The process and art of writing
including tips, recommendations, and guidelines
A paper written for use by the participants in the IIIEE Masters Program.
Compiled by Joseph Strahl

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Introduction

While at the IIIEE you will be writing a number of papers, memos, reports and a thesis (thesis writers should consult the IIIEE guidelines for Master's Thesis). The purpose of this paper is to help you in your endeavor to write better papers. We will concentrate on mistakes that occur in the processes prior to the writing of the first sentences; how papers should be organized; the communicative relationship between the author and the reader; the importance of questioning sources; and the mechanics of listing references to sources. We will not consider grammatical mistakes.

Acknowledgments

This paper was not authored by one person alone. The origins of this paper were started by Helena Jörnlid, Thomas Lindqvist, and Joseph Strahl in 1994. Curt Görman and Peter Kisch sketched out other parts of this paper during the fall of 1995. During the summer of 1996 Joseph Strahl synthesized the parts. The version of the paper that you are presently reading was completed during September 1997 where some of the paper underwent extensive modification and Karin Ohrt contributed additional material. A paper about how to write papers is, in itself, subject to continuous improvement.

The organization of this paper

The paper is organized in the approximate chronological order of events that are connected to the process of writing a paper or thesis.
Some general recommendations

There is a common starting point for all types of writing. Writing is the process of conceptualizing your message in a preliminary form and then expressing and explaining your ideas, thoughts, views, findings, results, conclusions, etc. to a reader in a written form. Music and art also begin with message conceptualization but lead to sounds and images, not words. The ultimate goal of your writing, whatever type of writing it is, is to transfer your message to the receiver in a written form as effectively as you can. Good writing should leave a firm impression in the mind of the reader. You may never win a prize in literature for your efforts, but your writing can be inspiring and interesting.

What is the purpose of your writing?

The purpose of your writing is usually obvious. Or is it? The writing process should always begin by considering the purpose, but often we skip this stage and our writing suffers. As a consequence, we may be forced to rewrite the paper more often or more extensively. It is important to begin your work by asking several questions like those listed below:

- What kind of paper are you supposed to write?
- What is your message, objective, aim, etc.?
- Who is the receiver? What kind of readers make up your audience?
- What could the receiver want to get out of your report?

Beginning the writing process in this way suggests that writing must orient itself to placing the reader at the center. Unfortunately, this is not a very common approach, especially in the academic world. Many writers still write for themselves, either because of egotistical tendencies or by default since they have failed to consider the reader. To not place the reader in the center of your writing will be self-defeating.

The choice of subject matter is the obvious starting point when writing a paper. Whether you have chosen yourself or been assigned the topic, it is important that early on you make it clear to yourself (and your advisor) what you want to achieve in writing the paper and why. A clearer vision of the subject and your goal is something that will develop as you proceed with your work. When you begin writing, it is very important that you have your goal in mind and that your concept is precise and kept within bounds.

A word about objectivity

Academic writing has a long history of striving for objectivity. This means that academic writing frequently attempts to hide the writer in phrases that give the impression that the paper has written itself. Thus, the use of the words "I" and "we" is strictly forbidden. While we may be trained to write in this fashion and taught that objectivity and distance to our work are important, this style may sacrifice clarity for the sake of objectivity. If a paper is clear and easy to read, the alert reader will find the places where the author is not being objective. Indeed, in the interest of clarity one
can only commend authors who dare to announce to their readers what their true opinions are.

**Preparation facilitates writing and reading**

A common mistake is to underestimate the time needed to prepare the actual writing. Preparing to write and then writing the paper may take longer than you expected or intended. Spending time on the preparation and structuring of your report before you start will result in a well-written report with much less effort. A structured paper will also be easier to read and understand. Structuring can roughly be described as deciding on the hierarchy of the topics to be addressed in your paper. The structuring will also result in the number of topics to be addressed within this hierarchy, which will actually end up forming the outline for the text.

Thus by reading the outline a good overview of what the paper/report is about may be obtained. The headings reflect both the content and the hierarchy of the different topics discussed in your paper, or:

- the headings provide the structure and invite the reader
- the text provides the context

Since you never have the time or the possibility to write about everything in your report, you must clearly delimit the scope of your work, i.e. set boundaries for what is to be included in the report. Delimiting is a natural outcome of determining the purpose of your writing.

**Getting started**

**Literature Search and Problem Formulation**

After you have chosen the subject, begin to investigate the available literature so that you can gain an overview of the problems concerning the subject. By reading one or several general reports, you will receive ideas on where to delve further, as well as obtain background knowledge to which you can relate your own investigation. As you are reading, think about issues you can address in your paper. A good starting point is to note passages about which you are critical or doubtful. But remember to limit the literature study. A good way to determine if a certain book will be useful is to read through its introduction and conclusions.

The subjects of many papers have not been based on literature sources but rather on interviews or some form of survey study. When it comes time to begin working on a thesis your advisor or others at the Institute may be able to provide you with ideas about persons involved with your subject or about pertinent literature, which can provide an overall picture for your area of investigation.

In order to proceed from the general overview of the subject and literature to your own particular investigation and the material you are going to use, it is necessary to formulate the problem as clearly and concisely as possible. The type of material that is best suited as the starting point in the investigation depends entirely on the problem to be investigated. A clear formulation of the problem is necessary in order to
determine in which manner and with which material one may best deal with the subject.

Therefore, as soon as possible you should demarcate the subject of your paper by formulating the questions you would like answered and also, if possible, the supplementary questions that are not going to be expanded upon. What is to be investigated and described? Which concepts are central to the formulation of the problem? The sentence that states the goal of the paper can be said to be the most important one in the whole paper. If it is vague and not well thought-out, the entire paper will be affected.

Material and Sources

When you have obtained background information and your subject has crystallized to the point that you have formulated the problem and questions, it is time to determine which material is appropriate for use. You may need assistance from your advisor. One principle rule is to limit the material substantially. It is more important to be able to work through less material thoroughly and make independent observations than to tackle a large mass with superficial reporting. By not taking in too much material, you increase your chances to really think about what you are reading and draw appropriate conclusions from this reading. It is better to supplement later with aspects from other material and comparisons, if time allows, than to wade in over your head at the beginning.

The material can, and even should, be of different nature. Here, an important distinction should be made between source, which is the citing and possible incorporation into your work of an acknowledged scientific description of your area and literature, which is a general reporting of what others have written about the area of your investigation—i.e. in the rule, other investigations. This literature also constitutes material to the degree that you use the investigations as supporting evidence for what you are proposing, or analyze the reasoning and conclusions you encounter in them.

A distinction must also be made between primary data and secondary sources. A statistical yearbook from a government agency contains primary data. A book whose author is comparing the standard of living in several countries over time may contain references to such primary data. When possible, you should use a primary source and not a table, for example, reprinted in a secondary source.

Structuring the paper: a first look

In this writing guide, we will consider two main structures or models that can be used to organize a paper: the so-called logical-historical model and the popular science/journalistic model. The former is essentially the way most theses and similar works are structured, as well as many articles appearing in scientific journals. The more popular science approach is used more often in other types of journals and to address another kind of audience. Both ways of structuring papers have their merits, similarities, and uses, and neither should be used to the exclusion of the other. Furthermore, it is possible to combine both ways and still produce good results.
Generally, we would like to advocate more frequent use of the popular science/journalistic model. In this model the most important messages appear first. Readers with little time at their disposal may only be able to get through the first two or three pages in a fifteen page report. The author of the paper will accomplish nothing if the most important messages finally appear on page twelve, thereby losing his reader in the process.

Figures 1 and 2 should give a better sense of why we advocate more frequent use of the popular science structure.

**Figure 1: The logical-historical method**

![Diagram](image1)

Position in the paper, from beginning to the end.

**Figure 2: The popular science/journalistic method**

![Diagram](image2)

Position in the paper, from beginning to the end.

In some ways the logical-historical model is like a very long joke told at a cocktail party: by the time you get to the punch line, no one is listening any more. The popular science model grabs your attention, provides the most important message during the
first part of the paper, and then bolsters the beginning with supporting evidence, references to other relevant studies, and minor observations.

The logical-historical approach to structuring a paper reflects, to varying degrees, the actual chronological order of events that took place at some point in time. The author structures her paper around the chronology. In actuality, however, the investigative process is seldom that neat and orderly. Experimentation is fraught with false starts and methodological dead ends, but this usually gets weeded out from the final reporting.

While the popular science type of article may be short on context in the beginning, by the time the reader has reached the end, he has received all of the necessary information. The risk occurs when too many readers are satisfied with reading the What is New? part of the paper and rely on this when writing their own papers. The reader does a disservice to himself and the author of the original paper if the entire paper is not read thoroughly before being used as a source. Another objection to using the popular science approach is that in its most extreme form the reader is provided with only fragmented information in the beginning.

It is possible to strike a compromise between the two models: in some ways a good abstract functions as a surrogate for a popular science structured paper. The reader quickly gets the gist of the whole paper when reading a well-written abstract. However, a ten page report not intended for publishing seldom has an abstract.

A better compromise, where the author chooses to use the logical-historical model yet still wants to give the reader a good start, is to write a short summary in the beginning of the paper presenting the vital messages. If your report is fifty pages long, then summarizing the findings and potential conclusions of the report in the first two or three pages, i.e. beginning with a popular science approach but then immediately switching to the logical-historical method, might be a good approach. This initial summary goes by various names but is sometimes called an Executive Summary. Many theses use this strategy.

Since most of us seldom write theses or columns in newspapers, our writing may often end up falling in between the two types of pure structures. While popular science and journalism may sound negative to some of us, there is no law that states that a rigorous, academic paper cannot be structured along popular science lines. Even though the organization departs from that commonly used in a thesis, the author should still take care to follow the proper mechanics of referencing and to question the validity and credibility of sources. We will return to this point later.

**Planning your time**

Already at the beginning of the paper, you should write down a short presentation of your work (one A4 page), which can function as the starting point for you (and possibly your advisor when you meet). You can receive viewpoints and assistance only if you have concisely and clearly presented what you are doing and described the problems you are encountering. Remember that when you write a brief summary, you are forced to think through your objectives. It should contain:
It is important to begin writing the paper with a good time margin. Do not assume that the mere writing will progress quickly, even if you think you have a clear vision of the content.

Often it helps to discuss the paper with someone else, and thereby receive input about what needs to be more clearly defined or get new ideas about how the material can be presented. Always plan in some reserve time at the end of the project, and remember that the technical work (such as typing, etc.) in the final writing phase also takes a time.

**Writing the Paper**

Now you have come to the central point in your work, where you progressively arrange your material, systematize it, and little by little collate the information, interpretations, and conclusions so that the future reader can understand what you have done and learn something about the subject. One is never completely finished with any portion of the writing until the entire paper is finished. Therefore, it is very important that you begin to write your first draft of the paper as soon as possible. In this way, you can pick up further suggestions from your colleagues and advisors, which will help you along.

The following six points were written originally to help students structure a traditional paper with a logical-historical organization. However, many of the points are equally relevant to the writing of other types of papers. We have attempted to comment on the differences between the popular science and the logical-historical structural approaches in each point below.

1. **Central position of the problem.** By this is meant that the paper shall demonstrate the work methodology employed in solving a problem. The point is not to report all you know, but to focus on a specific problem and show your process of thinking, observations, and reflections when attempting to answer the questions, as well as your proposals for solving the problem. General reporting may only be used for giving general background information. While both ways of structuring your paper -- the logical-historical and the popular science -- cover methodological concerns, the former places these up front and the latter more towards the middle or end.

2. **Substantiation (reference to sources).** Every assertion, every statement that is made in the paper, which is not generally known and accepted, shall be substantiated. This is done by referring to the source of information in such a way that it can be easily verified. It is important that you are aware of the source being used and the value of that source and/or the information it
possesses. When you cite a source directly, quotations must be set off with quotation marks.

3. Criticism of source. This means that one does not accept at face value the information given in the sources. The credibility of that which is being asserted must be open to question. This applies to questions pertaining to the source's credibility in general, especially if the source is suspected of being biased in a certain direction, which would affect the value of that particular information. Good questions to pose regarding source material are: How did the source receive its information? Why has the source recounted this information? Who can profit from the information being disseminated? Has something been omitted or neglected? Humanists and social scientists generally have greater experience in reflecting on the credibility of sources and exhibiting concern for the validity of non-numerical information, in particular, than engineers. For this reason, natural scientists, engineers, and others less accustomed to questioning a source's credibility should make an extra effort and not be afraid to be critical of their sources.

4. Interpretation. It is important to differentiate between presenting a fact and interpreting one. One must also differentiate between a source's interpretation of the information, other researcher's interpretations, and one's own interpretation. This distinction must be indicated clearly in the paper, and, if possible, one must attempt to explain these differences in interpretation. The value of conclusions are to a great degree dependent on the interpretation of the different information being well thought-out and related to the paper's purpose and questioning.

5. Analysis-synthesis. Analysis and synthesis are central terms in scientific work and must be kept clearly separate. It is especially important not to anticipate the synthesis in the analysis. The analysis is the process of extracting from the material answers to questions one poses, evaluating and interpreting these answers, as well as substantiating one's own interpretations on every point. Synthesis consists of drawing conclusions from the different analyses one has performed, and if possible, summarizing the conclusions into a solution for the problem one has chosen. In a popular science approach to structuring a paper, the synthesis may appear before the various individual analyses, yet the analysis and synthesis must remain distinctly separate. In a very short paper or one not intended for distribution, the distinction between analysis and synthesis may not be clearly stated or may be of less importance than in a strictly scientific paper.

6. Summarizing chain of events for the structure of a paper: The sources offer the material, the material is interpreted, the interpretations are analyzed, from the analyses conclusions are drawn, the conclusions are summarized into a synthesis describing the final conclusion to which the author of the paper has come. Again, the order of presentation in a more journalistic paper will be more-or-less the reverse of the chain of events listed here.
Structuring revisited: what all papers should have

A paper should have a title. Longer papers should have a title page with the title, author's name, who the paper is for, date, and perhaps even a relevant picture. The title should reflect the contents of the paper and pique the reader's interest. Titles should not be misleading. Short titles are usually preferable, but some subjects do not readily lend themselves to this.

If your paper is only five pages long, i.e. more like an office memo or a very brief report to a more senior member of the staff, then there is no need for a table of contents. A twenty page paper should definitely have a table of contents.

All papers should have a summary (a two page paper might be an exception). Depending on the subject of the paper and the target audience, the summary may appear first or last. A summary should provide a good overview of the whole paper so that a rushed decision-maker may be satisfied by reading only two instead of twenty pages. A good summary contains the essence of the ideas and arguments of the entire paper but does not tell the whole story.

The main body of the paper should then present ideas, arguments, and messages in a pleasing and logically consistent manner. The paper may be reporting on the results of a changed production process. The paper may be arguing for changes in company policy so that the environmental credibility of a product or site is increased. The paper may be comparing environmental legislation in several countries. This last paper may include a section on methodology (how does one compare legislation?), whereas the first two probably have less reason to discuss this topic.

Depending on the type of paper, there may be a need for a conclusions or recommendations section. This is not the same as the summary, since a summary should include material from the introduction, main body, and conclusions.

If you have chosen the logical-historical structure we suggest that your paper contain the following elements:

**Title Page.** Besides the title, this page should also contain information about the institution/department's name and subject area under which the paper is being placed, the date for the seminar where the paper is to be presented, the name of the supervisor, the name of the author.

Possibly, a preface should follow after the title page. Especially in longer papers, a preface may contain such items as background to the paper, acknowledgment directed to persons who have contributed to the paper by giving advice and viewpoints, and even personal reflections. Shorter papers seldom contain a preface.

**Table of Contents.** There are different schools as to how detailed one should list the sub-headings in the Table of Contents. Some people have been taught that the Table of Contents must include headings down to the 4th level (i.e. Chapter 3, Section 2, Sub-section 3, Heading 2). While this method is inclusive one surely must wonder whether the reader is helped by having so much detail in the Table of Contents. In
this example clarity is being sacrificed for the sake of detail. In a Masters Thesis of about 100 pages length one can wonder if the Table of Contents should be 4 pages long; perhaps a one or two page Table of Contents would be sufficient?

A possible summarization. If the paper is long, it is a good idea to summarize the most important sections before the main body of the paper begins. If you want a cursory inspection of that which you have written, then even a shorter paper should begin with a short summarizing text.

Introduction. This should address:
- the problem and goal
- questions and assumptions that comprised the starting point
- the scope, methodology, and presentation
- discussion of possible problems in methodology and scope

Appropriate headings here might be: Background, Purpose, Method, Disposition

Main Body. The entire investigation is presented here, divided into a number of sections according to appropriateness. The following points should be included:
- sketch of the background
- material description and discussion of material, for example, the criticism of sources
- analysis of the material
- comparison with different interpretations
- findings and possible discussion about findings

Note that the above points do not necessarily need to be separate sections.

Conclusion. This section should be brief and include:
- formulation of the problem (repetition from the introduction)
- summarization of the manner in which the problem was solved
- synthesis, i.e. summarization of conclusions
- possible reservations, proposals for further investigation, etc.

The appearance of a paper based on a popular science or journalistic structure would be different. A possible organization follows below:

Title Page. The audience, "This paper was written for Green Inc.", can be stated along with the author's name and affiliation. The paper may be dated according to the date it was completed or when it is to be presented, but the event to which the date refers should be explicit.

Table of Contents. See the comments and explanations on the previous page.

Conclusions and Consequences. This section could include:
- a summary of the most important conclusions
- what these conclusions could mean for the reader or others
- how you have drawn your conclusions
- why this is important

**Analysis.** This corresponds roughly to the latter part of the Main Body in the logical-historical approach.

- what analysis was used to reach the conclusions
- the analysis itself
- how the analysis relates to other work
- interesting but less important conclusions could be mentioned here
- why a particular method was chosen, which theories were used
- what do the conclusions and analysis mean for other theories

This last point may be part of the Conclusions and Consequences section above if the paper is rather theoretical!

**Methods and Sources.** This is a mix of material that might appear in the Introduction and Main Body in the logical-historical approach.

- description of the method in detail
- elaboration as to why a particular method was chosen
- description of sources, their reliability and credibility
- standard references about methods and general references about the subject

**Background.** This is also a mix of material that might appear in the Introduction and Main Body in the logical-historical approach.

- the scope
- the possible problems and how these were overcome in the original research
design/problem solving process
- the questions and assumptions that set the stage for the inquiry
- the problem and the goal

The author could choose to include at the very end a short recapitulation of the salient points. This reminds the reader of the most important messages.

**Sources.** A listing of sources of information commonly appears at the end of all kinds of papers and reports. This listing is sometimes entitled Bibliography in the case where all sources are written materials. Otherwise, the title Sources is more often appropriate. The technicalities pertinent to footnotes and the listing of sources will be dealt with later on in this paper.
The appearance of the paper and the mechanics of writing

Use headings to spurn your reader on into the details in the text. In order to do this, the headline should be fresh, interesting, and applicable to the contents. Do not attempt to fool the reader into thinking that he/she is going to read about one idea when the paper really deals with another. You may lose readers forever if they feel tricked.

For example, consider these examples of writing the same heading in different ways:
Starting a CP project
The success of a CP project depends on your communicative skills!
The cardboard processing mill and its operations
How does a cardboard mill operate?

The text should be fluent, relaxed, and close to the spoken language. There is a fine line here, however. You must avoid the carelessness and imprecise nature of some spoken language yet not be stuffy or dry. No one ever said that writing was easy! Maintaining the golden thread in your paper and a high attention level is crucial for its success.

Attempts to make a good impression on the reader by making the text more complicated or by using words with which you are not familiar are probably doomed to failure. Often, the reader will see through this façade. This is particularly the case when the author does not have English as a mother tongue, yet the readers are, for example, British or American. However, even native English speakers can fall into the trap of masking sloppy thinking with various forms of linguistic gymnastics. Native English speakers should constantly remind themselves that, depending on their ability, non-native English language readers may need to have ideas presented in a less complicated fashion.

Figures, tables, and pictures should be used where appropriate. Moreover, you can place some information in boxes. The box signals to the reader that the material in the box is of importance but is somewhat peripheral to the main message. The reader may, then, choose to skip the information in the box and return to it later or read the boxed information right away. The use of such boxes is particularly common when using a popular science approach.
Pictures and tables are used to present concentrated information and explain something that might otherwise be difficult to impart in words, or as a further explanation of the text. Good tables should leave the reader with a clear understanding of the matter. Trying to cram too much information into one table will confuse the reader. Alternatively, some readers lose interest if tables are used too often in the paper and give a "dense" or "packed" impression. The best pictures are elegant because of their simplicity. Pictures and tables should be closely related to the text. Some sort of explanatory text is often needed to place the table or picture into context. Therefore, a good picture text, called a caption or legend, is needed. Tables can also be placed in appendices.

Figures should be treated carefully and with respect. If you use figures in your paper, you should be absolutely certain of the correctness of their values and to what they refer. If you are not, leave them out or provide references. Not all figures are important, and therefore you should think carefully about which to include and which to leave out. Using an appendix to present additional data is a possibility for presenting further, less important, information.

Make the text as long as it needs to be. The text will be judged by its content and format; not by the number of pages.

**The conventions of the natural sciences meet the world of writing**

Chemical and mathematical formulas should always be written on one line, given enough space, and set apart with an extra line from the rest of the text. In this way the formulas can function both as part of the text and somewhat like a picture. See the following example of methane combining with oxygen to form carbon dioxide and water:

\[
\text{CH}_4 + 2\text{O}_2 \rightarrow \text{CO}_2 + 2\text{H}_2\text{O}
\]
Try to use illustrations or text instead of formulas if the reader is not an expert in the relevant subject. Do not use chemical formulas in the text. In some cases it may be more appropriate to write "The mercury content in the fish was abnormally high." instead of "The Hg content in the fish was abnormally high."

Only use commonly accepted abbreviations. Creating your own will confuse your reader.

**Abbreviations and their meaning**

Before you use an abbreviation or acronym for the first time in a text, write out the entire word, phrase, or name. Then, immediately after the entire word, put the abbreviation or acronym into parentheses, such as Non-Governmental Organization (NGO). In this way you signal to the reader that you want to save space and that the following shortening will refer to the entire word or name when it later appears in the text. Some abbreviations are so commonplace that the author can safely go right to the abbreviation, i.e. the UN, the EU, NATO, etc. since the vast majority of readers are familiar with the acronym. However, few readers will know what you mean by CP or, worse yet, the UNEP IE. The tricky part is the situation where the acronym may be known by some readers and not others: for example, many will recognize ICC as the International Chamber of Commerce, but fewer will recognize the WBCSD as the World Business Council for Sustainable Development.

Then, there are the cases where one abbreviation or acronym can mean more than one thing. LCA is sometimes used to refer to "life cycle assessment", sometimes to "life cycle analysis". Thus, the LCA term may refer to very quantitative methodology only for some readers or may be a broader term covering all types of assessment of the environmental impact of a product during its "life" for others. Make sure that your readers know what you mean by the acronym before you begin using it!

**Source credibility and validity**

Authors of non-academic papers may wish to make use of sources to strengthen an argument or let the reader know where to turn for more information. Yet, all too frequently, they do not question the validity of the information that is cited. One cannot assume that just because a number appears in a table it is reliable or that the author of another paper, whom you have chosen to cite, has been careful when checking up on his own sources. Furthermore, there are cases of fraud in the sciences, and statistics provided by industry or government need not be correct. This may not be due to a company or agency knowingly seeking to mislead the public. The information may, in fact, be correct to the best ability of the information provider yet still widely miss the mark.

As the author of a paper that relies on sources of information other than scientifically controlled experiments, you are responsible for questioning your sources. This does not mean that you need to double check every number you use, but it does mean that you should exercise caution and even question the motives of the author being cited or quoted. A good rule of thumb is that the more you suspect that something may be wrong, the more diligence that should be pursued. In the end, you may choose another, more reliable, source. You may also discover that a footnote is a better
choice. The footnote will not disturb the reader but signals that you have something further to say. For example, you might say in the text that:

"The PCB content in Baltic seal is very variable but generally thought to be too high and may contribute to reproductive disorder." *

The footnote could read * "Andersson (1992) suggests that the content of PCBs in Baltic seal varies by age of the animal, with young animals having low concentrations but older animals of reproductive age have very high concentrations in the fatty tissues. On the other hand Heikkonen (1989) finds no such trend and Kolakowski (1995) suggests that seals who spend a greater percentage of time in the Gulf of Bothnia as opposed to the Gulf of Finland or the Baltic Sea proper have lower PCB concentrations. Andersson is generally considered to be the leading authority about levels of toxins in mammals in the Baltic Sea yet the discrepancies in observations lead me to the conclusion that PCB content in seals may be determined by a variety of factors and cannot be predicted. There appears to be no scientific consensus that PCB concentration varies by age and therefore reduces the fertility of adult seals in the Baltic Sea."

Generally speaking, academic papers using the logical-historical structure use extended footnotes, like the one above, whereas papers in trade journals and popular science style papers are more likely to use boxes to include information that could otherwise appear in extended footnotes. There is no clear cut rule to follow here. Instead, you must use your own judgment.

Footnotes, citations, references, and sources

Sources are the materials or people that assist you in proving a point, that support a certain position, either by being an authority in the area or otherwise and essential piece of information. Your sources should be credible and valid. Primary sources are preferable to secondary sources or third hand accounts provided, of course, that the primary sources are available.

But it isn't enough to just have sources; one must demonstrate to the reader what the sources are both to increase your credibility and to enable the critical reader to check on your sources. Critical readers may want to check a detail or, perhaps, consult the sources to check whether your interpretation is the same as theirs.

Footnotes can take the form of extended commentary or be citations located on the same page. An example of using footnotes for an extended argument or discussion can be seen on the previous page where the question about PCB content in seals is covered.

Citations, which can take a number of different forms, show exactly where you obtained the information or data. The citation can be on the bottom of the page, within parentheses in the text, at the end of each chapter or section (in which case these are often called endnotes), or even at the very end of longer paper or thesis. Given the goal of our writing is to put the reader in the center, then we should place our citations on the same page as the text that we refer to.
References are the complete bibliographic information necessary to find a particular source. From a library perspective another term for references could be "bibliographic entry". Note that references and citations need not be identical. For example the exact page from which a quotation appears must be indicated in the citation but this information should not be included in the reference. Traditionally all references appear at the end of the paper or thesis but before any appendix that you might have. Some authors divide their references by kind: for example all written references appear first, then come interviews, and finally electronic and Internet references. Other authors do not make such divisions. All list of references should be in alphabetical order.

With regard to citations and references there are a number of different modes of procedure. You will find numerous examples of citations and references in How to Cite. The exact format will vary depending on the kind of source, how many authors there are, etc. While a number of different options are presented, note that the APA style is one of the most widely accepted. **Thus we expect you to use the so-called "APA style" whenever possible.**

**Summary**

1. The ultimate goal of your writing is to transfer your message to the receiver in a written form as effectively as you can.
2. To not place the reader at the center of your writing will be self-defeating.
3. Clearly delimit the scope of your subject.
4. The sentence that states the goal or the purpose of the paper can be said to be the most important one in the entire paper.
5. Tailor the structure of the paper to the audience as well as the goal of the paper.
6. Substantiation!
7. Question your sources.
8. Use headings to invite the reader onward.
9. The text should be fluent and relaxed but not careless and imprecise.
10. Be careful with abbreviations.
11. For footnotes/citations and references/bibliographic entries use the so-called APA style whenever possible.
12. Always allow sufficient time to write and rewrite the text.
13. Theses at the IIIEE have certain layout rules. Follow these.
14. The text will be judged by its content and format, not by the number of pages.