8	13.6
Ling	207	63	30.4	9.9
Science	307	66	21.5	16.6

Note: 5 of the full-sentence literature titles and 4 full-sentence science titles are also counted here as being compound in view of the fact that they also contain non-clausal C-units.

As can be seen, the percentage of science papers having this type of title is the lowest of the three groups (21.5%), while the figure is almost trebled in the case of the literature papers (60.8%), for which this type of title is the most favoured. With 30.4% of the linguistics papers carrying this type of title, linguistics falls between the other two groups, but is closer to science on this parameter. A Chi square test showed the differences to be highly significant ($\chi^2 = 56$, $df = 2$, $p < 0.001$). These inter-group differences in frequencies are also matched by differences of form.

4.1. Compound science titles

The following list provides some representative examples of this type of title:

21. *Genome sequencing and informatics: New tools for biochemical discoveries*
22. *Two neoarchean supercontinents? Evidence from the Paleoproterozoic*
23. *Possible indicators of microbial mat deposits in shales and sandstones: Examples from the mid-proterozoic belt supergroup*
24. *Compartment-specific accumulation of recombinant immunoglobulins in plant cells: an essential tool for antibody production and immunomodulation of physiological functions and pathogen activity*
25. *Morphological and genetic differentiation of Patella granularis (Gastropoda: Patellidae): recognition of two sibling species along the coast of southern Africa*
26. *Coping with complexity: lessons from the mathematical sciences*

One reason for the high frequency of this type of title may perhaps be traced to the advice given in books about how to write research papers. Lester (1993), for instance, presents six strategies for writing a title, three of which involve two elements separated by a colon. Of these, one involves providing a general subject followed by a colon followed by “a phrase that renames the subject.” In fact, the example he provides (*Computer Control: Software Safeguards and Computer Theft*) shows more than a simple renaming of the first noun phrase. Instead, there is a noun phrase indicating a general topic, followed by an expanded phrase in which the particular aspects of that general topic to be dealt with are specified. In the examples of compound science papers given above, the first NP indicates the area of the research, while the second NP either indicates the application of that research (as in Titles 21 and 24) or provides some information to help locate what was worked on either in a geographic sense or from within the discipline, according to the field of study (as in Titles 22, 23, 25 and 26). In both cases, it could be said that there is a narrowing down, focussing either on where the study has come from or on where it might point to, both of which may be useful to the reader by positioning the research not only through indicating the particular point (or topic) studied, but also by giving directional information that could look either backwards or forwards. We have already alluded to the fact that the scientist trying to keep abreast of the latest developments in his field must nowadays read a number of journals, each of which is published within a fairly narrow range of specialisation. Assuming he is a regular reader of certain key journals in his field, his need is to locate those papers which

deal with the particular questions relating to his own research. It is useful, therefore, for him to have an early announcement of the subject area of the paper. This can be achieved even before starting to read any article through a three-tier structure of information comprising: (1) the journal title itself, which gives the broad (but specialised) area, and the article title which narrows the focus to (2) a particular sub-area and then (3) a particular thrust leading to or emanating from that. It is obvious, therefore, that this title format is ideally suited to the scientist's needs and at this preliminary stage of the paper-reading process presents an extremely efficient example of information packaging or "the tailoring of an utterance by a sender to meet the particular assumed needs of the intended receiver." (Prince, 1981) It is worth underlining the point that the information being provided is by way of mapping the location of the paper's subject matter within the field. This differentiates such titles quite remarkably from the full-sentence titles referred to above. In the latter, the information was a synoptic account of the paper's findings. They, therefore, provide what Dahl (1976: 38) calls propositional information. In these compound titles, no full proposition is being transmitted. Instead, such titles present juxtaposed "elements of information" (Lambrecht, 1994) which, nevertheless, are highly meaningful to the targeted professional reader. In such cases, the scientist has to read the paper for full propositional information. However, it is important to note that such titles could be expressed in propositional form (e.g. This paper deals with the X in Y). That they are not, is a recognition of the redundancy of this proposition here, since the reader can easily assume that this is indeed a paper dealing with X and Y purely from the presence of X and Y themselves and from his knowledge of the world, specifically that a title usually tells you something about what the paper printed underneath it is about. The parallel with the streamlining operating in the use of C-units in conversation is also useful here. Leech (2000) refers to the "add-on principle", where speech is constructed by the chaining together of simple "clause-like chunks" which progressively add on further units of information in such a way that processing is made easier. The simple juxtaposition of noun phrases in titles also leads to ease of processing.

Returning to our analogy between research article titles and advertisements, it may be instructive to consider that Leech (1966: 114) has commented on the use of independent nominal groups in advertising English to function as full clauses (e.g. "Escudo — a marvellous tobacco blended from just two kinds of leaf"). He refers to such arrangements as "sub-logical", meaning that the logical relations underlying their juxtaposition are not overt, as in a full proposition, but implied. There seems an obvious parallel here with the redundancy we have assumed in these titles. It will be observed that the first nominal in Leech's example is the product name, a feature also noted by Rush (1998). In the case of the title, we have pointed out that the first nominal deals with a sub-area within the much wider research field. The parallel with advertising seems clear. To those who may be passing by—or perusing the journal—the title writer is calling his wares, which he announces implicitly by referring to the particular sub-area he is targeting within the field. By doing this usually at the very beginning of the title, he thereby obeys a convention dictated by a perceived need of the reader i.e. that the information regarding the paper's contents

be received as speedily as possible. In relation to the informativeness of statements, Strawson (1964) has made a useful distinction between what he calls the “Principle of the Presumption of Knowledge” which says that informativeness is not achieved in a vacuum- the listener/reader always knows something already - and the “Principle of the Presumption of Ignorance” which says that the speaker/writer must make a hypothesis regarding the current state of knowledge in the mind of his listener/hearer. Thus, the researcher has to decide what might already be familiar to the reader (realised in the brief designation of a sub-area within the field) and then draw his attention to what he hypothesizes the reader is ignorant of, namely in this instance what his own work focuses on. Without an adequate assessment of the former, the latter by itself might not achieve a successful transmission of information. Both full propositional and compound titles capitalize on the reader’s presumed knowledge of the field in general since they are couched in highly specialised language. However, whereas the full propositional title targets the reader’s presumed ignorance of the particular findings of the researcher, the compound title targets the reader’s presumed ignorance of the particular thrust of the paper. Thus, we might paraphrase a title of this type (e.g. Title 26 above: *Coping with complexity: lessons from the mathematical sciences*) as *You know the problem of coping with complexity; well I’m going to pass on some lessons about this from the mathematical sciences.*

4.2. Compound literature titles

Turning to literature compound titles, the first point to note is that, whereas in scientific compound titles the juxtaposed elements are noun phrases, in the literature compound titles, the elements are more varied in form and include participial phrases, prepositional phrases and infinitive phrases e.g.

- 27. *Circling the spheres: A Dialogue*
- 28. *from Minding the Darkness: A poem through imagining*
- 29. *To Witness Spectacles of Pain: The Hypermorality of George Bataille*

A striking feature is the use of a quotation as the first element, of which 23 cases appeared in the sample. In some, the quotation serves as an illustration or example of what the following element (and hence the paper) is about e.g.

- 30. “*My sister! My sister!*”; *The rhetoric of Catherine Sedgwick’s Hope Leslie*
- 31. “*I Fought the Law (and I cold won)*”: *Hip-hop in the mainstream*

The pragmatic rationale here seems to be to attract by means of showing the technical creativity of the paper writer in coming up with the apposite quotation. In other cases, there is no *apparent* connection between the quotation and the second element e.g.

- 32. “*The assurance to write, the vanity of expecting to be read*”: *Deception and Reform in Mary Davys’s “The reform’d Coquet”*

33. “*What about a problem that doesn’t have a Solution?*” Stone’s “*A Flag for Sunrise*”, DeLillo’s “*Mao II*”, and the politics of Political Fiction

The writer in these cases presents an elegant puzzle again solvable only by reading the paper. Title (32), for example, presents a quotation from the book being reviewed which allows the author of the paper to make the point that the original author admits to the vanity of expecting to be read, a quality she obliterates in her heroine. Thus there is some playing with the idea of deception. Title (33) is unravelled when it becomes clear that the writer of the paper is taking issue with critics who feel that American novelists have not dealt with the impasse, or “utterly intractable” problems, of political difficulties and reviews the two works referred to in the title in support of his views. In all cases, again, the quotation is redundant from the point of view of giving the information that would pinpoint the topic of the paper and at this preliminary stage may even, as we have seen, obscure matters. Any actual information being provided via the quotation is thus done so indirectly, focussing perhaps on what it is hoped the reader will deduce regarding the attributes of the author of the article and the elegance of the paper rather than on an explicit conveying of what the actual topic is. Rather, at this preliminary, title-reading stage of the paper-reading process, the reader is already being pushed into a thinking mode where he tries to work out the allusions or connections that the paper-writer wants him to see and may therefore be nudged into reading the paper in order to unravel the mystery. In all cases, if the quotation is removed, the title remains perfectly viable. The same effect is found even in cases where the first element is not a quotation, e.g.

34. *The unknown soldier and the return of the fallen: The political dimension of mourning in German texts from the first world war to the present*
 35. *Refined Law: The Symbolic Violence of Victims’ Rights Reforms*

While this may indicate a sharpening of focus in the second element, this role of the first element as providing authorial insight and/or the initial impetus towards sharing the writer’s take on his topic does not match the narrowing down already discussed above in the science titles. Whereas narrowing down in science titles involves a very precise (and hence wordy) specification of the area or research application within the field that the research is tackling, in literature titles this is achieved more economically by incorporating the title of the work, the name(s) of the character(s) or the name(s) of the author(s) under analysis. It is this element that can stand alone as the “true” title. e.g.

36. “*Here is my space*”: *The politics of appropriation in Shakespeare’s ‘Antony and Cleopatra’*
 37. *Doing things with words: Another look at marriage rites and spousals in Renaissance Drama and Fiction*
 38. *Facing the invisible sphinx: About the writing of the ‘L’Homme Moyen Sensuel’*

Once again, any enigma in such titles is removed on reading the paper. Thus, Title (37) refers to the performatives of J. L. Austin with an adaptation of his famous title “How to do things with words.” The paper rests on the point that as late as the mid-18th century it was possible for two people to effect their marriage simply through declaring they were man and wife. Title (38) seems even more puzzling, but a reading of the paper reveals that the author is writing about his difficulties in writing his book about the 1932–33 famine in the Ukraine. This catastrophe, he says, is like a sphinx asking the question, “Why does no one see me?” Again, once one understands its meaning, the title becomes an embellishment of the paper but, in order to reach this stage of appreciation, the reader does, after all, have to succumb to the enticing lure and actually read the article.

4.3. Compound linguistics titles

Turning to compound titles in linguistics papers, it has already been noted that, as far as frequency goes, our sample shows that they fall between science and literature, although closer to the scientific total. However, in terms of the internal information structure of compound linguistics titles, they very much adhere to the pattern found in compound science titles. All cases begin with a phrase indicating a general topic (e.g. *Lexical inventions*) followed by another phrase indicating the status or nature of the research reported (e.g. *a preliminary report*, *a re-examination*, *an introduction*) or the particular approach used or area targeted (e.g. *French interlanguage as L2 versus L3*). Unlike literature compound titles, they present no intriguing puzzle for the reader to work out regarding what the writer is up to in his paper. Rather, they follow the scientific pattern, with the first element most commonly presenting the ‘known’ sub-area and the second indicating the new contribution presented by the research. Some examples are:

39. *Noun incorporation. New evidence from Athapaskan*
40. *Language policy, language education, language rights: Indigenous, immigrant and international perspectives*
41. *Subject-verb agreement in Brazilian Portuguese; what low error rates hide*
42. *Perception and control; a minimalist analysis of English direct perception complements.*

5. Remaining title structures

Table 3 presents the basic figures for titles that are left after removing the full-sentence titles and compound titles from the corpus and shows the similarity between linguistics and science in terms of the frequencies obtained. Around two thirds of the science and linguistics titles fall within this category, as compared with only 39.2% of literature titles. However, within this remaining group of titles, it is possible to separate out a few sub-types. These and the respective frequencies for the three disciplines are shown in Table 4.

Table 3

Basic statistics regarding titles excluding full sentence and compound titles

	Total number of titles	Total excluding full sentence and compound titles	As % of group total	Mean length (words per title)
Lit	237	93	39.2	8.2
Ling	207	135	65.2	8.2
Science	307	213	69.4	12.7

Table 4

Titles excluding full sentence titles and compound titles

	NP PP (PP)*		NP (and NP)		Participial P		PP	
	n	%	n	%	n	%	n	%
Lit	43	18	35	14.8	7	2.9	5	2.8
Ling	105	50.7	28	13.5	4	1.9	7	3.4
Science	224	72.9	10	3.3	2	0.7	1	0.3

(Note: percentages are of the respective construction found in the total number of titles for each group.).

Once again, there are marked differences in the frequencies. A Chi square test on frequencies of titles with the format NP PP(PP)* showed the difference across the three groups to be highly significant, thus allowing rejection of the null hypothesis. ($\chi^2 = 86.6$, 2df, $P < 0.001$). The same test conducted on titles comprising NP (and NP) also showed highly significant differences in frequencies across the three groups ($\chi^2 = 21.1$, df = 2, $P < 0.001$). The remaining two title-types occurred too infrequently across the three groups to warrant statistical testing.

5.1. Remaining science titles

As can be seen, the title where the basic structure involves a noun phrase with one or more post-modifying prepositional phrases is clearly the overall title-pattern of choice amongst scientists, constituting almost three quarters of all science titles in the corpus. Some examples illustrate this:

43. *Identification of a calcineuron-independent pathway required for sodium ion stress response in *Saccharomyces cerevisiae**
44. *Propagation speed of a magnetic flux-tube solution with electric current*
45. *Deferred seasonal increase in testes weight under poor nutritional conditions in a sub-Antarctic population of rabbits (*Oryctolagus cuniculus*)*
46. *Investigation of the reactive oxygen intermediate in an arene hydroxylation reaction performed by xylyl-bridged binuclear copper complexes*
47. *Effects of salinity and starvation on larval development of the crabs *Armases ricordi* and *A. roberti* (Decapoda: Grapsidae) from Jamaica, with notes on the biology and ecology of adults*

In fact, the use of post-modifying prepositional phrases is the distinguishing feature of titles in this discipline. It is not hard to see why when we consider again the scientist's need to inform the reader as quickly as possible about the specific focus of his study within the research matrix of his discipline, an objective which is well-served by the explicitness afforded by postmodification in general (Quirk et al., 1985). This very specific targeting of the point under investigation can be further seen by the fact that by far the commonest preposition is *of*, constituting as it does nearly half of all instances of prepositions, e.g.

48. *Regulation of the Heat Shock response*
49. *Visualisation of three-dimensional datasets*
50. *Purification and characterization of ceramide-activated protein phosphatases*

These particular examples illustrate the common pattern where an initial noun phrase involving a nominalization of a dynamic verb (to indicate a process carried out) is followed by an *of*-phrase indicating the patient of that process.

The next most frequent preposition is *in*, which makes up about a quarter of all prepositions used here. In some cases, it is used to indicate the geographical focus of the research, e.g.

51. *Phase Transitions in the universe*
52. *Unusual larval growth production of Nyctiphantes simplex in Bahia de La Paz, Baja California Sur, Mexico*
53. *Population dynamics of the white pine-weevil, Pissodes strobi, infesting jack pine, Pinus banksiana, in Ontario, Canada*

In other cases it is also used to introduce the species or area being targeted within a wider field e.g.

54. *Polymorphism, mating preferences and sexual selection in the Arctic skua*
55. *Body mass dynamics in the Mediterranean pine vole *Microtus Duodecimostatus**
56. *Range effects and dimensional organisation in visual discrimination*

However, the common practice is for the title to include a piling up of multiple prepositional phrases within the one title, indicating the very precise specification of the research. e.g.

57. *Zoeal development of three species of *Pugettia* (Decapoda: Majidae) with a key to the known zoeas of the subfamily Epialtinae*
58. *NMR investigation of the presence of the B-structure in compact non-native states of globular proteins*
59. *The effect of adsorbed concanavaline A molecules on the characteristics of bound water in the hydrate shell of dispersed silica as judged by ¹H NMR data of frozen aqueous suspensions*

From Table 4, it can also be seen that while there are a few titles made up of an independent noun phrase e.g.

60. *Precambrian clastic sedimentation systems*
61. *Coronal line-width variations*
62. *The nuclear pore complex*

These are not sufficient to make up a substantial trend. A glance at the examples indicates why. Such a pattern does not offer the same degree of narrow precision in the specification of the research point. However, as can be seen from some of the examples presented in this whole section, pre-modification also occurs. The sample yielded 52 titles (=28% of all science titles) combining both pre-modification and post-modification. In the majority of these (29 titles, or 15.7%), the pre-modification is simply in the form of a single adjective or noun (as in Titles 51, 53 and 57 above), but 18 (or 9.8%) combine post-modification with heavy pre-modification, as in, for example, Titles (45), (52), (55) and (59). This combination allows for very precise specification of the topic while also avoiding the lopsidedness that might otherwise occur. Compare, for example Title (52) (*Unusual larval growth production of Nyctiphantes simplex in Bahia de La Paz, Baja California Sur, Mexico*) with how it would be rendered with only post-modification (*Unusual production of growth in the larva of Nyctiphantes simplex in Bahia de La Paz, Baja California Sur, Mexico*). The premodified title in this case is both shorter and more evenly balanced.

5.2. Remaining literature titles

Literature titles may also be written in noun phrase and post-modifying prepositional phrase format but this is far less frequently the case than in either science or linguistics titles. Where they occur, the most common preposition is *in*, again indicating an attempt on the part of the paper's author to be specific about his area of research since *in* precedes the title of the work studied in the paper, e.g.

63. *Neo-Petrarchan Kitsch in Romeo and Juliet*
64. *Disseminated Consciousness in Sons and Lovers*

While *of* occasionally precedes the particular author focussed on, as in

65. *The poetry of Rudyard Kipling in Russia*

The targeted author is usually bracketed with his work in a possessive noun phrase e.g.

66. *Poetry and terror in Peter Dale Scott's Coming to Jakarta*
67. *The unifying sub-text of Nathaniel Ward's The Simple Cobler of Aggawam*

What seems to be absent is the piling up of multiple postmodifying prepositional phrases as is found in the science titles. In the case of literature titles, the fine specification of topic can be achieved through the mention of author and work as indicated above.

However, as **Table 4** shows, literature titles in this category are more varied in structure than those in science. For example, just under 15% of all literature titles are in the form of a single or co-ordinated noun phrase. Even such apparently simple titles may be “mysterious” in the sense that they offer no clue as to what the paper is about e.g.

68. *Manifest Domesticity* (- dealing with the forceful influence of women’s writing and the concept of domesticity in 19th century American literature. The title is a play on the phrase Manifest Destiny used to explain the 19th century westward expansion of the United States.)
69. *Garbage-Disposal Imagination* (- in which the writer describes his own short story writing as putting his experiential “stuff” into the garbage disposal of his imagination and, once he flips the switch, the story comes out.)
70. *Poor Eliza* (The paper blends an examination of *The King and I* and *Uncle Tom’s Cabin* in a discussion of the political use of “sentimental rhetoric.”)

Although not as common, titles comprising a participial phrase

71. *Listening to the candle* (- the title of the poem the paper is critiquing.)
72. *Writing the Story* (The paper quite literally is about how the author actually wrote a particular short story.)
73. *Unpacking Edith Wharton*

and those featuring a rather succinct focussing of topic by the preposition *on*

74. *On “Beginnings”*
75. *On the Sublime and Beautiful in Shelley’s “Frankenstein”*

are worth mentioning. These were virtually absent from the science corpus presumably because they are not informative enough for the scientist’s purpose.

5.3. Remaining linguistics titles

As we have seen in other title types, linguistics “remainder” titles fall between those found in science and literature papers. Thus, 50.7% of the linguistics titles were NP PP (PP)* (as compared to 72.9% in science and 18% in literature) but 13.5% were NP(and NP) (as compared to 3.3% in science and 14.8% in literature).

In spite of the similarity in frequency of post-modifying prepositional phrases in linguistics titles and science titles, we do not see in the linguistics titles the same degree of piling up of prepositional phrases which is so much a feature of science titles. There does not seem to be the same degree of pinpoint specification required

here of the particular research focus. Consider, for example, the following three (complete) linguistic titles:

76. *Acoustic markers of political power*
77. *Self-reference in press releases*
78. *Evidence in favour of a broad framework for pronunciation instruction*

In each case, it could be argued that science would require some further specification. (*Political power* as expressed by which language, or in which part of the world? *Press releases* where, in which language, and in relation to which area of activity? *Pronunciation instruction* in which language and at what level of learner competence?) That the titles are left at the level of this more general formulation may stem from the fact that there is not as much published in linguistics as there is in science. Fewer researchers and fewer published articles may mean that areas in linguistics are not as crowded as they are in science, so that there is less need to pinpoint precisely the very particular research focus. An intermediate level of specificity may be sufficient for the needs of the reader. It could even be suggested that too narrow a specification might turn some readers away. These possibilities are all, of course, conjectural but seem amenable to more empirical investigation.

Turning to the use of particular prepositions in postmodifying phrases, *of* does not stand out (as it does in science titles) as the most frequently used preposition since almost equal numbers of *of* and *in* occur in these linguistic titles. The corpus yielded a few instances of the pattern found in science: *The X of Y in Z*, where X usually but not always indicates a process nominalization, Y the patient and Z the geographical or disciplinary locus of the research. Examples are:

79. *Creation of proverbial wisdom in the laboratory*
80. *The study of imperative usage in biblical Hebrew and English*
81. *Possible origins of infixation in Khmer*

More commonly, the noun phrase is followed merely by an *of* phrase alone

82. *A collaborative planning model of intentional structure*
83. *Biological foundations of linguistic diversity*
84. *The perception of foreign-accented speech*

or by an *in* phrase alone

85. *Grammaticalization in American sign language*
86. *Asymmetrical cluster development in a disordered system*
87. *Definiteness in Czech*

The last example illustrates also the common ‘geographical’ use of *in* to introduce the particular language being studied. Apart from this heavy use of *of* and *in*, there

are occasional instances of a range of other prepositions (*on, for, by, among, to*), but no significant trend could be discerned here worth mentioning.

As in science, there were no linguistics titles in the form of participial phrases, but 7 linguistics titles were in the form of prepositional phrases, e.g.

- 88. *On the characterization of a chain shift in normal and delayed phonological acquisition*
- 89. *On experiential sentences*
- 90. *On the speaker-dependence of the perceived prominence of Fo peaks*

Once again, the status of linguistics title style as falling somewhere between that of science and literature is exemplified in these titles. First is the fact that titles of this type were totally absent from the science corpus but were found in the literature sample. Second is the fact that in examples (88) and (90), after the introductory *on*, the rest of the title follows the typical post-modification pattern found in science titles, while third is the fact that example (89) shows a brevity and succinctness found more in certain literature titles than in science titles.

6. Conclusion

At the beginning of this paper, the question was raised as to how far research paper titles could be thought of as headlines. In the course of the analysis, it was shown that some titles (although not as many as the literature would have led us to expect) depart completely from the characteristic block language of headlines by showing full-sentence construction. The remaining title patterns do show features of block language but only in that their construction may be reduced to the phrase level. However, another suggestion was made, namely that titles are like advertisements where the writer of the article tries to secure “customers” through an attractive presentation of his “products”. As in advertisements, the noun phrase has been shown to be a significant feature but, again, the analogy is not an exact one. Rush (1998) has pointed out that the noun phrase in advertising English is characterised by long strings of premodifiers. This is not the predominating feature of the noun phrase in research article titles. Instead, particularly in science paper titles, there is a characteristic piling up of post-modifiers, usually in the form of prepositional phrases. Rush cites as an advantage of the use of multiple premodifiers the fact that it “often produces a certain degree of vagueness” (p. 170). This may be advantageous in commercial advertising but would certainly not be so in what we might call “academic advertising”, where the pragmatic aims of the researcher are much better served by precision and explicitness in pinpointing the exact focus of the research. As we have seen, this is efficiently achieved through the use of both pre- and post-modification.

Swales (1990: 224) pithily sums up our position at this point. “Titles,” he writes, “consist of only a few words, but they are serious stuff.” Titles are indeed texts in miniature. All must add to the reader’s mental representation of the world by informing him that the paper he sees printed underneath the title he is currently

reading deals with “something or other.” As we have seen, this is not conveyed in full propositional form (This paper deals with.), but is implied, since the writer makes the pragmatic presupposition that the reader will know this already. (Where the full propositional form *is* used, the type of information being conveyed is different (We have found that.).) It is in how the “something or other” is revealed that so much of the variation in research article titles is found. We are therefore faced with the fundamental question: why are there so many ways of expressing what seems like such a basic item of information? This can be partly answered from an analysis of the information structure of the grammatical structures involved, as we have seen in, for example, the use of post-modification. However, this has to be complemented by a consideration of the pragmatic ends achieved through such variations in the structuring of information. In the present analysis, differences in pragmatic ends have been correlated with the professional contexts characterising the three disciplines under scrutiny. The essential contrast in the aims of the literature specialist and the scientist seems to be a factor operating even within the reduced scope of the research article title. The science title is an up-front, straightforward presentation of information, whether the information is that of what the paper has established or of what the paper is about. The literature title characteristically sets out to attract the reader through a kind of verbal flirtation, enticing the reader with suggestive and tantalisingly enigmatic hints of the delights that follow. In some cases, where this is carried to the point of obfuscation, it may be pertinent to ask whether this may actually result in turning the reader away in frustration instead of attracting him. There is also the risk that, where no explicit mention is made of the contents of the paper, the paper may be ‘lost’ if bibliographers working on the basis of titles alone cannot find sufficient to enable them to classify the paper. However, as we have seen, to the reader who is sufficiently persistent to undertake a reading of the paper, there may be the reward of being able to enjoy the academic entertainment often afforded by a post-hoc appreciation of the title’s germaneness and cleverness. In between science and literature are the linguistics titles which, while not conforming completely to either extreme, nevertheless correspond more to the science pattern than to the literature pattern, thereby upholding Haggan’s findings (op. cit.) regarding research article introductions. At the moment, it is hard to gauge how much of these styles are fundamentally determined by the intrinsic differences characterising the three disciplines and their practitioners and how much they are the result purely of accidental historic convention or tradition. In the science corpus, for instance, only one instance approaching a literary-type enigma was found: *Water on the sun: the sun yields more secrets to spectroscopy*. In spite of being written in what might be interpreted as popular magazine style, this appeared in *Contemporary Physics*. Thus, it is possible for the convention to be broken. How far scientists would welcome more of this and literature specialists more of the straightforward scientific style is impossible to say at this juncture. Scientists may not wish to appear lightweight or frivolous and literature scholars staid or unentertaining according to the norms of accustomed usage in their respective fields. To engage in such risky innovations may jeopardise peer acceptability of their papers. If titles really are advertisements, however, the very unexpectedness of any such departures from accepted convention may in itself attract.

Appendix. Source journals for titles

Literature

1. *American Journal of Philology* 118 (1) 1997
2. *American Journal of Philology* 118 (4) 1997
3. *American Literature* 70 (3) 1998
4. *American Literature* 71 (4) 1998
5. *Ariel: A Review of International English Literature* 29 (4) 1998
6. *Ariel: A Review of International English Literature* 30 (3) 1999
7. *Cambridge Quarterly* 27 (3) 1998
8. *Cambridge Quarterly* 28 (3) 1999
9. *Chicago Review* 44 (3 and 4) 1998
10. *College Literature* 26 (1) 1999
11. *College Literature* 26 (3) 1999
12. *Critical Inquiry* 25 (1) 1998
13. *Critical Inquiry* 26 (6) 1999
14. *Critique: Studies in Contemporary Fiction* 40 (1) 1999
15. *Critique: Studies in Contemporary Fiction* 40 (3) 1999
16. *Early American Literature* 34 (1) 1999
17. *Early American Literature* 34 (3) 1999
18. *English The Journal of the English Association* 47 (189) 1998
19. *English The Journal of the English Association* 48 (192) 1999
20. *Essays in Criticism* 48 (4) 1998
21. *Essays in Criticism* 49 (3) 1999
22. *Essays in Literature* 33 (1996)
23. *Forum for Modern Language Studies* 33 (3) 1997
24. *Forum for Modern Language Studies* 33 (4) 1997
25. *Hudson Review* 50 (4) 1998
26. *Hudson Review* 51 (4) 1999
27. *Literary Review* 42 (1) 1998
28. *Literary Review* 44 (1) 2000
29. *MLN* 112 (5) 1997
30. *Modern Drama* 42 (4) 1999
31. *Modern Language Review* 91 (1) 1998
32. *Modern Language Review* 93 (4) 1999
33. *PMLA* 113 (3) 1998
34. *PMLA* 113 (5) 1998
35. *Review of English Studies* 49 (196) 1998
36. *Review of English Studies* 50 (199) 1999
37. *Shakespeare Quarterly* 49 (4) 1998
38. *Studies in English Literature 1500-1900* 39 (1) 1999
39. *Studies in Philology* 95 (3) 1998
40. *Studies in Philology* 95 (4) 1998

Linguistics

1. *Applied Linguistics* 19 (4) 1998
2. *Applied Linguistics* 20 (2) 1999
3. *Clinical Linguistics and Phonetics* 12 (6) 1998
4. *Clinical Linguistics and Phonetics* 13 (6) 1999
5. *Cognitive Linguistics* 6 (4) 1997
6. *Cognitive Linguistics* 8 (2) 1999
7. *Computational Linguistics* 24 (4) 1998
8. *Computational Linguistics* 25 (3) 1999
9. *International Journal of American Linguistics* 64 (2) 1998
10. *International Journal of American Linguistics* 65 (2) 1999
11. *International Journal of Lexicography* 11 (1) 1998
12. *International Journal of Lexicography* 12 (4) 1999
13. *International Journal of the Sociology of Language* 127 1997
14. *International Journal of the Sociology of Language* 128 1997
15. *IRAL* 36 (4) 1998
16. *IRAL* 37 (1) 1999
17. *Journal of Child Language* 25 (1) 1998
18. *Journal of Child Language* 26 (1) 1999
19. *Journal of Linguistics* 34 (2) 1998
20. *Journal of Linguistics* 35 (2) 1999
21. *Journal of Phonetics* 26 (4) 1998
22. *Journal of Phonetics* 27 (3) 1999
23. *Journal of Pragmatics* 31 (2) 1999
24. *Journal of Pragmatics* 32 (12) 2000
25. *Journal of Psycholinguistic Research* 26 (1) 1997
26. *Journal of Psycholinguistic Research* 26 (6) 1997
27. *Language Acquisition: A Journal of Developmental Linguistics* 7 (2) 1998
28. *Language Acquisition: A Journal of Developmental Linguistics* 8 (2) 1999/2000
29. *Language and Speech* 41 (3-4) 1998
30. *Language and Speech* 42 (2-3) 1999
31. *Language in Society* 27 (4) 1998
32. *Language in Society* 28 (1) 1999
33. *Language Learning* 48 (3) 1997
34. *Language Learning* 49 (4) 1999
35. *Language Sciences* 21 (2) 1999
36. *Language Sciences* 21 (4) 1999
37. *Linguistic Analysis* 27 (1-2) 1997
38. *Linguistic Analysis* 29 (3-4) 1999
39. *Linguistics* 36 (4) 1998
40. *Linguistics* 37 (4) 1999
41. *Studies in Language* 22 (1-3) 1998
42. *Studies in Language* 23 (2) 1999
43. *Theoretical Linguistics* 23 (1) 1997
44. *Theoretical Linguistics* 23 (3) 1997

Science

1. *Behavioural Processes* 43 (3) 1998
2. *Behavioural Processes* 46 (2) 1999
3. *Biochemistry* August 11th 1998
4. *Biochemistry* August 17th 1999
5. *Biophysics* 42 (5) 1997
6. *Biophysics* 44 (6) 1999
7. *Botanical Journal of the Linnean Society* 127 (4) 1998
8. *Botanical Journal of the Linnean Society* 128 (4) 1999
9. *Bulletin of Entomological Research* 88 (4) 1998
10. *Bulletin of Entomological Research* 89 (3) 1999
11. *Contemporary Physics* 39 (July-August) 1998
12. *Contemporary Physics* 39 (September-October) 1998
13. *Ecological Entomology* 23 (3) 1998
14. *Ecological Entomology* 24 (1) 1999
15. *Genetics* 150 (1) 1998
16. *Genetics* 153 (1) 1999
17. *Human Genetics* 103 (1) 1998
18. *Human Genetics* 104 (1) 1999
19. *IBIS The International Journal of Avian Science* 140 (3) 1998
20. *IBIS The International Journal of Avian Science* 141 (3) 1999
21. *Journal of Applied Physics* 84 (4) 1998
22. *Journal of Applied Physics* 86 (5) 1999
23. *Journal of Crustacean Biology* 18 (3) 1998
24. *Journal of Crustacean Biology* 19 (3) 1999
25. *Journal of Inorganic Chemistry* 70 (3-4) 1998
26. *Journal of Inorganic Chemistry* 76 (1) 1999
27. *Journal of the American Chemistry Society* 120 (31) 1998
28. *Journal of the American Chemistry Society* 121 (31) 1999
29. *Journal of Zoology* 245 (3) 1998
30. *Journal of Zoology* 246 (3) 1999
31. *Plant Molecular Biology* 40 (1) 1998
32. *Plant Molecular Biology* 41 (1) 1999
33. *Plant Physiology* 117 (4) 1998
34. *Plant Physiology* 118 (4) 1999
35. *Sedimentary Geology* 120 (1-4) 1998
36. *Sedimentary Geology* 123 (1-2) 1999
37. *Solar Physics* 181 (1) 1998
38. *Solar Physics* 187 (2) 1999
39. *The Journal of Cell Biology* 142 (3) 1998
40. *The Journal of Cell Biology* 145 (3) 1999

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