

# REFEREED JOURNAL PAPERS: PRACTICE AND PROCESS

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**Abstract:** Research must be published, otherwise it will be lost. The most important papers for a researcher to produce are those published in international refereed journals. Good practice in writing papers is something that can be learned. The editorial process involves sending submitted papers to independent experts in the field, usually anonymously, and their comments inform the editor, who decides whether and how to progress with a paper. Much of this is as obscure to experienced researchers as it is to new ones. With forethought and planning, the success rate of getting submitted papers accepted for publication can be increased. Editors and publishers are generally very keen to help people improve their success rate.

Keywords: editing, peer review, publishing, refereeing, writing.

## INTRODUCTION

Good journal papers are a pleasure to read but for many people, a pain to produce. For some people, writing is a pleasure. For most academics, it is simply essential as the output of research is as good as lost, unless it is published and disseminated. Indeed, the most important feature of an academic CV is the list of publications. It is not just the quantity that matters, but where they are published. The reason that journal papers are often regarded as the most important type of publication is because of the vetting process through which papers are put. Generally, the more rigorous the vetting process, the higher it is rated by the academic community.

## WRITING GOOD JOURNAL PAPERS

A good paper will form a record of progress in research, adding to our collective understanding of the particular topic. Although there is a preponderance of empirical research in a field like construction management, papers which build theory ought to form part of the literature. Generally, papers should either develop or test some kind of theory. It is not necessary to do both in the same paper, but a paper that does neither will not add to the sum of knowledge and therefore will not fall into the category of a research paper. Such a paper should quickly be rejected from a refereed journal and directed instead to a more general interest magazine. There is a big difference between “archival research journals” and other kinds of periodical.

One very useful and, sadly, unusual way to contribute to theory is to produce a survey paper (also known as a review paper). These seem few and far between, but a good survey paper will critically review the literature in a particular topic or sub-topic, and

place the various contributions in relation to each other, showing the emergence and development of ideas and evaluating the relative strengths and weaknesses of the various strands of enquiry already published. By pulling together all the literature in this way, an enormous contribution to our understanding may be made. Generally, though, most people in our field produce papers that report the results of empirical research.

### **Structure and style**

Any report of research begins with a review of the relevant body of literature, and those who are uncertain about how to do this should look for guidance in Silverman (2000: 12) and in Rudestam and Newton (1998: 50-51). In all papers, a structure is required and the argument should flow from one section to the next. Obviously, clear English should be used throughout and jargon should be avoided. There is a great tendency among researchers to use too much jargon. It has its place. If you are conversing with other experts in your field, then an agreed jargon is an extremely shorthand way of communicating large ideas quickly. However, you have to be clear that there is agreement on jargon (this can be helped by providing an index or table of terms) and that the paper is directed exclusively and specifically to such an audience. The general rule is to stick to clear, basic English.

In terms of overall structure, good papers will move from the general to the particular and begin with the context of the work, move through the statement of the problem being investigated, deal with the empirical and/or analytical aspects of the work, then develop the discussion and draw conclusions based upon what has been covered in the paper, relating these back to the original context of the work. Issues connected with style, structure and presentation are dealt with extensively elsewhere in the literature (for example, Turk and Kirkman 1982) and there is no need to reiterate that guidance here, other than to state that the easiest questions can be the most difficult to answer: what have you done, why is it important and how have you gone about it?

### **Conceptualization and theoretical basis of the work**

There should be a clear statement near the beginning of a paper explaining the problem that the paper seeks to resolve. Authors often mistakenly leave this until half way through the paper, or even omit it altogether.

Any serious piece of research will involve concepts that are specific to the issue being investigated, or to the investigative approach that has been taken. These should be summarized and explained if they are not common within the field of the target audience. This is not just a case of explaining the concepts related to the particular phenomena under investigation, but, more importantly, to identify the methodological basis of the work: to answer the question, “what kind of research is this?” However, a research paper is not place for “text-book” explanations. You should report what you have done and what you have discovered, and show how it relates to what we already know. Of course, the nature of the investigation is inevitably connected to some issue of relevance in society, or more specifically in the construction industry, but, while it may seem heretical to some, it is not necessary for a piece of construction management research to be practically relevant to industrial concerns. A piece of research may hold relevance only for other researchers, but that should not detract from our judgment of its value. The aim should be to advance our understanding. This is not necessarily the same as increasing the productivity of an industrial sector or the profitability of a company.

There should be explicit connections to an existing body of knowledge or body of theory, although these may not reside in the literature of construction management. Indeed, it is helpful if there are references to bodies of research and knowledge outside our own “domain”, since ours is not an academic discipline in its own right, with its own research techniques and theories (Hughes 1999). While there are some emerging strands of theory that are unique to construction management or construction economics, most research in this area builds upon theoretical models developed elsewhere in the social sciences. These connections must be identified in order to make clear where a particular piece of work is rooted and to ensure that we are not simply re-inventing theories and models that are well-known in more mainstream disciplines. Without such connections, we run the risk of consigning our research to an academic backwater. With such connections, we may even be able to influence developments in mainstream thinking. In determining the theoretical basis of a piece of research, it is useful to think about knowledge domains.

These issues are important because progress in our understanding often depends upon our ability to generalize from specific examples. One useful question is “what is the general class of problem of which your chosen topic is a specific example?”. Understanding this enables some kind of view to be developed about the extent to which findings might be generalized into a wider context. Thus, good papers will begin with what is well-known and move gradually deeper into the less well-known (Latour, 1987: 57).

In citing the work of others it is important not to merely drop names in. Many authors write a sentence, and then place a citation at the end of it, indicating that someone else has already made this assertion. But this widespread practice is not helpful. First, it does not tell the reader whether the original author concluded a piece of systematic research with this idea, or, perhaps, merely mentioned it in passing.

Relying on a statement as true merely because someone else has already written it is not what the citation of literature is supposed to be about. Better practice would not involve mere name-dropping, but would involve a sentence, or part of a sentence, explaining what the authors did to come to their conclusion. And if they did not carry out research in the development of their ideas, then their ideas are no more or less important than anyone else’s, and should be treated as such. Ideas and conclusions that have resulted from careful, replicable research should be cited as such, indicating that you understand what other researchers have done, and whether you are citing good or bad research.

The construction of a scientific argument relies on the steady accretion of analytical and empirical results (Latour 1987). Mind you, as it stands, this assertion is another example of how we all fall into this trap of name-dropping, instead of citing someone’s work properly. The sentence should read: *The construction of a scientific argument relies on the steady accretion of analytical and empirical results, a process that has been very clearly explained by Latour (1987) in his discussion of how scientific arguments are constructed.* Thus, we would expect, when seeing names cited as authority for some idea, to be told what they did to come to their conclusion. It is not a question of being right or wrong, just of letting readers understand the context of the ideas we are citing. If you are interested in a more detailed exposition of this kind of thing, Latour’s book is a very readable and interesting account of how to make and develop a scientific argument.

### **Analytical framework and hypotheses**

The analytical framework of a research paper is not always clearly articulated. It should be. The extent to which a particular approach is authoritative is often judged in terms of where it has come from. Connections to the research literature should be expected in the passages describing the analytical framework. When this is done well, it makes clear the credibility of a paper by showing the usefulness of the particular approach, or approaches that precede it.

One perennial problem with research papers in our field is the question of whether there should be hypotheses. They are certainly not a pre-requisite for a good research paper. In fact, they may not belong at all. The question about whether there should be hypotheses is, perhaps, a wrong question. Their presence or absence depends upon the methodological stance of the research. It is not intended to enter into the methodological debate here, other than to point out the dangers of not understanding the methodological implications of different approaches to research (see, for example, Seymour and Rooke, 1995). Given one methodological stance, hypotheses may be irrelevant. Given another, they may be indispensable.

If there are hypotheses, they should be clearly stated. If there are no hypotheses, then this, of itself, is not a problem, but it should be clear whether the paper is a review, a case study, a contribution to theory development or some other type of study. Without clear articulation, the reader stands no chance of determining the value of the contribution. In the presence of hypotheses, the relationships between the main variables should be explicit and reasonable. They should be stated in a way that makes them testable and the results, no matter what they are, interpretable. If the research is not built on hypotheses, the significance of the paper's contribution to the development of theory must be explained.

### **Research design**

There are many methods that can be used to find answers to questions. Some are more suitable than others. In answering certain types of question, one particular method may be very powerful, but the same method may be weak in dealing with other types of question. Therefore, the relevance of the methods of research will be judged in terms of their appropriateness to the nature of the question being asked. Similarly, the sensitivity of the methods must match the needs of the research question. A good paper will make clear the type of research design, perhaps by reference to earlier, similar studies from different regions, different industries or different disciplines.

The research must be focused on an appropriate unit of analysis. It is useful to describe the criteria by which this was chosen, as well as the criteria by which the cases were chosen. For example, the unit of analysis could be a person, a finished building, a project, a firm, an industry or a country. Each would result in an entirely different study from the others. Moreover, cases might be selected from a large number of similar cases, which would imply one kind of approach, or the question might be framed in such a way that there is only one case, implying an entirely different approach. Neither, of itself, is more or less valid than the other. Indeed no judgement can be made about the validity of a piece of research simply by counting the cases or referring to the unit of analysis. Each characteristic depends on the other.

It is always important to address whether the research design isolates what is being measured from other effects, or, at the very least, identifies the inter-relationships between the effect under scrutiny and other effects. If the research design involves the

identification of variables, they need to be clearly and reasonably operationalized (i.e. translated into simple descriptions of what is measured and how it is to be measured) and the reliability and validity of the measures should be discussed. Similarly, there will be issues related to the appropriateness of the population for the research question being studied, the sample size used and the extent to which the results can reasonably be generalized on the basis of this particular sample.

Again, not all research is as deterministic as this, but there are traditions in different types of work and if a phenomenological or ethnographic approach is being adopted, then the author should take this stance clearly and confidently and not try to dress it up in hypothetico-deductive clothes! These issues are well-articulated by Johnson and Duberley (2000), who warn against the dangers of not dealing with the epistemological positions that are implicit in different approaches to empirical research.

### **Results and discussion**

Within the research paper, the data or evidence of the field-work must be present in some guise. But there are always limits on the length of papers, whether for conferences or for journals. It is inevitable that the data will not be reported in their entirety through these outlets. Thus, one technique is to describe what the data *is like*, rather than what it is, giving examples. The full record of the data can be maintained elsewhere, perhaps in a departmental library or on the internet, so that the interested reader can interrogate the data further.

In any event, there must be sufficient information within the paper itself for the reader to evaluate whether the data were appropriate for the study and whether the data collection and record keeping were systematic. Similarly, the validity and robustness of the results of the study will depend upon whether the analytical techniques were appropriate and adequately described. Most importantly, there should be reference to accepted procedures for analysis. This helps the reader to understand what kind of tradition there is in the particular kind of analysis and how such research is generally reported.

In assessing how systematic the analysis has been, one of the main ideas is to persuade the reader that if he or she were to have done the same things, then the same conclusions would have been reached (Latour 1987). Again, it is important that this very statement implies a certain epistemological stance, so the researcher and the reader need to be clear about whether they are working from the same basis in coming to their views about the results and their discussion.

### **Conclusions of a paper**

Conclusions can be the most difficult part of a paper to write, particularly if the context and research design have not been addressed properly in the first place. It is often the case that those who have the greatest difficulty writing conclusions can trace their difficulties to poor research planning. When research is well planned, the conclusions become obvious from the work that has been reported.

No new facts should be introduced in the conclusions. The conclusions of the study should be consistent with the results of the analysis. Where there is no numerical analysis, the conclusions should be consistent with, and follow from, the development of the argument in the paper. One thing that is usually not necessary is to include a further summary of the contents of the paper.

In many cases, conclusions can be bolstered by considering whether there are alternative conclusions that are consistent with the data or arguments that have been presented. Also, it is useful to consider both theoretical and practical implications of the results. If the research has been properly contextualized at the beginning of the paper, the theoretical implications of the reported research can be adequately connected to the literature discussed there.

The limitations of the study should be noted, but only in terms of the parameters of the research and applicability of the findings. Authors sometimes misinterpret the purpose of a section on limitations of the work and attempt to indulge in soul-searching self-criticism, identifying faults in the execution and reporting of their own work. This is simply not required. The section on limitations should make clear that, for example, the conclusions do not apply to all construction activity in all places at all times. The approach taken in the research enables certain generalizations to be made, but what are they?

Conclusions can also be bolstered by including discussion of the evidence for and against the researcher's arguments and making a clear distinction between the data and their interpretation.

## **ELEMENTS OF A JOURNAL SUBMISSION**

A paper submitted to any journal will consist of a manuscript, surrounded by a lot of data about the paper itself.

### **Covering letter**

While most authors write little more than a note asking for a paper to be considered for publication, some go a little further and see the covering letter as an important part of the submission. Gump (2004), for example, shows that there are many things an author can do to expedite the progress of a paper. An author can make clear which institution hosted the research work, indicating qualifications, job title and so on, or at the very least, some indication of why he or she is authoritative on the topic. As papers are sometimes rejected for being beyond the scope of a journal, and in such circumstances would not even get into the refereeing process, it is important to address the letter to the right person, include the title, and the number of words. One very useful piece of advice that Gump provides is to explain to the editor how this paper relates to the scope of the journal. It is also wise to confirm that this is an original submission, and that is not simultaneously being considered elsewhere. There are ethics associated with submitting papers, and it is important to make it clear that you are aware of them. Simple things, like your full contact address and details are often missing from covering letters. Including them can only help. Donovan (2004) adds a further suggestion for covering letters: suggested referees. An editor can be given very useful guidance by an author who suggests two or three referees. Not that they will necessarily be used, but understanding what kind of expertise is best for reviewing a paper will help an editor choose appropriate referees. Similarly, you might wish to provide details of referees to specifically exclude, either because you know of certain individuals who are simply set against your work, or to whom you are related, or who have worked closely with you in the past on this work. Guidance about referees to choose or to avoid is very helpful for editors.

### **Authorship**

The numbers of authors per paper seem to be growing. Analysing data on published papers since 1983 in our field (Hughes 2000), I discovered that the number of authors per paper was growing, on the average, and faster than the number of institutions per paper. What this means is that although more people are being identified as authors, they are tending to be within the same institution, rather than from different places. This indicates a growth in multiple authorship, but not in inter-institutional collaboration. One worrying aspect of authorship is the question of whether all the authors actually contributed to the writing of the text in the paper. There are different traditions in different areas of science. For example, in some sciences, the head of the institution, the head of the research team, the technicians who provided the resources to enable the research are all cited as joint authors, even though they may have contributed none of the text. In other areas, only those who directly contributed text would be listed as authors. The latter tends to be the case in construction management, although there are some notable exceptions. Because we operate with different assumptions, there is confusion around this issue, and all authors should clarify who will be listed, and in what sequence, before they begin work on their papers, to avoid divisive and difficult arguments later in the process. One alternative to joint authorship, for someone who is not actually an author, is to include mention of them in the acknowledgements.

### **Acknowledgements**

The acknowledgements are frequently missing in papers. In this section, authors can acknowledge the support of the research funders, the contribution of non-authoring colleagues in their research team, the contribution of data subjects, whether anonymous or named, and the contribution of anonymous referees, whose comments often help authors to produce much better papers than would otherwise have been the case. This is not just simple courtesy, but a clear way of communicating to others that you understand the complex processes of research and publication. No one can get through these processes alone, so I would expect acknowledgements in every paper. Of course, it is important that acknowledgements are not sent to referees with the paper for reviewing. One way for accomplishing this is to put the acknowledgements in a separate file, "not for reviewing", that can be incorporated into the paper after acceptance, before publication. Many journals would do this as a matter of course.

### **Abstract**

Any research paper is capable of being summarized succinctly. Papers are expected to include an abstract or summary at the beginning, especially in the cases of conferences and journals, but this should be the last thing to be written and, as such, may be the least considered but most important part of any paper!

In summarizing the contents of a paper, there are several aspects to be borne in mind. Readers of a journal will read most of the abstracts, but very few will read the full papers. Perhaps 95% of readers will read only the abstract. The need for abstracts to be terse often causes difficulty and can taint what is otherwise a perfectly acceptable style of writing. Certain problems are frequently encountered. The abstract should not be a table of contents in prose, neither should it be a mere introduction. It should be informative. Tell the reader what the research was about, how it was undertaken and what was discovered, but not how the paper is organized. The main findings must be summarized. If there are too many of them, then just exemplify them in the

abstract. Some journals call for structured abstract, but even a journal that does not go that far will deserve an abstract that contains certain essential elements:

- Background: A simple opening sentence or two placing the work in context.
- Aims: One or two sentences giving the purpose of the work.
- Method(s): One or two sentences explaining what was done.
- Results: One or two sentences indicating the main findings.
- Conclusions: One sentence giving the most important consequences of the work.

The worst abstract I ever came across had to be completely re-written as it told me nothing about the paper, even though it was not wrong. In fact, I realized later that this abstract could be used to describe most papers I have ever seen. It includes nearly every error in abstract writing, so here it is:

*This paper discusses research which was undertaken in the author's country. A theoretical framework is developed from a literature search and this is used by the authors as the basis of an analytical model. The researchers collected data within this framework and analysed it according to the precepts laid down by earlier researchers in the field. The data is used to demonstrate that our understanding can be significantly increased and this is discussed in the light of previous work. Conclusions are drawn and it is shown that these may be useful for practitioners.*

### **Keywords**

I have encountered many strange practices in the way that authors choose keywords for their papers. I am constantly wondering why anyone would add “construction” as a keyword in a construction journal. Similarly, keywords like “project site”, “site operations”, “site practice” are all used inconsistently, where any one of them would suit all three purposes. Another common practice is a noun-phrase that combines more than one concept, for example “procurement case studies”, which really should be two keywords, “procurement” and “case studies”; in an alphabetical list, someone searching for “case studies” would miss entirely a paper entered under “procurement case studies”. Most people are not particularly worried about keywords, so they would not even look for advice on how to choose them. Quite often, authors’ keywords are merely the main words from the title, but choosing keywords in this way seems to miss the point.

Help is at hand in the guise of a British Standard; BS 6529:1984 Examining documents, determining their subjects and selecting indexing terms. This is a very useful source for working out the difference between good practice and bad practice. Among other things, reading this standard helped me to understand my discomfort with the widespread practice of simply copying the words of the title into the keywords. The title denotes the subject of the document, whereas the keywords provide indexing terms for the concepts that are dealt with in the document. Clearly, there is scope for some words appearing in both the title and the keywords, but not without careful consideration.

How, then, should we choose our keywords? It is best to keep keywords simple by using common words, and by not inventing new words for familiar concepts. In choosing specific keywords, it may be useful to consider choosing words from a series of categories, as follows:



- **Discipline:** e.g. economics, architecture, statistics, management, organization, financial accounting, psychology, social science.
- **Methods:** e.g. analytical, grounded theory, case study, interviews, experiment.
- **Phenomenon:** e.g. information systems, control systems, quality systems, cost systems, procurement, business process, culture.
- **Data source:** e.g. construction sector, civil engineering, property development, commercial building, housebuilding.
- **Location:** e.g. town, country, region.
- **Unit of analysis:** e.g. industry, profession, construction firm, consultancy firm, construction project, design project, briefing, documentation, tendering, construction, occupation, maintenance, disposal, individual.

Choosing a keyword for the discipline of a piece of research is important, but not obvious. For example, in *Construction Management and Economics*, it is pointless including the word “construction” as a keyword, because, to the extent that it is relevant to one paper, it would be relevant to them all. But a similar paper in *Journal of Law and Economics* would need it. On the other hand, a database of papers including both journals may need what appear to be obvious keywords, but these would need to be added by the database compiler, as they would not belong in the published version of the paper.

As well as advice about how to choose keywords, it may be apposite to provide some advice about what not to do. For example, authors sometimes use the same noun-phrases consecutively; one recent example was “careers” and “career development” both for the same paper, another was “timber panel delamination” and “timber panel house construction”. While specificity is a good principle, it appears that it is easy to go too far. Another practice to avoid is the provision of keywords that do not help. Perhaps this arises from teasing words out of a meaningful title; for example, “deployment challenges”, “theoretical framework”, “definition”, words that, out of their context, cease to convey anything at all about the papers to which they have been applied.

In this age of electronic databases, keywords may be thought of as an anachronism, since we now have a wide-ranging facility for free-text searches, which examine every word in a document. However, thinking about the notion of keywords, and trying to find articles about them, was a salutary lesson in the purpose of keywords. Every journal paper contains keywords, preceded by the sub-heading “keywords”. I wanted to find articles and papers written about keywords. But, a free-text search of papers in which the search term is “keywords” simply returns every paper published! Similarly, anyone interested in abstract concepts would find nothing by carrying out a free-text search for “abstract”, since most papers contain this word as a sub-heading. Other examples are words like “building” and “construction” which are more likely to occur in articles from biochemistry and botany than from the construction sector. Thus, the great advantage of searching for some well-chosen keywords is that there (should have been) some intellectual effort applied to identifying which concepts are covered in the document, which is a more useful guide to its relevance than which words are used. Thus, the main use of keywords from a paper is as index entries in a collection of papers.

There is no recognised thesaurus of construction management research keywords. However, there is a list of suggested keywords in the ARCOM model paper layout, which is available on the internet.<sup>1</sup> This paper provides a short list of 126 potential keywords, but is probably too short, and somewhat outdated as it was compiled a few years ago. By contrast, a major research project a few years ago was carried out for the Joint Contracts Tribunal with the aim of developing a terminology of roles in construction projects (Hughes and Murdoch 2001). This provided a structured list of definitions of project stages, activities and roles, and is now used as a basis for drafting building projects. Is there a need for similar exercises in other domains of knowledge within construction management?

Research topics come and go as new ideas are disseminated among the research community. But there seems to be a need for a structured list of concepts that could be revised on a regular basis, to enable all of us to navigate our way through the CM literature. Without such a list, keywords will continue to be a wasted opportunity for the research community. Perhaps this is an item for future discussion somewhere.

### **Tables and figures**

It is interesting just how much time is taken up in the editorial process removing unnecessary ornamentation in tables and figures. The inclusion of excessive graphical “noise” is probably a result of almost universal access to powerful word-processing and graphics software in computers, all with default styles that are difficult to overcome. The best guidance I have seen about portraying complex and comprehensive data visually is from Tufte (2001) who provides an excellent overview of how to develop clear graphical portrayals of complex data. The best figures and tables contain nothing that does not add to the message. It is important to think about whether a journal publishes colour or monochrome figures. If the latter, then convert your graphics to monochrome before submitting them. The worst figures contain less data points per unit area of paper than a sentence of text would. Pie charts, and histograms with only a few data points are simply a waste of paper. Computer screen dumps are frequently out of place in papers that are not about the user interface of software.

### **References**

Clearly, every paper requires connections into the literature and therefore every journal paper will have some references at the end. It is remarkable how some authors either fail to notice that each journal has a specific style for the sake of consistency between articles, or else they do not see it as their task to format their own references. Worse, many references are incomplete, inaccurate or simply missing. This is just clumsy and does not convince editors and reviewers that the paper is carefully prepared and accurately executed. At the risk of stating the obvious, make sure that you format your references according to the expectations of the journal to which you are submitting your paper.

There is one final aspect about the citation of references. This is the extent and pattern of the list of references. Things to avoid in a research paper are extremely short lists of references, or lists that include only the author’s own papers. Both of these imply that the author has not made the connections with other work in the topic, or the antecedents of the research. Excessively long lists convey the idea that the author is merely trying to produce the longest possible list. If references are cited

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<sup>1</sup> <http://www.arcom.ac.uk/current-conf/conferences.html>

properly, with some contextualizing text about the meaning and origin of the ideas being cited, then the proportion of the paper occupied by the list of references will not be excessive.

### **Footnotes and endnotes**

Many publishers prefer authors to avoid footnotes and endnotes. They are not always necessary, and should only be used if there is no other way of qualifying or explaining a point in the text. Generally, they are not needed in a well-structured paper and can usually be re-cast into the body of the text.

## **EDITORIAL PROCESSES**

On receiving a new submission, an editor or editorial assistant will check that the paper conforms to the requirements of the journal. The topic will be assessed to determine whether the paper falls within the scope of the journal. Tables and figures may be assessed at this point. The length of the paper, and the inclusion of the elements listed above, will also be checked. Some journals may also check at this point that the paper has not already been published. This process is now much easier with tools on the web such as Google Scholar, which provides bibliographical details of a huge range of literature. Referees will also spot papers that have already been published because, if they are experts in their field and up to date with the literature, they often recognize when a paper re-appears. I have often come across papers that were once conference papers, and they re-surface as journal papers. This is acceptable, provided that the newer version of the paper is substantively different, either because it contains fresh data or new arguments, but certainly different conclusions. No academic publisher is interested in re-publishing material that has already been published, quite apart from the potential for copyright infringement. Less frequently, I have come across plagiarism, a very difficult and emotional issue. Fortunately, it is rare. It is also becoming easier to detect with the increasing availability of various computer tools.

In these days of electronic submission, the need to pack securely the correct number of copies of your paper is reducing in importance. But if you are submitting hard copy, check how many copies are required, and pack them properly! It is remarkable how many authors send 100-200 sheets of paper half way around the world in flimsy packaging that falls apart mid-journey.

### **Receipt and allocation**

Once a paper has got through the initial hurdle of being received in good order, fitting with the scope and containing all of the necessary parts of a paper, referees are allocated. The choice of referees hinges usually on the keywords provided for a paper. As discussed above, this can be something of a hit and miss process, unless an editor intervenes and chooses keywords for a paper that are likely to match with keywords against referees' names in the journal's database. Small journals can proceed without the need for a database, as the editor can use personal knowledge of referees and authors to choose suitable reviewers. A further source of possible referees' names is the list of authors whose work is cited in the submitted paper. For my journal, I have a growing database, currently standing at about 3,000 people. This provides me with a wide choice of referees.

In *Construction Management and Economics* I aim to get four referees' reports for each submitted paper. We have recently moved to a fully on-line submission and

review process, which enables us to be much more responsive and timely, but also means that we do not wait for slow or absent referees anywhere near as long as we used to. In order to get four reports on a paper, we may have to request anything between six and eighteen people to review the paper. Some decline, some do not answer, some agree to do it and then find they cannot fit it in. These delays may result in a paper being in refereeing for several months. But the new on-line system has inserted an extra step into the process that seems to move things along much more quickly. Whereas we used to send the whole paper to someone, and ask them to review it, we now only send the abstract and invite them to be a reviewer. This makes the process quicker and more effective.

### **Decisions on papers**

Some reports come back the same day, others take a few weeks. Referees' reports are of variable quality. Some are wonderfully argued critiques of the strengths and weaknesses of a paper, fully referenced, showing how the paper can be improved. Others are quick reactions based on a cursory reading, and these are not that helpful. Indeed, such reviews may even be scrapped, especially if they are impolite. The point is, an editor who deals with referees' reports, is not simply counting up votes for and against publication. It is not intended to be a democratic process. What really matters is the strength of argument. A referee who provides a compelling argument to justify accepting, revising or rejecting a paper is far more persuasive than three who simply indicate their views with no compelling argument. A good editor will always say that the decision on publication is the editor's, not the referees'. It is also important for referees to bear in mind that their task is to comment on the quality of the science, not the style of the English, or typographical errors. It is helpful to list those spotted, but this is not the primary role of a referee.

One indicator of a journal's quality is the rejection rate. Most authors would submit their work first to the journal they perceive to be the best. A higher rejection rate would indicate a journal that many people perceive as a worthy place to publish their work. Not all of it gets through the refereeing process. *Construction Management and Economics* currently rejects around 55% of papers submitted, and this rate appears to be rising. Thus, the majority of papers received are rejected at the first hurdle of refereeing. Papers that are not rejected will usually require some form of revision. If the required revision appears to demand further research and a quite different paper, then the decision will be reject and resubmit. If it requires further research work and a revised paper, then the decision will be for major revision. If the paper only required revision, but with no need for further research work, then the decision will be for a minor revision.

### **Re-submission**

When a revised or re-submitted paper comes back in, unless the revisions were minor, it will go back to the same referees to get their views on whether the changes they suggested have been carried out adequately. Authors are asked to include a detailed account of how they have responded to each comment of each referee, or why they have decided not to follow any particular suggestions. This document is an important part of the re-submission. If the author feels that a referee has made inappropriate comments, or has misunderstood the science, it is important for the author to argue this case. An editor may decide that the referee was simply wrong, in which case, the referee will not be asked to approve the revisions. All this depends on the strength and clarity of the relative arguments. In some cases, where the science is outside of

my own experience, I would ask appropriate editorial board members to comment on the competing arguments and advise me about which way to go, but the decision is still the editor's. Referees may come back with further requirements that arise from the revised paper, or merely minor typographical errors that need fixing.

### **Production**

Accepted papers are sent to the publisher immediately, usually on the day of acceptance. In the case of commercially published journals, this moves the focus of activity into the publisher's office, out of the editorial office. A new process starts. The paper is now checked for structure, style and clarity. Once the production office has checked that the basics are all included, the paper is sent for copy editing. This involves someone who is good at English checking the sense and structure of sentences and paragraphs, and drawing up a list of questions for the author about things that are not clear. Once the author has responded to copy editor's queries, the paper is then on the home straight for appearing in print. It is next sent to a typesetter, an old fashioned job title that used to refer to the placing of metal type into blocks for printing, but these days refers to a computer process that achieves the same end. The purpose of typesetting is to produce the final version of the paper that will be printed.

A paper may spend some time in copy editing, and authors are often surprised by a sudden and urgent request for responses to copy editors' queries after an inexplicably quiet few weeks or even months. Then several more weeks or months can pass until the paper is finally scheduled for publication.

## **PUBLICATION AND DISSEMINATION**

There are essentially two approaches to making up issues of a journal. Either the papers are chosen to go into a specific issue at the time of invitation, or first submission, or issues are made up based on finished papers, after copy-editing. In *Construction Management and Economics* both options are used: the former in the case of special issues with guest editors, the latter in the case of all other issues. When I am making up an issue, the sequence of publication of papers is dictated by the date of first submission. This means that older papers are published first, subject to fitting exactly into the number of pages in an issue, topical and geographical spread, and the fact that to encourage terseness in the style of writing shorter papers tend to get chosen over longer ones, all other things being equal.

Once the combination of papers is chosen for an issue, the editorial needs to be written, and I generally ask authors to propose some notes to help with this, as they are generally better placed than anyone else when it comes to describing their work in simple and general terms. After "making up" an issue there is then about a month or so for the printing to take place.

On publication, press releases are sometimes distributed to trade press about interesting articles, to try and generate interest in the journal and its authors. Authors also get off-prints of their articles, and a copy of the whole journal in which the article appears. While the copy of the journal is of little use, most of us like to have it. What surprises me is how many people do not seem to know what off-prints are for. These days, they are PDF versions of what was printed, but they used to be properly printed copies of the paper provided free to authors, and extra copies could be purchased. The reason for the practice of free off-prints is to help authors to send their recently

published work to their peers, to develop their own network of researchers, but that is another topic (see Agre 2005).

## CONCLUSIONS

The publication of research papers is extremely important for the individual researcher, for his or her institution, for the discipline and for society. There are many misunderstandings and plenty of sloppy practice in this endeavour. With a little care and attention to detail, the success rate of authors can be increased greatly. There is plenty of good advice and literature available on all aspects of writing and publishing papers, and some editors are keen to share their experiences, while others are a little more reticent. Understanding the process can only help researchers to become authors. There should be no mysteries about the publication process. Understanding the process, and the timescales involved, reveals how important it is to enter into dialogue with editors and to keep several papers in various states of progress at any one time. An active researcher could aim to produce papers at the rate of one every month or two. Some will contain significant results, and these should be sent to the highest-rated journals, others will be more routine papers that can be sent to conferences and magazines. As long as there is a steady flow of output being submitted, after a year or so, there will be a steady flow of papers being published. The goal is to get the best research published in the best journals for the maximum research impact. Generally, any editor or publisher is happy to help you to achieve this goal.

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