I. Writing Course Papers

One of the basic goals of courses in history and philosophy of science is to stimulate students to read critically and analytically and to formulate arguments and ideas and a convincing way. In course papers you can demonstrate these skills. Every HPS assignment assumes that

a) you have read the course readings and have formed a critical understanding of them;
b) you have developed a critical understanding of the topics discussed in this class based the readings, the lectures, and the class discussions;
c) that you are able to apply the central arguments to new episodes in the history of science;
d) that you are able to conduct independent research to shape and support your argument; and
e) that you are able to communicate your argument convincingly and effectively.

Writing a paper is, first of all, an exercise in communication: how to present your ideas and arguments in such a way that they are comprehensible to a reader who does not know the fine details of your topic. In other words: your paper needs to be reader-focused rather than author-focused.

In this guide to writing course papers in HPS, a few pointers for writing interesting and convincing papers are provided.

1. Define a Topic

In this course, paper topics are given in the assignments. Nevertheless, within the framework of the assignments, you have considerable freedom of defining your own topic. Or, to put it another way: you will have to define what your paper is about and which message you want it to convey, even though the parameters are provided with the assignments.

The prime characteristics of a paper are: it has one main topic, it makes one central point, addresses one main issue, and only makes one or two major points. A paper should always be an answer to a question. A paper should have a message.

The main topic of the paper can be expressed in a thesis paragraph, which is the very first paragraph of the paper. In the thesis paragraph, you indicate your main conclusion and outline your argument.

The following therefore are not papers: summaries of the readings in the course reader or summaries of readings found elsewhere. Every good paper summarises work that has done before, but goes beyond these summaries by placing cited work in context, criticising it, or building on it. In other words: in every paper, it should be abundantly clear what your voice is and what your opinion is. When we read your paper, we are most interested in finding out your thoughts, arguments and ideas. The ideas of the people you cite we can read ourselves!

Consider the following when you are contemplating the topic of your paper:

- The point you are going to argue should be interesting, novel, and surprising. Nobody is waiting to read a paper about the facts that books fall on the floor if you drop them or
about the fact that the sun rises every morning. If your topic is counter-intuitive, has some novelty, or argues a point that has not been made in the readings, it will be much more interesting to read (and write). Put yourself in the position of an editor for a newspaper. Is your paper newsworthy? Does it add anything to existing debates? Does it make the reader interested or excited?

- The point you are going to argue should be specific, well-defined, and well circumscribed. In a paper you can only provide a limited number of arguments. Most of the time, less is more. The more specific your topic and the point you are arguing, the easier it is to find sources and define your arguments. Bad topics would be: “Science in the Western world.” “What scientist have to say about evolution” (too broad; it would be impossible to cover this point in a book-length manuscript, let alone a single paper). Good topics: “The controversy over cold fusion.” “Australian scientists address evolution, 1860-1890.”

- Ask yourself the following questions: Is the topic of your paper novel? Does it add anything above and beyond the readings and class discussions? Novel points and arguments and your own point of view are far more interesting.

TEST: State the topic and main conclusions in a few sentences (that is three maximum). If you cannot do this, you first need to formulate the main topic and conclusions of your paper.

2. Make an Outline

Organisation is of paramount importance in papers. A well-organised paper is a pleasure to read. A paper without organisation is very hard to read. At no point in the paper should the reader be left guessing as to what the paper is about, what you are arguing, and where the argument is going. The purpose of the paper is to convince the reader of your particular point of view by presenting convincing arguments. In a paper outline, you develop the “skeleton” of the paper. At this point, you decide which arguments you are going to use and in which order you are going to present them.

After finishing your paper outline, you can write your opening or thesis paragraph. You often need to rewrite the opening paragraph and the conclusion after your paper is finished to make sure they accurately reflect the main body of the paper.

3. Locate Sources

Explore the list of “Further Readings” in the course syllabus that is part of the course reader, or on the web. There are a number of useful readings listed there.

Go to the readings for the weeks that are most closely related to the topic you are interesting in and see what sources are quoted in these articles.

Conduct searches on the world wide web with Google (or your preferred search engine). The resources of Google Scholar are really useful (http://www.scholar.google.com) as they contain all electronic articles available.

You should be very cautious about using sources from the world wide web, since about everybody can host a web-site presenting all kinds of fascinating and outlandish opinions. When you keep that in mind, web-searches often provide quick access to useful academic sources (as secondary sources normally found in journals can sometimes be found on the web as well).

Use the electronic databases provided by the University of Sydney Library (go to the home-page of the library, see under “Databases and Electronic Resources”).

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The first very useful database is History of Science and Technology (HST), which is a comprehensive database for literature in the history, philosophy, and sociology of science. Another very useful database is Factiva.com, which provides access to articles in newspapers and magazines (you can search, for example, for articles in Australian newspapers). If you are investigating how science is represented in the media, this will be a very useful source.

For your paper, you should locate both primary and secondary sources. Primary sources are articles and statements made by scientists, practitioners, individuals, and commentators in the past. Secondary sources are generally written by historians, philosophers, and sociologists of science analysing developments in science.

You should explore the secondary literature relevant to your paper in order not to invent the wheel once more. The secondary literature is also helpful in formulating your thesis statement in suggesting ways in which your topic can be explored fruitfully. The secondary literature can provide examples of how the issues you address in your paper can be analysed and discussed. You should attempt to find some secondary sources first to explore your topic and gain a sense of what has been written about it. It can also guide you to interesting primary sources.

Your paper should include references to the primary literature since here developments in science can best be explored. References to the primary literature indicate that you have conducted independent research into your topic. Locating primary sources is one of the most important skills in the history, philosophy, and sociology of science.

4. Write the Paper

A good paper goes beyond summarising the existing literature. In writing your paper, it should be obvious to the reader that you have consulted a number of sources and that you know relevant primary and secondary sources. However, your paper should present original ideas, original arguments, and a conclusion of your own. Your arguments should of course be supported by citations to the relevant literature, but should go beyond merely summarising it.

Cover page

A tutorial or course paper contains the following information on the cover page:

A. Title;
B. Your name and student number;
C. Name of the course for which the paper is submitted;
D. Date the paper is submitted;
E. A word count (excluding references)

Papers should be either one and a half or double-spaced. New paragraphs need to be indicated with either a blank line or an indent at the beginning of the new paragraph.

A good paper has five parts: a title, an opening paragraph, the main body, the conclusion, and references (either presented as endnotes, footnotes, or a references list).

1. The title should be concise and informative, and give the reader a good impression of what the paper is going to be about. It should be the main signpost for the reader to gain an impression of what the main argument of the paper will be.

   Bad titles:
   “The Origin of Species: Different Opinions.”
   “An Exploration of Experiments in the Field.”
   “Assignment 4.”
Good titles:
“Theological Arguments in Favour of Evolutionary Theory.”
“The Scientific Nature of Parapsychological Experimentation.”
“The Political Motivations of the Critics of Parapsychology.”
“The Nature of Experimentation in Homeopathic Medicine.”

Use sub-headings in your paper to make the organisation clear. There should at least be one sub-heading after the thesis paragraph, and one near the end called something like “Conclusion.”

2. **The thesis paragraph** contains the thesis statement (or thesis statements) of your paper, which indicates what the main conclusion of the paper will be. The opening paragraph also provides a road map for the reader for the rest of the paper.

Examples: “In this paper, I will argue that parapsychological research does not adhere to the basic rules of the scientific method.” “In this paper, I will argue that, within Chinese medicine, alternative forms of experimentation exist.”

After the thesis statement, the opening paragraph gives an indication of how you are going about answering your main question, problem or issue. (“In this paper, I will explore three issues in relation to my main topic ....”). Here you provide a road-map for the reader for the rest of the paper. The opening paragraph should give the reader a clear idea of what the paper is about, what the point is that you are going to argue, why the topic you cover in this paper is relevant and important. You do not present your arguments or quotations in this paragraph. After reading your opening paragraph, the reader should no longer have any questions about the topic of your paper, your main arguments, and the conclusions you are going to draw.

The last sentence of your thesis paragraph should indicate your expected conclusion.

3. **The main body** of the text contains the arguments you can present in favour of your thesis statement. You can also cover possible counter-arguments, and argue why they do not apply in your case or why they do not weaken your argument. If you have written a paragraph which does not argue for the main conclusion of the paper, consider deleting it.

Each paragraph in the main body of the text is a building block or a stepping stone. They follow the structure of the paper as outlined in the opening paragraph. At the end of every paragraph or group of paragraphs you should remind the reader what the main topic was about and what the relevance of the preceding paragraph(s) was to your main argument. You should take the reader by the hand and always explain what you are doing and why you are doing it. Ideally, you link your paragraphs by showing how they are related to the main theme, how your they are building on previous paragraphs, and how the following paragraphs represents a progression in your argument. You can do this through **linking sentences**. Providing such sentences is also called **signposting**. It prevents the reader from getting lost.

Make sure that you give about equal attention to the sub-themes or sub-topics in your paper. You do not want to overemphasise one and under-emphasise another theme. Your paper should appear balanced.

**Citations and quotations**

Use quotations sparingly in the main body of the text. I am keen to read your thoughts and your arguments rather than the opinions of others. When you use a citation or use primary and secondary sources, make the evidence, quotations, and references work for your narrative. You should not use citations and quotations to tell the main story; instead, you should use quotations to reinforce the points you are making in the paper.

When you use a quote, always indicate why you use that specific quotation and what it demonstrates. Quotes never demonstrate what they are about; you need to interpret the quote
for the reader. After your quote, you will have to emphasise its importance and how it is related to your main argument.

When you quote an author, indicate why the person you are quoting is important for your argument. Just mentioning names does very little to further your argument.

Wrong: “According to Charles Rosenberg, malaria epidemics have become much more frequent in recent years.”

Right: “According to the influential historian of medicine Charles Rosenberg, malaria epidemics etc. etc.”

Right: “According to the epidemiologist Charles Rosenberg, etc. etc.

The source of the reference has to appear either in a footnote or the citation has to follow the author-date format (i.e. According to Rosenberg (1952), malaria … ).

4. In the conclusion, you draw all arguments together in a short summary and bring the most important point of your paper home. Your conclusion should reflect what you said in your thesis statement. The conclusion demonstrates why we have been on reading your paper thus far and what we have discovered by joining you in the journey of your paper. You do not present any new evidence, arguments, or quotations in the conclusion. You could indicate why your conclusion is relevant in cases not covered in this paper or suggest further applications. This can include further thoughts and considerations that are not backed up by evidence in your paper which are thought-provoking and suggestions for future research. Of course, these suggestions and further considerations are directly relevant to the topic of your paper.

5. References. Throughout your essay, provide citations and references that support your argument. You can place these references in foot-notes or end-notes, or use the author-date system in the text and a bibliography at the end of your essay (see the second part of this paper guide).

5. About Quoting, Citing, Paraphrasing, and Plagiarism

Isaac Newton once famously stated: “By standing on the shoulders of giants, I have been able to see farther.” When you are writing your paper, you do not have to invent the wheel again. A lot has been written, there are lots of sources available for your use. You can demonstrate your insight and creativity by making skillful, creative and appropriate use of all the writings that are available. But, of course, the content of the paper has to be your own. Your paper has to be written in your own words, presenting your own analysis and arguments.

Using quotations and references demonstrates you have done your research and that you relate the points in your paper to previous work. It strengthens your paper.

Quotations. When you use quotations, they should be used to reinforce your points. Quotations should never be used to tell the story or save you time from writing it. The famous “cut and paste” type of essay does not constitute acceptable work. Only use quotations if they are directly relevant and fit appropriately in your line of argument. When you quote, you use somebody’s exact phrasing. To indicate this, you use “quotation marks.”

Example: In my opinion, essays should contain clearly and succinctly expressed ideas. As Hans Pols, author of a guide to writing course papers in the history and philosophy of science states, the ideal paper “has one major topic, addresses one main issue, and only makes one or tow major points.”1 One should therefore not try to cover too much material in one paper.

Alternately: .... As Hans Pols (2004), author of ..... 

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Bibliography

**Paraphrasing.** Rather than repeating what other authors have said, you can put their ideas in your own words. Nevertheless, you need to put in a reference to the original source.

**Plagiarism** is the use of someone’s exact wording without providing a source, or closely paraphrasing someone’s words without acknowledgement. Using quotations, citations, and references strengthens your paper. Not providing appropriate references weakens your paper tremendously. A paper in which plagiarism is detected results in an automatic grade for that paper of zero (0). This mark cannot be made up. We use software to detect plagiarism.
6. Most Common Stylistic Mistakes: “On How to Write Good”
By Marta Hanson. Source: http://histmed.jhmi.edu/hanson/courses/WritingGood.pdf

1. Verbs must agree with their subjects.
2. Prepositions are not words to end sentences with.
3. And don’t start a sentence with a conjunction.
4. It is wrong to ever split an infinitive.
5. Avoid cliches like the plague. (They are old hat).
6. Also, always avoid annoying alliteration.
7. Also too, never, ever use repetitive redundancies.
8. Be more or less specific.
9. Parenthetical remarks (however relevant) are (usually) unnecessary.
10. No sentence fragments.
11. Contractions aren’t necessary and shouldn’t be used.
12. Foreign words and phrases are not apropos.
13. Do not be redundant; do not use more words than unnecessary; it’s highly superfluous.
14. One should never generalize.
15. Comparisons are as bad as cliches.
16. Don’t use no double negatives.
17. Eschew ampersands & abbreviations, etc.
19. Analogies in writing are like feathers on a snake.
20. The passive voice is to be avoided.
21. Eliminate commas, that are, not necessary.
22. Never use a big word when a diminutive one will suffice.
23. Kill all exclamation points!!!
24. Use words correctly, irregardless of how others use them.
25. Profanity is for assholes.
26. Understatement is always the absolute best way to put forth earth shattering ideas.
27. Use the apostrophe in it’s proper place and omit it when its not needed.
   [“it’s” = “it is”, “its” = possessive form of “it”]
   As Ralph Waldo Emerson said, “I hate quotations. Tell me what you know.”
29. If you’ve heard it once, you’ve heard it a thousand times: Resist hyperbole; not one writer in a million can use it effectively.
30. Puns are for children, not for groan readers.
31. Go around the barn at high noon to avoid colloquialisms.
32. Even if a mixed metaphor sings, it should be derailed.
33. Who needs rhetorical questions?
   [A rhetorical question is one asked for effect or to emphasize a point].
34. Exaggeration is a billion times worse than understatement.
35. It behoves us not to use archaic language.
   And finally . . .
36. Proofread every space and letter carefully to see if you any words out.
II. References

References allow you to indicate the sources you have used in writing an essay or thesis. They contain essential information that backs up the arguments in your essay and they provide further information for the curious reader. When you read articles and want to know more, the first thing you do is checking the footnotes or the bibliography, because these provide valuable further resources that could be useful for your own research. Similarly, indicating your own sources in your essays provides information to the reader on the sources you have used. By using references you can demonstrate that you have conducted research for your paper.

Be specific in your references. When you refer to an article or a book chapter, you need to provide the number of the page from which the information you are using. When you quote from a source, you also need to indicate the page number of the citation you use in your paper.

There are two ways to include references in your text; which method you use depends on your preference and style. Whichever style you choose, it is important to use it consistently:

1. Footnotes or endnotes
   This system of referencing is standard within the humanities. At the end of the sentence, you place a note, and within the note, you provide further information. Using footnotes or endnotes allows you to make additional points, to comment on the sources, or to present arguments that are subsidiary to the main text.

2. Author-date, with bibliography
   This system of referencing is standard in the sciences. It situates the references within the text. Full information is provided in the bibliography at the end of the text.

When writing essays for courses in the Unit for History and Philosophy of Science, you have to use one of the following three writing styles:

A. Footnotes or Endnotes: Chicago A (14th edition)

B. Author-date, with bibliography: American Psychological Association style

C. A reference style of your choice
   If you want to use the reference style you are familiar with because of your major, you can use it. You need to indicate the reference style you use on the cover page of your paper.

Where an element of a citation appears in italics in this document in italics, it may be underlined instead as well.

1. Footnotes or Endnotes (Chicago A)
You place a footnote or endnote in the text at the end of the sentence for which you want to provide a reference is made or about which you want to provide more information. In the footnote or endnote, you provide the full details of the reference. Please note: in footnotes and endnotes, the first name of the author comes first, followed by the last name. The elements of a reference in a footnote or endnote are separated by commas.

Your footnotes or endnotes would look as follows:

**Book**

**Book, second edition**

**Book by two or three authors**

**Edited book**

**Edited and Translated Book**

**Chapter in an Edited Collection**

**Article**

**Dissertation**
Article, book, or book-chapter that have been published previously

If, in your argument, it is important to indicate that the work you are citing has been published previously, give the original publication date in square brackets.


Citation when you have not consulted the original source

When you have not consulted the original source, but another source in which the original source is quoted, you need to indicate this in your reference list.


Documents from the World Wide Web

1. If you consult the electronic version of a journal of which a paper version also exists, treat your reference as a normal reference.

2. If you consult an electronic journal of which there is no paper version, refer to the journal as if it is a normal journal.

3. If you refer to a page on the world-wide-web which only exists on the web, use the following guidelines.

   There is no standard way of referencing to documents on the world wide web as of yet. When referring to material from the Web, indicate the author of the site (if indicated), the name of the site (what you see on the bar on top of the home page), the date of publication or last revision (if indicated), the URL, and the date you accessed the site (web-sites change all the time, therefore this information is essential). Because page numbers are irrelevant on the web, use text divisions to indicate where your quotation is located.

For an excellent resource on how to reference internet sources see:


Personal Site


Professional Site


[NB No date is indicated on this site]
Article published on the web


Book


When available, the use of the printed source is preferred.

Second and Subsequent References

When you cite the same source more than once, you use a shortened form in subsequent references.

The first reference would be, for example:


1. For the second and all subsequent references, simply give the authors last name and page reference.

16. Fleck, 85.

2. If, however, you are using two or more works by the same author, you must indicate which of the works you are citing. Use the last name, a shortened title, and a page number (if necessary):


3. If you use two authors with the same last name, give the full name in the abbreviated reference.

12. Roy Porter, 98.


4. If you refer to the same work as in the reference that is immediately preceding the current one, use the abbreviation “Ibid.” If you refer to the same page, this is sufficient. If you refer to a different page, add the page number.

The first reference would look as follows:

If you refer in the note immediately following this one, and you refer to the same page, your note would look like this:

2 Ibid.

If you refer in the note immediately following this one or the first one, to the same article, but to a different page, the next reference would look like this:

3 Ibid, 34.

**Bibliographies**

In most cases, when you place your full references in footnotes or endnotes, you do **not** need to provide a bibliography. However, in some cases this is required. Bibliographies are organised alphabetically by the authors last name, and, for every author, in the order the works have been published (if an author has published several works in one year, you order the references alphabetically by the first word of the title). The elements in the bibliography are separated from each other by periods. If a bibliography is required, it would look like this:

**Bibliography**


2. Author-date system of citation (APA Style)

With this system of citation, you place the name of the author and the year of publication in the text (with a specific page number if required). At the end of your paper, you provide a bibliography with all details. Please note: in bibliographies, the last name of the author appears first. Bibliographies are organised alphabetically. The elements of a bibliography are separated by periods.

In text:
The work of Kuhn (1962) has had a tremendous influence on scholarship in the history and philosophy of science, although many of his arguments have been anticipated by others (Fleck 1979). In their path-breaking work on science in the early modern period, Daston and Park (2001) argue that the generally accepted view on this period is incorrect. Similar arguments have been made elsewhere (see Chandler, Davidson, and Harootunian (1994)).

To indicate the page number: As has been argued by Shea (1980, p. 45), the origins of the public health movement are obscure. Other authors concur (Richards 1988, p. 660). Specific page numbers are indicated in the text, never in the bibliography.

To cite more than one article by one author: Hacking (1986, 1990) has argued that things are not as they appear.

To cite several authors: The therapeutic revolution had a profound impact on Western medicine (Rosenberg, 1979; Vogel, 1980; Warner , 1986).

If an author has more than one publication in one year: Kuhn (1970a, 1970b) has indicated several times that he had difficulty understanding his critics.

Article, book, or book-chapter that have been published previously. If, in your argument, it is important to indicate that the work you are citing has been published previously, give the original publication date in square brackets. As (Merton 1973 [1942]) has argued, the path-breaking work of evolutionary scholars (among them (Darwin 1972 [1859])), demonstrates the lasting influence of science.

Citation when you have not consulted the original source. As Hacking (1986, p. 222); as quoted in Hacking (1999, p. 112) argues, …

In Reference List:
Books:

Book, second ed.:
Book by two or three authors:

Edited book:

Edited and Translated Book:

Chapter in an Edited Collection:

Articles

Dissertation

Publications that have been published previously

WWW Documents
It is awkward to refer to documents from the World Wide Web using the author-date reference system unless you refer to articles and books published on the web. In that case, you reference would look like this:


Bibliography
A bibliography of all cited sources would look like this:
3. Endnote

Endnote is a software program that stores and organises bibliographic information. It is freely available to anyone studying at the University of Sydney. The first step in using the program is entering the bibliographic information of the sources you are using in a paper or thesis. You only have to enter each reference once; after that, you can use it as often as you like. With each reference, you can enter notes, an abstract, or other useful information. Once you have entered the bibliographic information, you can choose from a great number of bibliographic and reference style. Endnote will automatically format your references in the bibliographic style you select.

To use footnotes or endnotes, select “Chicago 14th A” from “Output styles” (under “Edit”).

To use the author-date reference style, select “APA 5th” from “Output styles” (under “Edit”).

Endnote works together with Microsoft Word and Corel WordPerfect. You need to install Endnote after you install either word processor. You can have an Endnote toolbar appear, which will greatly facilitate using Endnote in combination with your word processor, because it will allow you to Cite While You Write (CWYW). When you select the Chicago output style you want to use in your paper (either “A” or “B”), your citations be formatted correctly automatically. Endnote differentiates between the main text (bibliographic style) and footnotes or endnotes (note style), formatting references correctly for both.
When you are using footnotes or endnotes, select the reference you want to cite, switch to Word or WordPerfect, and press the button “Insert Selected Citation(s)” from the Endnote toolbar in Word. A temporary reference will appear, which will be replaced by a correctly formatted reference a few seconds later. (In WordPerfect, you have to press “Format Citations”.)

When you create a bibliography or reference list, Endnote automatically formats them correctly and places them in alphabetical order.

After finishing your paper, press the button “Remove Field Codes” to remove the codes Endnote has added to your paper to organise your references, and you have a perfectly formatted paper, meeting all the guidelines of the Chicago Manual of Style, 14th ed.

More information on the licensing arrangement with the University of Sydney and the download site you can find here: http://helpdesk.usyd.edu.au/software/endnote/. You will need your Extro account login name and password.

**Further Reading**

