

Chapter 11

Writing Your First Journal Article



Abstract This chapter deals with writing your first journal article. First, we discuss how to select the right journal for the publication. The audience, the impact factor and journal rankings are discussed, as well as the current possibilities and pitfalls with open access publishing. Then, we look at planning the writing of a journal paper, and finding time for writing. The elements of writing a good abstract are discussed, and the popular method from PhD Talk on “Writing an abstract in 30 minutes” is explained. Then, we discuss the review process, including the timeline of reviews, and how to deal with reviewers’ comments. You learn how to write a comprehensive reply to the comments of the reviewers to increase your chances for publication. Then, we look into dealing with rejection. Most journals only accept about a third of all submitted manuscripts. Therefore, rejection is quite normal. We discuss how to rework a rejected paper for submission to another journal. Finally, we look to the future, and how to juggle a number of papers in different stages of the writing and publication process.

Keywords Journal article · Journal publication · Academic writing · Publishing · Planning · Rejection

11.1 Introduction and Learning Goals

The goal of this chapter is to discuss the steps that are required to turn your research into your first journal paper. We discuss all the steps that lie between finishing the actual research, and having a paper about the research published. First, we need to discuss where you can publish your research, and you will learn how to select the right journals for possible publication of your work. As always, we discuss the importance of planning your work in order to get your work done: in a first instance, to write your first draft version, and in a second instance to discuss this draft with your coauthors, and finalize the draft version for submission. As an abstract is an important part of a paper, we discuss what makes a good abstract, and how you can quickly write a good abstract. Then, we discuss the review process, and how to deal with the comments of reviewers. Again, we start from the concept of planning your work, and then discuss the steps required until submission of a revised manuscript. We also discuss the reality of rejection of academic work, and how to move forward after getting a rejection.

Finally, we will look towards the future, discussing your next papers and how you can work in your academic career towards a constant output of journal papers.

11.2 Selecting a Journal

11.2.1 Audience of a Journal

A first factor to consider when selecting a journal is the audience of the journal. There are two ways of determining if the audience of the journal is the audience you have in mind for reading your work.

The first method is by identifying who publishes the journal. The publisher can be a large publishing house such as Elsevier, Springer, Wiley, or Taylor and Francis, to name a few of the big guys, and in that case the publisher won't tell you much about the audience of the journal. However, if the publisher of the journal is a professional association, you know more about the readership of the journal. For example, the two journals that are published by the American Concrete Institute are read by the members of this institute, and a subscription to one of the journals is included in the membership of the institute. Some professional associations pair up with a large publishing house to streamline their digital workflow. In these cases, you can find the journal and submission page for the journal on the website of the publishing house, but the description of the journal will clearly say that this is the journal of a certain professional association.

A second method is by reading the journal description on the journal's website. This description will mention the aim and scope of the journal. While this description often does not directly mention the audience, the aim and scope will list the areas of research that are covered by the journal. And from the areas of research, it is easy to find out the audience. For example, if the area of research is infrastructure engineering, the audience will be infrastructure engineers. The audience of journals that are not published by professional associations is typically more academic, unless the publications are open access. While you as a PhD student may take your library access for granted, many practitioners in the industry or scholars at less privileged institutions don't have the same library access. They may only receive the journals that come with the membership of professional associations, for which they often have to pay themselves.

11.2.2 Impact Factor and Rankings

A second factor to consider when selecting a journal, is the relative importance of this journal. This relative importance is usually expressed by the impact factor of the journal, and by the journal ranking.

The impact factor is calculated based on the ratio of citations to publications in a given year. The higher this value, the more important the journal. You should only compare impact factors within your field – it does not make sense to compare to other fields: if you are doing research in architecture, you won't publish in *Nature*,

Title	Type	↓ SJR	H index	Total Docs. (2015)	Total Docs. (3years)	Total Refs.	Total Cites (3years)	Citable Docs. (3years)	Cites / Doc. (2years)	Ref. / Doc.	
1 Applied Energy	journal	2,998 Q1	99	1256	3114	54325	18568	3007	6.01	43.25	
2 Composite Structures	journal	2,408 Q1	92	973	1530	33900	6319	1514	4.08	34.84	
3 International Journal of Sustainable Transportation	journal	2,216 Q1	16	45	68	2004	193	65	2.10	44.53	
4 Building and Environment	journal	2,121 Q1	86	413	956	18419	3919	946	3.74	44.60	
5 ACI Structural Journal	journal	2,088 Q1	70	82	378	1708	470	313	1.33	20.83	
6 Energy and Buildings	journal	2,073 Q1	103	771	1972	26533	7409	1940	3.39	34.41	
7 Journal of Composites for Construction	journal	2,051 Q1	65	92	245	2959	574	232	2.25	32.16	

Fig. 11.1 Overview of Scimago journal rankings for civil and structural engineering

and the impact factor of Nature is not relevant to you. Moreover, some journals try to use certain tactics to amp up their impact factor.

A good reality check is to see if you have been reading articles from the journal you are considering. If you have, submitting your work to this journal is a good move. If you have not, check out a few of the most recent issues of the journal, and carry out a search on the keywords of your research on the journal website. If nothing really interesting comes up, then probably your work is not the right fit for the journal – leaving the impact factor aside here.

Another way to find the relative importance of a journal is by looking at its standing in the Scimago Journal & Country Rank [1]. You can see an example of the rankings of 2015 for civil and structural engineering in Fig. 11.1. This ranking is based on a slightly different metric, the SJR, which is based on the weighted average of citations in a certain year by the documents published in the three previous years. Based on this metric, a journal is also categorized in a certain quartile. If the journal belongs to the top 25% of journals in its field, it will be classified as a Q1 journal. Similarly, a Q2 journal sits in the top 25–50%, whereas a Q3 journal ranks between 50% and 75% and a Q4 journal lower than 75%.

When you are determining possible journals for submitting your work to, don't focus on one single journal. Instead, make an overview of the journals that are relevant for your research. Look at the journals that you are reading, look at the journals of professional associations of which you are a member, or that are relevant for your field, and look at their impact factors and rankings. You can make an overview table of interesting journals. An example of such a table, for journals relevant for my research and related topics, is shown in Table 11.1 [2]. You can immediately see from this table that the journals related to structures (for example, the ACI Structural Journal) tend to have a lower impact factor than the journals related to concrete materials (for example, Cement and Concrete Composites). Even though both research fields are closely related, you can see that, depending on your research

Table 11.1 Example of list of journals relevant to research on reinforced concrete bridges, values of 2015

Journal	IF	SJR	Quartile
ACI Structural Journal	1.03	2.088	Q1
Transportation Research Record	0.556	0.474	Q2
Journal of Structural Engineering (ASCE)	1.63	1.431	Q1
Journal of Bridge Engineering (ASCE)	1.39	1.038	Q1
Magazine of Concrete Research	1.50	0.955	Q1
Structural Concrete	1.023	0.874	Q1
Advances in Structural Engineering	0.83	0.475	Q2
Beton- und Stahlbetonbau	0.16	0.493	Q2
Cement and Concrete Composites	4.37	3.017	Q1
Construction & Building Materials	3.27	1.606	Q1
Engineering Structures	2.54	1.813	Q1
Materials and Structures	1.76	1.136	Q1
Journal of Performance of Constructed Facilities (ASCE)	0.70	0.582	Q2
Heron	0.00	0.282	Q3
Structural Engineering International	0.299	0.339	Q2
ICE – Bridge Engineering	0.19	0.212	Q3
Structures & Infrastructure Engineering	1.11	0.699	Q1
Structural Control and Health Monitoring	2.51	1.549	Q1
Structural Safety	2.72	1.609	Q1
Computers and Structures	3.24	1.71	Q1

topic, it may not make sense to compare the journals you are (trying to) publish in to the journals in closely related fields. You may also see in Table 11.1 that, since the impact factor and SJR are calculated differently, the rankings based on both metrics become different. There's not a single way of quantifying which journal is the "best" one. Use the impact factor and similar parameters wisely, as one of the many tools to select the right journal, but not as the only element for selection.¹

With this discussion about relative importance of journals and impact factors, you may be wondering if you, as a little PhD student, can publish in high-impact journals [3]. You may be wondering if you should focus on publishing as much as possible, but only in low-impact journals? In general, a lot of the acceptance of a paper in a certain journal depends on the reviewers. It has happened to me that I have submitted a paper to one journal, and got rejected. Then, I decided to resubmit it, to a journal with a higher impact factor, and got an acceptance after only one round of reviews. The system is not always equally logical. Most of the time, I submit first to the journal in which I'd love to see my paper published (and that is not always the journal with the highest impact factor!). If the work gets rejected, I will rework the manuscript and submit it to a similar journal, that has slightly less of my preference. Don't shy away from submitting your work to certain journals – in the worst case you'll get a rejection with some stingy comments, in a slightly less worse case, you'll get a rejection with useful comments, and in the best case it will get

¹ Unless your institution or supervisor explicitly asks you to do so.

accepted. Aim high when you submit. Don't settle for the low-hanging fruit (although, arguably, a journal paper never is a low-hanging fruit, and especially not your first journal paper). Encourage yourself to go the extra mile and try to get your work up to the standards of your favorite journal.

A final aspect to consider when you decide where to submit your work, is the estimated time it takes between submission and review, and between acceptance and publication. If you need your publications to start to apply for grants, scholarships, and post-doc positions, you may want to find journals that have a faster publication track. For some journals in my field, it is not uncommon to take two to three years between first submission and publication, which can be a serious disadvantage when you need the build up your publication record. Moreover, if you receive reviewers' comments after a year, you will be scratching your head to remember what the paper was originally about. Other journals, especially those managed by large publishing houses, have shorter review and publication cycles. The speed record in my field is a journal where after acceptance of the paper, the publishing house immediately takes matters into hands to develop the proofs, and the paper is published online ahead of print shortly afterwards.

11.2.3 Open Access Publishing

Most scientific journals are only accessible if you have a library subscription. If you are lucky enough to be working at a large, first-world institution, access to scientific papers is typically not an issue for you. If, on the other hand, you are not working at a privileged institution, you may feel desperate if you run into a paywall again. The basic idea of open access publishing is taking away the paywall and making sure the paper can be downloaded without restrictions or required library subscriptions.

When you chose to publish your paper in an open access journal, there are possible types of open access you can encounter. The first type of open access journals is fully organized by volunteers, possibly with some funding of a professional organization or higher education institution to pay for the website hosting and small costs. This type of journal does not make profit, and publishes all papers on a website where no library access is necessary to download the papers. The second type of open access journals is the most common type, where the journal charges the cost of publication to the author. Upon publication, the article will be freely available for downloading by all visitors to the website. Library subscriptions are not necessary. As such, the income the publisher usually has from the library subscriptions is now replaced by the publication fee paid by the author. For many authors, however, the publication fee can be hefty: between 500 USD to 5000 USD, depending on the journal.² This money goes to the employees that work fulltime for the publishing house, for example the employees that make the proofs of your paper, and also goes

²Some institutions or countries have agreements with publishers so that these fees for the authors are waived. Do look into what is available at your institution and country. Ask your library for the institutional policies and targets for open access publishing.

into the profits of the publishing house. The authors, reviewers, and editors of scientific journals are volunteers, and never get paid for their work. In some cases, the publishing house will offer a discount on the open access fees to reviewers and editors of the journal.

With the increasing popularity of the open access publishing model, a number of so-called predatory journals have entered the market. Just as with fake conferences, the only goal of a predatory journal is to cash in the publication fee of authors for profit, without the normal rigor of the peer-review process. If you just published a conference paper, and a journal you never heard of approaches you to ask you if you want to resubmit your conference paper as a journal paper, it is most likely a predatory journal that sniffed out you published a conference paper without a copyright transfer form. In some cases, however, it can be the journal of the professional organization of the conference that is inviting you for their journal. In case of doubt, check the website of the journal, see which professional organization they are affiliated with (if any), check their editorial board, and see from which country the journal is operating. If the website has poor grammar, that's a red flag for a predatory journal. Another typical case of a predatory journal is a journal that welcomes submissions from pretty much any topic, or a journal that describes itself as the "best" journal. If you have doubts about the quality of a journal, just Google "name of journal" with "predatory journal" and see what shows up, and to learn if other authors have been duped by the journal in the past.

Exercise

1. Go through your literature managing software, and write down the names of the journals from which you have read papers. Write down the names of journals issued by professional organizations in your field. Once you have a list of potentially interesting journals, make a table like Table 11.1, in which you write down the impact factor, SJR, and quartile of the journal. Keep this table as a guide to help you decide in which journals you should aim to publish your work throughout your PhD and in the years after your PhD.

11.3 Planning Towards Your First Draft

11.3.1 *Finding Time for Writing – Slow and Steady*

When it comes to writing journal papers, planning is key. During your PhD years you perhaps can still pull it off to set aside a few days or weeks, perhaps in the summer when nobody is in the lab, to get your manuscript out. However, you won't be

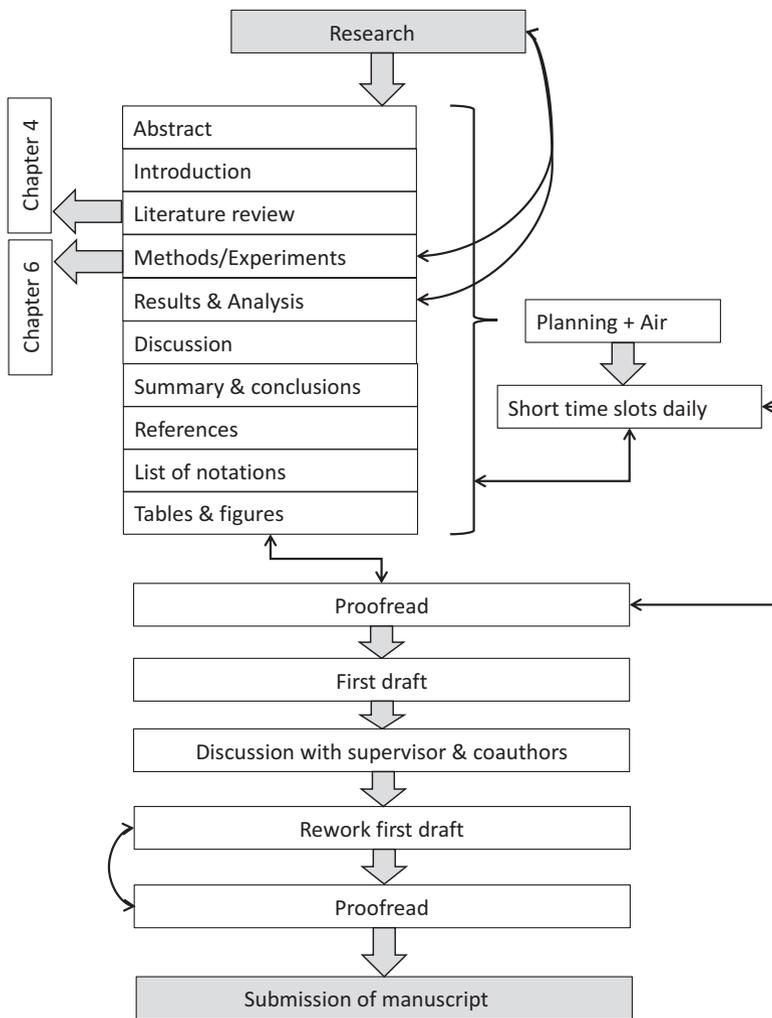


Fig. 11.2 From research to the submission of a journal paper

able to use this trick later in your career. Once you start teaching, supervising students, and juggling a number of research projects, with service appointments and other duties, you need a different strategy for writing. The tried and tested method is slow and steady: reserve a few hours a day to work on your paper, and plan accordingly. You can find an overview of the process from research to the submission of your manuscript in Fig. 11.2.

You may want to postpone writing your first paper until you have finished the experiments you are currently working on, but if you keep postponing your writing, you'll never get to the point of having a finished draft [4]. Make writing a priority.

For finishing your PhD, writing your dissertation and/or your journal papers is what will determine your graduation. For your future academic career, your publications are the most important parameter. Even if you decide to go to the industry, I would still encourage you to keep involved with research and publish on a regular basis.

The key point is that you'll only find time for writing if you make time for writing. Set aside an uninterrupted time for writing each day, and make it a priority. When making your planning, reserve that time for writing. For most people, writing first thing in the morning works. Some scholars prefer to get in a few hours of writing from their home office before going to campus. I, too, write from my home office or the office of the company where I work as a consultant before showing up to campus when I am in Ecuador.³ When I am in the Netherlands, some mornings I need to start in the lab right away, or I sit with my colleagues to catch up first. Nonetheless, I make sure that at some point during the day, I fit in my writing.

The amount of time you can reserve for writing each day varies widely. If you are a PhD student, and you don't have any experiments going on, you may be able to write for as many hours a day as you want. Don't try to write for eight hours – you'll just end up procrastinating. Two slots of two hours, on the other hand, may be feasible. Keep in mind that many tasks count as writing: typing words, making figures, sorting out the references you need for the paper, and proofreading/editing. Don't try to force yourself to type words for many hours on end in a given day – you'll end up dreaming about words appearing on a white screen. If you are working in industry, 30 minutes a day after dinner may be the only time you have available. If you are a starting professor, with a heavy course load, protecting your time for writing can be hard. But typically, you will need to publish your papers to get tenure, and to be considered for course load reduction based on your research. You may start out with ambitious plans, but if you need to develop a lot of new courses, your teaching duties will take up most of your time. When I started teaching, I had a 3-3 course load without the help of a TA. On average, I managed to write three to five days a week, for one to two hours at a time, and tried to submit six manuscripts per year. It worked, and after two years in which I had to set up five new classes, I managed to get course load reduction to two courses per semester. After another year, I got tenure, the position of full research professor, and a course load of only one course per semester. This achievement would not have been possible without the publications, and these would not have been possible without reserving time for them, each day, and working slowly and steadily towards submission.

With these warnings, you should by now have pulled your planner a little closer to see when you can free up time to work on your publications. That brings us to the next question: "How much time does it take to write a draft journal paper?" Of course, it all depends – not all papers are born equally. Sometimes putting together a paper comes very easily, because you've already done all the research, experiments, literature review, and general thinking. For some papers, you need to revisit

³Or at least, that's what I did pre-baby. Now I write from my campus office because I can't concentrate at home with the baby and I can't pump in the company office.

some concepts, and find yourself in an uphill battle to write a stand-alone paper on a topic you have been working on previously. Based on my experience, writing your first journal papers will take about 40 hours, spaced out over two to four weeks. If you struggle with writing, you can space out the development of your article over 12 weeks, following the course in reference [5]. As you get more practice in writing, you will see that sometimes writing a journal paper takes only 12 hours, spaced out over one to two weeks – not on a single day; the key is to write in short blocks of time so that you can be fully focused. In case of need, it is possible to write a paper (typically a conference paper) in two days [6], but you shouldn't be doing this too often. These numbers are only valid when you have all the experimental and calculation results, an idea of the audience, contents, an outline of the paper, and some material in research reports that you can pull from. Remember that you are recommended to develop reports and small documents for discussion with your promotor while you are working on your experiments and their analysis. If you have a dissertation chapter ready and want to turn it into a journal manuscript, you will be faced with the challenge of needing to cut a lot of words, and at the same time, making sure the paper stands on its own.

As mentioned previously, 40 hours for writing a first draft refers to the case where you have all experimental results and calculations ready, as well as some good text in research reports. Your main task then is to make one story out of the material, to provide the drawings, and to summarize information into tables. The second part that I mentioned is that these 40 hours tend to be spaced out over two to four weeks. You could think that 40 hours make for one fine work week, but typically you have a number of additional tasks that you need to take care of: supervising students, replying e-mails, making a small calculation for your supervisor, and meetings.

The way you divide these 40 hours depends on you and your skills. Some people are fast at putting together text, but drawing figures takes them a lot of time. I remember that for the second chapter of my dissertation (the literature review), I needed more time for drawing the figures than for writing the text. For me, drawing is an uphill battle: I'm not good at it, I don't like it, and I easily lose concentration when I need to draw. For other people, drawing comes naturally, but producing text is where they struggle. Know which element of writing is your nemesis, and make sure you reserve enough time for this.

Once you have identified the number of hours you need to add to your planning to work on your paper, how many hours a day you can reserve for writing, and have an idea of the tasks you need to carry out (i.e. write a certain number of words, make a certain number of drawings and tables, edit, write the summary, proofread, and format the references), you will be able to put these tasks on your planner. As always, leave some air in your planning: if you have a chunk of two hours for writing, plan tasks that you can realistically achieve in 1.5 hours of undisturbed time, so

Name	Date modified	Type	Size
FW Paper for Engineering Structures_SG	5-5-2017 18:48	Outlook-item	64 KB
Track your article JEST_6982 accepted in ...	5-5-2017 18:42	Outlook-item	40 KB
Re Paper for Engineering Structures_FR	5-5-2017 18:42	Outlook-item	46 KB
Re FW Your manuscript ENGSTRUCT_201...	5-5-2017 16:38	Outlook-item	44 KB
Your manuscript ENGSTRUCT_2017_619...	5-5-2017 16:37	Outlook-item	39 KB
Reviews complete and decision pending ...	5-5-2017 16:15	Outlook-item	39 KB
FW Your manuscript ENGSTRUCT_2017_6...	4-5-2017 13:48	Outlook-item	46 KB
Preview your submission ENGSTRUCT_20...	3-5-2017 13:43	Outlook-item	36 KB
Received revision ENGSTRUCT_2017_619...	3-5-2017 13:43	Outlook-item	38 KB
ENGSTRUCT_2017_619_Revision 1_V0	3-5-2017 13:41	Adobe Acrobat D...	1,729 KB
cover letter ESM 2017-05-03	3-5-2017 13:32	Microsoft Word-d...	119 KB
ESM for slabs subjected to combinations ...	3-5-2017 13:29	Microsoft Word-d...	144 KB
ESM S19-S26 2017-05-03	3-5-2017 11:58	Microsoft Excel-w...	58 KB
Invitation to revise manuscript ENGSTRU...	1-5-2017 16:15	Outlook-item	67 KB
Reviews complete and decision pending ...	1-5-2017 16:14	Outlook-item	39 KB
Your manuscript ENGSTRUCT_2017_619 h...	13-3-2017 9:57	Outlook-item	39 KB
Successfully received submission Extende...	10-3-2017 17:12	Outlook-item	38 KB
Preview your submission ENGSTRUCT_20...	10-3-2017 17:12	Outlook-item	36 KB
ENGSTRUCT_2017_619_Original_V0	10-3-2017 10:45	Adobe Acrobat D...	413 KB
cover letter ESM 2017-03-10	10-3-2017 10:33	Microsoft Word-d...	119 KB
highlights ESM combiloads 2017-03-10	10-3-2017 10:27	Microsoft Word-d...	15 KB
Abstract ESM combiloads 2017-03-10	10-3-2017 10:24	Microsoft Word-d...	14 KB
ESM for slabs subjected to combinations ...	10-3-2017 10:23	Microsoft Word-d...	139 KB
Extended Strip Model for slabs subjected...	10-3-2017 10:16	Microsoft Word-d...	138 KB
Extended Strip Model for slabs subjected...	19-1-2017 9:35	Microsoft Word-d...	115 KB
Extended Strip Model for slabs subjected...	19-1-2017 9:31	Microsoft Word-d...	115 KB
ESM S19-S26 2016-11-09	10-11-2016 11:20	Microsoft Excel-w...	47 KB
Probabilistic prediction of failure mode ...	18-8-2016 14:17	Microsoft Word-d...	176 KB
review process	3-5-2017 13:25	File folder	
figures	3-5-2017 13:05	File folder	

Fig. 11.3 Organize all files of a paper in the folder of the paper

that you have time to drink some water, take a stretch, or go to the bathroom in your breaks. If you use the Pomodoro technique for writing, use those five minute breaks to stretch, walk around, and get some fresh air. All you need to do now, is to get comfortable, put in the work, and move your manuscript from outline to first draft. When you write that first draft, make sure you save all high-resolution versions of the figures in the same folder as your draft manuscript, as well as additional calculations you may have made. When you need to revisit this information during the review stage, you'll be happy you don't have to start rummaging through all your folders on your computer to figure out where you save the information you need. You can see an overview of how I organize all files (manuscript, calculations, figures, highlights, cover letter, review process, abstract, and e-mails) of a paper in a folder in Fig. 11.3.

Exercise

1. This exercise is for students who have all material for writing a first draft of a paper. If you haven't been able to get started on writing the paper, or if you have stalled because lab work got in your way, this exercise is for you. Estimate the number of hours you need for writing your first draft (I recommend 40 hours), and how many hours a day you can spend on writing (I recommend two hours per day). Then, identify the tasks you need to carry out. These tasks can include, and are not limited to: write the abstract, make the outline⁴, put the paper in the right format, write the text (limited to a certain number of words), make a certain number of drawings and tables, edit your text, write your summary and conclusions, proofread your draft, and format the references. Once you know all the tasks you need to do for a paper, start adding these to your planning – keeping in mind that you can only plan work for about 75% of the time you have reserved. Write in your planner for each day and each timeslot what you exactly need to do. Make sure you have clear instructions. Don't say you will write for two hours. Instead, put in your planning that you will write 500 words and make one drawing. Check by which date you are expected to have your first draft ready. Hold yourself accountable by telling your coauthors they can expect your first draft by that date.

11.4 Planning Towards Submission

Once you have finished your first draft, it is time to discuss this draft with your supervisor, who will function as your coauthor. Sometimes, you will truly coauthor a document, and another author will write entire paragraphs and sections of the paper. If you are a PhD student, typically you will publish with your supervisor and perhaps one or more other members of your thesis committee, if they helped you significantly with the research presented in the paper.

In the ideal world, your supervisor is the person who teaches you to write, and thoroughly goes through your work to improve the overall structure, the structure of paragraphs and sentences, your grammar, your figures, your tables, and virtually every element of your writing you can think of. In reality, supervisors are very pressed for time, and perhaps won't have the time and energy to go through all details of your work. If you start writing your journal paper, it is best to ask your supervisor which way of working he/she prefers, and what type of feedback you can expect. You can also ask senior PhD students how their experience is in terms of feedback from your supervisor. In how much depth can you expect your work to be read, and within how much time can you expect feedback?

⁴If outlining works for you.

Once you have an idea of what to expect as a reasonable time schedule, plan to have a meeting with your coauthors after the time they need to evaluate your draft. If they haven't had time to look at your work or forgot about the meeting, then reschedule for shortly afterwards – it helps to at least have the topic on their mind. If meetings get postponed for months on end, and your coauthor does not seem to be interested in finishing and submitting the paper, you may consider dropping your coauthor, unless he/she is your supervisor. In that case, you will just need to keep on bugging him/her with meetings and asking for feedback.

If you have collected all the feedback of your coauthors, you need to read through everything, and assess how much time it will take you to implement the suggested changes. Set aside time in your allotted timeslot for writing to make these improvements, and commit to having the revised version by the day on which you book the last timeslot for working through the comments. Then, let the paper rest for some time, say a week, and block a timeslot of two to four hours to proofread your paper. If you think everything is ready, you can move on and submit the manuscript. Make sure you reserve time after proofreading for the actual process of submitting. Uploading the manuscript and figures, adding all author information, and writing a cover letter are all elements that can take up a significant amount of time – reserve two hours to work on this.

As you will be working on more journal papers based on your research, the involvement of your coauthors can become less. Always make sure you discuss your planning for writing the paper with your coauthors, and give them sufficient time to provide you with feedback (at least two to three weeks). If you have built up a good working relation with them throughout the publication of previous papers, you can move on with submission even if you didn't receive any feedback. Don't ever submit your first journal paper without the input and feedback from your supervisors. Don't ever submit a journal paper with a coauthor you haven't worked with before without his/her approval and feedback. You can only move forward with publishing work assuming the coauthors approve of the work if you have been working constantly and intensely with them for about five years and you worked directly with them for the research.

Upon submission, you can lean back, take some time off, and celebrate the fact that you just submitted your first journal paper. The amount of time it takes to receive the comments of the reviewers varies widely among different journals. In some cases, you will receive feedback after only a few weeks. Some journals take about a year. Some journals will give you an estimate of the required time in the e-mail confirming your submission, or provide this information on their website. If you start to worry about the status of your manuscript, check the online system first. If your manuscript still shows up as "in review", then you'll have to wait patiently. If something seems odd in the system, and only if you really have a cause for worrying about your manuscript, then you can contact the editor of the journal.

11.5 Writing a Good Abstract

11.5.1 *How to Write an Abstract in 30 Minutes*

One of my most popular posts on PhD Talk is titled “How to write an abstract in 30 minutes” [7]. Surprisingly, it is a post that I typed out in less than ten minutes, simply documenting the technique I use for writing abstracts. The method is based on Koopman’s “How to write an abstract” [8] and elements from the course in Engineering Communications [9] I took with Dr. Rosenstein at Georgia Tech.

Starting to write an abstract is scary. The abstract is the very beginning of a new paper and a new writing project. Your acceptance for going to a conference will depend on it. For a journal paper, your abstract is an important element that will be duly studied by the reviewers and that will determine if a reviewer accepts or declines the invitation to review your paper. There can be a tremendous amount of pressure on you when you need to write an abstract. And all the while, a white page in your text processing software is staring you in the eye. You may start writing a few words, delete them again, decide you need some coffee, bring coffee, check Facebook, try a few words again, and keep fidgeting away for an entire afternoon.

To avoid the fear of the blank screen, I am using a method in which I use questions that I answer for myself. Instead of subdividing my abstract in the classical elements of background, problem statement, methods, results, and conclusions, and coming up with sentences that fall in each of these categories, I copy and paste a set of questions into the white page, and start typing out the answers to these questions. Sometimes I answer these questions by talking out loud, and then write down what I just said. Once I have answered all the questions, I remove the questions, and see how I need to modify the sentences for them to be joined together. Then, I proof-read, check for style and grammar, and voila, the abstract is ready.

The questions that I use are based on Koopman’s description of the elements of an abstract [8]:

- **Background:** Why are the problem and the results important and why should they be studied?
- **Problem statement:** What problem specifically are you trying to solve?
- **Methods:** How are you trying to solve the problem? Which methods did you use: simulation, analytic models, prototype construction, or analysis of field data?
- **Results:** What’s the answer of applying these methods?
- **Conclusions:** What are the implications of this answer? Is it going to change the world, be a significant “win”, a nice hack, or serve as a road sign indicating that this path is a waste of time?

Exercise

1. Consider the topic you are currently working on. Set a timer for 30 minutes. Use the recommended questions for writing an abstract, and develop a first draft of an abstract before the timer goes off. Use this exercise to practice the technique of writing an abstract.

11.6 Writing a Cover Letter

Many journals require that you write a cover letter to accompany your paper upon submission. Your cover letter should contain the following elements:

- It should be addressed to the editor of the journal.
- It should mention that you prepared the manuscript according to the guidelines. If the formatting guidelines include a limiting word count, mention the word count of your manuscript.
- It should contain a short description of why you consider your work interesting for the readers of the journal.
- It should mention that the manuscript is original and has not been published previously. If you've shown a preliminary analysis of these results in a conference paper, you should mention this fact.
- Print your cover letter on official university paper and include your signature.

You can find a template for writing a cover letter in Fig. 11.4 and an example of the application of this template in Fig. 11.5.

11.7 The Review Process

11.7.1 *Timeline of Reviews*

Suppose you finally received an e-mail with a reply from the journal where you submitted your first paper. There are different replies, see Table 11.2, you can expect:

- **Rejected:** Check out the advice in the next section.
- **Rejected with an encouragement to resubmit as a new manuscript for the same journal:** Deal with the comments in the same way as you would deal with any reviewers' comments, and give the paper a large round of editing before you resubmit it. Read it carefully, and see if you are emphasizing your original contributions sufficiently. If not, add sections to stress these elements, and eliminate superfluous paragraphs. Make sure you thoroughly rearrange the structure and contents before you resubmit.

<p><i>Place and Date</i></p> <p>Dear <i>Professor Editor</i>,</p> <p>I hope you will consider the attached manuscript, “<i>Title of Manuscript</i>” for publication in <i>Journal</i>.</p> <p>The manuscript is prepared according to the guidelines for authors. The topic of study is <i>explain the topic of study in this paragraph</i>.</p> <p>The readers of <i>Journal</i> might be interested <i>my work – explain here how your work and results could be interesting for the readership of the journal</i>.</p> <p>This original manuscript has not been previously published. The manuscript is currently not submitted to any other journal for consideration. A preliminary study on the topic was submitted as a conference paper <i>for Conference, if that was the case</i>.</p> <p>Your comments and feedback on this study are valuable and of great interest to our research.</p> <p>I look forward to hearing from you.</p> <p>Yours sincerely,</p> <p><i>Signature</i></p> <p><i>Your name</i></p>
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Fig. 11.4 Template of a cover letter

- **Positive decline / Revise and resubmit / Manuscript needs to undergo major revisions:** The advice in this section will mostly deal with this type of reply: you need to make some major changes to the manuscript based on the recommendations of the reviewers. The manuscript will undergo further peer-review when you resubmit it.
- **Accepted pending minor revisions:** You still need to make some changes to the manuscript, but typically the manuscript will either be re-reviewed quickly, checked only by the editor, or will not be re-reviewed at all.
- **Accepted without requested changes:** Put the champagne cold, this case is very rare and means your paper is just going through.

Depending on the decision, the journal will give you a certain amount of time to react. In case of a rejection or rejection with encouragement to resubmit, you will need to resubmit your manuscript either elsewhere or as a new manuscript to the same journal, and you will not have a deadline for resubmission. Take some time off from the paper to rework it with fresh energy, but make sure you don't let the work



Quito, March 10th 2017

Dear Dr. Gould,

I hope you will consider the attached manuscript, “Extended Strip Model for slabs subjected to load combinations” for publication in *Engineering Structures*.

The manuscript is prepared according to the guidelines for authors. The topic of study is a plastic design and assessment method for reinforced concrete slabs, the Extended Strip Model, which now has been modified so that the model becomes suitable for combinations of loads. Moreover, the proposed model is compared with experiments on reinforced concrete slabs subjected to a line load and a single concentrated load.

The readers of *Engineering Structures* might be interested in the developed model, and in the presented experiments. The Extended Strip Model is the first lower-bound plasticity-based design and assessment model that addresses the problem of shear-critical reinforced concrete slabs, for which the governing codes give extremely conservative capacities.

This original manuscript has not been previously published. The manuscript is currently not submitted to any other journal for consideration. A preliminary study on the topic was submitted as a conference paper for the *fib* Symposium 2017.

Your comments and feedback on this study are valuable and of great interest to our research.

I look forward to hearing from you.

Yours sincerely,

Eva O.L. Lantsoght

Fig. 11.5 Example of a cover letter (One small difference with respect to the letter I used: I took out my signature, just in case)

go stale. If the decision involves major revisions, you get a few months to rework your manuscript. Depending on the journal, you will receive between three months and a year to resubmit your work. If you fail to revise it within this deadline, you will need to resubmit it as a new manuscript, and start from the beginning of the process again. For minor revisions, you will typically receive less time to react,

Table 11.2 Overview of possible outcomes of a decision for a journal paper

Decision	Action	Timeline to resubmission
Rejected	Comments will be technical, general, and editorial Analyze the comments Rework your paper thoroughly Proofread and improve your writing Ensure at least 33% is new contents before you resubmit	No deadline, submit to another journal
Rejected with encouragement to resubmit	Comments will be technical, general, and editorial Analyze the comments Rework your paper thoroughly Rearrange the sections and restructure your work Proofread and improve your writing Ensure at least 33% is new contents before you resubmit	No deadline
Major revisions	Comments will be technical, general, and editorial Analyze the comments Address each comment respectfully and completely Proofread carefully Ensure at least 25% is new contents before your resubmit	Three months – one year
Minor revisions	Comments will be mostly editorial Analyze the comments Address each comment respectfully and carefully Proofread carefully Maximum 10% new contents	Two weeks to six weeks
Accepted	Comments will be only editorial Implement comments and provide overview of how you implemented them Verify if you need to submit additional documents such as a copyright transfer form Celebrate!	A few days

more in the order of a few weeks (two to six weeks in my field). If your work is accepted without changes, read the e-mail properly before you start celebrating. You may still need to submit a copyright transfer form, or reply in one way or another before the publisher starts to develop the print proofs and moves into the publication stage of your work.

Once you know the amount of time you have to resubmit your work, plan accordingly. Quickly read through the comments to see how much work it will be, and start reserving timeslots in your calendar to develop your revised version. If you need to discuss certain elements with your supervisors, ask for a meeting. Don't plan too closely to the resubmission deadline – the risk of having to resubmit as a new manuscript is just too large. Don't underestimate the amount of time it takes to make

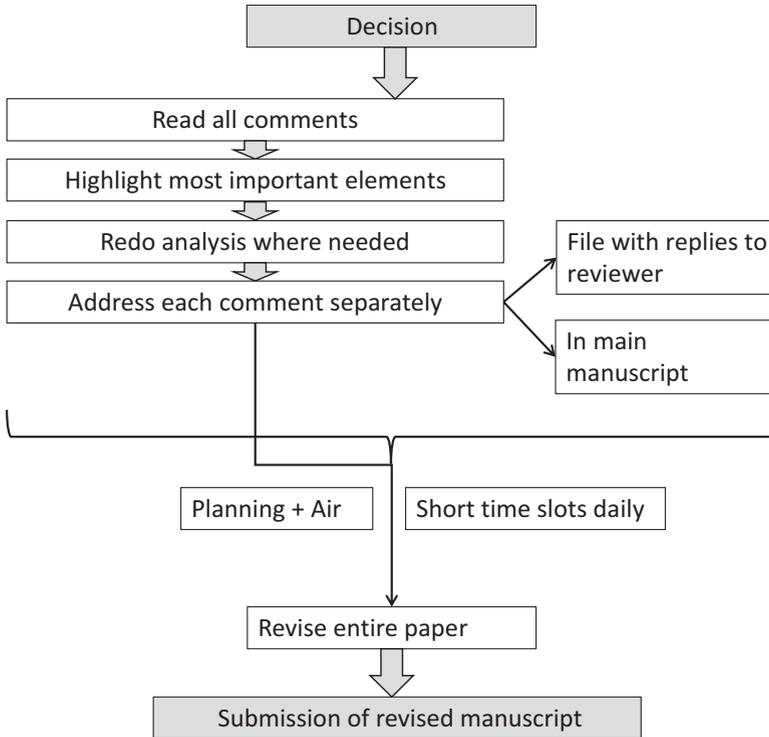


Fig. 11.6 From manuscript decision to revised manuscript

major changes to your work. As a rule of thumb, making major changes takes about as much time as writing your first draft. In fact, the whole process after writing the first draft takes about the double amount of active time on your part as the time it takes to write the first draft. This time involves going from first draft to submission, implementing reviewers' comments, subsequent rounds of reviews, and checking the print proofs. Make sure you plan enough time for dealing with the reviewers' comments. Take every comment seriously, because the acceptance of your work will depend on the impression the reviewers have of your work. As such, you should make sure the reviewers have the impression that you carefully dealt with each of their comments. When you are faced with pages and pages of comments, of up to seven reviewers, you may get tired of replying to each and every comment in detail after a while. For this reason, I recommend you work on implementing reviewers' comments in timeslots of no more than two hours, so that you can take a break after working on the comments for a certain amount of time each day. You can find an overview of how to work from the decision to the revised manuscript in Fig. 11.6.

11.7.2 How to Implement Reviewers' Comments

There is no magic hack related to dealing with the comments of reviewers. If you receive comments from seven reviewers, you will have to address each and every comment of each and every reviewer, and document how you dealt with each comment. If you receive five pages with comments, you will have to address each and every comment of each and every reviewer. If you don't document how you implemented the comments of the reviewers, it will be difficult for them during re-review to assess if you took all their suggestions into account, and they may simply decide you haven't done enough effort and reject your work.

Receiving a lot of comments can be intimidating and exciting at the same time. You can feel intimidated because the reviewers have a lot of criticism, and you may feel like implementing all their comments will be a lot of work, and you may doubt if you can do so before the deadline, or if you can do so at all. You can feel excited because a careful peer-review can be really useful for your research. If the reviewer analyzed your paper in depth and provided valuable input, you can learn and make significant improvements to your paper and your research.

The first step to take when you receive the comments of the reviewers, is to print out⁵ the comments, and read through each of them. Highlight the comments that you need to discuss with your supervisor. Check if some comments from different reviewers are contradictory, and get a first idea of how to deal with these contradictory comments. Verify if some comments deal with the same topic, and how you can address this topic. You can use colored pens to make notes about recurring themes in the comments.

If there are no contradictory comments, you can simply address all comments sequentially. If there are contradictory comments, you will have to refer to the comment of reviewer 1 where reviewer 2 thinks you should have been doing the opposite, and vice versa. You will have to write a solid reply to both reviewers with your point of view, showing how you implemented the comment you agree with most into your paper, or arguing respectfully why both are mistaken.

For sequential replying of comments, you can simply copy and paste the comments of each reviewer in a separate document, and start implementing each comment. Write a reply to each and every comment, to show the reviewer that you took the comment in consideration. How to write replies to each comments is the topic of the next section.

11.7.3 How to Reply to Reviewers' Comments

As I mentioned before, it is important to reply each and every comment of the reviewers. Start to type your reply to the reviewers' comments by copying and pasting all comments of a reviewer into a new text file, so that you won't miss any

⁵Or use a digital equivalent.

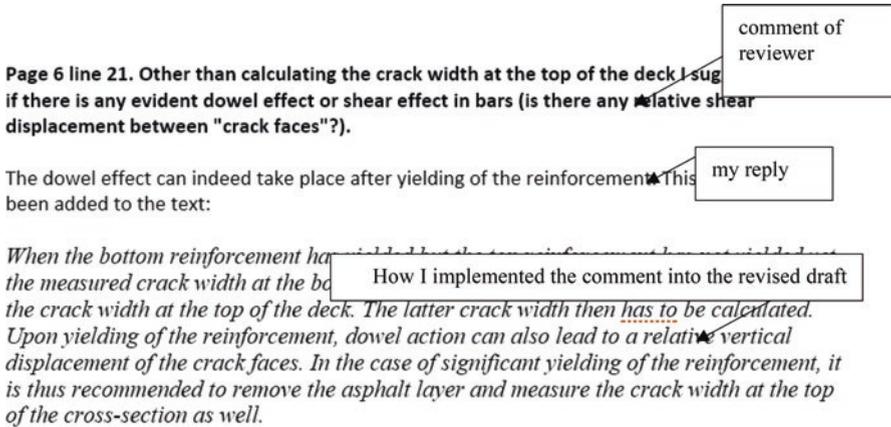


Fig. 11.7 How to write a reply to the comments of a reviewer

Table 11.3 Using a table to reply to the comments of a reviewer

Comment	Reply	Implementation
<i>Copy and paste each comment of the reviewer in a separate cell</i>	<i>Explain what you did to implement the comment of the reviewer, or why you do not agree with the reviewer based on the literature or your research</i>	<i>Copy and paste the revised part of your manuscript to show how you implemented the comment</i>

comment. Make a new file for each reviewer. If you happen to receive your comments in a PDF, then simply take an image capture of each comment and paste each comment into a new file. Even when the reviewer points out a typo, just write a “Thank you” as a reply before you implement the correction. For technical comments, you can break down your reply into two parts: your reply directly to the comment, and then you can show how you implemented this information into your revised manuscript. To keep everything clear, I suggest you use simple formatting to show the different parts in your reply to the reviewer: I use **bold** when I copy the comment of the reviewer, I use a normal font when I type my reply, and I use *italic* for the quotes from the revised manuscript, as shown in Fig. 11.7. Another possibility is to make a table of comments, replies, and implementations, see Table 11.3. Where necessary, add references to your reply and/or revised manuscript, and make sure these references show up correctly in your reply file. When you are asked to revise a large section of text, a figure, or a table, I suggest you first paste the old version, explaining that this is the old version, and then the new version, explaining the changes you made. Showing the old and new versions side-by-side helps the reviewer to notice that you really did your best to fully revise a large section of text, figure, or table.

If you did your planning correctly before starting to tackle the comments, you will have sufficient time. Even when you think making changes does not take that much time, you should think again. Not only does making changes take about as much time as writing a first draft, it is also tiring. You need to concentrate very well on what the reviewer wants you to change, and how you can make this change in a way that does not violate the core of your story, or how you can argue that the comment of the reviewer should not be implemented.

If you are faced with a comment you don't agree with, then don't simply reply to the reviewer that you don't agree, and move on. If you don't agree, you have to do double the effort to convince the reviewer that you are right. Refer to other research in detail, including references, and screen captures were needed. Explain every element in detail. Make sure the reviewer sees that you've taken his/her comment seriously, thought deeply about it, and came to a conclusion that is supported by your research and the literature. Consider this exercise in argumentation as a preparation for your thesis defense.

In the case of conflicting comments between reviewers, say reviewers 1 and 2, discuss the comments in the separate files developed for each reviewer, but refer the comments of the other reviewer. In your file "reviewer 1.doc" (for example, depending on the software you use), you'll have in bold the comment of reviewer 1. Then, in your discussion, mention that you have an opposing point of view from reviewer 2, and copy the comment of reviewer 2 integrally into your reply file. Then discuss both views in depth, referring to the literature where needed, and finally state your opinion, and show how you implemented the comment into your revised manuscript. Similarly, in "reviewer 2.doc", you will have in bold the comment of reviewer 2, and the citation of reviewer 1 in your reply.

When writing your replies, make sure you give reviewer 2 as much attention and detail as reviewer 1. Don't let your attention go stale after endless hours of typing replies to reviewers. Work in short chunks of time if needed to stay sharp. Make sure every comment of every reviewer is replied in a detailed, polite, and thoughtful way. The impression the reviewers will get from your replies will also determine if your revised manuscript will get accepted, rejected, or will need to undergo further peer-review.

After you have discussed your replies, and some parts that perhaps you were not too sure about with your coauthors, you are ready to prepare your revised manuscript for resubmission. Check your layout, bibliography, and references to tables and figures again to make sure everything is still working properly. Check if your revised version still fulfills the requirements with regard to word count, and edit certain parts⁶ if you need to chop words. Once you've verified the revised version of the paper fulfills all requirements for submission, send in your work again, and wait for a reply.

⁶Not the newly added parts, obviously.

11.8 Dealing with Rejection

11.8.1 *The Reality of Rejection*

If your first paper comes back with a rejection, don't lose all hope. Rejection is as much part of life in the academic world as is conference travel. Most journals only accept about one third of all submitted abstracts. Your manuscript can also be rejected after a first, second, or even third round of reviews. Rejection is quite normal. Of course, it never feels good to receive a rejection, but it is nothing to worry about deeply. It does not mean that your work has no value, but it may mean that you have to present your work in a different way, or that you have to present your work to a different audience.

Sometimes, reading the comments of reviewers that have rejected your work may be horribly frustrating. There can be the ad hominem attacks (if you are PhD student, it probably means the reviewer has some beef with your promotor, because chances are small that the reviewer knows you personally), there can be the complete misinterpretations of what you were trying to convey, there can be the denigrating comments that there is not enough novelty in your work, or that your writing is bad... There is a whole slew of type of comments that can be not so helpful. The ad hominem attacks just mean you need to cross your fingers and hope your work won't be reviewed by this reviewer again. The complete misinterpretations can mean that you need to present your work and its goals in a clearer manner, but it can also mean that the reviewer is too focused on his/her own world. Comments about a lack of novelty mean that you need to write more clearly what has been done in the past, what was lacking, and how you have moved the state-of-the art forward. Finally, the comments about writing mean that you need to carefully revise your draft for logical order, grammar, and all elements of style. Sometimes, however, reviewers seem to immediately write this comment when they see the contribution comes from an institution outside of an English-speaking country.

On the other hand, sometimes reviewers will be able to point out a major flaw in your work. It may feel overwhelming to read that somebody identified an important piece of work you missed, or a flaw in your logic. You may feel upset that your supervisor did not catch this mistake. If you receive such comments, you should be grateful because it means the reviewer looked at your work in detail. Finding the flaw and sending you back to redo your analysis is something that will move your research forward. In the end, it is better that a reviewer catches a flaw before your work gets published than that you receive a comment from a reader later suggesting that maybe you were wrong in your analysis. Additionally, if a reviewer catches a mistake in your work, this input helps you for writing and preparing your dissertation.

So what does rejection really mean? It means you need to roll up your sleeves, give your manuscript a good brushing up, and submit it elsewhere. Don't throw your manuscript to the bottom of a drawer, never to be visited again, but put it in your planning to continue working on it after you've digested the disappointment.

11.8.2 How to Face Rejection

The first rejection is the worst. You may be able to shrug it off quickly, or you may feel heart-broken, wanting to know who the hell that reviewer was who completely misunderstood your work, and dreaming about pursuing the reviewer and shouting how wrong he/she is. If you feel down, take a deep breath, and see what you need. If you need to go home, soak in your bathtub, and have some wine, then go for it. If you need to go for a run to release your frustration, do so. Tune in to yourself and do what would feel good for you right now. Take the weekend off to be mad at the entire research world, if you need, and spend it reading fiction, partying with friends, gaming, cooking, and hating research. If you come back on Monday, feeling refreshed and with a new view of the situation, then you are ready to move on. If you still feel mopey, talk to a fellow PhD student about it. If the feeling lasts for a longer amount of time, talk with your supervisor about how disappointed you feel in your research.

Being able to bounce back after a setback is an important skill for every PhD student, because setbacks and disappointment are part of the life of a researcher. If you feel invincible and think you are always right, academia is probably not the right place for you. As a researcher, you are always exploring, doubting, changing ideas, and trying to find your way around in the dark. Humility, admitting that you can be wrong, that you may need to work a bit more on your writing, or simply that you don't know it all, are an essential part of your mindset as a researcher.

11.8.3 How to Move Forward and Resubmit Elsewhere

When you are ready to come out of your hole of self-pity and hate for the entire research world, it is time to gather your troops for the next battle. Read again through the comments of the reviewers that rejected your paper. Why was it precisely rejected?

If there was a flaw in your research, you should go back, and redo your analysis before you resubmit your work elsewhere (obviously!). Make sure you discuss your changes and new insights with your supervisor and possible other coauthors before you submit. Check and double check to verify if similar errors did not creep up in other parts of your analysis. If possible, make a hand calculation to check if computational results correspond with your expectations. Rewrite your analysis, results, and discussion sections in the light of your new findings, and update your research reports where appropriate. Ask a fellow PhD student to read your work and ask him/her to check if there are any possible leaks and flaws in your reasoning. If you are convinced your work is water-tight this time around, then do the scary thing – submit it again, to another journal. In this case, you can submit to a journal of the same type as where you have submitted your work before (same audience, and/or same relative importance).

If the main issue with your work was the actual writing and the English, ask your supervisors if you can get help from a professional proofreading service. Many universities have communications specialists in their departments, or an external office they exclusively work with for translations and proofreading services. Check your university's website, and ask senior colleagues for information about the options. Don't be afraid to ask for help. Know that you can learn a lot from the comments of a professional proofreader: he/she can give you an overview of grammar and style mistakes you commonly make, which will improve your writing in the long run. Don't get lazy either: if you know you have a professional to assist you, don't see this opportunity as a waiver for continuous work on your writing. You still need to put in the work on your side. Once you have the input from a professional, you can submit your manuscript to a journal of the same type as where you submitted your work before (same audience, and/or same relative importance).

If the reviewers think the contribution of your work is limited, analyze first why they came to this conclusion. Did you not stress the novelty of your work sufficiently? Are your results very similar to previous work? Are you reporting negative results? If it is a matter of wording, then rewrite in such a way that your new contributions are highlighted a number of times. Make it clear in your literature review section what the limitations of the existing work were, and how you have moved the state-of-the-art forward with your work. When you have reworked your manuscript, submit it to a journal of the same type as where you submitted your work before. If your results are very similar to previous work, or to work that has been published recently while you were working on something similar, you may need to either carefully compare your work to the existing body of knowledge to see if you maybe did manage to shine a new light on a single parameter, or other condition. If everything is pretty much the same as the other work, you will need to add something new to the contents of the paper, for example a novel analysis method of your work, or show the novelty of something smaller such as the measurement techniques you used. In this case, after reworking your manuscript, you'll have to resubmit to another type of journal. If you added new information, you can look for a journal that is more related to the contents of your newly added work. If you focused on one single parameter, you can submit to a similar journal as where you submitted before, but for example of lower relative importance. Finally, negative results are a difficult topic. Officially, all positive and negative results should be reported in the same way. However, journals prefer to publish "wins" rather than "losses". The result is the so-called publication bias. If a journal does not accept your negative results, rework your manuscript, discuss how other researchers can learn from your failed experiments for future research, and submit to a journal of lower relative importance.

If your manuscript was rejected because it does not fit the journal, make sure you do your homework better before you submit your work elsewhere. Select another journal from your table, but check recent issues of the journal to verify if the topic of your work fits this journal. You'll be more convincing for the journal editor if you

check for papers about your research topic in the archives of the journal, and refer to the relevant work in your manuscript.

Use the guidelines from the previous paragraphs to select the journal where you will submit the second version of your manuscript to. Use the table of journals you developed to guide you in your choice for a second journal. Make sure your manuscript has been improved and/or changed significantly based on the comments of the reviewers from the first journal – you never know when the second journal happens to call upon the same reviewers as the first journal. Unless your work has been changed significantly, the reviewer won't change his/her opinion about your work and send a straight rejection again.

11.9 Writing Your Next Paper(s)

11.9.1 Identify Topics

Depending on the guidelines of your institution, you will either need to have a certain number of papers accepted in order to be able to defend your thesis, or write a “big book”-style thesis [10].

If you are graduating based on a number of papers, your next paper can either be another research project, or it can be the next part of your research. Generally, if you have delivered a research report to your supervisor, and have moved your research forward, there should be sufficient material in the report for writing a journal paper.

For those of us whose main task during the PhD is to develop a dissertation, you may be faced with the task afterwards to develop your journal papers based on your dissertation. Having your dissertation published is not sufficient; only very few researchers in your field will ever read your entire dissertation. Therefore, you need to turn your dissertation into journal papers after finalizing your dissertation. For those who land a research-oriented post-doc position, you will have sufficient time and space to work on your papers. For those, however, who join the industry, working on your papers will be something you have to do in your evenings and on the weekends.

It sounds easy: just take a chapter at a time and turn it into a journal paper. Unfortunately, where your dissertation has a single introduction and literature survey for the entire document, you will need to write a new introduction and literature survey for each paper you publish. In your dissertation, the description of your experiments and your analysis can be in different chapters. In a paper, you cannot publish your experiments without an analysis and without drawing any conclusions, nor can you publish an analysis without introducing your experiments. Each journal paper has to stand on its own.

The first thing you need to do is to identify the separate papers you can develop from your dissertation. Try to develop a paper from each chapter. If you have more

than one original contribution in each chapter, then devote a single paper to each original contribution. The following general topics you find in a STEM dissertation can be an isolated paper:

- literature review, which then becomes a review or state-of-the-art paper,
- development of a database of results from the literature
- experiments and analysis: if you have a large amount of results, you may need to publish different series of experiments separately to discuss each of them sufficiently
- development of an analytical model
- comparison between experiments and numerical models
- comparison between experiments and existing analytical models
- comparison between experiments and existing codes and guidelines
- advanced statistical analysis of your data
- case studies
- recommendations for practice based on your work
- side studies you did during your PhD that did not end up in your dissertation

Once you've outlined the different papers you want to write, identify the right journal for each of these papers. For each paper, identify who will be your coauthors. Your PhD supervisor will probably standard be a coauthor, but perhaps some member of your committee has been particularly helpful in one part of your analysis. If that's the case, then ask this committee member if he/she would be interested in being involved in the development of a paper on this topic. If you are aiming for an academic career, try to publish with other people to show that you can work across research groups and internationally.

In a next step, decide when you will work on each paper. Take your planner to reserve time periods for the first few papers that you need to work on, but don't fall for the trap of starting to place all the papers in your calendar. Instead, identify how many papers you realistically can develop in a semester, which depends on the amount of time you have available each day for writing. Don't book all your writing time for writing your journal papers – you will need to work on conference papers as well, and as you start to receive the comments of reviewers on the papers you submitted, you will need time for working on the revisions. The number of papers you can work on per year depends on your job. If you've switched to industry, two or three papers per year will already be quite some work. If you are a post-doc, you can aim for at least six papers a year. If you are a newly appointed assistant professor with a large teaching load, four to six papers should be possible. It took me to about two years after my PhD graduation to submit the last manuscript that was based on my dissertation.

Once you have an idea of the number of papers you can develop per year, you also know which interval you should aim for to submit manuscripts. For example, if you aim at submitting three papers in a year, then you should submit a paper every four months. Based on these intervals, you can set your target deadlines for each paper you have in mind in your overview of papers and target journals. As you finish the first draft of one paper and send it to your coauthors, don't drop writing from

your schedule until this paper is published. Instead, start developing your next draft. Develop a constant stream of writing, revising, implementing comments from coauthors, and submitting.

Keep in mind that not all papers are born equally. Some papers will fall out your dissertation in just a few writing sessions. Other papers will be a complete drag, as you force yourself to take a piece of your dissertation and turn it into a stand-alone narrative. Accept this fact, and don't get mad at yourself. Just put in the work each and every workday to move your writing forward, just as you practiced (hopefully) during your PhD days.

Don't get disappointed if you start to fall behind on your original planning – if anybody fell behind big time on her original ideas, it is me. I started assuming I could develop a draft every four to six weeks. The idea was to give two weeks to my coauthors for input, implement their input, and submit. And keep submitting. I forgot to factor in that I would need two to three weeks to implement the reviewers' comments each time a paper came back. I didn't factor in that my time for writing would often be limited to maximum an hour per workday, as I would need to start working on new research, put a lot of time into my teaching duties, and navigate the Willy Wonka's Chocolate Factory that is administration in Ecuador. If you fall behind, just roll with the punches, as long as you keep rolling forward.

As time passes by since the publication of your dissertation, and new research results come out, you will need to implement the latest publications in your literature review for your new manuscripts, and perhaps redo some of the calculations and analysis you did during your PhD. You may simply have forgotten in which spreadsheet or with which procedure you determined certain values in your dissertation. If that's the case, take the safe route, and redo the calculations. You may also have forgotten what you did precisely. I kept a side research project aside to develop into a journal paper. I did the research at the end of 2011. I wrote the paper in 2015, and I had to redo some sketching and thinking to remember the logic behind my calculations.

11.9.2 Become a Productive Writer

The best advice to become a productive writer is to put in the work. You can't expect to develop your journal papers if you don't plan time to work on these. Reserve time for writing each workday, and move your draft forward steadily.

If you have all material ready to turn part of your dissertation or a research report into a journal paper, you may be able to do this quickly. Your first journal paper will be a journey on a learning curve, but as you get more trained in writing journal papers, you may find that some papers roll out quickly. My fastest for a journal paper so far was eight hours, spaced out over one week (so not a single work day, but based on my one to two hour timeslots for writing daily) [11]. How is it possible that this paper came out five times faster than what it usually takes me to develop a paper? One of the main reasons is that I had a lot of the writing ready in my disserta-

tion. You can enjoy the same benefit if you have a lot of writing ready in a research report. Often, you have more material ready than you think. Don't make the mistake of keeping the actual writing of the draft paper for "when you have time" – cast the iron while it is still hot; this approach takes the least amount of time to turn the work into a manuscript. Have that time for writing available, each workday.

Just as what you did for writing your first paper, always start by making a plan for writing your paper when you have the outline ready. If you can estimate how much time each section and subsection will take, you can assign pomodoros for the writing tasks. If you only have 30 minutes for writing in a given day, consider that one undisturbed Pomodoro for churning out a subsection of your manuscript. Even if it is just 30 minutes, reserve this time to fit writing in between other duties. Thirty minutes can be an incredibly productive bit of time; and eight days of 30 minutes will get you farther than a single time slot of four hours, in which your attention inevitably will start to trail.

If you have all material ready to develop a paper, the very minimum amount of time you can spend on each separate section can, for example, be:

- **Abstract:** 30 minutes, see above.
- **Outline and planning:** 30 minutes⁷
- **Introduction:** 30 minutes. Don't spend too much time going back and forth with your introduction. Sure, writing an introduction is stressful, because it is how you invite the reader into your research. Be ruthless, and simply focus on the following question: "What does the reader need to know before we can delve deeper into this topic?" to identify the topics you need to introduce. For the background information, answer the question: "Why should the reader care about this research?".
- **Section 1:** maximum two hours
- **Section 2:** maximum two hours
- **Section 3:** maximum two hours – provided that you have all material ready in a research report or dissertation chapter. If you have all the ingredients for cooking up the sections, simply dump your existing text from your research report or dissertation into the sections, and start rewriting the text. Make sure your tables and figures fulfill the guidelines of your target journal, and make alterations where needed.
- **Proofread:** one hour. Read your paper after a few days, so you revisit your work with a fresh mind.
- **List of notations, conclusions, references:** one hour. Either develop the list of notations while writing a paper, or wait until the end, then use a colored pencil to highlight each symbol as you come across the notations while proofreading, and develop the list of notations at once. Write your section of conclusions after proofreading the manuscript and making notes about the most important points discussed in the paper. After writing these conclusions, crosscheck with the

⁷If you use outlines to structure your writing.

abstract to see if all topics you promised in the abstract are effectively discussed in the paper. Finally, if you use automatic referencing software, read through your list of references to check for the occasional typing error, or possible minor issue with formatting.

11.9.3 Juggling Different Papers

Once you have different papers submitted to an array of journals, each in different stages of the review process, keep a close look at your files and time. Once you start to submit papers, you will need to combine some planning, some list-making, and some document-tracking.

For starters, it helps to have an overview with all papers you are working on, and want to work on in the future. I use one Google Drive spreadsheet with an overview of all papers, target journals, target deadlines for submission, and a color code to identify where in the review process this paper sits. You can take a look into my paper cooking kitchen in Fig. 11.8. At any given point in time, I have a number of papers that I am working on, that are with my coauthors, that are in review, that need further action after review, that are in press, or that are published. Believe me when I tell you it is good to have a handy overview of what is going on with each paper [12].

You will need a handy overview to see when it is time to ask the editor when you will hear back from the reviewers, or when your paper in press will be published, or to keep track of which of your coauthors have already given feedback on a given paper. Additionally, you will need to learn how to juggle your self-imposed deadlines for developing your first drafts with the deadlines of the journals to resubmit your revised versions, as well as all other deadlines that you need to meet.

1	Paper	Topic	Journal/Venue	First draft	Revisions	Submitting	Draft Review	Revision	Resubmit
2	IABMAS	QS	IABMAS	x	x	x	x	x	
3	TRB/TRR	effective width	TRR & TRB	x	x	x	x	x	15/11/2013
4	ES1	S11 - S18	ACI Struct J	x	x	x	x	x	21/1/2014
5	ES2	rework ACI 2: S11 - S18	Engr Structures	15/03/2015					
6	ACI 3	BS1 - BK3	ACI Struct J	x	x	x			
7	Heron	overzicht proeven	Heron	x	x	x	x		
8	ACI 4	combigroeven	ACI Struct J	x	18/09/2013	x			
9	ACI 5	MEM	ACI Struct J	15/12/2015	16/10/2013	x			
10	review	literature review	Mag of Concrete R	15/3/2014	1/4/2014				Sc
11	database	database & review	Mag of Concrete R	15/3/2014	1/4/2014				Ph
12	ES1	code extension	Engr Structures	15/5/2014	1/6/2013				Ph
13	ICE BE-1	herwerkt van TRB 2014							
14	ICE BE-2	QS + AASHTO	europese journal, bruggen	6/4/2014	27/4/2014				
15	JB2	St Sebastiaanbrug	Journ Bridge Engr	15/4/2015	27/6/2014				op
16	ES3	2d/4d	Engr Structures	15/9/2015	27/9/2014				afg
17	Duts	overzicht proeven	B & Stahlbetonbau	15/10/2015	27/11/2014				Sc
18	ES4	herwerk TRB 2016	Engr Structures	15/12/2015					
19	SC 1	LoA	Structural Concrete	15/11/2015	27/1/2015				ini
20	M&S 3	vermoensvoorstel & database	materials and structures	15/02/2015	27/3/2015				
21	C&M 1	opnieuw M&S paper 1	construction and building materials						
22	ES5	probabilistic analysis ruytenschildt from fib	Engr Structures						
23	ES6	Ruytenschildtbrug	Journ Bridge Engr	15/01/2016					

Fig. 11.8 Color-coded overview of papers, target journals, and self-imposed deadlines. Color code: light blue for accepted and published, dark blue for accepted and in press, purple for rejected but submitted elsewhere, green for in review (Minor edit: I removed the names of my coauthors from their respective columns)

My Google Doc may look surprisingly low tech, but it has a number of advantages. It is a shareable document, so my coauthors have access to it to check on the progress whenever they want to. At any point in time, they can access the most recent version. If I need to make a snapshot in time, for example for my annual evaluation, then I simply print out a PDF of the most recent state of the document. Since the document is rather low-tech and accessible online, I can always add ideas wherever I am, without needing to download a heavy file. By now, I have all files I need for working in the cloud through Dropbox, but I keep this particular file on my Google Drive.

The added benefit with the color-coding is that I can quickly see which papers may need some following up. If a paper has been in press forever, it may be a good idea to ask the editor about a time schedule with regard to publication. If you haven't heard anything for more than six months or a year (depending on the journal), it may be wise to get in touch with the editor. Check online about the time it takes for papers to be published in the journal, to have an idea if your waiting time is normal. Similarly, if you have submitted a paper for review, but haven't heard anything from the reviewers after a year, it may be a good moment to inform with the editor about the process.

Besides using the overview in the Google Doc, you can integrate this system with a to-do list. For me, that means to have a reminder in my to-do list when I start writing a paper, reminders to follow-up with coauthors, and my self-imposed deadlines for submission of the manuscript. Besides an online to-do list, which generates a daily list of tasks, I also like to map out my work per semester by writing in a notebook. Typically, I outline in my semester plan somewhere between four and six papers that I want to work on. If I have deadlines coming up in a semester (for example, for conference papers, or revised versions of journal papers), then those papers certainly need to make their way to the list.

When reviewing tasks for the upcoming week, I add these tasks in their respective categories into the weekly template (for me, in Google Calendar). Timeslots for writing papers get filled in with the paper I need to work on. If planning the paper shows me that I will need two weeks' worth of timeslots for this particular paper, then I fill in the timeslots for two weeks.

A final difficulty when juggling papers is that you may lose track of the files you use. To avoid confusion, create a folder for each paper you are working on, and make sure you have all necessary information in this folder. Keep all figures you used for the paper in a subfolder. Save your cover letter, the calculation sheets that you have used, word equivalent calculation table, and other relevant information in the folder of the paper. Create a subfolder for the review process, in which you store the comments of the reviewers and your replies. Store all e-mails regarding the paper in this folder (if you do Inbox Zero, you should already be filing all e-mails in the right folder instead of having them pile up in your Inbox). Save different versions of the paper in an organized manner (I use "Paper Title YYYY-MM-DD"), see Fig. 11.3. For the figures, it may be a good idea to number the figures in the file

name (for example “fig 1.eps” and “fig 2.tif”). Doing so will facilitate uploading and organizing the figures into the online submission system.

11.10 Summary

Writing your first journal paper may feel like a major step to take. If you graduate based on a number of papers accepted for publication, it is a step towards your graduation. If it is not a graduation requirement, it is an important step in growing as a researcher. When you start writing a journal paper, you need to know where you want to submit this paper. We learned in this chapter the different elements to consider when you select a journal, and you developed an overview of interesting journals for your work.

As mentioned numerous times in this book, to get anything done, it helps to plan ahead. Before writing your first draft, plan your time and your actions. You practiced developing a planning towards a first draft. Then, you need to ask for feedback on this draft from your coauthors and/or supervisor(s), and rework your draft for submission. These steps too need planning.

A separate topic in this chapter deals with writing good abstracts. We discussed the different elements that make up an abstract, and you learned a method to quickly write an abstract when writer’s block tries to get a hold of you.

After submission of a manuscript, you wait. After some time (shorter or longer, depending on the journal and/or the reviewers), you will either receive the bad news that your paper has been rejected, or you will need to rework your manuscript for resubmission. Only in very few cases your work is accepted without any requested changes. If you need to rework your paper for resubmission, your first step should be to make a plan of how you will deal with the comments. Then, you will need to implement the requested changes, and –equally important- you will need to write a good reply to the comments of the reviewers, explaining them how you implemented the comment, or arguing based on the literature why this comment should not be implemented, and then showing where in the paper you implemented the comment or provided more information. If your paper is rejected, which happens to about 66% of all papers, you will need to decide where else you could submit the paper. You learned in this chapter how to analyze the comments of the reviewers that rejected your paper to identify which steps you need to take to have a larger chance of acceptance upon submission to another journal.

Finally, we looked towards the future in this chapter. After writing your first journal paper comes a second, third, fourth – and before you realize it, you are juggling a number of papers that you are drafting, that are with your coauthors, that may be in different rounds of review, or in press. We discussed how to juggle working on different papers, especially after completion of the PhD trajectory, when other responsibilities start to vie for your attention.

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