



Thesis Manual

A handbook of suggestions and requirements

Graduate Program in Sustainability Science

Graduate School of Frontier Sciences

The University of Tokyo

INTRODUCTION

A master's thesis as well as a doctor's dissertation both represent a treatise that substantiates an original academic achievement by students during their graduate study. This manual has been prepared by the Graduate Program in Sustainability Science (GPSS) at The University of Tokyo to aid students in writing their theses and dissertations. However, this manual merely sets forth the minimum format, whereas the content and length must be decided by you, under the supervision of your advisor. Also, using the proper mechanics and conventions of good English writing, including grammar and spelling, is solely your responsibility.

GPSS expects all theses and dissertations to exemplify the highest academic achievement and integrity, ethically and otherwise.

The information in *1.0 PLANNING* section was taken from the GPSS Handbook and is accurate at the time of creating this website. However, the program may change as it evolves, so be sure to check the GPSS website for the most up-to-date accurate information concerning the structure and requirements of the curriculum and program.

GPSS website: <http://www.sustainability.k.u-tokyo.ac.jp/>

The Thesis Manual companion website is regularly reviewed and updated, and also includes a search engine to help you find what you along with some helpful hints and an FAQ section:

<http://www.sustainability.k.u-tokyo.ac.jp/thesismanual/>

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1.0 PLANNING (not necessarily in order of occurrence)

1.1 GENERAL

This manual outlines the areas on which thesis manuscript review primarily focuses. Meeting these criteria does not guarantee approval, but disregarding them could very well lead to repeated revisions.

The word *thesis* generally refers to the publication of research at the master level of a graduate school. More often than not the major portion of a thesis represents a review of cited literature, and original research the smaller portion.

The word *dissertation* generally refers to the publication of research at the doctoral level of a graduate school. More often than not the major portion of a thesis represents original research, and review of cited literature is the smaller portion.

In this manual the word *thesis* is used to mean both the master thesis and the doctoral dissertation unless otherwise specified.

1.2 DEADLINES¹ ... develop timelines, plan carefully, and be on time

1.2.1 General

A master or doctoral thesis in sustainability science is required for all GPSS students. The theme of the master or doctoral research will unlikely be adequately discussed within an existing discipline, so students are urged to apply interdisciplinary approaches to a specific issue related to sustainability or to develop a proposal for new institutions, values, or paradigms designed for building a sustainable society, going beyond simply analysis of specific environmental problems. Research on sustainability requires diverse concepts, tools, and methodologies; hence, GPSS students are strongly encouraged to discuss issues with faculty members from a variety of backgrounds and to choose his/her principal advisor(s) after careful deliberation.

1.2.2 *Determine your thesis principal advisor*

Students first discuss their ideas concerning graduate research with some of the members of the GPSS Steering Committee so that committee members can understand students' knowledge and their areas of research interest. Students are then provided with information on faculty advisors involved in the program as well as suggestions regarding possible research themes. Depending upon a student's research interest, individual meetings can be arranged with potential principal advisors. Through this process, students choose their principal advisor (hereinafter advisor) within a few months after enrollment, based on mutual agreement between the students and their advisor. The topic of a thesis is decided through discussions with the advisor.

1.2.3 *Determine your thesis co-advisor*

The program is aimed at providing students with concepts and methodologies for utilizing and integrating diverse academic fields and disciplines. Hence, each student will also choose a co-advisor (hereinafter co-advisor), preferably with a background that differs from that of the principal advisor. After consulting the principal advisor, each student is to submit a list of three potential co-advisors to the GPSS Steering Committee within one year after enrollment. Upon approval of the GPSS Steering Committee, the co-advisor

¹see GPSS Handbook for actual dates, and always confirm with your principal advisor *well in advance* to help ensure that

will be decided by the beginning of your advisor gets that date into his/her schedule. the second year. Co-advisors will provide advice to students at least two times during the second year, once before the mid-term presentation and once before the final presentation. The decision regarding the granting of a master or doctoral degree will be made by considering the principal advisor's evaluation of the thesis, co-advisor's evaluation of the thesis, and the evaluation of the final presentation made before the members of the GPSS Steering Committee.

- 1.2.4 Submit Thesis Proposal Draft to your advisor
- 1.2.5 Obtain Thesis Approval from your advisor
- 1.2.6 Submit 1st draft to your advisor/co-advisor
- 1.2.7 Revision 2 (if needed)
- 1.2.8 Revision 3 (if needed)
- 1.2.9 Periodic meetings with advisor/co-advisor
- 1.2.10 Submit Final Thesis (1 week before Final Presentation)

Every thesis must include an abstract of no more than 1,000 words. Theses and abstracts will be made publicly available through the GPSS website and or the Kashiwa Library, unless there are specific reasons not to do so.

➤ (NOTE: late submission of your thesis may cause a lower evaluation)

- 1.2.11 *Obtain final approval from advisor and GPSS Steering Committee*
- 1.2.12 *Submit Final Thesis to Department*

1.3 PRESENTATIONS

1.3.1 *Progress Reports*

Each student is required to present their progress report at the end of each semester. Each speaker must make a 10-minute presentation, followed by questions and answers for five minutes. A digital abstract of around 500 words must be submitted to the faculty in charge at least 24 hours prior to the scheduled presentation. Presentation slides and abstracts will be uploaded on to the GPSS website, and will remain on the GPSS website for a period of time.

1 st Progress report presentation	M1 1 st semester end
2 nd Progress report presentation	M1 2 nd semester end

1.3.2 *Mid-Term Presentation (M2 1st semester end)*

Each student is required to present their progress report at the end of each semester. Each speaker must make a 15-minute presentation, followed by questions and answers for 5 minutes. An abstract of around 500 words must be submitted to the faculty in charge at least 24 hours prior to the scheduled presentation. Presentation slides and abstracts will be uploaded on to the web site of GPSS, and will remain on the GPSS website for a certain period of time.

1.3.5 *Final Presentation/Defense of Thesis* (1 month before graduation)

Each student is required to present their progress report at the end of each semester. Each speaker must make a 20-minute presentation, followed by questions and answers for 10 minutes. Presentation slides and abstracts will be uploaded on to the GPSS website, and will remain on the GPSS website for a period of time.

2.0 ORGANIZATION

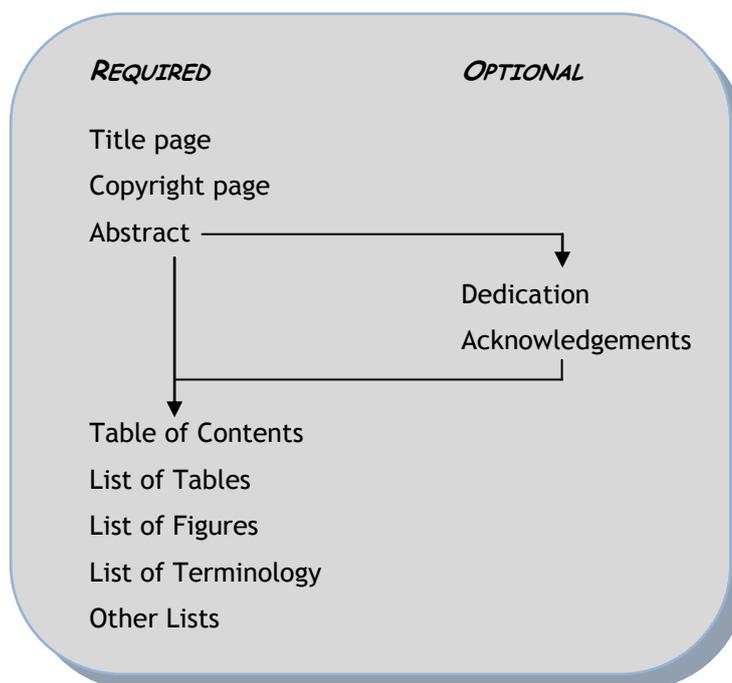
2.1 GENERAL

Most master theses are 80-150 pages, and doctoral theses are often longer. However, students should keep in mind that the quality of the writing (and, of course, the quality of the research itself!) is more important than the quantity of pages. Consult your advisor regarding any questions.

2.2 FRONT MATTER

SIMPLY: tell the readers what they should expect to encounter

This part of your thesis contains certain required factual information and optional information:



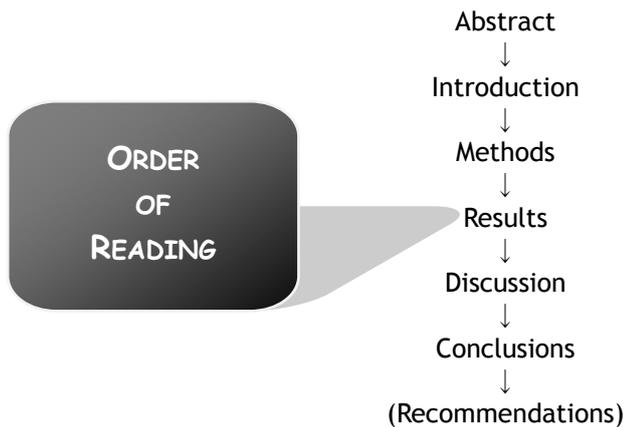
2.3 BODY OF TEXT

SIMPLY: tell the readers what they should expect to encounter

The most typical pattern used in journal writing worldwide today is the IMRAD model: **I**ntroduction, **M**ethods, **R**esults, **A**nd **D**iscussion followed by your Conclusions. Many theses also follow this or a similar pattern, but you should discuss the organizational structure with your advisor at a number of stages, always making sure that you understand what is expected of you and your thesis.

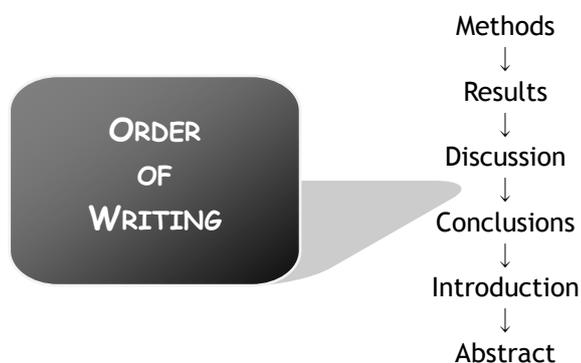
NOTE: The following suggestions for consideration should not be construed as “fixed”. Ideas are listed here merely to provide you with some guidance and direction. You must develop your own organizational structure and have this approved by your advisor ... the earlier the better.

The conventional IMRAD model is also used by most, if not virtually all, scientific and academic journals today. A more complete description follows in this section.



However, even though the IMRAD model represents the most common structure for the reader, this generally differs from the flow of the original writing itself.

When you think about it, **Methods** is probably one of the easier parts to put down into writing, and you should be able to draft this even before you obtain any results. Completing this should naturally lead you right into the **Results** section. You have to collect and analyze your results *before* you can even attempt a **Discussion** of theoretical and practical aspects, and the significance of your findings. Now you are on your way to writing your **Conclusions**, which really are best written before you write the **Introduction** that describes what Conclusions were unknown or unproven in the beginning. And, of course, how can you summarize your thesis in an **Abstract** until the thesis itself is completed?!



2.3.1 Introduction generally should . . .

see 4.2

- present the nature and the scope of the problem you investigated
- provide a concise rationale for your research
- refer to the research of other specialists in the field to give you credibility
- review the relevant literature briefly to orient the reader
- state your main conclusions
- state your method of investigation
- state main results of your investigation

SIMPLY: tell the readers what they can expect

★ *Introduction* and *Discussion* sections generally function as a pair. ★

2.3.2 *Methods generally should . . .* see 4.3

- be precise
- be presented in chronological order (most cases)
- describe how you will carry out your fact finding
- determine a method that is reproducible: provide enough detail so that a competent researcher can repeat the experiment



Consider: *Is enough detailed information provided so that another competent researcher can replicate or reproduce the results?*

SIMPLY: what you used, what you did, and how you did it

★ *Methods* and *Results* sections generally function as a pair. ★

2.3.3 *Results generally should . . .* see 4.4

- be in chronological order or in order of importance
- describe the new knowledge
- ensure that all results are meaningful
- present representative data (not endlessly repetitive data)

SIMPLY: what you found and what you observed

★ *Methods* and *Results* sections generally function as a pair. ★

2.3.4 *Discussion generally should . . .* see 4.5

- answer the questions posed in the Introduction
- define unsettled points
- discuss both theoretical and practical applications
- discuss the significance of the Results
- indicate what the findings tell readers in relation to proving your hypothesis
- point out any exceptions or lack of correlation
- present the principles, relationships, and generalizations shown by the results: avoid repeating previous statements
- previously published work
- show how your results and interpretations agree or contrast with

SIMPLY: what you learned

★ The *Introduction* and *Discussion* sections generally function as a pair. ★

2.3.5 *Conclusions generally should . . .* see 4.6

- mention what you believe to be crucial in this line of research
- state your conclusions clearly
- summarize the evidence for each conclusion

SIMPLY: why the results are important
what is the significance or value

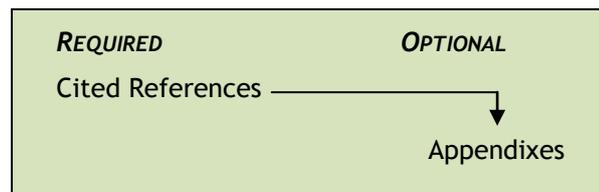
2.3.6 *Recommendations generally should . . .* see 4.7

- discuss what type of studies future research should conduct that would likely answer some major remaining questions
- explain what needs to be done next to take this research to a higher level

SIMPLY: what to do next

2.4 BACK MATTER

This part of your thesis generally contains required factual information, but may also include figures, flowcharts, graphs, illustrations, questionnaire samples, questionnaire response tabulations, and other information or data too detailed to include in the body of text.



2.4.1 *Cited References*

A thesis must include a list of cited literature or bibliography listing all works that are referred to in the text. This section follows the last page of the body of text and precedes the appendixes (if any).

SIMPLY: Give credit where credit is due. (see 6.3)

The styles used for listing sources in the list of cited literature or bibliography are detailed and complicated, and they can vary considerably among academic disciplines. For this reason, follow the most-widely accepted scholarly style manual in your field. (see 6.32)

Be aware that there are many styles on how to cite references, but virtually every style includes the minimum following parts:

JOURNALS

author's name(s)
title of article
publication information

- title of publication (article)s
- volume number
- issue number
- page numbers

BOOKS

author's name(s)
title of book
publication information

- city of publication
- publisher name
- date of publication

These represent the basic guidelines, yet there are numerous anomalies, so check a style manual. (see 6.32)

<u>Author variations</u>	<u>Title variations</u>
1. author, only one	1. manuscript in preparation
2. author, two	2. proper noun use
3. author, more than two	3. revisions
4. editor(s)	4. subtitles
5. group authors	5. translations
6. others	6. untitled work
	7. others

<u>Source variations</u>	
1. acts	10. newspapers
2. archival documents	11. online
3. audio	12. organizations
4. books	13. symposiums
5. doctoral dissertations and master theses	14. technical reports
6. foreign language sources	15. translations
7. government	16. unpublished work
8. journals	17. visual
9. magazines	18. others

2.4.2 Appendixes

Appendixes (also *Appendices*) should be limited to supporting material genuinely secondary to the main argument of the thesis. They must include only material that supplements or clarifies material referred to in the thesis. This material is put into an appendix because it is usually long and complex nature would be distracting in the body of text.

In scientific writing, the appendix usually represents a detailed explanation that is too long for the Methods section of your thesis which would be disturbing to the reader because the excessive detail distracts the reader from the inherent train of thought.

Appendixes typically include:

1. actual surveys used for data collection (original language and English)
2. computer programs
3. instrument diagrams
4. long calculations
5. maps
6. statistical analysis
7. written comments from surveys
8. others

SIMPLY: additional information that supplements or clarifies information in the body of text, yet is too long

REMEMBER: Whenever you have a question or a problem, seek help. Don't wait!

3.0 FRONT MATTER (discussed in order of appearance)

3.1 GENERAL

The front matter of a thesis is an important part because it gives the reader direction, and an overview of your structure which should facilitate understanding. Some parts are required and some parts are optional.

3.2 TITLE PAGE (1 page) required (see pp 44, 46)

The thesis or dissertation begins with a title page, which must be prepared in the specified form. The title should be as concise as possible, and provide an accurate description of the thesis content. Students are strongly encouraged to embed key words into their title, so that the title will be retrievable on computerized listings. Be sure to use words for formulas, symbols, Greek letters, and so on. And remember to consult your advisor ... an approval may be necessary.

- **Page Numbering:** Do *not* print a page number on the title page. This page is counted as page *i* for pagination purposes only.

Doctoral students are subject to more stringent formatting restrictions and deadlines as set forth by the Student Affairs Section since dissertations are subject to more university-wide standards. For example, Ph.D. dissertations must have a Japanese title on the OUTSIDE COVER PAGE of the dissertation (the cover of the bound version) in a prescribed manner, whereas the INSIDE COVER PAGE does not. Master theses do not have this requirement.

Therefore, doctoral students should obtain a copy of the most recent *Ph.D. Dissertation Handbook* from Student Affairs or download a copy from the university online system in order to prepare your dissertation in the proper manner. Consult your advisor if you have any questions.

3.3 COPYRIGHT PAGE (1 page) required (see p 48)

Copyright protection basically starts when the thesis is bound. To secure this protection, a copyright notice should be affixed on a separate page immediately following the title page. The notice should include the full title of your thesis, copyright symbol ©; the year in which the copyright is established; and the full, legal name of the author, and the statement “*All rights reserved.*”

- **Page Numbering:** Do *not* print a page number on the copyright page. This page is counted as page *ii* for pagination purposes only.

3.4 ABSTRACT (1 or more pages) required (see p 50)

An abstract is required and should not exceed 1,000 words. It should immediately follow the copyright page; and should state the problem, describe the methods and procedures of investigation, and give the main results or conclusions of the research. More simply speaking, the abstract should address five questions:

Q1: What did you do?

Q2: Why did you do it? What question(s) were you trying to answer?
What problem(s) were you trying to solve?

Q3: How did you do it? state methods

Q4: What did you learn? state major results

Q5: Why does it matter? point out at least one significant implication



- Page Numbering: Do *not* print a page number on the abstract page(s). This page is counted as page *iii* (*iv*, *v*, ...) for pagination purposes only.
- Tables, graphs, or illustrations should *not* be included in the abstract.
- Abstract is *not* included in the Table of Contents.

Emphasize original contributions. The word ABSTRACT should be centered at the top of the page text area followed by two lines of space. In-text citations are generally unnecessary unless required by your advisor.

3.5 *ACKNOWLEDGMENTS* (1 or more pages) optional (see p 52)

This is a statement recognizing the help or encouragement from individuals or institution; that is, those who assisted you in your academic research. The word ACKNOWLEDGMENTS should be centered at the top of the page text area followed by two lines of space. Continuing pages must be headed also, e.g., *ACKNOWLEDGMENTS (continued)*, if the acknowledgements are longer than one page.



- Page Numbering: This is the first page with a page number, provided an Acknowledgements page is used. That is, if the last page number of the abstract is *iv* (even though it is not printed), then the page number for the Acknowledgements page is *v* and printed in the footer area of the page, centered.
- This is the first page with a number.
- All pages after this have a number: pages before the Introduction use lowercase roman numbers (*vi*, *vii*, *viii*, *ix*, *x*, *xi*, ...) and all pages beginning with and after the first page of the Introduction use Arabic numbers (1, 2, 3, 4, 5, ...).
- Acknowledgements are not included in the Table of Contents.

3.6 *DEDICATION* (1 page) optional (see p 54)

This is a statement recognizing the people who have supported you during your graduate studies such as family members, friends, scholarship providers, and the like. The word DEDICATION should be centered at the top of the page text area followed by two lines of space. Continuing pages must be headed also, e.g., *DEDICATION (continued)*, if the dedication is longer than one page.



- Page Numbering: This page number (in lowercase roman numbers) is the next number in the sequence following the last page of the Acknowledgements.
- Dedication is not included in the Table of Contents.

3.7 *TABLE OF CONTENTS (TOC)* (1 or more pages) *required* (see p 55)

Each entry shown should have a page number with leader dots from entry to page number. The page number should be flush the right margin. The heading TABLE OF CONTENTS should be centered and capitalized at the top of the page text area followed by two lines of space. The divisions shown in the TOC must agree, in wording and style, with the divisions in the text. All front matter beginning with the List of Tables and all back matter pages should be shown in the TOC. Main headings should be shown in capital letters both in the TABLE OF CONTENTS and in the text headings. APPENDICES should be shown in the TOC. Continuing pages must be headed, *TABLE OF CONTENTS (continued)*, if the table of contents is longer than one page.



- **Page Numbering:** This page number (in lowercase roman numbers) is the next number in the sequence following the last page of the previous section. The TOC page number follows the Abstract or Acknowledgements (or perhaps the Dedication, if used) page number.
- The ABSTRACT, ACKNOWLEDGEMENTS, and DEDICATION parts are ***not*** included in the TABLE OF CONTENTS.

3.8 *LIST OF TABLES* *required if tables used* (see p 40)

When tables are used, a List of Tables should be placed on a separate page immediately following the Abstract, Acknowledgements, or Dedication page ... whichever is the immediately preceding part. Center and position the heading, LIST OF TABLES at the top of the page text area followed by two lines of space. Table numbers should be presented in Arabic numerals, e.g., Table 1, Table 2, etc. using title case. If the title is longer than one line, each entry should be single spaced, with double spacing between titles. The complete table title must be shown.

Each table entry shown should have a page number with leader dots from last word in the table title to the corresponding page number, which should be flush with the right margin. Tables must be listed here as sequentially numbered tables using Arabic numbers. Continuing pages are headed, *LIST OF TABLES (continued)*, if the List of Tables is longer than one page.



- **Page Numbering:** This page number (in lowercase roman numbers) is the next number in the sequence following the page number of the immediately preceding part which would either be the Abstract, Acknowledgements, or Dedication part.
- The List of Tables should be the first part of the TABLE OF CONTENTS.
- The List of Tables should precede and List of Figures.

3.9 *LIST OF FIGURES* *required if figures used* (see p 28)

When figures, process flowcharts, metabolic pathways, or similar schematics are used, a *List of Figures* should be shown on a separate page immediately following the *List of Tables*. Center and position the heading, LIST OF FIGURES at the top of the page text area followed by two lines of space. Figure numbers should be presented in Arabic numerals, e.g., *Figure 1, Figure 2*, etc. using title case. If the title is longer than one line, each entry should be single spaced, with double spacing between titles.

Each figure entry shown should have a page number with leader dots from last word in the figure title to the corresponding page number, which should be flush with the right margin. Figures must be listed here as sequentially numbered tables using Arabic numbers. Continuing pages are headed, *LIST OF FIGURES (continued)*, if the list of figures is longer than one page.



- **Page Numbering:** This page number (in lowercase roman numbers) is the next number in the sequence following the last page of the previous section; that is, the last page number of the List of Tables.
- The List of Figures should follow List of Tables and precede the List(s) of Terminology: Abbreviations, Units, and others.

3.10 *LIST OF TERMINOLOGY: ABBREVIATIONS, UNITS, AND OTHERS* optional (see pp 66, 68, 70)

If more than three abbreviations or acronyms of words or phrases, or other thesis-research specific words which are not in common usage are used in the texts, e.g., ATP, COPD, a *List of Terminology* must be included on a separate page immediately following the *List of Figures*. Center and position the heading, TERMINOLOGY at the top of the page text area followed by two lines of space. Continuing pages are headed, *LIST OF TERMINOLOGY (continued)*, if the list of terminology is longer than one page.

- **Page Numbering:** This page number (in lowercase roman numbers) is the next number in the sequence following the last page of the previous section; that is, the last page number of the List of Figures.

If you fail to prepare, then you prepare to fail.

- **Always maintain excellent communication with your advisor.**
- **Always be aware of what is expected of you in order to fulfill the requirements of your master or doctoral course.**
- **Prepare for your advisor meetings.**
- **Prepare for your presentations.**
- **Anticipate questions and prepare some answers.**

4.0 BODY OF TEXT

4.1 GENERAL

Use the same style of font or typeface that appears in the main body of the text in all headings and subheads, page numbers, endnotes, appendixes, and all other parts of the thesis or dissertation. Exceptions are made only for tables and figures produced by different technology or by graphic artists. Whatever you do, always be consistent!

4.2 INTRODUCTION see 2.3.1

A good introduction generally includes an overview of the problem, a statement of why the problem is important, a summary of relevant literature, and a clear statement of the research question; that is, the hypotheses and/or goals of the research. The introduction should be written in such a way as to enable even a non-specialist researcher to understand it.

Writing a good introduction is challenging until you know what the body of the thesis says. Consider writing (or re-writing) the Introduction *after* you have completed the rest of the paper, rather than *before*. see 2.3

4.2.1 *Content*

- 4.2.1.1 be sure to include a sufficiently interesting statement at the beginning of the introduction to motivate your reader to read the rest of the thesis ... it is generally an important or interesting scientific problem that your thesis either solves or addresses. Draw the reader in and make the reader eager to read on.



NOTE: your professors and fellow students will read what you write because that is what professors and fellow students do ... they are part of your “university family”. However, the real world off campus is often different; that is, submitting research to journals for publication, preparing research presentations for symposia, and other similar scenarios. The real world reads what you write because the content seems of interest and potential value, and is written in a professional fashion.

- 4.2.1.2 provide a thorough review of relevant literature to enable even a non-specialist researcher to understand the problem. Cite previous research in the field chronologically; that is, cite those who had ideas first, and then cite those who have done the most recent and relevant work. You should then go on to explain why more work was necessary (your work, of course).
- 4.2.1.3 provide a clear statement of the research question; that is, the hypotheses and/or goals of the research.
- 4.2.1.4 explain the scope of your work: what your research *includes* and what your research *excludes*. Briefly explain the rationale for excluding any seemingly pertinent areas.

4.2.2 *In-text Citations* (end reference form provided for easy comparison)

When discussing existing work, the source of such information must be cited to give credit to the original source. The in-text citation should immediately follow the title, word, or phrase to which it directly relates.

Basically, two options exist:

- | | |
|----------|---|
| Option 1 | use a citation in parentheses [()] in the sentence |
| Option 2 | use author as part of a sentence, and put the year reference in Parentheses |

4.2.2.1 Single Author

Cite *single-author* references by the surname of the author (followed by date of the publication, all in parentheses)

Option 1: in-text citation: 1 author

The main defining characteristics of ecotourism fall into two categories, namely environmental inputs and environmental outputs. The inputs are the natural and associated cultural features in a particular geographic place which serve as attractions for tourists. The outputs are the net costs or benefits for the natural and social environment. Ecotourism can hence be viewed as geotourism with a positive triple bottom line (Buckley, 2003).

Option 2: in-text citation: 1 author

According to Buckley (2003), the main defining characteristics of ecotourism fall into two categories, namely environmental inputs and environmental outputs. The inputs are the natural and associated cultural features in a particular geographic place which serve as attractions for tourists. The outputs are the net costs or benefits for the natural and social environment. Ecotourism can hence be viewed as geotourism with a positive triple bottom line.

Cited Reference entry: 1 author

see 5.2

Buckley, R. 2003. Environmental Inputs and Outputs in Ecotourism: Geotourism with a Positive Triple Bottom Line. *Journal of Ecotourism*, 2 (1): 76-82.

4.2.2.2 Two Authors

Cite *double-author* references by the surnames of both authors (followed by date of the publication, all in parentheses)

Option 1: in-text citation: 2 authors

Although ecotourism is often theorised as a hard path and ecocentric, in the last decade such travel has softened to accommodate heightened demand in a growing number of regions, and the inclusion of other more consumptive types of activities (Fennell and Nowaczek, 2010).

Option 2: in-text citation: 2 authors

According to Fennell and Nowaczek (2010), although ecotourism is often theorised as a hard path and ecocentric, in the last decade such travel has softened to accommodate heightened demand in a growing number of regions, and the inclusion of other more consumptive types of activities.

Cited Reference entry: 2 authors

see 5.2

Fennell, D., and Nowaczek, A. 2010. Moral and empirical dimensions of human-animal interactions in eco-tourism: Deepening an otherwise shallow pool of debate. *Journal of Ecotourism*, 9 (3): 239-255.

4.2.2.3 Three or more Authors

If three or more authors are involved, use only the first (or *lead*) author's name followed by *et al.* Notice that there is no comma after the author's name, no punctuation after "et" and [.] after "al". (followed by date of the publication, all in parentheses)

Option 1: in-text citation: 3 or more authors

Growth in the marine wildlife tourism industry has been accompanied by concerns regarding its sustainability. A new generic framework for assessing the sustainability of such ventures has proven to have at least three applications: improving existing marine wildlife tourism operations through reviewing their sustainability; developing an auditing mechanism as part of the licensing provisions for such tourism; and helping to determine the likely sustainability of proposed ventures. (Rodger et al., 2010).

Option 2: in-text citation: 3 or more authors

According to Rodger et al. (2010), growth in the marine wildlife tourism industry has been accompanied by concerns regarding its sustainability. A new generic framework for assessing the sustainability of such ventures has proven to have at least three applications: improving existing marine wildlife tourism operations through reviewing their sustainability; developing an auditing mechanism as part of the licensing provisions for such tourism; and helping to determine the likely sustainability of proposed ventures.

Cited Reference entry: 3 or more authors see 5.2

Rodger, K., Smith, A., Newsome, D., and Moore, S.A. 2011. Developing and testing an assessment framework to guide the sustainability of the marine wildlife tourism industry. *Journal of Ecotourism*, 10 (2): 149-164.

4.3 METHODS

see 2.3.2

This section describes the data you will use to test your hypotheses, the sources of the data, the variables that you plan to extract from the data, and the operational definitions of the variables.

If you are planning a *secondary analysis* of someone else's data, you must describe their study in enough detail so that the readers need not return and look it up to understand the data.

If you are planning an *original collection of data*, you must describe how you are going to go about it and must establish that doing what you plan to do is feasible. Specific techniques such as surveys, interviews, or observations should be described in some detail. If you are using someone else's measurements, including specific questions used in that person's study is helpful.

If you are planning to construct new items (for example, an original survey), you must include enough items so that you can use them to construct valid scales and give an indication of how these items will be formatted into an instrument. Also, adding a copy of the original instrument and any pertinent data—in English—as an appendix is recommended.

A clear description of the variables is essential. The variables should have been

introduced in the Introduction, so more conceptual definition is unnecessary in the Method section. Rather, what you need to do here is provide a clear *operational* definition—that is, the specific measures in your data that will represent each concept in your analysis:

<i>Concept</i>	<i>Variable</i>	<i>How measured</i>
volunteer affection (VA)	volunteer turnover	number of volunteers <i>joining</i> an NPO in a given year as a percentage of total volunteers
volunteer disaffection (VD)	volunteer turnover	number of volunteers <i>leaving</i> an NPO in a given year as a percentage of total volunteers
volunteer disparity	volunteer turnover	VA-VD

The readers need to understand just what specific data items you are planning to put into your analysis.

The explanation of the research should be presented in a manner suitable for the field of study. This section should ...

- 4.3.1 have a coherent structure that flows logically and smoothly and include information to allow the reader to assess the credibility of your results.
- 4.3.2 provide a description of methods used, in sufficient detail to enable the reader to understand how the data were gathered and how to apply similar methods to other studies.
- 4.3.3 provide a complete account of the research presented in a systematic manner typical of the field of study

**Do not include descriptions of results. That is for the Results section.*

4.4 RESULTS & FINDINGS

see 2.3.3

The results are actual statements of observations including statistics, tables, and graphs. Describe the results of experiments or surveys that provide evidence in support of your thesis. Usually experiments or surveys either demonstrate the viability of a method or technique, or demonstrate that a method or technique provides better performance than those that exist. Mention negative results as well as positive results. Break up your results into logical segments by using subheads.

- 4.4.1 have a coherent structure that flows logically and smoothly and include information to allow the reader to assess the credibility of your results.
- 4.4.2 present ample details so that readers can draw their own inferences and construct their own explanations.
- 4.4.3 describe the nature of the findings and avoid merely telling the reader whether or not your findings are significant.
- 4.4.4 be specific

<u>avoid vague wording</u>	<u>use specific wording</u>
<i>There was a large impact On the environment.</i>	<i>The negative impact on the environment was 40% larger than expected.</i>

4.4.5 *do not include any statement regarding interpretation of the data*; that is, only include statements regarding actual observations. Make it crystal clear to the reader which statements are observation, and which are interpretation. This is often best accomplished by physically separating statements about new observations from statements about the meaning or significance of those observations.

4.4.6 do not worry if the Results section seems short.

4.4.7 *do not interpret results ...* that should be done in the Discussion section.

4.5 DISCUSSION see 2.3.4

4.5.1 provide an overall analysis and integration of your thesis research considering the current research in the field.

4.5.2 state the conclusions regarding goals or hypotheses of your thesis that were presented in the *Introduction*, and the overall significance and contribution of your thesis research.

4.5.3 comment on strengths and limitations of your thesis research

4.5.4 discuss any potential applications of the research findings.

4.5.5 *do not include any statement regarding actual observations*; that is, only include statements regarding interpretation of data.

Make it crystal clear to the reader which statements are observation and which are interpretation. This is often best accomplished by physically separating statements about new observations from statements about the meaning or significance of those observations.

4.5.6 questions to consider

Q1: What relationships, trends, and generalizations did you discover among the results?

Q2: What are the likely causes underlying these patterns?

Q3: Are there any exceptions to these patterns?

Q4: Do your results agree/disagree or correlate with the results of previous work?

Q5: What implications do the present results hold for other unanswered questions in sustainability science, earth sciences, ecology, environmental policy, etc....?

Q6: What are the things we now know or understand that we did not know or understand *before* your research?

Q7: Did you include the evidence or line of reasoning (a.k.a. rationale) for supporting each interpretation?

Q8: What is the significance of your results: why should readers care?

4.6 CONCLUSIONS & IMPLICATIONS

see 2.3.5

- 4.6.1 summarize what was learned and how it can be applied (think about the practical applications in today's and/or tomorrow's world).
- 4.6.2 analyze possible future research directions in the field drawing on the work of your thesis.
- 4.6.3 questions to consider
 - Q1: What is the strongest and most important statement that can be made from your observations?
 - Q2: Did you refer back to the initial problem ?
 - Q3: Did you describe the conclusions that you reached from carrying out this research?
 - Q4: Did you summarize new observations, new interpretations, and new insights that resulted from your research?
 - Q3: Did you explain the broader implications of your results; that is, how your research could have a greater, expanded impact?
- 4.6.4 avoid repeating your abstract, introduction, or discussion word-for-word.

4.7 RECOMMENDATIONS & FUTURE RESEARCH

see 2.3.6

- 4.7.1 If you feel that further research is required in order to fully develop the optimal solution to the problem, tell your readers. Then, briefly describe steps that you suggest and their rationale.
- 4.7.2 If you feel that further research is not required because you believe that you have proven that your hypothesis-solution really does solve the problem, tell your readers.
- 4.7.3 If you feel that even though your hypothesis solution really does solve the problem yet new problems or new questions arose that require further research, then tell your readers. Then, briefly describe the new problems and questions. Always keep in mind that you must communicate the "value" and "significance" of problems, ideas, solutions, etc

5.0. BACK MATTER

5.1 GENERAL

Cite all ideas, concepts, text, data that are *not your own*. All references cited in the text must be listed in the “Cited References” section.

5.2 CITED REFERENCES (comprehensive list of data sources)

- author’s name(s)
- date of publication
- publication title (journals and books)
- article title (journals)
- publisher information
- pages (if part of a publication)

Be sure to use hanging indentation: 1st line flush left with the margin, subsequent lines also indented. (see 6.17.2)

Buckley, R. 2003. Environmental Inputs and Outputs in Ecotourism: Geotourism with a Positive Triple Bottom Line? *Journal of Ecotourism*, 2 (1): 76-82.

The Cited References section must be an integrated list, *not* a series of lists. References without an author should be alphabetized by the title of the reference; “A/An/The” are ignored when alphabetizing such entries.

Do not split entries over two pages. If an entire entry does not fit on one page, place the entire entry on the next page.

Single-space within the entry, and double-space between entries.

5.2.1 Journals

Example 1: JOURNAL, 1 author

^①Weeden, C. ^②2011. ^③Responsible tourist motivation: how valuable is the Schwartz value survey? ^④*Journal of Ecotourism*, ^⑤10 ^⑥(3): ^⑦214-234.

- ① Author’s last name [,] [space] Author’s first name initial [.] + middle name(s)
initial(s) [.] [space]
- ② year of publication [.] [space]
- ③ title of article [.] [space]
- ④ title of journal in italics [,] [space]
- ⑤ volume number [space]
- ⑥ issue number in parentheses [(#)] [:] [space]
- ⑦ page numbers [.] *Avoid abbreviating page numbers.

<u>unacceptable</u>	<u>preferred</u>
214-34	214-234
91-99	91-99
1930-36	1930-1936

Be sure to use hanging indentation. (see 6.17)

Example 2: JOURNAL, 2 authors

^①Nowaczek, A., and Smale, B. ^②2010. ^③Exploring the predisposition of travelers to qualify as ecotourists: the Ecotourist Predisposition Scale. ^④*Journal of Ecotourism*, ^⑤9 ^⑥(1): 45-61.

- ① 1st Author's last name [,] [space] 1st Author's first name initial [.] + middle name(s) initial(s) [.] [,] [space] and 2nd Author's last name [,] [space] 2nd Author's first name initial [.] [space] + middle name initial [.] [space]
- ② year of publication [.] [space]
- ③ title of article [.] [space]
- ④ title of journal in italics [,] [space]
- ⑤ volume number [space]
- ⑥ issue number in parentheses [(#)] [:] [space]
- ⑦ page numbers [.] *Avoid abbreviating page numbers (see Example 1)

Be sure to use hanging indentation. (see 6.17)

Example 3: JOURNAL, 3 authors or more

^①Folke, C., Carpenter, S., Elmqvist, T., Gunderson, L., Holling, C.S., and Walker, B. ^②2002. ^③Resilience and Sustainable Development: Building Adaptive Capacity in a World of Transformations. ^④*AMBIO: A Journal of the Human Environment*. ^⑤31 ^⑥(5): 437-440.

- ① 1st Author's last name [,] [space] 1st Author's first name initial + middle name(s) initial [.] [,] [space] 2nd Author's last name [,] [space] 2nd Author's first name initial + middle initial(s) [.] [,] [space] ... repeat pattern until last author. Use "and" before the last name.
- ② year of publication [.] [space]
- ③ title of article [.] [space]
- ④ title of journal in italics [,] [space]
- ⑤ volume number [space]
- ⑥ issue number in parentheses [(#)] [:] [space]
- ⑦ page numbers [.] *Avoid abbreviating page numbers (see Example 1)

Be sure to use hanging indentation. (see 6.17)

5.2.2 Books

Example 4: BOOK, 1 author see 4.2.2.1

^①Glasman-Deal, Hilary. ^②2010. ^③*Science Research Writing for Non-Native Speakers of English*. ^④London: ^⑤Imperial College Press.

- ① author's last name [,] [space] first name [.] [space]
- ② year of publication [.] [space]
- ③ title of book in italics [.] [space]
- ④ city of publication (world famous cities do not require country name) [;] [space]
- ⑤ name of publisher [.]

Be sure to use hanging indentation. (see 6.17)

Example 5: BOOK, 2 authors

^①Gotelli, Nicholas J. and Aaron M. Ellison. ^②2004. ^③*A Primer for Ecological Statistics*. ^④Sunderland, MA: ^⑤Sinauer Associates, Inc.

- ① 1st Author's last name [,] [space] 1st Author's first name [space] + middle initial [.] [space] and 2nd Author's first name [space] 2nd Author's middle initial(s) [.] [space] + last name [.] [space]
- ② year of publication [.] [space]
- ③ title of book in italics [.] [space]
- ④ city of publication (cities not well known require an additional state/province or country that is well known) [;] [space]
- ⑤ name of publisher [.]

Be sure to use hanging indentation. (see 6.17)

Example 6: BOOK, more than 2 authors

^①Carrell, Michael R., Norbert F. Elbert, and Robert D. Hatfield. ^②1995. ^③*Human Resource Management: Global Strategies for Managing a Diverse Workforce*. ^④Englewood Cliffs, NJ: ^⑤Prentice-Hall.

- ① 1st Author's last name [,] [space] 1st Author's first name [space] + middle initial(s) [.] [,] [space] 2nd Author's first name [space] + 2nd Author's middle initial(s) [.] [space] last name [,] [space] and 3rd Author's first name [space] 3rd Author's middle initial(s) [.] + last name [.] [space]. ... repeat pattern until last author. Use "and" before the last name
- ② year of publication [.] [space]
- ③ title of book in italics [.] [space]

- ① city of publication (cities not well known require an additional state/province or country that is well known) [:] [space]
- ② name of publisher [.]

Be sure to use hanging indentation. (see 6.17)

5.2.3 Foreign Language Publications

For titles in a non-Roman alphabet, romanize the original title followed by an English translation inserted in brackets.

① Imai, Kazuhiko. ② 2010. ③ *Shiinia Kyoju no Keifu to sono Mirai* ④ [Genealogy and Future of Residence for Elderly People]. ⑤ Tokyo: ⑥ Kashima.

- ① author's last name [,] Author's first name + middle initial [.]
- ② year of publication [.]
- ③ title of book in italics. The title of the foreign language book must be romanized in a way that approximates the flow of the original language.
- ④ add a best-translation title in brackets [translated title in English] [.]
- ⑤ city of publication (not well known cities require an additional state/province or country that is well known) [:] [space]
- ⑥ name of publisher [.]

Original Japanese:	「シニア居住の系譜とその未来」
Romanized version 1:	<i>Shinia Kyoju no Keifu to sono Mirai</i> (title case)
Romanized version 2:	<i>Shinia Kyoju no keifu to sono mirai</i> (sentence case)
Translated title:	Genealogy and Future of Residence for Elderly People

Whichever romanized style you choose, ensure that you apply it consistently!

5.2.4 Other Cited Reference Variations see 2.4.1

There are a number of anomalies concerning Cited Reference styles, too long to list here. Always check a style manual for the proper convention. (see 6.32)

The *Thesis Manual* does not address all questions related to style and format for preparing a thesis or dissertation. For specific questions not answered herein, please consult one of the most popular style manuals unless your advisor specifically designates one: see 6.32

- *Publication Manual of the APA*
- *Scientific Style and Format: the CBE Manual for Authors, Editors and Publishers*
- *A Manual for Writers of Term Papers, Theses, and Dissertations* (Turabian)

Whichever style reference you use, be sure to maintain a consistent style throughout your entire thesis or dissertation. When you plan on submitting an article to a journal in the future, but sure to check the journal's website and review their style requirements. Usually this information can be found in the areas labeled *Contributors, Authors and Contributors, Instructions for Authors,* or perhaps *Submitting an Article*.

5.3 APPENDIXES

In some theses it may be desirable to include certain additional reference materials, e.g., text forms, blank survey forms, detailed descriptions of apparatus, extensive tables of raw data, list of comments written in surveys by respondents, etc., which include information that is perhaps too detailed or too lengthy for the primary readership, but is still perhaps relevant to the secondary readership. Such materials should be included in the appendix that follows the Cited Literature section.

Margins and Pagination

Appendix information must have margins within the limits of the thesis text. Sheets larger than thesis size must be reduced to the required size by photocopying methods.

Titles

Any appendixes in a language other than English must romanized and accompanied with an English translation. Another option would be to merely include a full English translation with the original language version. If you have more than one appendix, begin each appendix on a new page, and label each appendix with a capital letter (A, B, C, ...). No capital letter designation is used with only one appendix.

Center and position the appendix name at the top of the page text area followed by two lines of space. Then, center the appendix title using title case. (see 6.6)

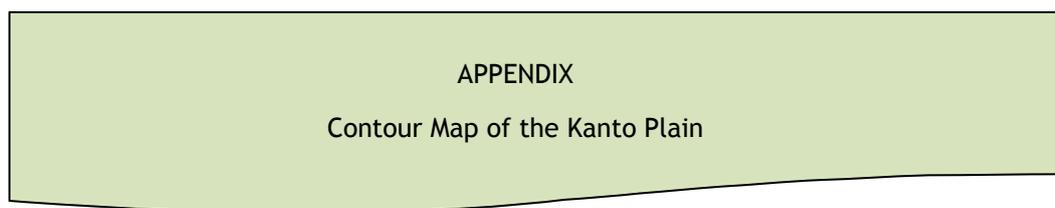
multiple appendixes

APPENDIX A
Questionnaire Form for Satoyama Survey: Midori-ku, Yokohama

APPENDIX B
Questionnaire Form for Satoyama Survey: Tama City, Tokyo

APPENDIX C
History of Satoyama

single appendix



Case

The first appendix should be headed *APPENDIX A*, and continuing pages must be headed *APPENDIX A (continued)*. The second appendix should be labeled *APPENDIX B*, and so. Center at the top of the page. Appendix designation (A, B, ...) must be capital case; appendix titles must be title case. see 6.6

Appendix Numbering

Appendixes are paginated consecutively from the preceding pages; that is, the page number of Appendix A should be the next number in sequence from the last page number of the Cited References section. Tables and figures in the appendixes must be numbered consecutively continuing the numbering in the text.

6.0 STYLE

6.1 GENERAL



6.1.1 use formal, written grammar and style throughout your entire thesis. This is the type of grammar that is generally taught in school and that is tested in standardized tests. If you find an error in quoted text or in tables or figures that you use, do *not* make any corrections. You must use copyrighted material “as is” with no changes.

6.1.2 avoid contractions

<u>avoid</u>	<u>use</u>
we've	we have
can't	cannot
won't	will not

6.1.3 avoid multiple columns for text

6.1.4 print on only one side of the paper: do *not* print on both side

6.1.5 use standard verb forms and minimize use of idiomatic expressions

6.2 ABBREVIATIONS

6.2.1 Abbreviations of Latin phrases in common usage such as *cf.*, *et al.*, *e.g.*, *i.e.*, *in vivo*, *in vitro*, etc. need *not* be italicized or underlined.

6.2.2 No abbreviations should appear in chapter headings or subheads

6.2.3 Sentences should not begin with abbreviations, symbols, or numbers. Ampersands (&) may *not* be used in the body of the text.

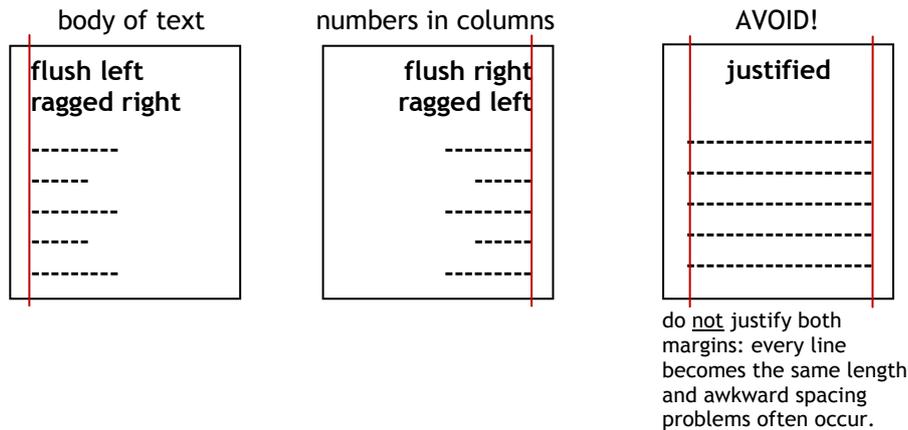
6.3 ACADEMIC INTEGRITY: SCHOLARLY REFERENCE AND PLAGIARISM

Students are responsible for acknowledging any business models, facts, ideas, or materials of others used in their own thesis. see 6.28

There are many ways to handle scholarly references, and preferred usage varies by field. In choosing an annotation or reference system, students should be guided by the practice of their discipline and the recommendations of their thesis advisor, department, or committee. In some fields, publishers of scholarly books or articles have established styles for various editorial details and may have issued a style manual to guide contributors. Students who plan eventual publication may find these guides helpful in setting a style for their advisors that will be appropriate for publication without extensive alteration (style manuals, 6.32).

If you include copyrighted material in your thesis that goes beyond the limits of “fair use”, you are responsible for obtaining written permission from the copyright holder. The Students Affairs Section has a standard form. The Graduate Program in Sustainability Science, the Graduate School of Frontier Sciences, and The University of Tokyo take no responsibility for any damages that may arise from copyright violations by a degree candidate.

The general guideline for scholarly reference and throughout your entire thesis whatever the convention used is *consistency* (see 6.7). Essential publication facts should be as complete as possible, but unnecessary details should be avoided. Follow the practices of your discipline; and most of all, be sure to follow the style recommended by your advisor.



6.5 AMERICAN vs. BRITISH STYLE see 6.3.1

Many words that differ greatly between American English and British English are seldom used in science. Here, for your edification, are a couple examples that are remarkably different:

British system

one billion = 10^{12} (before 1975)
 one billion = 10^9 (since 1975)

one trillion = 10^{18} (before 1975)
 one trillion = 10^{12} (since 1975)

practice (n)
 practise (v)

in future
 at weekend

(North) American System

one billion = 10^9

one billion = 10^{12}

practice (n)
 practice (v)

in the future
 on the weekend

NOTE: Generally American style is preferred, so consult with your advisor if you prefer to use British style. Many journals accept article submissions with either North American English or British English spelling provided the spelling conventions are applied consistently throughout the document.

6.6 CASE & Capitalization

6.6.1 General

follow the rules for capitalization in the style manual that you use, especially for proper nouns, headings and subheads, letters, measurements, and the like.

6.6.2 Title Case Capitalize major words in a sentence or phrase
(The first letter of proper nouns always uses capital letters.)

- 1st word
- nouns
- verbs
- adjectives
- adverbs

TITLE page

Building a Zero-Emission and Resource-Cyclical Community in the
Preah Vihear Area of the Kingdom of Cambodia

LIST OF TABLES page

Table 20 Eco-tourism Advantages to Sustainability of Local Villages 12

LIST OF FIGURES page

Figure 7 Burned and Unburned Areas in Deciduous Forest 32

- 6.6.3 Sentence case Capitalize the 1st word only in a sentence or phrase
(the first letter of proper nouns always uses capital letters.)

Building a zero-emission and resource-cyclical community in the Preah Vihear
area of the Kingdom of Cambodia

- 6.6.4 Uppercase This is commonly known as ALL CAPS.

BUILDING A ZERO-EMISSION AND RESOURCE-CYCLICAL COMMUNITY IN THE PREAH
VIHEAR AREA OF THE KINGDOM OF CAMBODIA

- 6.6.5 Lowercase Use small letters only.
(the first letter of proper nouns always uses capital letters.)

building a zero-emission and resource-cyclical community in the Preah Vihear area
of the Kingdom of Cambodia

When listing items using bullets or numbers, use lowercase:

Back matter includes

- cited references
- appendixes

Required front matter includes

1. title page
2. copyright page
3. abstract,
4. table of contents,
5. list of tables,
6. list of figures, and
7. other lists.

6.7 CONSISTENCY

- 6.7.1 *Alignment* see 6.4
- if the body of your text is set for flush left, ragged right alignment, then all of the text must be flush left, ragged right alignment
 - if you center major headings at the top of the page, then center all major headings at the top of the page
 - if you center tables and figures on the page, then center all tables and figures on their respective page
- 6.7.2 *Case* see 6.6
- if you use uppercase for major headings, then use it for all major headings
 - if you use title case for A-level subheads, table and figure titles, then use it for all A-level subheads, tables, and figure titles
 - if you use sentence case for B-level subheads, then use it for all B-level subheads
- 6.7.3 *Font and Style* see 6.11
- if you use 12pt Times New Roman, then use it everywhere
 - if you use plain style for text content, then use it everywhere in the text
 - if you use italic for introducing new special terms, then do it consistently
 - if you use bold for A-level subheads, then do it consistently every time
 - if you use bold, underlined for A-level subheads, then do it consistently every time
 - if you use italic, underlined for B-level subheads, then do it consistently every time
 - if you use 10 pt. for table or figure notes, then use 10 pt. for all table or figure notes
 - if you italicized or underlined foreign language words or terms, then always italicize or always underline such foreign language words or terms
 - consistent font use is a must for a professional appearance. This includes page titles, heading, subheads, page numbers, etc.
- 6.7.4 *Readability*
- if you prepare tables in digital form that are crisp and easy to read like the text itself, then all tables must be crisp and easy to read
 - if you prepare figures or other visual materials in digital form that are crisp and easy to read like the body of text itself, then all tables and figures must be crisp and easy to read
(NOTE: usually when copying and pasting a figure, table, or whatever from a website—regardless of proper citation from another source—the readability is more often than not, degraded ... which is unacceptable.)
 - a uniform typeface and uniform margins enhance readability

6.7.5 Spacing

see 6.30

- if you use 2.5 cm margins for your thesis, then every page must have 2.5 margins (Note: all words, figures, tables, and the like must be “inside” the page margins)
- if the title of major headings is on the 3rd line from the top margin, then all major headings should start on the 3rd line from the top margin
- if you use 2 lines of space between the table title (above) and the table (below), then use 2 lines of space between all table titles and their respective tables
- if you use 2 lines of space between the figure title (below) and the figure (above), then use 2 lines of space between all table titles and their respective tables
- if you use single spacing for an individual entry in your Cited References section, then all individual entries must be single-spaced
- if you use double spacing to separate individual entries in your Cited References section, then all individual entries must be separated by a double space

6.8 CORRECTING ERRORS

All corrections should be done by re-editing the original text, and printing out a new copy. Do not use any correction fluid to correct errors. Erasures, the use of correction fluid, interlinear corrections, those made by hand, or by strikeover, are not acceptable.

6.9 FIGURES

All figures must be readable and labeled, and copied items must be properly cited. Color is *not* recommended for distinguishing features; cross-hatching is preferred unless your advisor approves the use of color.

Location

Figures may be placed on a page alone by themselves, or they may be placed directly into the text. If a figure is alone on a page with no narrative text, it must be centered within the horizontal and vertical margins. Figures located in text may not be placed at the end of the chapter or at the end of the thesis.

When inserting figures into the text, they must be inserted as soon as possible after they are first mentioned. If the figure is too large to follow immediately the part of the text to which it relates, the figure should be placed at the beginning of the following page. A figure should be separated from the text both *above and below* it by approximately three single spaces, or placed on a separate page, depending on the size of the figure.

Figures larger than one-half page should be placed on a separate sheet. A figure that is too wide for the page may be placed lengthwise on the page (landscape layout).

Figures that can fit either vertically or horizontally on a page must *not* be reduced.

Numbering

All figures must be numbered consecutively throughout the thesis using Arabic numbers, i.e., *Figure 1*, *Figure 2*, etc. Figures should be identified by number only. Avoid using designations such as *Figure 1A*, *Figure 1B*. Figures may be set up with A and B parts. Figure numbering must be continuous throughout the thesis. For example, there may *not* be two figures in a thesis designated as “Figure 3”.

Captions

The caption (title) of a figure should consist of a single phrase (not a sentence) with sentence case and no closing period at the end. Place the caption **below** the figure (see style manuals recommended by your advisor or ones appropriate to your field). The word “Figure” should be written in full (not abbreviated), and the “F” should be capitalized (e.g., Figure 5). Figures and their captions need not be bold typeface, unless you or your advisor prefers them that way. Be sure to use a consistent format throughout your thesis.

Horizontal (landscape)

Horizontal figures that are too wide for the vertical-page layout may be placed lengthwise (landscape) centered on the page. Figure captions should be placed **below** the figure inside the page margins. Page numbers are always placed as if the figure were vertical on the page. Figures that can fit either vertically or horizontally on a page must *not* be reduced. Only those figures that are too large to be placed horizontally may be reduced and continued on two or more pages, if necessary. Page numbers must be in original type and the original size—do not reduce—and even in the event of a horizontal figure, are positioned in the same place as if the page were the normal vertical layout.

Readability

All graphs, diagrams, line drawings, manuscript facsimiles, maps, chemical formulas, computer printouts, and so on included in the body of the thesis or as an appendix must be easily readable and of the same print quality as the text; that is, generally produced by acceptable permanent methods (laser printer). Pages should not vary from the standard A4 (210 x 297mm) size paper. Plan your visual materials so that they meet this specification.

Spacing

Figure caption must be single-spaced. All lettering, including subscripts, must be clear, readable, and large enough to be legible for archival purposes. Rule lines should be computer-generated or drawn in black, permanent (non-water soluble) ink. All lettering, including subscripts, must be clear, readable, and large enough to be legible for archival purposes. White space around the text or data must meet all margin requirements.

Figure footnotes

Figure footnotes are to be identified by superscript numbers. Each figure footnote should be single-spaced; however, a double space must be used between each figure footnote to improve appearance. Each figure footnote must be on a separate line ending with a period. Again, always be consistent.

Reduction (see landscape)

Oversized figures should be reduced through photocopying but be sure the copy is on the same paper as the rest of the thesis. Page numbers are *not* to be reduced in size: they must be in original font and size. For reduction of material, always use machines that can reduce one percent at a time. Page numbers and headings must *not* be reduced.

6.10 FLOWCHARTS, GENEALOGICAL TABLES, ETC.

Flow charts of processes, genealogical tables, taxonomic charts, and similar additional materials—if not computer generated—must be drawn in black ink with black lettering. If the size is larger than a single-page size (see 6.9 *Horizontal landscape* or 6.33 *Horizontal landscape*).

6.11 FONT: TYPEFACE & SIZE

- 6.11.1 use high-contrast laser printed text
- 6.11.2 use New Times Roman or Century 12pt on all pages of the thesis. Colored or paint print worsen readability, so ensure that all pages are clear, crisp black.
- 6.11.3 *footnotes* should be New Times Roman or Century 9pt. The same font as your thesis text should be used.
- 6.11.4 *endnotes* should be New Times Roman or Century 12pt, the same as the body of your thesis text since endnotes is treated entirely as a separate page.
- 6.11.5 *captions* to visual material should be New Times Roman or Century 9pt. However, they may also be 12 pt. as in the body of text. Whichever you choose, be consistent. If you choose the larger size in the beginning and later you add a figure of table for which you decide to use 9pt, then you will end up reformatting all thesis captions to 9pt. Plan carefully!



In your thesis defense and preceding periodic presentations, use Arial 36pt for slide titles, and 28pt Arial for slide text.

6.12 FOOTNOTES & ENDNOTES

Textual notes that provide bibliographic reference, supplementary information, opinions, explanations, or suggestions that are *not* part of the text may be handled in one of two ways: 1) place them at the bottom of the same page in which the footnote number is found in the text (*footnotes*), or 2) group all your notes for any one section of your thesis at the end of that section in a list (*endnotes*). Whichever pattern you choose, be consistent throughout your thesis.

Such notes, though, should augment, complement, or amplify important information (concepts, ideas, ...) in your thesis text. Make sure that the notes are relatively simple, relevant, and essential; otherwise, avoid. Notes should strengthen your thesis and the argument in question. Consider incorporating lengthy footnotes or endnotes into the body of your thesis text.

Individual entries are single-spaced; double-space is used to separate individual entries consistent with the spacing used in Cited References, List of Tables, or List of Figures.

In the text, a Footnote or Endnote number is Arabic if style, generally placed at the end of the sentence to which it refers, and follows the sentence period. Use the superscript function to indicate the number. Use paragraph indenting. (see 6.17.1)

According to Buckley (2003), the main defining characteristics of ecotourism fall into two categories, namely environmental inputs and environmental outputs. The inputs are the natural and associated cultural features in a particular geographic place which serve as attractions for tourists. The outputs are the net costs or benefits for the natural and social environment. Ecotourism can hence be viewed as geotourism with a positive triple bottom line.¹

Footnote and Endnote numbering must be continuous throughout the thesis and the method must be *consistent*.

Put a short rule line between the last line of the page text and the first footnote on the page. If you have two or more footnotes at the bottom of one page, begin each entry on a separate line. (see page 1 of this manual for an example)



Endnotes should be on a separate page at the end of a major section. The title of the page should include the major section title and the word “NOTES” in uppercase.

Footnote and endnote information is often similar to Cited Reference entry information with the addition of a specific page number(s) for faster reference. However, the order (formatting) of the information differs. What should you do? Check a style manual (see 6.32) for the proper way!

6.13 FORMULAS & EQUATIONS

Mathematical and chemical formulas may be typed or hand-lettered, but must be consistent in style and placement throughout the text. Long, complex mathematical and chemical equations should *not* be included in text lines, but should be placed in the center of the page between lines of the text. The lines in structural chemical formulas and hand-lettered mathematical formulas must be drawn with black, permanent (non-water soluble) ink in a neat, professional manner.

All formulas and equations (as with all tables and figures) must be given an Arabic number and a caption, all placed within the margins. Also, a LIST OF FORMULAS AND EQUATIONS must be added to your front matter and to your table of contents immediately following the LIST OF FIGURES or LIST OF ILLUSTRATIONS whichever is last, and preceding any lists of abbreviations, units, or terminology.

6.14 HEADINGS & SUBHEADS

see 6.2.2

6.14.1 *Major Headings* 1, 2, ...

Use ALL CAPITAL LETTERS, 12 pt
Heading number should be aligned flush left

6.14.2 *A-level subhead* 1.1, 2.1, 3.1, ...

Use title case, 12 pt see 6.6.
Leftmost number should be aligned flush left directly under the 1st letter of the text in the immediately preceding line (major heading). Do not use a period [.] after the final number.

6.14.3 *B-level subhead* 4.1.1, 4.1.2, 4.1.3, ...

Use sentence case, 12 pt see 6.6
Leftmost number should be aligned flush left directly under the 1st letter of the text in the immediately preceding line (A-level subhead). Do not use a period [.] after the final number.

6.14.4 *C-level subhead* 4.1.1.1, 4.1.1.2, 4.1.1.3, ...

Use lowercase, 12 pt see 6.6
Leftmost number should be aligned flush left directly under the 1st letter of the text in the immediately preceding line (B-level subhead). Do not use a period [.] after the final number.

6.15 HYPHENATING

Do not hyphenate words at the end of a line, so turn off any hyphenating function in your software. If for some reason you feel that you have to hyphenate a word, be sure to insert the hyphen between syllables, and check a dictionary to ensure accuracy.

6.16 ILLUSTRATIONS

All illustrations must be readable and labeled, and copied items must be properly cited.

Illustrations in a thesis, including original drawings, graphs, maps, photographs, and other similar materials are acceptable provided the media used to produce them (paper, inks, digital printing processes, traditional photographic processes, and adhesives) are permanent.

Original drawings—including mathematical or scientific formulas or other hand-lettered materials, that are to be bound directly in the Archives' bound copy of the thesis without photographic or offset reproduction—must be prepared directly on a paper that meets the same standard required for the text by your advisor, and drafted and lettered in black, permanent (non-water soluble) ink.

All illustrations (as with all tables and figures) must be given an Arabic number and a caption, placed within the margins. Also, a LIST OF ILLUSTRATIONS should be added to your front matter and to your table of contents immediately following the LIST OF FIGURES, and preceding any list of abbreviations or terminology.

6.17 INDENTING

6.17.1 *Paragraph indent* body text, abstract, footnotes

The first line of every paragraph, footnote, and endnote must be indented. The second and subsequent lines of text are flush with the left margin. Set the (upper) first line indent in your ruler bar to about 5 spaces, and do not use the space bar. This will aid greatly in maintaining consistency. Software packages often have a style sheet function that can also be very helpful. Subsequent lines should be flush with the left margin.



On July 8, 2008 the Sacred Site of the Temple of Preah Vihear (hereafter, the Temple) in Cambodia was inscribed by UNESCO as a World Cultural Heritage Site. Following which, the Government prepared a Management Plan for the Temple and its surrounding area. It goes without saying that the values of the Temple are intrinsically linked with its natural surroundings. The problem was just how to effectively utilize the eco-tourism aspects of the area—and other similar areas in Cambodia—without sacrificing the sites themselves and their surrounding environment. In other words, how to make the balance of tourism and cultural heritage sustainable.

6.17.2 *Hanging indent* cited references

The second and subsequent lines of text are not flush with the left margin; only the first line is. Set the (lower) hanging indent in your ruler bar to about 5 spaces, or the equivalent setting to the paragraph indent, and do not use the space bar. This will aid greatly in maintaining consistency. Software packages often have a style sheet function that can also be very helpful. This type of indent is used in the Cited References section. see 5.2



Buckley, R. 2003. Environmental Inputs and Outputs in Ecotourism: Geotourism with a Positive Triple Bottom Line? *Journal of Ecotourism*, 2 (1): 76-82.

6.17.3 *block quotations* have no indenting.

Avoid quoting text that is longer than one paragraph. Such long quotations are general formatted into what looks like a “block” about the same amount of space from the left margin as a paragraph indent:

In discussing the key concepts of integrity, value-based development, and sustainability Sasaki (2010) specifically discusses the important of stakeholders:

The specific issues that affect all stakeholders—particularly international communities—are local, national, and global in nature. The local issues in the area are acute poverty and depletion of natural resources. The nation is confronting such issues as lack of technology and capital, scarcity of human resources, and weak institutions. Finally, the global issues are climate change and deterioration of biodiversity. (p. 10)

All these problems result from the unbalanced relationships between the mindsets and activities of people, and the constantly changing natural resources. Thus, the orientation plan for the development must address this imbalance and promote harmonious relationships between human activities and natural assets, often labeled *sustainability*.

6.18 IN-TEXT CITATIONS

see 4.2.2

6.18.1 Be sure to identify all business models, concepts, ideas, quotations—whether it is a direct quotation or paraphrased text—in your thesis or dissertation.

6.18.2 Foreign Languages
see 5.2.3 for citing sources in languages other than English.

6.19 LANGUAGES

6.19.1 *Thesis Language*

All GPSS theses and dissertations must be written in English. Use of any other language requires your advisor’s approval.

6.19.2 *Foreign Languages* see 5.2.3

When the thesis is written in English, terms or phrases in Japanese, Chinese, Korean, Thai, Latin, Greek, or other foreign languages must be italicized or underlined. Whichever style you use, be consistent.

Foreign words and phrases that have, however, been assimilated into the English language need not be italicized. The word “tsunami”, for example, need not be italicized because it is now part of the English language.

Guideline: if the foreign word is in a collegiate or unabridged English dictionary, then italics need not be used.

For terms in a non-Roman alphabet, romanize the term or phrase. All such terms or phrases must be followed by an English translation inserted in brackets [].

Original language

thesis usage *italicized* pattern

Japanese 生物保全の生体学

Seibutsu hozen no seitaigaku [Ecology for bio-conservation]

Original language

thesis usage underlined pattern

Japanese 生物保全の生体学

Seibutsu hozen no seitaigaku [Ecology for bio-conservation]

Foreign terms in common use in English—and which can be found in an unabridged dictionary—are treated as all other English words; that is, italicizing conventions are not used. Here is a short list:

ad infinitum	<i>to infinity, without end</i>
a priori	<i>from cause to effect</i>
de facto	<i>in fact, actual, realistically</i>
fait accompli	<i>accomplished fact</i>
faux pas	<i>a false step, error</i>
in toto	<i>in full, wholly</i>
non sequitur	<i>does not follow logically, illogical</i>
raison d'être	<i>reason for being</i>
status quo	<i>existing conditions</i>

6.20 MARGINS

Use 25-27mm margins on all sides of the text.

6.21 NUMBERS

see 6.23, 6.29

6.21.1 All single-digit numbers (1, 2, ..., 9) should be written as words when used in a sentence.

incorrect

Creating a sustainable community/society is a highly complex process of evolution. The evolutionary process involves mutual interaction of 3 systems; namely, 1) human and social system, 2) economic system, and 3) ecological system as shown in Figure 3.

correct

*Creating a sustainable community/society is a highly complex process of evolution. The evolutionary process involves mutual interaction of **three** systems; namely, 1) human and social system, 2) economic system, and 3) ecological system as shown in Figure 3.*

However, single-digit numbers may be used when they are part of a word and immediately followed by a hyphen [-]:

A 7-point scale was used (with endpoints labeled “strongly agree” and “strongly disagree” in soliciting participant responses for each item.

6.21.2 Use single-digit numbers with units of measurement (5 mg, 7 cm), time, dates, ages, scores, points on a scale, data in tables and figures ... and include one space between the numeral and the unit.



avoid
5mg

use
5 mg

6.21.3 never begin a sentence with a number in any case. Either 1) write the number as a word, or 2) restructure the sentence to enable use of the number.

incorrect

2 out of every 10 citizens responded that they were employing recycling measures at home on a daily basis.

Option 1: write the single-digit number as a word

Two out of every 10 citizens responded that they were employing recycling measures at home on a daily basis.

Option 2: restructure the sentence

Out of every 10 citizens 2 responded that they were employing recycling measures at home on a daily basis.

6.21.4 when using a decimal value of less than one (1) in a sentence, always precede the decimal point with a zero.

<u>avoid</u>	<u>use</u>
.8	0.80
.13	0.13

In tables, the “zero before the decimal point” is unnecessary; however, if some of your data in tables has 2 digits to the right of the decimal point, then all numbers in the column should also have 2 digits to the right of the decimal point, so be careful and be consistent! Sometimes software functions cause irregularities.

6.22 OVERSIZED MATERIALS & FOLDOUTS

Foldouts are generally discouraged. However, if reduction would make a figure too small to be easily understood, it can be duplicated by photography, photo offset, or photocopied on A3 (297 x 420mm) paper and then folded so that it fits inside the edges of the thesis and can be unfolded flat for review. The oversized sheet should be folded to allow 40mm on the binding edge and a smaller page overall—about 280 x 400mm—for possible trimming in the archival process.

6.23 PAGE NUMBERS

Every page in a thesis must have a number, though some of the front matter pages are not printed. Count the title page as page *i*, the copyright page as page *ii*, and the abstract as page *iii* but do not print the page numbers on any of these pages

Every page must be consecutively numbered including tables, figures, graphs, illustrations, diagrams, cited references. Avoid 8a, 8b, or other letter suffixes.

For *Front Matter*, use small Roman numerals (i, ii, iii, iv, v, ...) centered at the bottom of the page within the typing area of the page. The numbers are *not* followed by a period or enclosed in hyphens or parentheses:

<u>avoid</u>	<u>use</u>
ii.	ii
- ii -	ii
(ii)	ii

All pages must contain text or images. If you wish to include a blank page for some reason, please print “Page intentionally left blank” centered in the middle of the page to clearly indicate your intent, and use the proper page number at the bottom.

For the *Body of Text and Back Matter*, use Arabic numbers (1, 2, 3, 4, 5 ...) starting with page one (the first page of the text itself; that is, the Introduction). Center page

numbers at the bottom of the page. Continue numbering consecutively until the end of your thesis or dissertation. In a master thesis, the last page is usually your final appendix, or the last page of your cited references when appendixes are absent. In a doctoral dissertation, however, the last page could very well be your biographical sketch or vitae.

Page numbers should be about 15 mm from the bottom edge of the paper inside the bottom margin (2.54 cm) space. Page numbers must be the same font and size that you use in the main body text. Be sure to check pagination carefully. Account for all pages.

Do not use a period after the page number. Page numbers should be positioned in the same location on every page. Even if you use a landscape (horizontal) layout for a large-size table or figure, the page number is still positioned in the same place as if the page were the normal vertical layout.

6.24 PAPER AND PAGE SIZE

6.24.1 Use only standard A4 (210 x 297mm) white paper.

6.24.2 General text pages are set in “portrait” vertical position (210 x 297mm).

6.24.3 Pages may be set in “landscape” horizontal position (297 x 210mm) for figures, tables, or other visual materials that do not fit optimally in “portrait” position.

6.25 PHOTOGRAPHS

All photographs must be readable and labeled, and copied items must be properly cited.

All photographs included in your thesis should undergo “archival” or “optimum” processing to ensure reasonable permanency. Also, color photographs are not recommended unless absolutely necessary. Best thing to do is consult your advisor if you have any questions.

All photographs (as with all tables and figures) must be given an Arabic number and a caption, and placed within the margins. Also, a LIST OF PHOTOGRAPHS should be added to your front matter and to your table of contents immediately following the LIST OF FIGURES or LIST OF ILLUSTRATIONS whichever is last, and preceding any list of abbreviations or terminology.

6.26 PRINT QUALITY

Print must be clear and distinct with clean, sharp letters, and even blackness throughout. Smudged, indistinct, or blurred letters are *not* acceptable. The same size and style of print must be used throughout the thesis or dissertation unless otherwise noted. Dot matrix type that is not “letter quality” is *not* acceptable.

All lettering must be of publishable quality including tables, figures, illustrations, scanned images, and all other visual material. Images must be clear with no blurred or dark areas.

6.27 PUNCTUATION

Use standard punctuation for formal writing, yet opt for a simple style. Style manuals generally provide the basic guidelines. The comma [,] generally gives writers the most problems, and the number of rules on its use is many. The best rule of thumb is to use the comma when it helps the reader understand better, and avoid using a comma when it does not help the reader understand better ... and especially avoid the comma whenever it confuses the issue. Here are a few important points:



Always use a comma [,] before the conjunctions “and” or “or” in a series, and avoid using a comma before “such as”.

Insufficient commas
In a series

Moreover, it has the capability of integrating alternative resources of electricity, such as solar energy, bio-fuels, wind and mini-hydropower.

..., such as solar, hydroelectric, nuclear and bio-mass.

clarifying commas
distinguishes concepts

Moreover, it has the capability of integrating alternative resources of electricity such as solar energy, bio-fuels, wind, and mini-hydropower.

... such as solar, hydroelectric, nuclear, and bio-mass.

More complex style

Past studies suggest that the knowledge on the effects of vegetation management aids in conservation of rare plant habitats; however, it must come together with a historical understanding of the habitats.

simpler style

Past studies suggest that the knowledge on the effects of vegetation management aids in conservation of rare plant habitats. It must come together, however, with a historical understanding of the habitats.

Commas & periods in quotations

always inside closing quotation marks

According to Day and Gastel (2006), “Good scientific writing is not a matter of life and death; it is much more important than that”.

According to Day and Gastel (2006), “Good scientific writing is not a matter of life and death; it is much more important than that.”

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“Good scientific writing,” according to Day and Gastel (2006), “is not a matter of life and death; it is much more important than that.”

6.28 QUOTATIONS

All direct quotations (word-for-word copy of the text of an original source) and paraphrased text require that you properly cite your source. Doing so gives your thesis academic integrity by avoiding plagiarism (see 6.3). Failure to do so is unethical and will likely be considered as plagiarism, which in turn could lead to dire consequences. See your style manual for the various ways to quote others and to properly cite sources (also see 6.12).

If you find an error in quoted text or in tables or figures that you use, do *not* make any corrections. You must use copyrighted material “as is” with no changes. Insert *[sic]* into the text immediately after the questionable information.

... According to Andersen, “For the remaining studies, participants were undergraduate students at The University of Tokyo (n = 1177 *[sic]*; 843 female, 272 male; mean age = 20.1.”⁴

If the numbers of female and male participants are correct, then n = 1115. Otherwise, the numbers of female or male participants becomes questionable.

6.29 SCIENTIFIC & NUMERICAL NOTATION

see 6.21

In some cases for the sake of improving readability, it may be appropriate to express the units in both SI and, the less-scientific form in parentheses. For example, most people still think in terms of calories (more appropriately kilocalories or kcal) than in Joules (the SI unit of electrical, mechanical, and thermal energy). The proper SI expression would be “...contained 2510 J (600 kcal)...”.

When giving a decimal value of less than one (1.0) in text, always precede the decimal point with a zero.

unacceptable

.75 $\mu\text{mol/L}$

preferred

0.75 $\mu\text{mol/L}$

This style of notation avoids confusion as to whether or not the spot on the paper is a decimal point. Note that the symbol for “liter” is always a capital “L” rather than lowercase to avoid confusion with the numeral “1”.

6.30 SPACING

6.30.1 double-space 2 lines of space

- body text
- headings
- subheads
- table of contents (or single-space)
- lists of multiple-line entries: tables, figures, cited references, others
- between last line on a page and the page number

6.30.2 single-space 1 line of space

- table of contents (or double-space)
- individual table, figure, or other list titles with multiple lines
- individual cited reference with multiple lines
- table titles
- figure captions
- individual footnotes and endnotes

6.30.3 triple-space 3 lines of space

- before and after a table or figure in the body of text
- before and after other visual materials in the body of text

6.30.4 after punctuation

- use 1 space after all punctuation. Do not use 2 spaces after a colon [:] with present-day word processing software.

6.31 SPELLING see 6.5

Excellent academic and professional writing include no spelling errors. Any careless spelling errors will communicate a negative image to readers: if the writer is careless with such little things as spelling, then it is quite likely that the writer is careless with “other little things” such as found in your Methods section. Perhaps readers will doubt the accuracy or precision with “big things” too such as your analysis and conclusions.

Using spellchecking software is always helpful, so set your software for the US dictionary function. Software dictionaries may or may not include all the variations of the acceptable spellings of a word. To wit:

travel	travelled	traveled
focus	focussed	focused

North American English spelling is more common nowadays in scientific and technical writing than British English spelling. The University of Tokyo generally uses North American English spelling, punctuation, capitalization, and other similar conventions.

Here is a list of some of the important differences typically seen in science:

<u>British system</u>	<u>(North) American System</u>
programme	program
centre	center
metre	meter
fibre	fiber
litre	liter
sulphur	sulfur
ageing	aging
sizeable	sizable
insure	ensure
analyse	analyze
realise	realize
labelling	labeling
fulfil	fulfill
skilful	skillful
tumour	tumor
defence	defense
arguement	argument
judgement	judgment
learnt	learned

NOTE 1: You might want to consider having a colleague or a friend read your writing for possible errors ... of all kinds! But, of course, your supervisor is the definitive source regarding acceptable spelling conventions.



NOTE 2: Many journals accept article submissions with either North American English or British English spelling provided the spelling conventions are applied consistently throughout the document.

6.32 STYLE MANUALS

The *GPSS Thesis Manual* does not address every question related to style and format for the preparation of a thesis or dissertation. Many manuals and handbooks are available for this purpose. For specific questions not answered in this *Thesis Manual*, the current editions of standard style manuals will prove helpful:

American Psychological Association. 2011. *Publication Manual of the American Psychological Association* (6th ed.). Washington, D.C.: APA.

Council of Science Editors, Style Manual Committee. (2006). *Scientific Style and Format: the CSE manual for authors, editors, and publishers* (7th ed.). Reston, VA: The Council.

Turabian, K.L. (2007). *A Manual for Writers of Research Papers, Theses, and Dissertations* (7th ed.). Chicago: The University of Chicago Press.

6.33 TABLES

All tables must be readable and labeled, and copied items must be properly cited. Color is *not* recommended for distinguishing features unless your advisor approves the use of color.

Location

Tables should be inserted into the text as soon as possible after they are first mentioned. Place them directly into the text (in or between paragraphs), or on a separate page with no text above or below. If a table is alone on one page with no narrative text, it should be centered within the horizontal and vertical page margins.

If the table is too large to follow immediately the part of the text relating to it, the text should be continued and the table placed on the page that follows. A table should be separated from the text both *above and below* it by approximately three single spaces, or placed on a separate page, depending on the size of the table.

Tables larger than one-half page should be placed on a separate sheet. A table of one page or less in length should *not* be divided and typed on two pages. Tables running longer than one page should be started on a new page and may be continued on one or more pages, as needed. The continuing page(s) for the table must include the title and column headings.

Numbering

All tables should be numbered consecutively throughout the thesis using Arabic numbers, i.e., *Table 1*, *Table 2*, etc. Tables should be identified by number only. Do *not* use designations such as *Table 1A*, *Table 1B*. Tables may be set up with A and B parts. Table numbering must be continuous throughout the thesis. For example, there may *not* be two tables in a thesis designated as “Table 3”.

Titles

The title of a table should consist of a single phrase (not a sentence) with sentence case and no closing period at the end placed *above* the table (see style manuals recommended by your advisor or ones appropriate to your field). Tables and their titles need not be bold typeface, unless you or your advisor prefers them that way. Be sure to use a consistent format throughout your thesis.

Horizontal (landscape)

Horizontal tables that are too wide for the vertical-page layout may be placed lengthwise (landscape) centered on the page. Tables that can fit either vertically or horizontally on a page must *not* be reduced. Only those tables that are too large to be placed horizontally may be reduced and continued on two or more pages, if necessary. Oversized tables should be reduced through photocopying, but be sure the copy is on the same paper as the rest of the thesis. Page numbers must be in original type and the original size—do not reduce—and even in the event of a horizontal table, are positioned in the same place as if the page were the normal vertical layout.

Readability

All tables included in the body of the thesis must be easily readable and of the same print quality as the text; that is, generally produced by acceptable permanent methods (laser printer). Pages should not vary from the standard A4 (210 x 297mm) size paper. Plan your table materials so that they meet this specification.

Spacing

Table titles must be single-spaced; the body of the table may be single- or double-spaced for clarity and appearance. Headings and column and row entries should be clearly related. Ordinarily, vertical rules are not necessary, but they may be used if they improve readability and understanding. Rule lines should be computer-generated or drawn in black, permanent (non-water soluble) ink. All lettering, including subscripts, must be clear, readable, and large enough to be legible for archival purposes. White space around the text or data must meet all margin requirements.

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Table footnotes are to be identified by superscript numbers. Each table footnote should be single-spaced; however, a double space must be used between each table footnote to improve appearance. Each table footnote must be on a separate line ending with a period. Again, always be consistent.

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For reduction of material, always use machines that can reduce one percent at a time. If tables are too large to be reduced satisfactorily, they should either be split into several pages or be redone. Long tables may be single-spaced, and text may be slightly reduced. Page numbers and headings must *not* be reduced.

6.34 WIDOWS & ORPHANS

A “widow” occurs when the last line of a paragraph appears alone at the top of a page.

What is more is that the Mission believes that this Khmer Temple has a critical mission due to its unique characteristics. The uniqueness of the Temple is based on the magnificent combination of human arts and nature endowment. The location appears to be an unadulterated sacred place, enticing people to pray for the Gaia symbiosis between humans and the universe.

Thus, the Mission is of the view that safeguarding the Temple and developing its surrounding area should be a global responsibility for resolving the issues that the contemporary world is facing, namely, unsustainable and excessive human activities beyond the ecological regenerating capacity of earth. Thus, the development and management of the Temple and its surrounding area should be guided by the principles of “sustainability,” a crucial concept for all human and dwell deep in peoples’ minds as the spiritual

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activity in the twenty-first century.

In other words, sustainability should be made a universal value for the twenty-first century, otherwise there may be no future. In addition, the sacred site of the Temple and its surrounding area can play a more positive role in spiritual visitors as shown by the statute of Jayavarman VII.

The main stream of Cambodian culture as seen in the Cambodian Constitution which refers to the preservation of the Angkor civilization and to the restoration of Cambodia into an “Island of Peace.” It also states in Article 4 that the motto of the Kingdom of Cambodia is “Nation, Religion and King.” In Cambodia, “Religion and King” are alive backbone of the people, of the culture, and of the nation

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An “orphan” occurs when the first line of a paragraph, a major heading, or a subhead appears alone at the bottom of a page.

first line of a paragraph

World Cultural Heritage Site based on the first criterion (i) out of ten selection criteria stipulated in the Operational Guidelines 2005 of the World Heritage Centre, which is “to represent a masterpiece of human creative genius”. UNESCO approval “recognizes Preah Vihear as an outstanding masterpiece of Khmer architecture. It is very ‘pure’ both in design and in its decoration”. It should also be noted that the ICOMOS report states: “... the full value of the Temple of Preah Vihear is linked to its surrounding landscape. At one level it is an extraordinary interaction between the spiritual (the temple) and the natural (its surroundings). But in its planning and orientation—facing north, distinctly different from other Khmer temples, and in the bowl of three surrounding peaks—the nature is part of the spiritual setting, the three peaks reflecting the Hindu divine triad of Vishnu, Shiva and Brahma.”

In addition to this selection criterion, the Mission

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believes that there are three other criteria may also be applied for the Preah Vihear heritage: (ii) to exhibit an important interchange of human values, over a span of time or within a cultural area of the world, on developments in architecture or technology, monumental arts, town-planning or landscape design; (iii) to bear a unique or at least exceptional testimony to cultural tradition or to a civilization which is living or which has disappeared, and (iv) to be an outstanding example of a type of building, architectural or technological ensemble, or landscape which illustrates (a) significant stage(s) in human history. To sum up, the values to be fully appreciated are “human creative genius,” and “outstanding architectural ensemble and landscape in human history reflecting spiritual achievement.”

The value of the Temple site (property 154.7 ha) closely depends on its surrounding landscape. This

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subhead

concept for all human activity in the twenty-first century. In other words, sustainability should be made a universal value for the twenty-first century, otherwise there may be no future. In addition, the sacred site of the Temple and its surrounding area can play a more positive role in spiritual awakening which will provide inner peace for visitors, as demonstrated by the statue of Jayavarman VII (see Fig. 3.3).

It should be noted here that the above discussions are consistent with the main stream of Cambodian culture as seen in the Cambodian Constitution which refers the preservation of the Angkor civilization and the restoration of Cambodia into an “Island of Peace”. It also states in Article 4 that the motto of the Kingdom of Cambodia is “Nation, Religion and King.”

(2) UNESCO Recognition

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For development of the Preah Vihear (PV) area, the values to be preserved over the long term are certainly guided by the UNESCO’s criteria forth by the UNESCO Convention.

On July 8, 2008 UNESCO inscribed the Temple as a World Cultural Heritage Site based on the first criterion (i) out of ten selection criteria stipulated in the Operational Guidelines 2005 of the World Heritage Centre, which is “to represent a masterpiece of human creative genius”. UNESCO approval “recognizes Preah Vihear as an outstanding masterpiece of Khmer architecture. It is very ‘pure’ both in design and decoration”. It should also be noted that the ICOMOS report states: “... the full value of the Temple of Preah Vihear is linked to its surrounding landscape. At one level, it is an extraordinary interaction between the spiritual (the temple) and the natural (its surround-.

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INSIDE TITLE (Ph.D.) PAGE

BUILDING A ZERO-EMISSION AND
RESOURCE-CYCLICAL COMMUNITY IN THE
THE PREAH VIHEAR AREA OF THE KINGDOM OF CAMBODIA

A Dissertation

by

TARO KANKYO 67890

in Partial Fulfillment

of the Requirements for the Degree

Doctor of Philosophy

Advisor: Professor Taro Kashiwa

Co-Advisor: Professor Jiro Hongo

Graduate Program in Sustainability Science

Graduate School of Frontier Sciences

THE UNIVERSITY OF TOKYO

September 2012

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THE PREAH VIHEAR AREA OF THE KINGDOM OF CAMBODIA

A Thesis

by

HANAKO KANKYO 12345

in Partial Fulfillment

of the Requirements for the Degree

Master of Sustainability Science

Advisor: Professor Taro Kashiwa

Co-Advisor: Professor Jiro Hongo

Graduate Program in Sustainability Science

Graduate School of Frontier Sciences

THE UNIVERSITY OF TOKYO

September 2012

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ABSTRACT PAGE

ABSTRACT

On July 8, 2008 the Sacred Site of the Temple of Preah Vihear (hereafter, the Temple) in Cambodia was inscribed by UNESCO as a World Cultural Heritage Site. Following which, the Government prepared a Management Plan for the Temple and its surrounding area. It goes without saying that the values of the Temple are intrinsically linked with its natural surroundings. The problem was just how to effectively utilize the eco-tourism aspects of the area—and other similar areas in Cambodia—without sacrificing the sites themselves and their surrounding environment. In other words, how to make the balance of tourism and cultural heritage sustainable.

Field surveys were conducted at the Temple and its surrounding area (the Eco-tourism Area) from January 22 to January 25 and from March 11 to March 15, 2012. In addition, officials of government agencies including the National Authority of Preah Vihear, and company owners were interviewed using a 50-item multiple choice survey concerning environmental pollution and awareness. Since the variables were independent and categorical, an ANOVA experimental design was chosen, the data acquired therefrom were analyzed using multivariate analysis.

The survey results showed ubiquitous agreement from government, business, and local communities that eco-tourism holds great potential to the Kingdom of Cambodia. Future development efforts should be designed to create a sustainable community/society in the designated Preah Vihear Area that is socially acceptable, economically viable, culturally sound, and ecologically sustainable over current and future generations. Thus, future tourism development in the site area should be recognized as a “means” of achieving this long term vision. This is a daunting challenge for the present generation to assume on behalf of future generations, as well as a valuable challenge for Cambodian people and also for the global community.

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ACKNOWLEDGEMENTS PAGE

ACKNOWLEDGEMENTS

This research has been guided by and is indebted to the National Authority of Preah Vihear (NAPV) and their staff. In particular, during the field surveys, tremendous assistance from the hardworking staff of the NAPV was received despite their heavy daily workloads.

Further, this research is indebted to Mr. Shinichiro Sasaki, President of the Preah Vihear Association Japan for his continuous support. In Phnom Penh, Mr. Philippe Desan, Program Officer, UNESCO-Cambodia, provided much knowledge and insights regarding zoning issues.

In Tokyo, this research was supported by Professors M. Watanabe and S. Nissho of The University of Tokyo for their advice on the suitable phrasing of Lord Buddha's teachings. Moreover, the valuable advice of Mr. J. Tanaka of the International Development Center of Japan on development approach was greatly appreciated..

This research is also indebted to those associated with IR3S (Integrated Research System for Sustainability Science) and AGS (Alliance for Global Sustainability) of The University of Tokyo. In this connection, this research has been supported by Professor K. Takeuchi, Vice Rector of the United Nations University for his guidance and direction.

Acknowledgements page

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DEDICATION PAGE

DEDICATION

Effort, dedication, and commitment were fundamental elements for the completion of my doctoral dissertation, but even more important was the support of my family and friends. To my wife and my two wonderful, supportive children, my son John and my daughter Heather, today I dedicate this important professional achievement to them because without their presence, support, love, and understanding I would have never have been able to achieve my goal.

Dedication page

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Spacing Each entry should be single-spaced, double space between entries.

Case use title case

Page Number roman number, lowercase: "ix" or the number that follows the immediately preceding page.

LIST OF TERMINOLOGY: ABBREVIATIONS PAGE

LIST OF ABBREVIATIONS

ADB	Asian Development Bank
ANR	Assisted Natural Regeneration
AP	Action Plan
CEMP	Construction Environmental Management Plan
ETA	Eco-Tourism Agency
EA	Environmental Assessment
EAMP	Environmental Assessment and Management Plan
EIA	Environmental Impact Assessment
EIS	Environmental Impact Study
EPF	Environmental Protection Fund
EPL	Environmental Protection Law
GMA	Greater Mekong Sub-region
NBCA	National Biodiversity Conservation Area
NEPO	National Energy Policy Office
NRE	New and Reusable Energy
PV	Preah Vihear
UNESCO	United Nations Educational, Scientific, and Cultural Organization
WHC	World Heritage Center

List of Terminology: ABBREVIATIONS page

Margins	2.5 cm all sides
Font	Times New Roman 12 pt
Alignment	text flush left, page numbers flush right

- Page Title** Type "LIST OF ABBREVIATIONS" in ALL CAPITAL LETTERS
- This should be typed 2 line spaces from the top margin, and centered within the left and right margins.
- Text** start text 2 line spaces after the page title; double-spaced
- Alignment** Abbreviated forms are flush left
- The first letter of every extended form (the full wording) must be in line with one another. The best way to do this is setting a "left tab". AVOID using the space bar because unevenness usually results.
- Spacing** Each entry should be single-spaced, double space between entries. For example, the explanation of "UNESCO" extends beyond one line and has two lines single-spaced. However, the space between UNESCO and PV, and the space between UNESCO and WHC are double-spaced. Such spacing facilitates reading.
- Case** use title case or standard capitalization style for proper nouns, whichever is more appropriate.
- Page Number** roman number, lowercase: "x" or the number that follows the last page of the immediately preceding List of Figures.

SAMPLE LIST OF TERMINOLOGY: TERMS PAGE

LIST OF TERMS

Buffer Zone: this zone is equivalent to Zone 2a which is fan-shaped with 2,64.5 ha area and directly surrounds the Core Zone (property area of 154.7 ha).

Core Zone: this is equivalent to Zone 1 consisting of the Temple complex site with a total land area of 154.7 ha designated by UNESCO when the Temple site was inscribed on 8 July 2008.

Kulen Promtep Wildlife Sanctuary (KPWS): this sanctuary is one of the largest areas in Cambodia and is nearly adjacent to the PV Area in the southwest.

Riel: Cambodian currency (ISO 4217) and its exchange rate of 1US\$=4,200 riel is used in this document, which generally prevailed in the market from October 2011 to March 2012.

Sustainable Development: This is defined as a process of fulfilling people's desires for a long period of time in a manner that is socially valid, economically viable, culturally respected, and ecologically well-grounded.

Waste Diversion Rate: the percentage of waste materials diverted from traditional disposal such as landfill to be recycled, composted, or re-used.

List of Terminology: TERMS Page

Margins	2.5 cm all sides
Font	Times New Roman 12 pt
Alignment	flush left, ragged right

Page Title	Type "LIST OF TERMS" in ALL CAPITAL LETTERS This should be typed 2 line spaces from the top margin, and centered within the left and right margins.
Text	start text 2 line spaces after the page title; double-spaced
Term	Terms should be typed in italic, underlined, followed by a colon [:], and 1 space
Spacing	Each entry should be double-spaced, and add one extra line of space between each entry for clarity and to facilitate reading.
Number of Pages	as necessary
Page Number	roman number, lowercase: "xi" or the number that follows the last page of the immediately preceding List of Terminology: Abbreviations or other previous section.

LIST OF TERMINOLOGY: UNITS PAGE

LIST OF UNITS OF MEASUREMENT

$^{\circ}\text{C}$	degrees Celsius
cm	centimeter
GWh	Gigawatt hour
ha	hectares
kg	kilogram
km	kilometer
km^2	square kilometers
km^3	cubic kilometers
KV	kilovolt
L/s	liters per second
m	meters
m/s	meters per second
m^3/s	cubic meters per second
mm	millimeters
US\$	United States dollars

List of Terminology: UNITS Page

Margins	2.5 cm all sides
Font	Times New Roman 12 pt
Alignment	text flush left, page numbers flush right

- Page Title** Type "LIST OF TERMINOLOGY" in ALL CAPITAL LETTERS
- This should be typed 2 line spaces from the top margin, and centered within the left and right margins.
- Text** start text 2 line spaces after the page title; double-spaced
- Alignment** Unit forms are flush left
- The first letter of every extended form (the full wording) must be in line with one another. The best way to do this is setting a "left tab". AVOID using the space bar because unevenness usually results.
- Spacing:** Each entry should be single-spaced, double space between entries.
- Case** use lowercase and standard capitalization style for proper nouns, when appropriate.
- Page Number** roman number, lowercase: "xi" or the number that follows the last page of the immediately preceding List of Terminology: Terms.
- NOTE:
Assuming that this page is the end of the FRONT MATTER, then the next page should start the INTRODUCTION.
- In such a case, the first page of the INTRODUCTION should be using the Arabic numbers for the page numbers, beginning with the Arabic number "1".

GSFS Ethical Guidelines*

1. *spirit of integrity*
 - ✓ prevent bias or prejudice
 - ✓ prevent fabrication or falsification
 - ✓ prevent disregard of inconvenient data
 - ✓ prevent plagiarism
2. *originality of research*
 - ✓ lead to greater understanding of truths of nature
 - ✓ respect intellectual assets amassed by previous researchers
3. *recordkeeping*
 - ✓ maintain accurate and meticulous records to prove originality and objectivity
 - ✓ preserve data to validate your hypothesis and other claims
 - ✓ bear in mind that your findings will have to stand up to peer review
4. *fair and honest disclosure*
 - ✓ be aware of the responsibility to share new knowledge with society
 - ✓ uphold copyright laws regarding the work of others and cite properly
5. *joint research*
 - ✓ be aware that each individual has joint ethical responsibility also
 - ✓ observe and follow proper research ethics at all times
6. *faculty responsibilities*
 - ✓ provide a role model of the highest ethics and integrity
 - ✓ communicate proper research principles to students and researchers
7. *laws and regulations*
 - ✓ be aware of and follow country-specific laws
 - ✓ be aware of uphold international agreements
 - ✓ being ignorant of pertinent laws and regulations is no excuse
8. *social research*
 - ✓ is based on a firm agreement with a specific group in society
 - ✓ clarify the purpose of research
 - ✓ elucidate how your findings will be used
 - ✓ protect personal information of individuals and organizations
9. *ethics and safety concerning medical and bioscience research on humans*
 - ✓ protect human rights and safety
 - ✓ abide by relevant laws and guidelines
 - ✓ abide by the decisions of the University Ethics Committee
 - ✓ follow safety procedures

* In March 2012 the Graduate School of Frontier Sciences (GSFS) established a new ethics policy regarding research and scholarship that applies to all those in GSFS. Here is merely a short concise version of some of the main points. Be sure to obtain a copy of the newest official complete version.

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