PERSPECTIVES ON THE REVIEW OF RESEARCH PUBLICATIONS IN CONSTRUCTION MANAGEMENT

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It seems appropriate in a forum such as ARCOM to consider the impact of the peer review and referencing process on the preparation of research reports for conferences, journals and other publications. Both authors have extensive experience in writing and reviewing. The aim of this paper is to present and discuss their views concerning the production and presentation of various types of research publications. Issues are examined concerning the layout, content, style and presentation of summaries of research findings. The paper sets out some key aspects which influence the decisions of referees on the acceptability of papers and thus, hopefully, will play a part in raising the quality of submissions and the rate of acceptance without the need for major revisions. It examines the functions of title and abstract, as well as the importance of underlying methodological issues. Tips on literature review and referencing are offered, and suggestions are made on the use of language and illustrations.

Keywords: Construction, management, publications, research, review.

INTRODUCTION

Any serious research publication in journals or conference proceedings has to undergo a refereeing or reviewing process. The aim of this paper is to provide some insights into this process by indicating the key criteria and philosophies adopted when reaching decisions on whether to recommend publication, and providing advice to authors on amendments to enhance the papers they have submitted. Naturally, such advice is subject to the criteria and constraints of the publication medium and forum, and must be somewhat subjective.

The first consideration is a verdict on the contribution which the paper would make to the sum total of human knowledge in the relevant field. However, the nature and extent of the contribution required will vary with the publication. Few works can be claimed to make a truly negative contribution but, as Magnus Pyke (1960) declared, "there is too much published, and the pebbles of information are lost in the shingle; .... Printing was a long time coming; but now it has started, like the Sorcerer's Apprentice, there is no stopping it". What Magnus would have made of desktop publishing and the information explosion we shall, alas, never know! Furthermore, some offerings as research papers in the field of construction management seem to have a shelf-life between those of milk and yoghurt! No referees will wish to be associated with recommending such items for publication. Hence a demonstrable degree of endurance, as well as of importance, in the content is necessary.

The second major criterion is the applicability of an article to the particular journal, conference proceedings or other forum. There are things which are right to say, but

which can be said in the wrong places! The level of the publication must be matched to the audience. The reviewer will have a subjective view of what is appropriate in terms of level and content; normally, this is supplementary to the 'guidance for referees' provided by the journal editors, conferences organisers etc. Frequently, the referees' subjective views are more detailed, and are largely derived from extensive experience of the specific and similar publications. Particular problems may arise regarding new journals etc., so the role of referees is paramount in establishing appropriate 'standards'.

Referees must ensure that the writer's enthusiasm for the particular topic, which might be quite new to the referee, does not disguise a subject with which many readers are very familiar. "A wise scepticism is the first attribute of a good critic" according to Lovell (1848). Normally, referees are selected in accordance with their subject expertise and training but many publications do introduce new facets of topics, as well as entirely novel subjects. The audience may comprise people who are knowledgeable in the broad discipline only, rather than specialists in the field. Therefore, the aims of a reviewer will vary, depending on the nature of the publication. Few publications succeed in being appreciated fully by all who read them. They must, at least, be appropriate for the majority of the "target" audience.

Once a topic has been deemed to be both relevant and at an acceptable level, the paper can be entered for the full refereeing process. The obvious aim of submission of a preliminary abstract is to prevent abortive writing by the researcher and unnecessary detailed review by the referee. Essentially, the referee acts as a 'gatekeeper'. Any suggestions put forward by the referee when an abstract is being accepted must be acted upon if the full paper is to be approved upon review.

Every researcher wishes to see his/her work published in the appropriate forum with a minimum of rewriting after initial submission. Therfore, the writer should put himself figuratively, in the roles of the audience and the reviewer when proof-reading and assessing the paper prior to finalising it. Such a practice ought to lead to better, more readable and more comprehensible papers. These will, in turn, prove more effective in disseminating the results of research to the construction management community in general, and to researchers in particular. The objectives of the writer will therefore be achieved.

For centuries, there has been extensive writing about the work of the critic/reviewer, as can be shown by examining any anthology of quotations. Among the most prominent authors on the topics of critics and criticism are Johnson, Browning, Byron, Pope, Wilde, Disraeli, Shaw and Churchill, several of whom are quoted later in this text. Most artists are sensitive to criticism of their work but researchers must learn to accept (and, indeed, to welcome) valid and, hopefully, constructive criticism of their writings. Indeed, openness of critical review is the essence of scientific debate and advance in seeking 'the truth'. In preparing papers for review, one should bear in mind Arnold's definition of criticism as "a disinterested endeavour to learn and propagate the best that is known and thought in the world". When reacting to criticism, one should remember the words of Baruch (1983) "Never answer a critic, unless he is right!"

TITLE

Choice of an appropriate title is important for any 'publication' - a rose, by any other name, may well prove to smell as sweet but few might allow one near their noses

were it to be called, for example, "Fatal Poison" or "Fresh Manure". It is the title which will attract or repel readers through its initial impact. Admittedly, a highly-rated author might (and does) get away with outrageous titles; but for lesser mortals, the title is vital (no rhyme intended!). In the words of Turk & Kirkman (1989), "titles should be short, preferably on one line only; and they should specify exactly what the paper is talking about, not simply name a whole subject". It must contain enough information to direct attention as to its contents. As has been said about another object, it should be long enough to cover the subject but short enough to be interesting!

Only 42% of the 68 papers presented at the 1996 ARCOM conference had one-line titles. There may be no direct relationship between the quality of the papers and the conciseness of their titles; however, this hypothesis might be worthy of research! Another interesting feature is that the longest title among the 68 was co-authored by, possibly, the most eminent of all of the contributors. Turk and Kirkman (1989) suggested a useful technique for testing the words in a title by identifying those which might be used in a keyword index. Many of those which are unsuitable as keywords may not be strictly essential and could be eliminated from the title. Equally, titles must inform and illustrate distinctiveness, so a short but bland or general title may discourage both readers and reviewers.

Finally, it might be advisable for the title to be the last part of a paper to be written. One might determine a tentative title at the outset - necessary for a preliminary abstract if required - and finalise the title in view of the ultimate contents, immediately prior to submission. Certainly, most novelists leave it to the end, often changing it at the publisher's request or publishing it under different titles in different countries. This latter practice is rather akin to the occasional academic publishing identical or very similar work under different titles. Readers can draw their own conclusions about this. Referees who are up to date in their field should detect this easily and take the appropriate action - whatever that may be!

STRUCTURE

The essence of a good research publication is a logical structure which follows an appropriate sequence from introduction, through appropriate methodology (as explained by Edum-Fotwe et al (1996)) to results/findings, discussion, conclusions and recommendations. Lucid thinking on the part of the writer should produce a clear progression which draws the reader through the paper systematically. The end result should be that the reader understands the subject, the issues tackled and the rationale, and has gained an informed appreciation of the conclusions drawn, any recommendations made and the reasons for them.

The level of prior understanding of the topic by readers will have to be assessed carefully in deciding how much background theory, principles, literature and research details are to be included. One can err in either direction but probably it is better to do so on the side of caution in making this assessment. It is preferable to 'edit down' to yield a more concise publication. Structuring the publication under section and sub-section headings will assist the reader by providing an 'at-a-glance' indication of its contents and sequence.

Researchers want to be read and understood by a wide audience of their peers. Hence, everything possible should be done, within the constraints of space and time available, to ensure comprehension. Many aspects have a bearing on this, from the use of

numbered headings to writing style and use of pictorial representations. However, the most fundamental one will be the use of a suitable, rational sequence, developing the "argument" from introduction to final conclusion. Effective referees are scrupulous in assessing the progression of arguments when reviewing a paper and in voicing their concerns if dissatisfied with the logic.

THEORY AND LITERATURE REVIEW AND REFERENCING

There are several practices concerning theory and literature reviews which can greatly reduce the quality of a research publication. One is to list numerous "references" which relate to a subject but which have no direct bearing on the research being discussed. This detracts from the key texts and produces merely a bibliography which is appropriate for larger reports only. Whilst a long list of references gives the impression of being well-read and knowledgeable in the field, that is not a valid reason for the practice. Kipling (1893) observed, "He wrapped himself in quotations - as a beggar would enfold himself in the purple of emperors". In short, references should be cited only when they have a direct relevance to the research.

Another practice is 'self-quotation'; George Bernard Shaw once declared "I often quote myself. It adds spice to my conversation". A more recent Irish writer in the field of construction economics once quoted himself 13 times in a reference list of 19 sources for a conference paper of 8 pages. There is little merit in such practice, apart from seeking to raise one's profile in citation indices. It is hard to believe that each of a large number of writings on the same topic by the one individual contains enough original insights to merit such self-citation (Is self-citation a real recommendation?).

Other researchers fall down in not supplying enough background sources to illustrate the foundation for their own work. Reviewers will expect to see an appropriate cross-section of relevant theory and literature examined critically to establish the rationale for the research. They will be particularly impressed by inclusion of some recent publications and some lesser-known ones but this is a very subjective area. Writers must find a balance between a lengthy bibliography and a tiny list which implies that the present research has few antecedents or comparators. All references must be cited accurately, in the format laid down by the publisher. Referees may check the accuracy of entries and deal firmly with writers who have failed to meet the requirement. One of the primary reasons for publishing scholarly research is to assist readers in their own studies. Failure to provide adequate and accessible references will render such assistance ineffective. As a rough guide, approximately 3 references per page of text seems to be appropriate for a short research publication.

METHODOLOGY

A research publication is expected to be a summary of the findings of an investigation or study which leads to an increase in knowledge. There has been a tradition of rationalism, particularly in construction management papers, as identified by Seymour & Rooke (1995). This assumes a particular methodological basis, frequently taken for granted in research reports. Simister (1993) claimed that it is just as important to discuss the methods used in research as it is to disseminate its results and conclusions. However, researchers must beware of using spuriously deterministic research methods when seeking solutions to stochastic problems, as cautioned by Gunning (1996a). The explanation of methodology must not be so far above the readers' heads that they are unable to jump for it! Referees must assess the "academic rigour" of papers

submitted. The growing acceptance of philosophical, as well as rational, methodologies shows a maturing within the discipline of construction management. It is not always appropriate to employ a "scientific method" in research, yet it is essential to demonstrate that a rigorous approach, based on clear philosophical and theoretical foundations, has been followed. Edum-Fotwe et al (1996) identified the major subject disciplines which interact in construction management to be Economics, Sociology, Philosophy and Technology. Psychology is a primary candidate to be added to their list! They summarised the six major methodologies as being:

QUANTITATIVE   QUALITATIVE

Positivism   Phenomenology

Deduction   Symbolic Interactionism

Comparison   Hermeneutics

Researchers should have a clear understanding of the methodological issues relating to their work but should not allow overly-detailed explanation of these issues to cloud the focus of their reports. The most effective research publications display divergent thought coupled with an incisive approach which leads the reader concisely from background to research methods, followed by conclusions, insights and solutions. This is what referees are looking for (and what makes their work much easier).

RESULTS AND DISCUSSION

It is essential that the results of the research and their implications are discussed fully, clearly and precisely. The inferences drawn from the observations should be substantiated by the appropriate quantity of facts and figures necessary. A research paper, if it is to be kept to the typical length of around 10 pages, is not the place to present all of the detailed findings of the foregoing work. It is all too easy to confuse the reader with a mass of results which can conceal the key information. As is common with modern management information systems, one can have far too much data and too little information. Hence, a minimalist approach is advocated. In the words of Turk and Kirkman (1989) "to record and discuss every result is overkill; some detail should be left in an appendix, or a filing cabinet". It is much more important that readers have a manageable argument to follow rather than have a total account of all of the research outcomes.

In discussing findings, it is necessary to draw inferences rather than to merely restate the results. One must examine the results of empirical work in the context of any previous research in the field. It is necessary to draw appropriate comparisons and to identify any emerging trends or changes. Detailed examination of the cause and effect relationships, and resulting implications for construction management research or practice, will distinguish a rigorous and valuable paper from a trivial one. It is expected that all research papers will end with some concluding remarks and recommendations. These should be a rational progression from all of the preceding sections, drawing together the various strands in a summarising statement, and leading directly to clear suggestions. This part of the report is not the place for detailed discussion. Essentially, it is a list, recapping the major outcomes of the research and their implications for research or practice. Many readers may proceed directly from the initial abstract to this section before deciding to study the entire paper. Hence, it should be written in a crisp and direct fashion which presents the conclusions and recommendations resulting from the research in a way which invites further perusal.

In many ways, this is the most important part of the paper. Many reviewers are continually surprised at how good research is undermined by a failure to draw proper conclusions and recommendations from the results of intensive investigation. The conclusions drawn from the findings should be stated succinctly, following the discussion. Effective writers devote much time and effort to developing a logical progression from research results, through analysis, to appropriate conclusions. Failure to do so will result in a woolly presentation which reflects badly on the researcher and which generates harsh criticism from referees.

STYLE OF WRITING

Samuel Johnson (1791) was once advised by a college tutor to "Read over your compositions, and whenever you meet with a passage which you think is particularly fine, strike it out!". This makes the point that exceptionally flowery language may well detract from the essence of what is being written. Connolly (1971) described the "Mandarin" style of writers whose tendency is to make their language convey more than they really mean. He also declared that "an author arrives at a good style when his language performs what is required of it without shyness". George Bernard Shaw put it another way when he declared that "style is effectiveness of assertion".

According to Orwell (1968), style for functional writing should be "unobtrusive, an invisible medium like a window pane through which the information can be clearly seen". Writing style should consider the readers, as well as the content of the work and the 'norms' for the particular medium. Readability is affected by the length of sentences, the language used and the physical layout of the report. Long words and technical jargon may confuse readers rather than impress them. A buzz-phase generator has been devised by the Canadian Defence Department, as quoted by Gowers (1954), to illustrate how rather meaningless phrases can be produced to give an impression of expertise (which an expert reviewer should dismiss immediately). Foster (1996) has developed this into a Personal Instant Technophrase Computer which can generate many thousands of such options. An informal working party of ARCOM, including the present authors, produced a similar listing for Construction Management, published in the ARCOM Newsletter of June 1995.

Nominalisation, the linguistic term for turning verbs into nouns, reduces the dynamism of writing and promotes lengthy, passive sentences. Writers should remember the words of Gowers (1954) "prefer the active to the passive, the short to the long....". Svartik (1966) found that passive construction is about 5 times as common in scientific writing as in novels. This extends and obscures the desired message and thus reduces its impact. Kirkman (1975) carried out detailed research which concluded that most readers of scientific papers prefer "direct language, with verbs mainly active, a minimum of special vocabulary, judicious use of personal and impersonal constructions, sentences of varied length but mainly short and not complex".

The task of writers with regard to spelling and grammar has been eased greatly by the use of word processing. A spell check programme will detect misspelled and duplicate words, as well as capitalization errors. A thesaurus can add variety to the text. Grammatical errors can be highlighted by a grammar check. Finally, readability statistics can be generated for a range of data such as characters per word, words per sentence, sentences per paragraph, proportion of passive sentences and a range of indices for readability grades. Of course, the use made of such objective data may be

entirely subjective and, ultimately it is up to the author as to what form the paper will take; final, that is, until the reviewer has a say! Despite its many advantages, the use of word-processors requires a high degree of training and discipline on the part of writers to prevent the increased capacity for planning and revising text from proliferating unreadable prose. Whilst it can encourage a flow of expression and rigorous proof-reading, use of a computer can lead to boring repetition of words and phrases, as well as verbosity and unnecessary expansion of a paper. Electronic devices may minimise the physical effort but cannot replace original thinking and creative expression, which are the hallmarks of excellence in a research paper.

In order to maximise the effective readership of a publication in construction management, writers must remember that some readers will not have English as their mother-tongue, may not have an advanced knowledge of the topic or may read the publication after translation. Hence a direct informative style with a minimum of lengthy, technical terms is likely to prove most effective. The English language has many verbose and unwieldy phrases to replace common terms. Writers who choose these in an attempt to add variety, elegance and an impression of their erudition are likely to create the opposite view on the part of reviewers. Referees are unlikely to produce favourable reviews of a paper which they find difficult to follow. The tip is, therefore, to write in a simple style which communicates the intended message of the paper effectively, accurately and without undue bias.

The use of humour in a technical publication is a highly debatable topic. Some writers view it as part of their personal style but humour will be counter-productive if it detracts from the real message of the writing. Gunning (1996b) has argued that it may serve to relieve the tedium of a highly technical publication and will help readers to maintain concentration on the topic. However, many technical writers seem to feel that humour trivialises an issue and most readers do not expect to find humour within a paper on construction management. To incorporate humour invites an observation similar to that of Samuel Johnson (1791) about a woman preaching; "it may not be done well, but the wonder is that it is done at all!" On balance, readers and referees will be surprised to find humour in a technical publication and a humorous approach may devalue a paper's scientific worth in the eyes of a reviewer.

ILLUSTRATIONS

If a picture tells a thousand words, there is much to be said in favour of maximising the use of tables, charts, graphs and diagrams in a presentation. A well-organised illustration may well be understood faster and remembered longer than a written description (consider Bills of Quantities). Numbers, symbols, shapes and lines constitute the equivalent of a verbal vocabulary and should be selected and presented with care at least equal to that given to writing words. The detail must be limited appropriately and accepted conventions followed. Visual signalling such as colour/shading, ruling, spatial grouping and alignment all affect the communication of information. Modern technology has greatly assisted the production of a wide range of graphs and charts (Pie, Bar, Histogram, Surface etc.). Undoubtedly, charts can have great visual impact. There is a school of thought that the "younger generation" now expect information to be made available in short, sharp "bites", rather than in long-winded passages or pages. An effective illustration is the visual equivalent of a "sound-bite" and seems to be more appropriate to the present youth culture with its apparent inability to concentrate for long on any one topic!

However, in the words of Parry (1967) "visual presentation can be overdone; the inexpert user of charts and diagrams often fails to resist the temptation to try to say too much at a time. The keynote of nearly all diagrammatic presentation lies in simplicity of design and absence of cluttering detail. 'One point per diagram' is a helpful maxim - the author should be prepared to omit detail for clarity. A sequence of logically developed charts invariably is preferable to a single monsterpiece which, in saying everything, is saying nothing". There is a danger that the attractiveness of a decorative pictogram or cartoon can blur the central issue. Wheatley (1988) provides an example, in the advertiser's belief that a picture of a retired man lounging in a deck-chair with a tray of drinks by his side makes a piece of pension gobbledegook become immediately comprehensible. Diagrams can provide a particularly powerful summary of some types of research, but they should be used only where they add something useful to the words of the paper.

ABSTRACTS/SUMMARIES

Although abstracts and summaries are not synonymous, both constitute succinct statements of the contents of a publication. They should be informative and not merely hint at the facts within the full document. A coy descriptive abstract merely arouses the readers' curiosity by the promise of what lies within. This could lead to ultimate disappointment or frustration.

There is a difference between an abstract submitted for prior approval for a conference and an abstract/summary which precedes a full paper. In some cases the draft abstract gives the outline of work which has not yet been carried out so can be descriptive only. Where the work has been completed, the "draft for approval" abstract may form the published summary.

In the view of Turk and Kirkman (1989) an abstract/summary has 4 major purposes:

1. acting as an extended title, denoting contents,

2. presenting a short version of the entire report,

3. acting as a map to guide readers through the publication,

4. forming an aide-memoire by providing repetition and reinforcement.

It will help readers to decide upon the need for deeper reading by identifying the aims and objectives of the work, the outline methodology and its key findings. If constructed appropriately, it will create the correct impression of the work in the mind of the reviewer.

Although appearing at the beginning, an abstract/summary should normally be written last, based on the contents of the completed paper. It need not follow an identical sequence to the paper but should concentrate on the most important facets of the research. An abstract should use specifics rather than vague generalisations. It is essential to summarise the major conclusions. In most research papers, abstracts/summaries are about 200-300 words long, (being between 5 and 10% of the total publication), which should satisfy most referees if the work is accurate and self-contained.

CONCLUSIONS AND RECOMMENDATIONS

There are several key messages which may be drawn from the foregoing to guide the writer on how to please a reviewer:

1. The guidelines provided by the intended publisher, including length and format, must be strictly adhered to.

2. The topic must be of interest and relevance to the intended readers, be they researchers, practitioners or both.

3. The paper should be written in a style which is readable and uses terminology which is easy to understand, given the expected level of prior knowledge of the readership.

4. The title and abstract must be concise and informative.

5. There should be an appropriate review of previous work, up to date and referenced correctly.

6. The research process and methodology must be identified clearly within the paper and be appropriate and objective.

7. Discussion and conclusions should follow logically from the results of the research described.

8. The recommendations must be a rational progression, articulating the implications of the research.

Cooper (1975) has produced an 18-point list to act as a quick check on a report. Its items are:
Purpose/Audience/Effect/Comprehensiveness/Relevance/Development/Balance/
Arrangement/Introduction/Summary/Conclusion/Appendices/Diagrams/References/
Format/Symbols/Mathematics/Vocabulary. Thirty years after initial publication, these items remain of key importance to writers and reviewers.

Deficiencies in language, spelling and grammar can undermine the credibility of the work. Punctuation is a more complex issue in that its code is evolving continuously. According to Fowler (1970: 233-4) "the work of punctuation is mainly to show, or hint at, the grammatical relation between word, phrases, clauses and sentences; but it must not be forgotten that stops also serve to regulate pace, to throw emphasis on particular words and give them significance, and to indicate tone". There is rarely a single, correct way to punctuate a long sentence - so the best advice is to stick to shorter sentences with, consequently, a reduced need for punctuation marks.

The referee of a technical paper is very much like the respondent to a pilot survey with responsibility for ensuring adequate standards to the ultimate readership as well as to the publisher. As long ago as 400BC, the Greek Zeuxis stated "criticism comes easer than craftsmanship". More recently, Byron (1821) wrote "a man must serve his time to every trade/save censure; critics all are ready made". Disraeli declared that it is much easier to be critical than to be correct. The referee must spend considerable time and effort in carrying out an effective review which will benefit both the writer and the eventual readers. Writers can make things easy for everyone by following the principles developed in this paper.

A parting thought for researchers is the opinion of Sibelius, who declared "Pay no attention to what the critics say; no statue has ever been put up a critic"! Any fool can criticize and many of them do, sometimes without (apparently) reading the research paper fully. However, it is the earnest hope of the authors that this paper will serve to guide researchers in construction management towards the production and publication of even more effective papers which will find their way painlessly through the

review/refereeing process. It may also serve to remind reviewers amongst its readership also of their duty to uphold standards in those research papers which they recommend for publication.

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