GUIDE TO THE PREPARATION OF THESES AND DISSERTATIONS

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The Graduate School of the University of Tennessee, Knoxville

ABSTRACT

This guide outlines the formatting standards set forth by The Graduate School at the University of Tennessee, Knoxville. The guide is divided into five chapters which explain in detail the formatting requirements and submission procedures all graduate students writing a thesis or dissertation at the University of Tennessee, Knoxville must follow.

NOTE ON UPDATES

In addition to minor corrections, this updated version of the 11th edition of the *Guide to the Preparation of Theses and Dissertations* contains new information about:

- Procedures for submitting and uploading attachments.
- Rules regarding the use of special characters in titles and abstracts.

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CHAPTER I: INTRODUCTION AND GENERAL INFORMATION

Purpose of This Guide

This guide provides basic information about thesis and dissertation preparation at the University of Tennessee, Knoxville. It establishes the technical parameters within which all students must work. These parameters include margins, formatting and style, sequence of pages, and spacing. The guide does not address issues of content such as grammar, punctuation or wording. Correction of content is the responsibility of the student as overseen by their thesis or dissertation committee.

While a student's graduate committee evaluates the technical quality and content of a thesis or dissertation, the Graduate School imposes formatting requirements to ensure an appropriate and consistent academic appearance of the manuscript. The *Guide* sets forth basic requirements for organizing and formatting a thesis or dissertation, but students in consultation with their committees have much leeway in determining the look and feel of their document. However, once a student chooses a specific formatting standard, the student must apply that standard consistently throughout the document.

Because most graduate students will publish during and after their graduate education, students (in consultation with their thesis or dissertation committee) are encouraged to use publications within their field, such as scholarly journals, to assist them in establishing heading format, bibliographic form, and other conventions that are discipline specific. It is necessary for students to understand the various elements of a manuscript and general publication formatting requirements in academic publishing. Although knowledge and use of publication formatting is essential, the regulations established by the *Guide* take precedence over any other style manuals for final submission of a thesis or dissertation.

Students are encouraged to use style manuals such as the *MLA Handbook for Writers of Research Papers, Publication Manual of the American Psychological Association, A Manual for Writers of Term Papers, Theses, and Dissertations,* or *The Chicago Manual of Style* as resources for basic style and grammar. Students should never use previously accepted theses and dissertations as the final guide for formatting. Examples taken from other theses and dissertations may be out of context, out of date, or incorrect. The existence of a particular style or usage in a previously accepted thesis or dissertation does not establish precedent for its continuation. Students are responsible for obtaining and following up-to-date guidelines.

Background Information

The Graduate School at the University of Tennessee, Knoxville is committed to assisting graduate students and faculty members in meeting the goals of consistency, logical organization, attractiveness and correctness in thesis and dissertation preparation. The Graduate School is responsible for the review and approval of the final copies of theses and dissertations and provides guidance in document preparation through online materials, this guide, and the one-on-one assistance of the thesis/dissertation consultant.

Thesis/dissertation resources at the Graduate School

Each term, the Graduate School offers workshops to provide formatting guidance. The slides from these workshops, as well as downloadable templates and helpful formatting and submission information, can be obtained at any time by visiting the thesis/dissertation website at http://web.utk.edu/~thesis. Contact

information for the thesis/dissertation consultant is also found on the thesis/dissertation website.

Students must also work directly with the thesis/dissertation consultant for formatting reviews and for the final submission of the document. The Graduate School establishes a preliminary review deadline every semester for those students planning to graduate in that semester. Students are encouraged to meet with the thesis/dissertation consultant early in the process of formatting their thesis or dissertation. It is also highly recommended that students present a draft of their approval sheet to the thesis/dissertation consultant before the defense of the thesis or dissertation is held.

Electronic theses and dissertations

The Graduate School has accepted the submission of ETDs (electronic theses and dissertations) since 2001, and in 2007 decided to only accept ETDs, as opposed to the traditional bound option. Theses and dissertation may be bound, but the copy that is submitted to the Graduate School and will be deposited in the university library must be an electronic version. The Graduate School works with University Libraries and other members of the state and international academic community to offer sustainable and accessible digital repositories for dissertations and theses written by UT students.

TRACE

The Tennessee Research and Creative Exchange, or Trace, is the digital archive and showcase for all ETDs submitted as partial fulfillment of the requirements for graduate degrees conferred by the University of Tennessee. Trace is hosted by the University Libraries with support from The UT Office of Research, the Science Alliance, the Office of the Provost and the Graduate School. ETDs deposited in Trace are discoverable via UT Libraries catalog and WorldCat searches, and globally accessible. Trace will also be used to facilitate the process of ETD submission and review. Visit the Trace website (http://trace.tennessee.edu/) or contact the thesis/dissertation consultant for further information.

Student Integrity

Conferral of a degree implies in part the graduate's personal integrity and ability to perform within the framework of scholarly methods. There are three areas in which graduate students should be particularly cautious: the proper acknowledgment of cited works; the use of others' copyrighted material; and proper reporting of work subject to federal compliance regulations (e.g., use of human subjects, animal care, radiation, legend drugs, recombinant DNA, or the handling of hazardous materials).

Proper Acknowledgment of Cited Works

Students must take care not to plagiarize. The Graduate School defines plagiarism as "using the intellectual property or product of someone else without giving proper credit" (The University of Tennessee, 2008, 25). Any material taken from another source must be fully acknowledged, and in no case should one present another person's work as one's own. Extreme caution should be exercised by students involved in collaborative research to avoid questions of plagiarism. Appropriate acknowledgment of the work of any contributors is essential. Further, if the submitted thesis or dissertation has been published previously, or has been submitted for publication, this fact should be disclosed. If in doubt, students should check with their major professor or the thesis/dissertation consultant about such matters. Suspected plagiarism will be

investigated and appropriate action taken if necessary, including removal of the thesis or dissertation in question from the library, and rescinding of degrees.

The Use of Internet Links (Embedding)

Students may use hyperlinks in their document, as long as students take steps to ensure they do not give the impression that the material linked to is their own (if it is not.) Students may also provide an address (URL) to a site without providing an active link. Students should use discretion in including links because, unlike material published in paper journals and books, the content and location of websites changes frequently. For this and other reasons, students should not link to material that is integral to their thesis or dissertation. Instead, they should seek permission to include that material in their thesis or dissertation.

The Use of Copyrighted Material

The law governing copyright infringement is based on a principle called "fair use." If copyrighted material is used in a limited way for non-commercial purposes (e.g., scholarly work), permission to quote usually need not be sought. The 2003 Chicago Manual of Style states:

> For example, the [fair use doctrine] allows authors to quote from other authors' work or to reproduce small amounts of graphic or pictorial material for purposes of review or criticism or to illustrate or buttress their own points. Authors invoking fair use should transcribe accurately and give credit to their sources. They should not quote out of context, making the author of the quoted passage seem to saying something opposite to, or different from, what was intended (135).

Further, "[n]o permission is required to quote from works of the United States government or works in which copyright has expired" (132). In determining whether a work is still under copyright, students should consult the U.S. Copyright Office's guidelines (see, for instance, the "Copyright Office Basics," available at http://www.copyright.gov/circs/circ01.pdf.)

Even when permission is not needed, students must cite the owner's works fully. If extensive material from a copyrighted work is used in such a way that the rights of the copyright owner may be violated, permission from the owner must be obtained in writing. In determining the extent of a written work that may be quoted without permission, the student should consider the proportion of the material to be quoted in relation to the substance of the entire work. According to *The Chicago Manual of Style*,

Use of any literary work in its entirety – a poem, an essay, a chapter of a book – is hardly ever acceptable. Quotations or graphic reproductions should not be so long that they substitute for, or diminish the value of, the copyright owner's own publication. Proportion is more important than the absolute length of a quotation: quoting five hundred words from an essay of five thousand is likely to be riskier than quoting that amount from a work of fifty thousand. But an even smaller percentage can be an infringement if it constitutes the heart of the work being quoted (136).

The publisher usually has the authority to grant permission to quote excerpts from the copyrighted work or can refer requests to the copyright owner or designated representative. The copyright owner may charge for permission to quote. Permissions should be credited on the acknowledgments page, and the source should

appear in the list of references or bibliography section.

INTERNET SOURCES

Internet and other electronic sources must be cited as fully as print materials. At the very least, such works will have a title and a date, as well as the address or URL for internet materials. The date is normally the date consulted or date accessed. Professional journals and organizations (such as the APA) normally have specific suggestions for citing electronic materials.

Reporting of Work Subject to Compliance Regulations

Compliance with federal regulations governing the use of human subjects, animal care, radiation, legend drugs, recombinant DNA, or the handling of hazardous materials in research, is monitored by a number of federal agencies. Because of these regulations, research compliance is another area of importance to graduate students and to the conduct of their research. The Graduate School requires verification from the student's committee that the student has complied with the appropriate approval procedures prior to initiation of the thesis or dissertation related research, if approval is relevant to the research. A statement of knowledge of compliance is included on the Admission to Candidacy form. By their signatures, the committee members acknowledge that proper compliance has been obtained. The Compliance Officer in the university's Office of Research (http://research.utk.edu/compliance/) will answer questions regarding the required approvals for research projects. If approvals are needed, the Compliance Officer will provide guidance in helping students complete the appropriate forms. Compliance must be obtained before students begin research.

General Policies

Students should refer to the latest edition of the *Graduate Catalog* (http://catalog.utk.edu/index.php?catoid=2) for policies concerning registration for thesis/dissertation hours, restricted, classified, or proprietary research, and other requirements for completion of the graduate program.

The goal of The Graduate School, as well as the student's thesis/dissertation committee, is to ensure that a document has been produced that will properly represent and reflect well on the student, the student's committee, the department and the university.

CHAPTER II: THESIS/DISSERTATION ELEMENTS AND STYLE

The chief consideration in formatting the thesis or dissertation is consistency. While the Graduate School has specific rules and parameters that all theses and dissertation writers must follow, students do have some flexibility in formatting their documents, provided that the documents are formatted consistently. For example, while students may choose which basic font to use, they must use that same font throughout the document, including in footnotes, headings, page numbers, tables, reference citations and captions.

Examples within the guide and on the website

The appendix contains examples of many of the elements discussed in this chapter. These examples are representative of the many acceptable formatting techniques for particular parts of the thesis or dissertation. Please note that the style, typeface, and font size used in the samples varies from example to example because they are drawn from different theses and dissertations. Students should use a uniform and consistent style, typeface, and font size throughout their own document. The Thesis/Dissertation Consultant website also includes different templates which students may use, but students are free to use whatever template they please, provided that it falls within the guidelines outlined here and as discussed with the thesis/dissertation consultant.

Order of Pages

Theses and dissertations must follow a specific sequence of pages. See Table A-1[1] for a quick guide on how to number these different pages. The order of the pages are outlined below:

ETD approval sheet (see example at http://web.utk.edu/~thesis/appsheet_etd.pdf)

Title Page

Copyright Page (optional)

Dedication (optional)

Acknowledgement(s) (optional)

Abstract

Preface (optional)

Table of Contents, with page references

List of Tables, with titles and page references (if applicable)

[1] All tables and figures are located in the Appendix.

List of Figures, with titles and page references (if applicable)

List of Abbreviations (if applicable)

List of Symbols (if applicable)

Chapters or major divisions, including:

a) Introduction, if any

b) Main body (with the larger divisions and more important minor divisions indicated by suitable, consistent headings)

Bibliography/References including separation page

Appendices (if applicable), including separation page

Vita

Preliminary Pages

The preliminary pages comprise, but are not necessarily limited to, the approval sheet, title page, abstract, table of contents, list of tables and list of figures. They may also include a copyright page, dedication, acknowledgments, preface, and list of symbols and/or abbreviations.

Approval Sheet

The Approval Sheet is a very important part of the thesis/dissertation submission process. It certifies to the Graduate School that the committee members have examined the thesis or dissertation for form and content. Each thesis or dissertation submitted to the Graduate School must be accompanied by an approval sheet using the exact wording shown in figures A-1and A-2 (students may obtain MS Word versions of the approval sheet from the Thesis/Dissertation Consultant's website) and in the same font as the rest of the document. It is the student's responsibility to ensure that the correct document is obtained and that it is filled out correctly (see below).

TITLE

The final title of the student's thesis or dissertation should appear on this page. The title should be identical to the title as it is written on the title page. Use word substitutes in place of formulas, symbols, superscripts, or Greek letters. The title should not contain any characters that cannot be found on a typical English language keyboard.

STUDENT NAME AND MAJOR

The student's name used on the sheet must appear exactly as it is registered with the UT Knoxville. The major and degree to be awarded must be exactly the same as the official major and degree to which the student is currently admitted. Since official majors can change, students are encouraged to check the official major under which conferral of degree will take place. In any case, the concentration should not appear on the Approval Sheet. Students should take great care to confirm the registered name (not necessarily the full name) and major with the Thesis/Dissertation Consultant and/or the Graduation

Specialists (see figure A-1).

FACULTY SIGNATURES

Students are strongly encouraged to consult the Thesis/Dissertation Consultant about the wording and format of this sheet before obtaining faculty signatures. Theses and dissertations accompanied by incorrect or sloppily prepared approval sheets will not be accepted for submission for the degree. Black ink is required for the original signatures. The number of signature lines should equal the number of committee members. The department head does NOT sign the approval sheet unless he or she serves on the students' committee. No "courtesy members" sign the approval sheet, nor do their names appear here. In addition to the Dean of the Graduate School, only those faculty members already approved to serve on the thesis or dissertation committee should sign this form.

PAGINATION

Approval Sheets do not include a page number; they are not counted in the numbering sequence of the thesis or dissertation. (See figure A-2.) Please note that the black border on this example (and on other sample pages in this Guide) is meant to represent the page itself and should not appear as a border on the actual title page.

Title Page

The title page should follow the specific layout and wording used in figure A-3. Please note that the black border on this example (and on other sample pages in this Guide) is meant to represent the page itself and should not appear as a border on the actual title page.

TITLE

The final title of the student's thesis or dissertation should appear on this page. The title should be identical to the title on the approval sheet. Use word substitutes in place of formulas, symbols, superscripts, or Greek letters. The title should not contain any characters that cannot be found on a typical English language keyboard.

CONTENT

Students should place the title of the document centered at the top of the page, the degree statement centered in the middle of the page, and student's name and month and year of graduation centered at the bottom of the page. The student's name must appear as he/she is registered at The University of Tennessee.

PAGINATION

The title and name on this page must match those on the approval sheet. The title page is assigned a lowercase Roman numeral ("i"), although students should not show the page number on the page.

Copyright Page

All written materials, including theses and dissertations, are automatically copyrighted under U.S. law; no paperwork or payment is required in order to have copyright protection. Copyright protection is automatic for all such works from the moment of creation in a fixed form, which includes electronic formats. Students

are therefore entitled to place a copyright notice on the page immediately following the title page. The U.S. Copyright office recommends that this statement take the form shown in figure A-4: the word "copyright" followed by the copyright symbol (©) and the student's legal name, with this statement underneath: "All rights reserved."

The copyright page is optional but recommended. Students who wish to formally register their copyright with the U.S. Copyright Office may do so on their own. Fees and forms are obtainable online: http://lcweb.loc.gov/copyright/.

The University of Tennessee, Knoxville, while acting as a "publisher" for the thesis/dissertation, does not retain any claims to the copyright of the thesis/dissertation. Submission to the Graduate School is understood to include the students' granting of permission for the University of Tennessee to include these documents in the university library catalog and to retain an archived copy of the work. For more information about copyright, see the UT Libraries' copyright information page: http://www.lib.utk.edu/copyright/.

Dedication

If the student wishes to dedicate the thesis/dissertation, the dedication statement is included on this page. If appropriate, the student may include a short quote or other text here (see figures A-5 and A-6). The student may choose to omit the heading "Dedication" on this page if the intent of the dedication itself is clear.

Acknowledgments

The acknowledgments page is used to thank those who have helped in the process of obtaining the graduate degree. Permission to quote copyrighted material is listed here, as well as acknowledgment for grants and special funding. If students must include a disclaimer, stating, for example, that the views expressed in the thesis or dissertation are not necessarily the views of the agency or institution that funded or supported the research, they should do so on this page (see figure A-7).

Abstract

Every thesis and dissertation submitted to the Graduate School must include an abstract (see figures A-8 and A-9.) Although the content of the abstract is determined by the student and committee, the following information is appropriate: [1] a short statement concerning the area of investigation, [2] a brief discussion of methods and procedures used in gathering the data, [3] a condensed summary of the findings, and/or [4] conclusions reached in the study.

The abstract will be used by the University of Tennessee Libraries in cataloguing the thesis or dissertation. Therefore, the abstract must NOT exceed 350 words in length. Furthermore, if the abstract contains any special characters (those characters not found on typical English-language keyboards) the student must also write out the term or concept in plain English in square brackets immediately following the special character. For example: π [pi]. If you have questions about what qualifies as a special character, please check with the thesis/dissertation consultant.

Preface

A personal statement about the purpose and scope of the thesis/dissertation could be included in the preface. The tone of the preface, however, must be academic and appropriate to scholarly work.

Table of Contents

The table of contents may vary in style and amount of information included. However, entries for preliminary pages (any pages with Roman numerals) should not be included in the table of contents. Entries for the following sections **must** be included, with their page numbers:

- Chapter or section titles
- Bibliography/list of references
- Appendix, if used
- Vita

PAGE NUMBERS IN THE TABLE OF CONTENTS

Page numbers shown in the table of contents for the bibliography and appendix must be the number assigned to the separation sheet preceding these sections. No preliminary pages with Roman numerals are included in the table of contents. The table of contents entries begin with page 1 (see this document's table of contents for example; remember, however, that a student's table of contents will end with the vita).

INCLUSION OF HEADING LEVELS

It is not necessary to include all levels of headings in the table of contents. However, any inclusion must be consistent: If a particular level is included at any point, all headings of that level must be included.

USE OF WORD PROCESSOR INDEXING FUNCTIONS

Students are encouraged to use the indexing function of their word processing software (or other programs) to ensure the accuracy and utility of the Table of Contents. Please see the Office of Information Technology's training courses (http://web.utk.edu/~training/) or the thesis/dissertation consultant's website (http://web.utk.edu/~thesis/).

List of Tables/List of Figures/List of Attachments

If there are five or more tables in the thesis or dissertation, a list of tables must be included. If there are five or more figures in a thesis or dissertation, a list of figures must be included. Because attachments are uploaded separately from the main electronic theses or dissertations (ETD) file, a list of attachments must be included if the student's document includes one or more attachment. There must be a separate list (on separate pages) for tables, figures, and attachments. Any tables or figures designated as such appearing in the appendix must also be included in the appropriate list, although students may choose to include tables and figures, without specific listing or labeling, for instance, in the appendix as background material or raw data.

Each figure or table title must be unique, and all titles entered in the lists must be worded exactly as they

appear on the table, figure, or attachment. Table and figure titles in such lists must include information up to the first terminal punctuation. Attachment titles must include the file name. Additional explanatory information need not be included in the lists (see this document's List of Figures for examples).

Nomenclature/List of Abbreviations/List of Symbols

Pages listing nomenclature, abbreviations, or symbols may be included. This information may also be placed in the appendix (see figure A-10).

Text

Major Divisions

The thesis or dissertation must be divided into a logical scheme that is followed consistently throughout the document. The main body of the document must begin with a major division, such as a chapter or section. Chapters are the most common division, but sections and parts are also permissible. Chapter, section, part numbers and titles are primary divisions of the entire thesis or dissertation and are not part of the subdivision scheme. Each major division (chapter, section, or part) must:

- have a title
- be numbered consecutively throughout the document (e.g., Chapters 1, 2, 3, 4, and 5)
- begin on a new page

A major division entitled *Introduction* may precede the first numbered chapter, section, or part **only if** the student ends the document with another unnumbered major division entitled *Conclusion.* (Please note that both parts are required for multi-part, or "manuscript" theses/dissertations; see Chapter IV: Special Problems and Considerations.)

Subdivisions/Headings

Any logical system of subdivision within chapters or sections is permissible, but the scheme used must be consistent throughout the document. (See the online templates for different, but correct, approaches to headings.) The appearance of the heading must vary in style for each level of heading unless a numbering sequence is used to indicate level.

Once students decide on the format for each level of heading, they must apply the format consistently, including font, font size, and other font attributes (bold, italics, underline, et cetera), space above and below the heading, numbering, indentation, and punctuation.

BEGINNING NEW SECTIONS

The headings within a chapter, section, or part do not begin on a new page unless the preceding page is filled with text. If there is not room for the complete heading and at least two lines of text at the bottom of a page, the new heading should begin on the next page.

References Within Text

Referencing usually consists of information in parentheses or square brackets within the text. Two common methods of referencing are: [1] to use the author's name and date of publication, as in "(Smith, 2001)," or [2] to assign numbers to the bibliographic entries and insert the corresponding numbers for the authors as they are cited in the text, as in "Smith (5)." The purpose of internal referencing is to guide the reader to the appropriate entry in the list of references/bibliography, where complete information is available. In-text references to the author's name normally refer to an alphabetical list of sources; numbered references normally refer to a numeric list.

Students may **not** collect references as endnotes at the end of each chapter or section. Footnotes are permissible, but only if the student also includes a full list of references or bibliography at the end of the document.

The form, style, and content of references or footnotes should be determined by what is generally accepted in the student's field of study, using a professional journal or style manual. Students using both references and footnotes in the text must use a different format or style to differentiate the two, keeping in mind that the same font type must be used throughout the entire document. Other attributes may be used to distinguish footnotes from body text; for example, the footnotes may be single spaced and a smaller font size. In addition, the footnote number and the beginning of footnote must appear on same page.

Tables, Figures, and Attachments

Tables

Students should consider carefully whether information is best presented in the text or in a table. Tables should be used sparingly. The *Publication Manual of the American Psychological Association* states that "[f]or several reasons, it is worthwhile to be selective in choosing how many tables to include in your paper . . . reserve tables for crucial data that are directly related to the content of your article and for simplifying text that otherwise would be dense with numbers (2001, 147). Tables are usually quantitative, though some may consist entirely of words rather than numbers. In either case, care must be taken to organize the material in ways that are readily understood and visually clean.

TITLE AND NUMBER

Tables must have a unique title and number. The title and number are placed above the table.

TYPEFACE

Tables must use the same type of font as the rest of the document. Rather than copying tables from another source, students should create tables themselves. (For instance, tables should not be inserted into the text as "pictures.") Although the type of font within a table must be the same as the rest of the document, it may differ slightly in size.

REQUIRED FORMAT

Tables must have at least two columns with headers. The headers describe the material in each column. Headers must apply to the entire column, even if it continues onto additional pages. It is permissible, however, to use subheadings below the columnar header, separated by a line (see below). If the data does

not readily conform to the columns/rows format (such as an outline or list of questions), then it is likely not a table and should not be labeled as such.

The table must include these three horizontal lines:

- At the top of the table, above the header row but below the title/caption. (This is known formally as the table opening line)
- Between the header row and the body of the table. (This is known formally as the columnar heading closing line)
- At the bottom of the table, below the last row but above any explanatory notes. (This is known formally as the table closing line)

See figure A-11 for an example of a table with the three minimum horizontal lines. (See also APA, 2001, 149-54). Different table styles, such as a full grid (e.g., vertical lines and additional horizontal lines) or shaded rows, are acceptable but not required.

CONTINUED TABLES

If tables do not share the same page as text, they may be continued on as many pages as necessary, provided that the columnar headers remain the same and are repeated on each continued page. The first page must contain the table number and title, and subsequent pages contain the remainder of the table and the designation: Table #. Continued. (See figure A-12.)

TABLE FOOTNOTES

Footnotes to tables consist of four different categories: [1] full source citation, [2] general notes, [3] notes to specific parts of the table indicated by superscripts, and [4] notes on level of probability. Students should use any or all types of footnotes that are applicable to a particular table.
Tables must be in the same font as the text, though the font size may be slightly smaller.

Figures

Illustrations, such as photos, maps, drawings, graphs, or charts, should be called figures (Gibaldi, 2003, 136). See figure A-13 for one example of a figure. (See also figures A-14, A-16 and A-18.)

TITLE AND NUMBER

Figures must have a unique title and number. The title and number are placed below the figure.

TYPEFACE

Since figures may be imported from an external source, any text that is part of the figure can be in any typeface, provided it is neat and legible. The figure number and title, which sit below the figure, must be in the same base typeface as the rest of the thesis or dissertation, because this material is considered to be part of the typeset body of the document.

LENGTHY TITLES (LEGENDS)

Explanatory material for figures may be placed within the figure or continued after the period following the figure title. If a figure has a long title or legend that must be placed on a separate sheet because of the size of

the figure, the page containing the title and legend must be placed immediately before the figure (see figure A-14). The page number assigned to the legend page is considered to be the first page of the figure. Separate legend pages should be used only if needed.

CONTINUED FIGURES

A figure containing several related parts too large to be included on a single page may be continued onto other pages. The first page contains the figure number and complete title, and subsequent pages contain the remainder of the figure and the designation: Figure #. Continued (see titles for figure A-12).

FIGURE FOOTNOTES

Footnotes are placed below the figure title but are not separated by a dividing line. If the figure or data within the figure are taken from another source, the source citation must be included.

Equations and Schemes

Equations and schemes are not considered figures and should not be labeled as such, nor should they carry boxes or visible borders nor adhere to the placement rules for figures (see Placement for figure and table placement guidelines). Equations and schemes are considered to be part of the text; they should be formatted consistently throughout the thesis or dissertation, following the advice of the students' committee members. For examples of equations and schemes in text, see Figures A-22 through A-24.

Attachments

Students with very large files (such as maps, spreadsheets or architectural drawings) or multimedia objects (digital video, audio, datasets, software) should upload these as supplemental files in Trace (See Trace manual for instructions on how to do so). These supplemental files will be called "attachments." Attachments should be referred to by filename (see Figures A-19 through A-21). The student should include the filename both in the body of the document and in a list of attachments. If the reader needs any additional information (such as instructions about enabling a computer program), that information must be included with reference to the attachment (see figure A-19).

If you are using a multiple directory structure to accommodate interactive multiple file submissions, you will need to zip the entire set of directories and respective files before submitting your ETD. Mac and Windows users can use freeware to zip files (WinZip is one option -- http://www.winzip.com/index.htm) and Mac users may be able to do so without special software (http://www.apple.com/pro/tips/zip.html).

LIST OF ATTACHMENTS

Unlike a list of tables or figures, which is only required if the thesis or dissertation contains five or more of those items, inclusion of *one* or more attachments in the ETD necessitates a list of attachments in the preliminary pages. (See figure A-20). Numbering attachments, however, is not necessary. See NUMBERING ATTACHMENTS.

Titles

Each table, figure or attachment must have a unique title descriptive of its contents. No two titles can be exactly the same. The number and title must appear above each table and below each figure. Figures or tables containing parts must be given a general title, after which the figure/table may be broken down into separate parts as necessary. For multiple part figures/tables, the title may be composite, with no references to individual parts (see figure A-16), or integrated, with titles for each part as part of the general title (see figure A-11). The style of the titles must be consistent for all figures/tables. The title of an attachment may be its filename.

Numbering

Because tables and figures are separate entities, they must be numbered independently. Students may choose to number tables or figures in one of several ways:

- Number tables or figures consecutively throughout the thesis or dissertation, including the appendix, using either Roman or Arabic numerals (e.g., Table 1, Table 2).
- Number tables/figures within chapters, with appendix tables or figures carrying a prefix of "A" for appendix or a prefix designating the specific appendix (e.g., Figure 1.1, Figure 1.2, Figure 2.1, Figure 2.2, Figure A.1, Figure A.2).
- Establish a consecutive numbering scheme for the body of the manuscript and a different one for the appendix (e.g., Table 1, Table 2, Table 3 for text and Table A.1, Table A.2, for appendix). The style of numbering must be consistent for all figures/tables.

NUMBERING ATTACHMENTS

It is not always necessary to number attachments, but if the student will refer to the attachment at several points in the document, then numbering may be used. (A similar logic may be used when numbering and referencing equations.)

References to Tables and Figures in Text

Tables and figures must be referenced in the text by number, not by expressions such as "in the following table/figure" (Turabian, 1996, 92). When more than one table/figure is referenced on a page of text, each table/figure follows in the order mentioned until all have been placed, then text begins again.

CONTINUATION OF TEXT

Tables and figures are not considered part of the flow of the text, but rather are treated as artifacts that support the text. For this reason, it is not acceptable to "break" the text after a table/figure is first mentioned and leave white space on a page in order to wait to show a table or figure. Simply continue the text (even if it is a new paragraph or new section). Each page should have as much text as possible, unless it is the last page of a chapter. All text pages must be filled with text. In no case should a text page be left significantly free of text because of the mention of a table/figure.

Placement

Tables or figures can be placed in the thesis or dissertation in the following three ways: on a separate page immediately following the text page in which the table or figure is first mentioned; embedded within the text; or in an appendix. Students may use any combination of these methods within their thesis or dissertation, as long as they follow the rules governing each method.

ON A SEPARATE PAGE

It is recommended that tables and figures be assigned pages separate from the text to avoid problems in shifting during last-minute revisions. Figures should be placed on a separate page immediately following the text page where the table or figure is first referenced.

EMBEDDED WITHIN THE DOCUMENT

If the students wishes to incorporate tables or figures within the text (realizing it is the hardest method of figure or table placement), the following criteria must be met:

- Table or figure must be separated from the text by at least a half inch of space
- Table or figure cannot be continued onto a following page
- Table or figure must not be "sandwiched" between text. The table or figure must be placed at the top or bottom of a page, never in the center or near the center of the page.
- Text must cover at least half the page; the table or figure may not cover more than half the page below or above the text, including the title and at least a half inch space.
- If multiple tables or figures are mentioned together on a page, they may be placed on a page together, provided there is at least a half inch of space between each table or figure.

IN AN APPENDIX

When all tables/figures are placed in an appendix, this fact must be stated in a note in the body of the text. This note should be placed on the page of text that refers to the first table or figure in the document. The note could be presented either as part of a sentence, as parenthetical information, or as a footnote. When some, but not all, of the tables or figures in an ETD are mentioned in an appendix, their location must be clearly indicated in the text with each reference (e.g., Table 1 in Appendix A) unless the numbering scheme makes the location obvious (e.g., Table A-1).

LANDSCAPE PLACEMENT

To accommodate large tables/figures, it is sometimes necessary to orient them horizontally on the page (see figure A-17). In such cases, it is required to change the page orientation from "portrait" orientation (wherein the shorter sides of the page are on the top and bottom, and the longer sides are on the left and right) to "landscape" orientation. Students should *not* rotate the figure or table or the title: the image and text on the landscape page should read horizontally from left to right, and the top of the figure or table should be against the top of the page (in landscape orientation, the longer side of the page). The page number should be placed on the bottom or top of the long side of the page, consistent with the placement of other pages, and should be oriented the same way as the table/figure and the table/figure title. Landscape pages in the official thesis/dissertation will be read on a computer screen, *not* rotated as a bound page. All titles and page numbers are oriented the same direction as the figure or table itself.

Ensure that the margins in the landscape pages retain their dimensions. If the left margin is 1.25", for instance, then the left margin on the landscaped page (now a "short" side) should be 1.25" (not the top edge).

Bibliography/References

A thesis/dissertation must include a list of materials used in the preparation of the document. The purpose of listing the citations is threefold: (1) to serve as an acknowledgment of sources; (2) to give readers sufficient information to locate the material; and (3) in the case of personal interviews or correspondence, to save the reader the trouble of attempting to locate material that is not publicly available. The list may consist of only references cited in the text (as in a list of references) or may also include works consulted, but not cited, in text (as in a bibliography).

The format used for citations should be that used in the student's field of study, as determined in consultation with the advising faculty. However, citations may not be collected at the end of chapters or sections (endnotes); they may be listed only at the end of the document in a labeled section. (Note: In the case of multi-part or "manuscript" theses/dissertations, citations may be collected at the end of each part. See Chapter IV: Special Problems and Considerations).

Separation Page and Numbering

The list is preceded by a separation sheet with the title, List of References, Bibliography, Works Consulted, or Works Cited, at top or center of the page. Formatting for this heading should follow that of the chapter headings (or part titles), but this heading is not numbered. The separation sheet is assigned a page number and marks the beginning of the references section. The table of contents refers to this separation sheet, rather than the first page of the citations themselves.

The separation sheet and citations should not be numbered as chapters or sections because they are not part of the body of text. This rule refers to chapter/section number only, not to page numbers. The separation sheets and reference and appendix sections will continue the normal page numbering.

Appendix

The appendix "is a useful device to make available material that is relevant to the text but not suitable for inclusion in it" (Turabian, 1996, 12). In some cases, all tables/figures are moved to the appendix to avoid interrupting the text. Appendix material may not be collected at the end of chapters or sections, only at the end of the document. (Note: Appendix material may be collected at the end of a part in multi-part theses and dissertations. See Chapter IV: Special Problems and Considerations for more information.)

Separation Page and Numbering

An appendix, if included, is preceded by a separation sheet with the title Appendix, Appendixes, or Appendices at the top or center of the page (see page 27 for example). As on the separation sheet for the references section, formatting for this heading should follow that of the chapter headings (or part titles), but this heading is NOT numbered. This sheet is assigned a page number. The separation sheet and appendix

should not be sequentially numbered as a chapter or section, because they are not part of the body of text. This rule refers to chapter/section number only, not to page numbers.

Appendix Divisions

If the student wishes to subdivide the appendix, the subsections must follow a logical scheme of division. Subdivision can begin with their own separation sheets with the number (Appendix 1, Appendix 2, Appendix 3 or Appendix A, Appendix B, Appendix C) and title at the top or center of page, and the appendix material beginning on the next page; or each subdivision can begin with the separate appendix number and title at the top of the page where material begins. In either case, the main separation sheet, Appendixes or Appendices, is still required.

Appendix material as an attachment

If appendix material is included as an attachment, a page should be included stating how material is accessible and how it should be used (see figures A-19 through A-21).

Vita

The vita should be written in narrative form, not resume or *curriculum vitae* form. It should contain appropriate academic and professional information about the author/student (see figure A-25, although content will vary widely). Because copies of the manuscript will be available to the public, personal information, such as the student's address or phone number, should not be included.

Numbering

The vita is the last numbered page of the thesis/dissertation and is not preceded by a separation sheet. Like the References and the Appendix sections, the vita is not numbered as a chapter.

CHAPTER III: FORMATTING AND TECHNICAL POINTERS

Typeface and Quality

Typeface or Font

Typeface affects the physical appearance of a manuscript more than any other single element. Word processing software provides the opportunity to use different typefaces, type sizes, and font attributes, such as bold or italics.

TYPE SIZE

The size of type is determined by point size. Text is most readable in 10, 11, or 12 point, depending on font. These sizes are required for use in the thesis or dissertation. Other sizes may be used for headings, footnotes, table contents, captions, et cetera.

CONSISTENCY OF FONT ATTRIBUTES

In terms of typeface, consistency is key. Students should use specific type sizes and font attributes to establish styles or conventions that they will follow consistently throughout the document. For example, if the student chooses to use bold for table numbers, all table and figure numbers should be bold. Use the style features of your word processor or other software to help ensure consistent application of font size and other attributes.

The typeface selected for text will be the base style or the starting point for all type selection and will establish the framework for the entire document. All of the following items must be in the family of type selected as the base style:

- all preliminary pages, including approval sheets
- all text
- all tables, even those from other sources (provided the student classifies them as tables)
- figure numbers and titles (the text within figure may be of a different typeface)
- all page numbers, including appendix page numbers

The standard fonts are Times New Roman and Arial. Students should confirm any other fonts with the Thesis/Dissertation Consultant.

Spacing

The entire thesis or dissertation can be single, one-and-a-half, or double spaced. The convention chosen should be followed throughout the body of the document. For example, if the student chooses to make the document double spaced and make all quotes within the document single spaced, then these conventions should be used for all text and quotes.

If paragraph indentions are used, they should be uniform throughout the document. Students are encouraged to seek the advice of their committee members about conventions in their specific scholarly fields.

Other Formatting Considerations

Page Orientation

The text of the thesis or dissertation should use portrait (vertical) orientation. For examples, see this Guide and the online templates. Individual figures and tables may be placed on landscaped pages, as long as certain guidelines are followed (see figure A-18). Figures or tables too large to place within the margins on a landscaped page will ideally be placed as attachments to the thesis/dissertation rather than embedded within it. (See ***Attachments***, page 13, and figures A-19 through A-21.)

Margin Settings and Justification

The inside margin must be no less than 1 inch on all sides. These margins define the minimum white space to be maintained on all sides of the page and also apply to page number placement. In some word processors, it may be necessary to set the footer or header to 1 inch (minimum) to ensure this minimum white space. All material in the document, including text, tables, and figures, must fit within the margins. Page numbers also must be at least an inch from the bottom or top of the page.

Justification refers to whether the text of a document is lined up evenly along the left margin, the right margin, or both margins. Either full-justified or left-justified margins are permissible. The use of justified margins must be consistent throughout the document. Dividing the text into columns (journal/newspaper style) is not permissible.

Pagination

Page numbers should appear on every page in the document except the approval sheet (not numbered or counted) and the title page (not numbered but counted).

PRELIMINARY PAGES

Small Roman numerals are used to number the preliminary pages. Although the preliminary pages begin with the title page, no number appears on this page. The page following the title page should begin with the number ii.

BODY OF DOCUMENT

Beginning with the first page of the text, all pages should be numbered consecutively throughout the document (including the references, appendix, and vita) with Arabic numerals beginning with number 1.

FORMATTING AND PLACEMENT OF PAGE NUMBERS

Pagination using letter suffixes (e.g., 10a, 10b) is not allowed. The page number may be positioned at the top or bottom right edge of the page or at the bottom center of the page and must be consistently placed throughout the document. As mentioned in the previous section, page numbers must be placed one inch from the top or the bottom edge of the page.

Headers/footers

Regardless of the convention in the students' field of study, running headers or footers are NOT permitted in the thesis or dissertation.

Consistency in Format

The element that contributes most to the attractiveness and readability of the thesis/dissertation is consistency. Consistency in formatting means that the student establishes a series of conventions or protocols regarding spacing, heading sequencing, and other aspects of appearance to visually guide the reader through the document, thus enabling the reader to concentrate on the content. Consistency in thesis/dissertation production is especially critical, since it determines in part the committee reaction to content and, ultimately, acceptance of the document by the Graduate School.

Some faculty are very concerned about formatting guidelines and have specific ideas about document presentation. Students should take care to discuss their formatting with their faculty advisor(s) early on. Students planning to submit any document that presents complex formatting considerations (e.g., multi-part or "manuscript" theses/dissertations or documents with a large number of figures/tables) should plan to meet with the Thesis/Dissertation Consultant very early in the writing process to ensure a smooth revision and submission process.

CHAPTER IV: SPECIAL PROBLEMS AND CONSIDERATIONS

The guidelines given in the previous chapters are sufficient for most theses and dissertations. However, several circumstances require additional guidance. This chapter addresses a few of the more specific questions that may arise in thesis/dissertation preparation, such as the use of papers that have been or will be submitted to journals and requirements pertaining to creative writing and foreign languages.

The Use of Journal Articles in Theses and Dissertations

A thesis/dissertation may include articles submitted, or about to be submitted, to professional journals. However, certain guidelines must be met before these can be included in the final document.

Disclosure

The student must add a brief explanatory statement at the beginning of each article stating how the article was revised and/or detailing the student's involvement in the article (see figure A-27). Any co-researchers should be identified and their role clarified as part of this statement. If the article has been published, or will be published by the time of the final submittal process, the source should be cited as part of this statement.

Uniformity of Presentation

Additionally, the individual papers must be integrated into a unified presentation. This may be accomplished through an introductory chapter which might contain, among other things, a detailed literature review that is not present in most journal articles. One or more connecting chapters might be used to expand upon the methodology or the theoretical implications of the findings presented in the individual articles.

The guidelines given in the previous chapters, including a uniform style of headings, reference citations, and bibliographical format, must be used, even though the individual papers may have been prepared for submittal to journals with different formatting requirements.

Each paper may be listed as an individual chapter within the document or may be treated as a part following the multi-part format discussed in the next section. If treated as a multi-part thesis or dissertation, neither the brief explanatory statement nor the source citation may appear on the required part separation sheet.

Multi-Part Theses and Dissertations (or "Manuscript" Theses and Dissertations)

With committee approval, the primary division of a thesis/dissertation may consist of parts rather than sections or chapters. This is sometimes called a "manuscript" thesis or dissertation. The use of parts is an effective method of organization when research has been performed in two or more areas that cannot be combined into a single presentation, or to assist in maintaining consistent format for journal articles.

Students should note that a multi-part or manuscript format is only appropriate if the thesis or dissertation will contain two or more separate but related essays. Students with a single "content" chapter, conceived as

a journal article, should only follow the guidelines for "The Use of Journal Articles in Theses and Dissertations," and not treat their document as a "multi-part" thesis or dissertation.

Parts of a multi-part thesis or dissertation

Each part may be treated as a separate unit, with its own chapters, figures and tables, bibliography and appendix (if needed), or the bibliography and appendix may be combined at the end of the document. The student must exercise caution to ensure that formatting is consistent throughout, that all tables/figures have unique numbers, and that, in general, the organization into parts is logically arranged and consistently applied.

In all cases, the multi-part thesis or dissertation must include the following elements:

- Introduction and conclusion, which provide an overview and summary of the project
- Table of contents for the entire document
- List of tables for the entire document
- List of figures for the entire document
- Abstract for the entire document (of 350 or fewer words)
- Separation sheet (title page) for each part
- Abstract for each part (abstracts for individual essays do not need to adhere to the requirements of length and format).

Consecutive pagination should be used throughout the document, including numbering of the required separation sheets listing the part number and title. These separation sheets must be placed immediately in front of the first page of text for each part.

Previously published material

Where a manuscript thesis/dissertation includes previously published or submitted material (for instance, if one or more parts consists of published journal articles), the same guidelines from the previous section (The Use of Journal Articles in Theses and Dissertations) must be followed.

Creative Writing Theses

All theses, including those in creative writing, are expected to adhere to the basic guidelines given in the previous chapters, and must be blended into a unified presentation. In order for the Graduate School to accept a creative writing thesis, the thesis must include the following elements:

- Approval sheet
- Title page
- Abstract
- Table of contents
- Introduction which sets the academic tone for the body of the thesis and provides a rationale for the acceptance of the creative work as a thesis
- Vita

Students writing creative theses should include a bibliography or list of works cited if they cite sources in the thesis, as, for instance, in a critical introduction.

Theses and Dissertations Prepared in a Foreign Language

Theses or dissertations submitted as partial fulfillment of requirements for graduate degrees at University of Tennessee normally should be written in English. Under exceptional circumstances, another language may be used, if prior approval is obtained from the Dean of the Graduate School. A request to write in a language other than English should be submitted to the Dean of the Graduate School by the student's thesis committee, with endorsement by the department head and dean of the college, well before applying for Admission to Candidacy for the degree sought. The request should include a proposal and justification for the exception.

In all cases, the thesis or dissertation must include an abstract written in English.

CHAPTER V: CONCLUDING INSTRUCTIONS

Preliminary and Final Review

Preliminary and final reviews are the last examinations of the document for details *prior* to official final submission to the Graduate School. The number of intermediate reviews a student receives will vary, based on the student's needs, the complexity of the document, and so on.

The preliminary review is mandatory and should be conducted no later than halfway into the semester in which the thesis/dissertation will be submitted. Doctoral students and those students with exceptionally lengthy or complex documents are urged to come in much earlier. The document does not need to be complete by the time of the preliminary review.

During the preliminary review, the thesis/dissertation consultant will identify and address necessary formatting revisions. The consultant will not review grammar, spelling or other content concerns, which are the responsibility of the student, in cooperation with his/her faculty advisors. Students may also hire an editor, although final responsibility for the document will rest with the student.
Once the Defense is passed and the student has made all content changes to the thesis or dissertation, the consultant will examine the document in detail, as if it were the final copy. Any errors found during review must be corrected prior to final submittal. The thesis/dissertation consultant will review the student's thesis or dissertation as many times as is necessary to ensure that it is formatted according to UT guidelines.

Final Submission of Thesis or Dissertation

All theses and dissertations are submitted electronically. They will be placed into the University Libraries as an electronic document, accessible via the UT Library catalog. Students are not required to submit a hard copy to the Graduate School or the UT library.

Requirements

The Graduate School requires that students include the following materials as part of the final submission of their thesis or dissertation:

- At least one paper approval sheet with original signatures on plain white paper
- One PDF file of the thesis/dissertation (including the electronic version of the approval sheet)
- Completed Survey of Earned Doctorates (doctoral students only)

Submission Dates

Each semester, deadline dates are posted for final submission. These are the deadlines by which the thesis or dissertation itself, and all appropriate materials mentioned above, must be turned into the Graduate School.

The specific deadline dates for submission are published each semester by the Graduate School in the publication "Graduate Student Deadline Dates." Copies of this publication can be accessed via the Graduate School website or directly at http://gradschool.utk.edu/ddategraduation.shtml.

Each semester there are two dates for submission of final copies of all theses/dissertations. The first deadline, approximately two weeks before the end of the term, must be met by all students expecting to graduate that semester. The other date is for the "second deadline." Students meeting the second deadline will not graduate until the following semester; however, registration for the thesis/dissertation hours in the semester in which the degree is conferred is not required, since students meeting the second deadline are considered to have completed the degree requirements within the semester in which they were registered. Students must be registered for the appropriate number of thesis/dissertation hours during the term in which the thesis/dissertation is accepted by the Graduate School (minimum of three).

Hard Copies and Binding

All other copies of the thesis or dissertation, including any required by the department and/or committee, are produced and bound through arrangements made personally by the student. The student's major professor, or the program's graduate director, can help determine who expects to receive copies and how copies should be presented, but responsibility for obtaining such copies is entirely the student's. The University of Tennessee Book and Supply Store provides a low-cost binding service.

LIST OF REFERENCES

American Psychological Association. 2001. *Publication manual of the American Psychological Association*. Washington, D.C.: American Psychological Association.

The Chicago manual of style. 2003. Chicago: University of Chicago Press.

Gibaldi, Joseph. 2003. *MLA handbook for writers of research papers*. New York: Modern Language Association of America.

Turabian, Kate L., John Grossman, and Alice Bennett. 1996. *A manual for writers of term papers, theses, and dissertations*. Chicago guides to writing, editing, and publishing. Chicago: University of Chicago Press.

University of Tennessee, Knoxville. 2008. *2008-2009 Graduate catalog.* Knoxville: The University of Tennessee.

APPENDIX

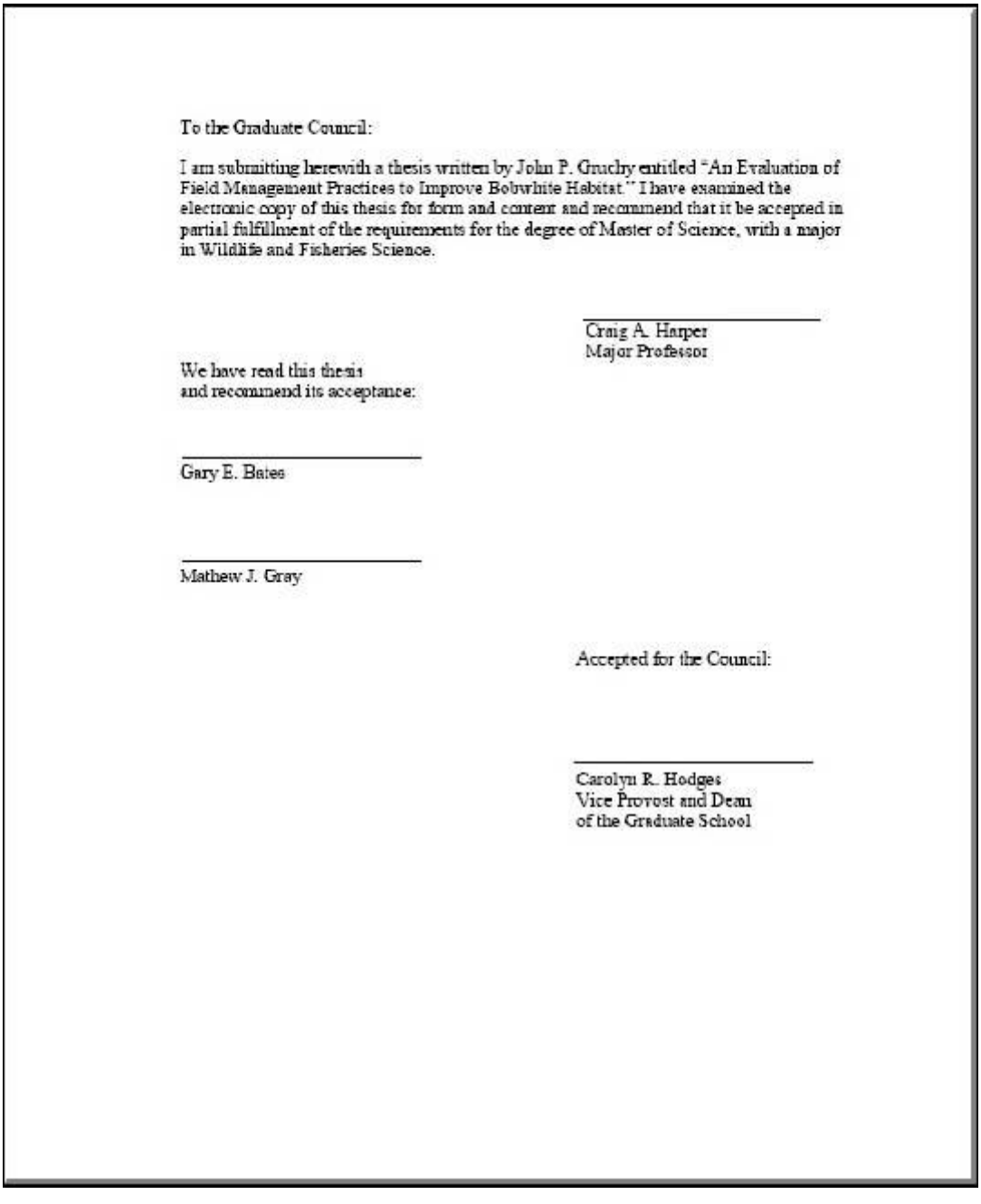
Please note:

The following figures represent a range of different documents submitted to the University of Tennessee. As such, they may use different conventions (headings, font, etc.). They are not a template, but a series of examples. For a template, with consistent headings and styles, please see the thesis/dissertation consultant's website (http://web.utk.edu/~thesis).

In addition, please note that the black boxes that surround many examples are meant to represent the pages. Do not put such boxes on your own page.

Table A-1: Arrangement of Thesis/Dissertation Parts

Thesis/Dissertation Parts	Page Assignment
ETD approval sheet (see example at http://web.utk.edu/~thesis/appsheet_etd.pdf)	No page number assigned (Not numbered or counted in page numbering sequence)
Title Page	Small Roman numeral assigned, not typed
Copyright Page (optional)	Small Roman numerals, beginning with 'ii' (visible on page)
Dedication (optional)	
Acknowledgement(s) (optional)	
Abstract	
Preface (optional)	
Table of Contents, with page references	
List of Tables, with titles and page references (if applicable)	
List of Figures, with titles and page references (if applicable)	
List of Abbreviations (if applicable)	
List of Symbols (if applicable)	
Chapters or major divisions, including: a) Introduction, if any b) Main body (with the larger divisions and more important minor divisions indicated by suitable, consistent headings)	Arabic numerals beginning with '1' (visible on page)
Bibliography/References including separation page	
Appendices (if applicable), including separation page	
Vita	



To the Graduate Council:

I am submitting herewith a thesis written by John P. Gruchy entitled "An Evaluation of Field Management Practices to Improve Bobwhite Habitat." I have examined the electronic copy of this thesis for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Master of Science, with a major in Wildlife and Fisheries Science.

Craig A. Harper
Major Professor

We have read this thesis
and recommend its acceptance:

Gary E. Bates

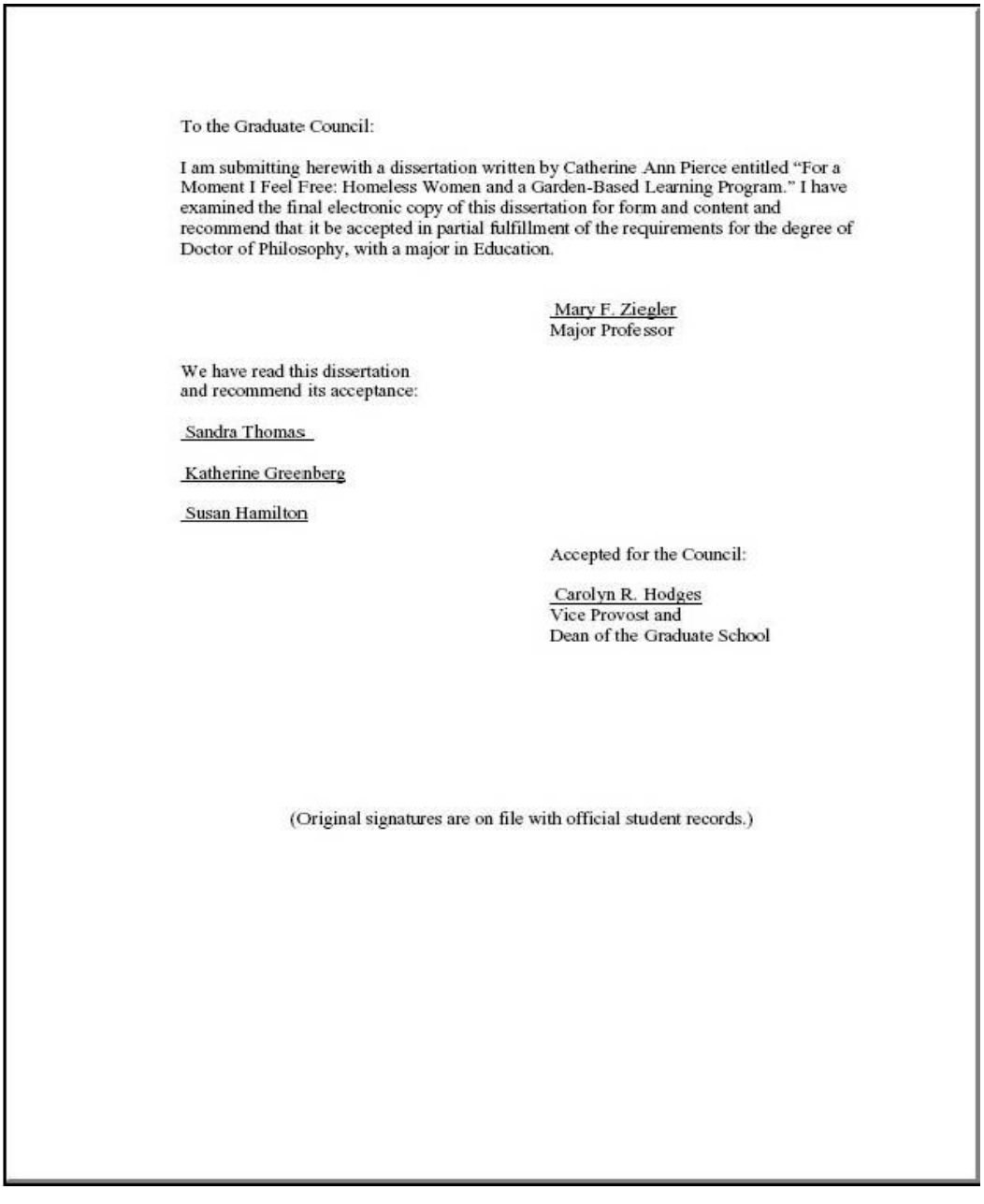
Mathew J. Gray

Accepted for the Council:

Carolyn R. Hodges
Vice Provost and Dean
of the Graduate School

Figure A-1. Sample Approval Sheet Format for Signature

Source: John P. Gruchy, "An Evaluation of Field Management Practices to Improve Bobwhite Habitat." Master's Thesis in Wildlife and Fisheries Science, The University of Tennessee, August 2007.



To the Graduate Council:

I am submitting herewith a dissertation written by Catherine Ann Pierce entitled "For a Moment I Feel Free: Homeless Women and a Garden-Based Learning Program." I have examined the final electronic copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Education.

Mary F. Ziegler
Major Professor

We have read this dissertation
and recommend its acceptance:

Sandra Thomas

Katherine Greenberg

Susan Hamilton

Accepted for the Council:

Carolyn R. Hodges
Vice Provost and
Dean of the Graduate School

(Original signatures are on file with official student records.)

Figure A- 2. Sample Approval Sheet for Electronic Submission

Source: Catherine Ann Pierce, "For a Moment I Feel Free: Homeless Women and a Garden-Based Learning Program." Doctoral Dissertation in Education, The University of Tennessee, December 2007.

Figure A- 3. Sample Title Page

Source: Can Özen, "Thermodynamic Characterization of Aminoglycoside-3 -Phosphotransferase IIIa." Doctoral Dissertation in Life Sciences, The University of Tennessee, December 2007.

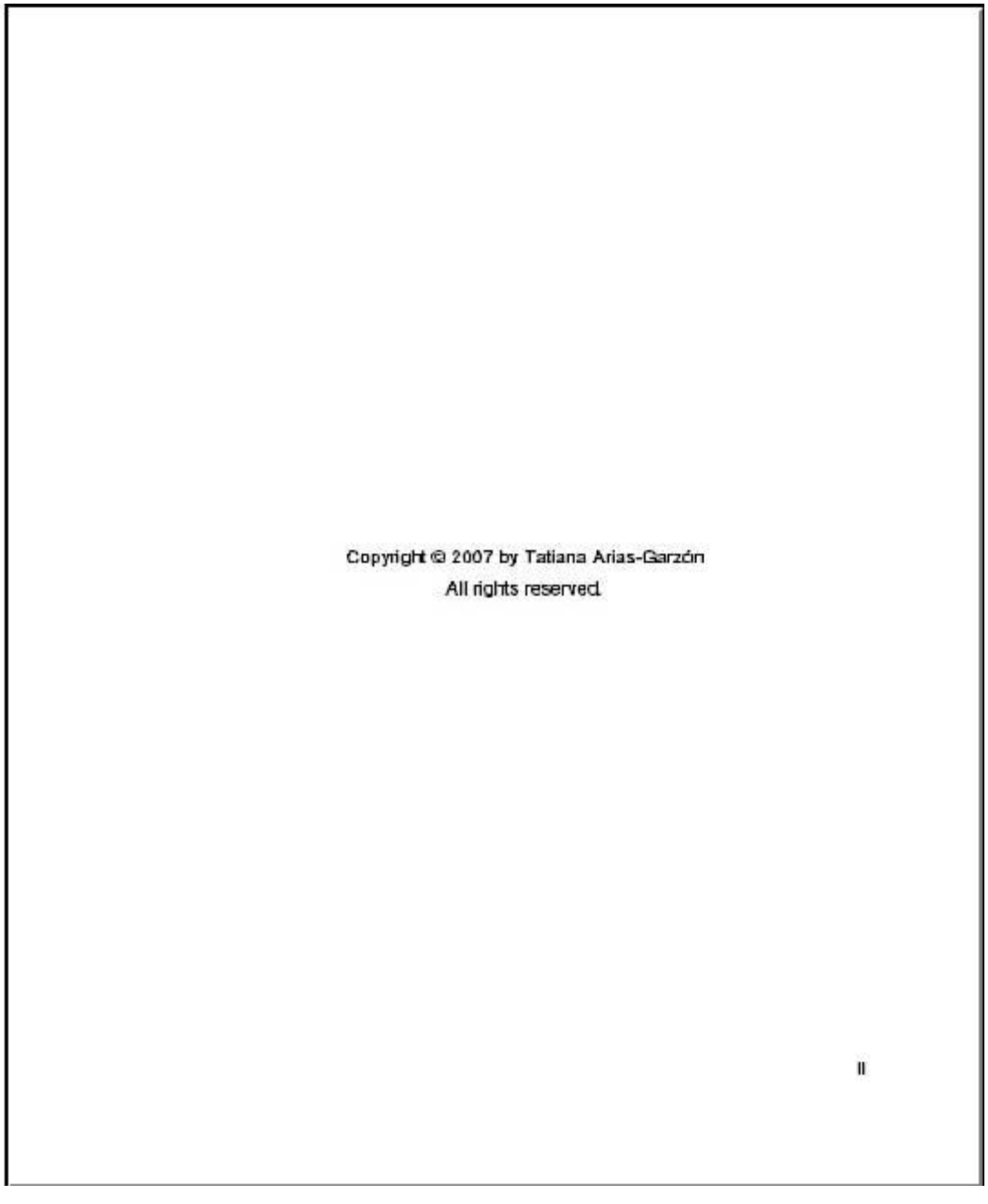
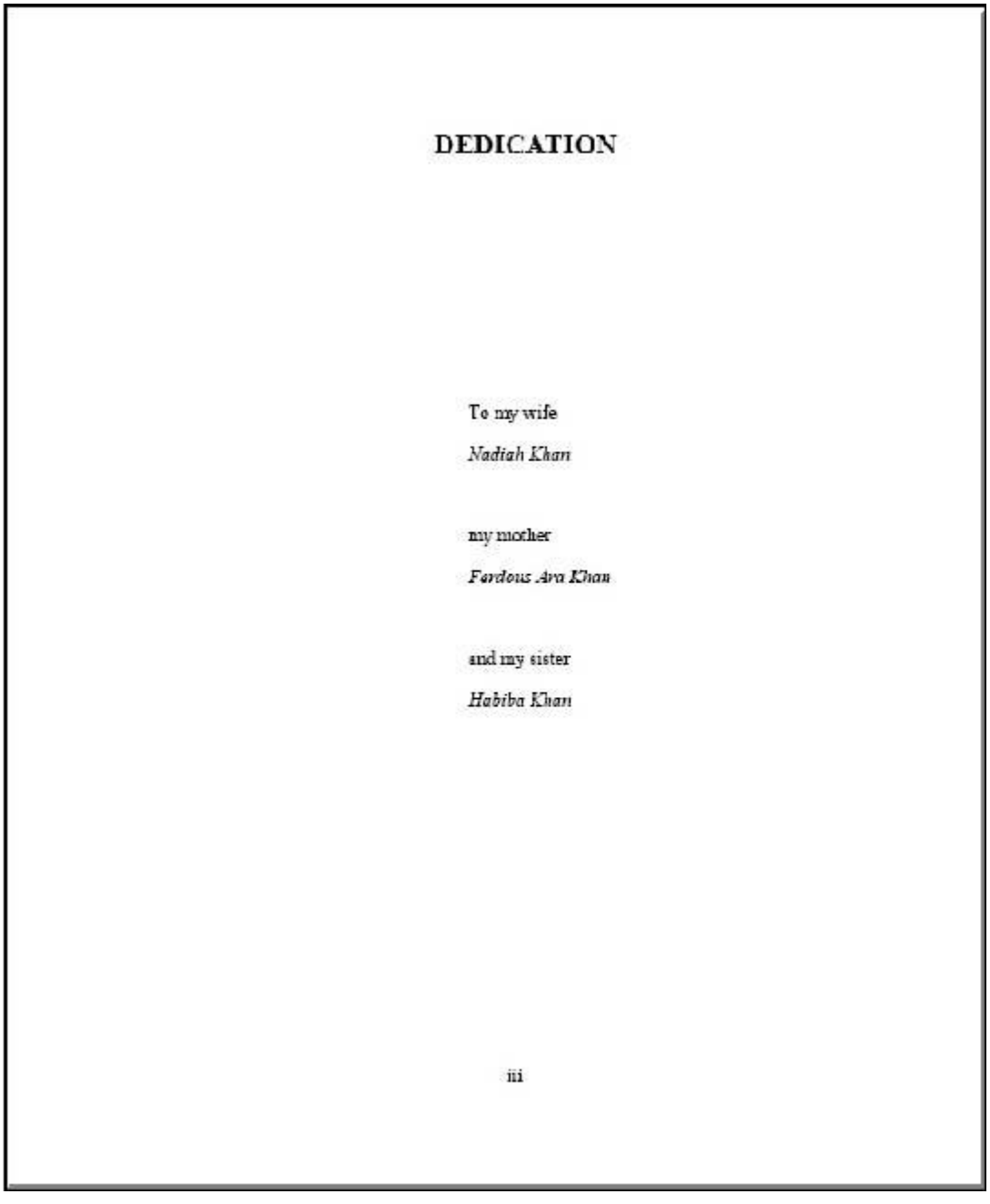


Figure A-4. Sample Copyright Page

Source: Tatiana Arias-Garzón, "Embryology of Manekia naranjoana (Piperaceae) and its implications for the origin of the sixteen-nucleate female gametophyte in Piperales." Master's Thesis in Ecology and Evolutionary Biology, The University of Tennessee, May 2007.



DEDICATION

To my wife

Nadiah Khan

my mother

Ferdous Ara Khan

and my sister

Habiba Khan

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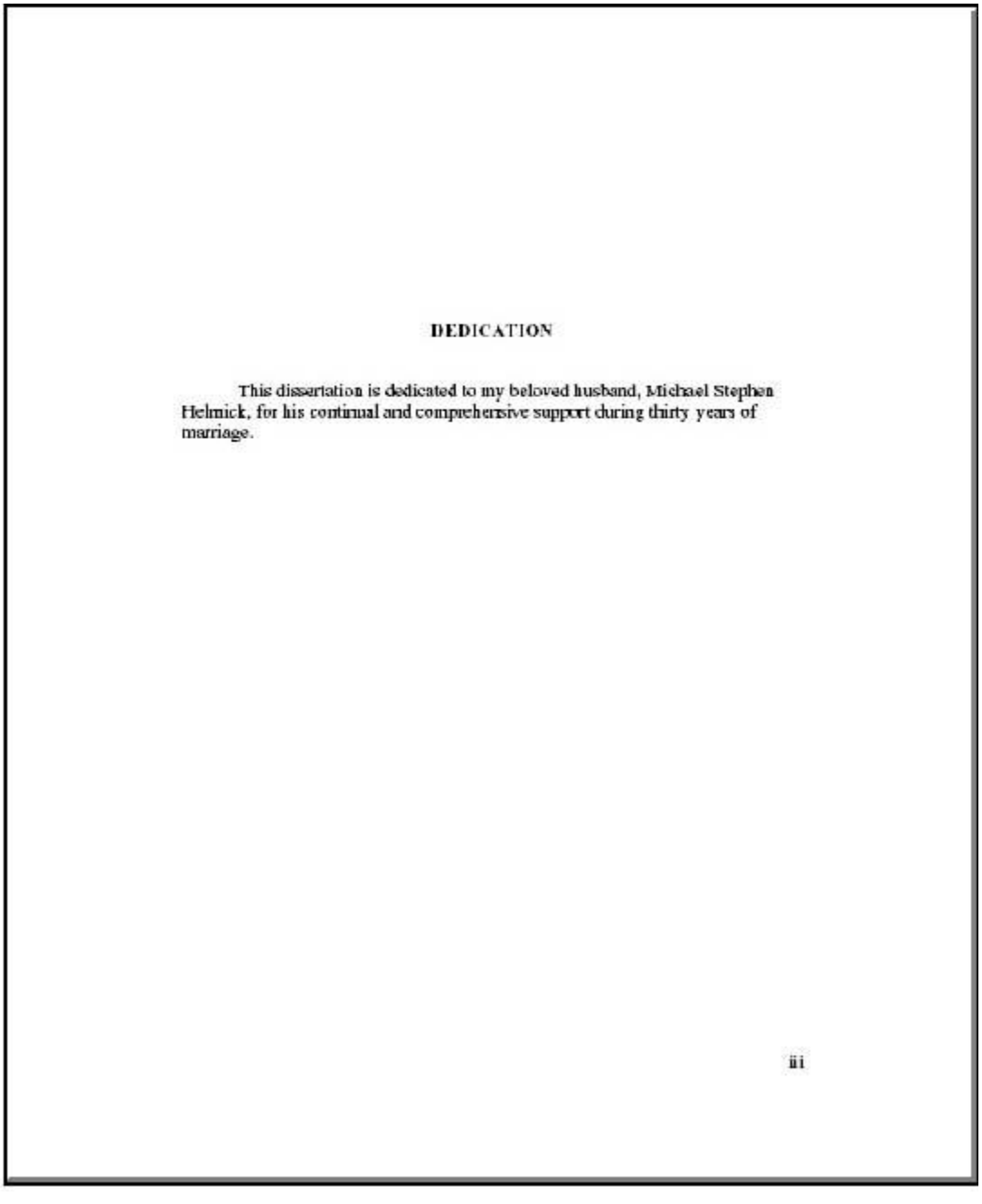
Figure A-5. Sample Dedication Page

Source: Faisal Khan, "Modular DC-DC Converters." Doctoral Dissertation in Electrical Engineering, The University of Tennessee, May 2007.



DEDICATION

This dissertation is dedicated to my beloved husband, Michael Stephen Helmick, for his continual and comprehensive support during thirty years of marriage.

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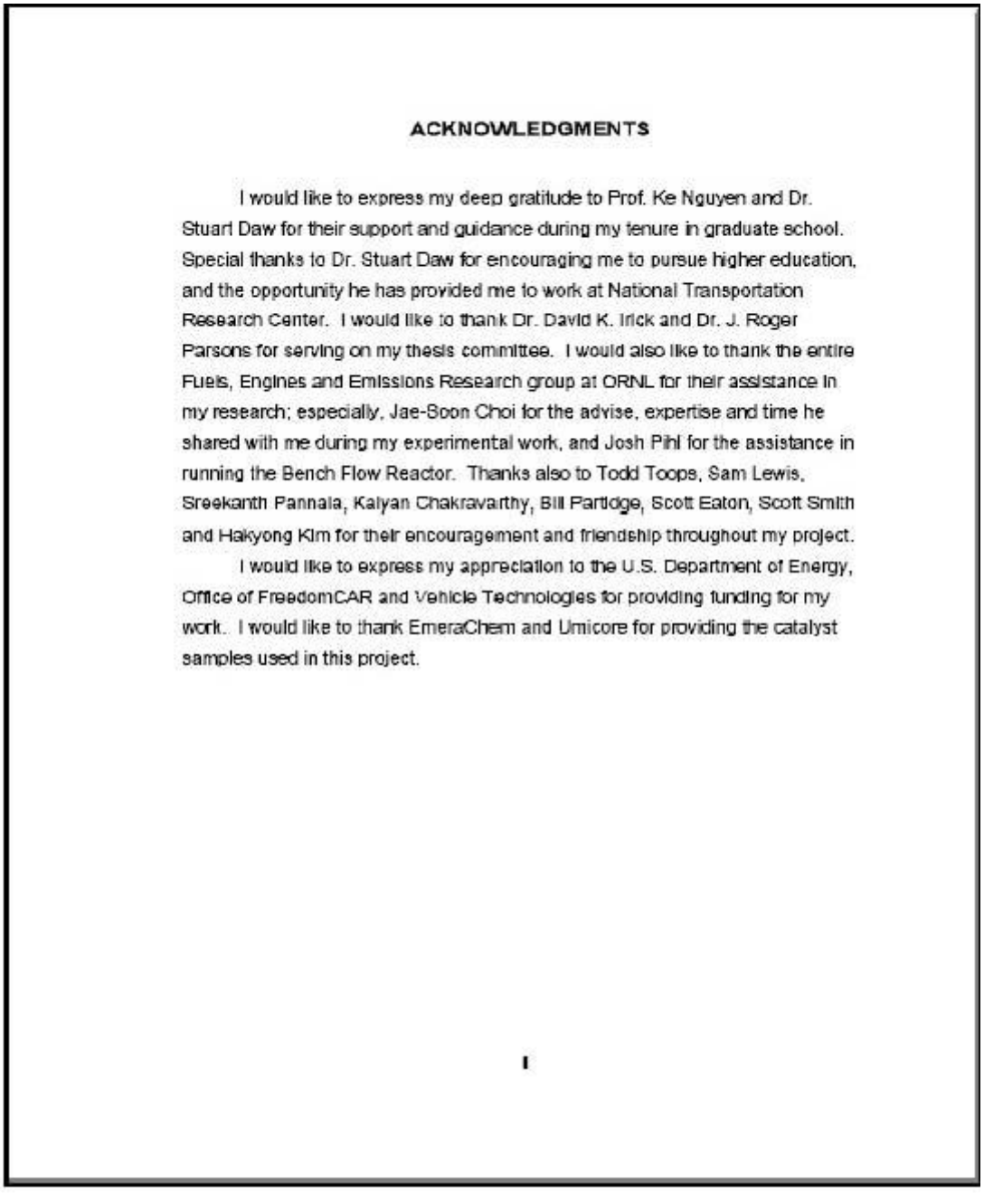
Figure A- 6. Sample Dedication Page

Source: Melinda Davis, "Social Foundations in Teacher Preparation Programs in the United States: Changes in Roles and Responsibilities from the 1970s to the present." Doctoral Dissertation in Education, The University of Tennessee, May 2008.



ACKNOWLEDGMENTS

I would like to express my deep gratitude to Prof. Ke Nguyen and Dr. Stuart Daw for their support and guidance during my tenure in graduate school. Special thanks to Dr. Stuart Daw for encouraging me to pursue higher education, and the opportunity he has provided me to work at National Transportation Research Center. I would like to thank Dr. David K. Irick and Dr. J. Roger Parsons for serving on my thesis committee. I would also like to thank the entire Fuels, Engines and Emissions Research group at ORNL for their assistance in my research; especially, Jae-Soon Choi for the advise, expertise and time he shared with me during my experimental work, and Josh Pihl for the assistance in running the Bench Flow Reactor. Thanks also to Todd Toops, Sam Lewis, Sreekanth Pannala, Kalyan Chakravarthy, Bill Partidge, Scott Eaton, Scott Smith and Hakyong Kim for their encouragement and friendship throughout my project.

I would like to express my appreciation to the U.S. Department of Energy, Office of FreedomCAR and Vehicle Technologies for providing funding for my work. I would like to thank EmeraChem and Umicore for providing the catalyst samples used in this project.

I

Figure A-7. Sample Acknowledgement Page

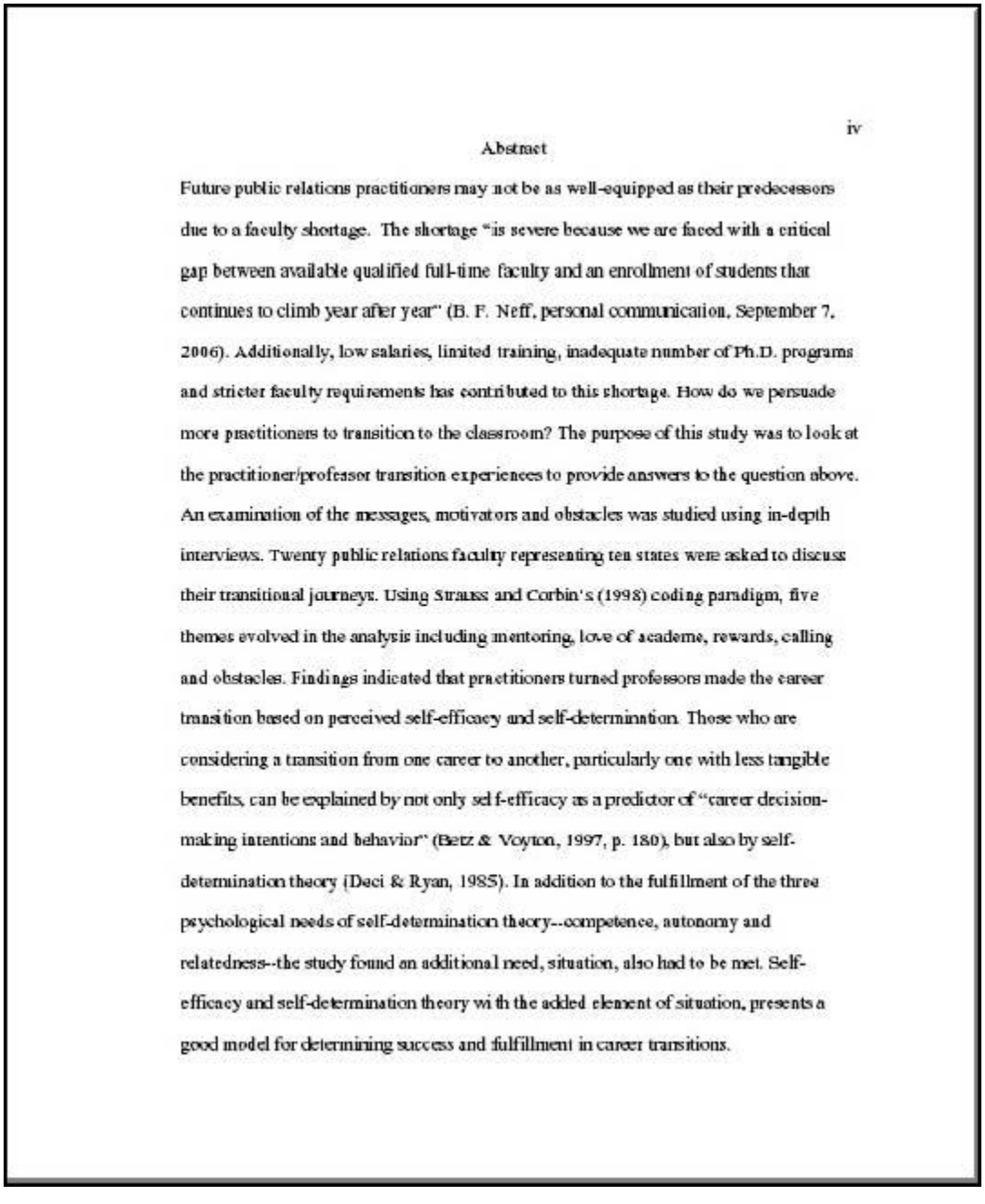
Source: Vitaly Prikhodko, "Effect of Length on the Performance of Lean NO_x Traps." Master's Thesis in Mechanical Engineering, The University of Tennessee, August 2007.

Abstract

In today's fast-paced society, the need to travel using automobiles is increasingly important. Aside from the road itself, the intersection is the most basic unit of a traffic system. As such, controlling the flow of traffic through intersections in an efficient manner has become a task of the utmost importance. The signal-scheduling algorithm described in this thesis is designed for just such a task. Concepts are drawn from the field of packet switching in computer networks and are applied to the traffic control problem. The method proposed utilizes a maximal weight matching algorithm to minimize the queue sizes at each approach to the intersection. The goal is to provide lower average vehicle delay as compared to a current state-of-the-art traffic signal control method. In particular, a focus is given to providing increased levels of service to high-priority vehicle classes (such as emergency vehicles or large trucks). Because the minimization of vehicle queues forms the basis of the algorithm, it is important to establish the conditions under which the system is guaranteed to be stable (i.e. the queue sizes are finite); to this end, Lyapunov function-based analysis is provided. Using a traffic simulation environment, the proposed control method is compared to control methods currently implemented in the field. The results of the simulations show that the performance gain obtained when using the proposed method can be substantial, particularly in the case where prioritization among multiple classes of vehicles is desired.

Figure A-8. Sample Abstract Page

Source: Richard James Wunderlich, "A Longest-Queue-First Signal Scheduling Algorithm with Quality of Service Provisioning for an Isolated Intersection." Master's Thesis in Electrical Engineering, The University of Tennessee, December 2007.



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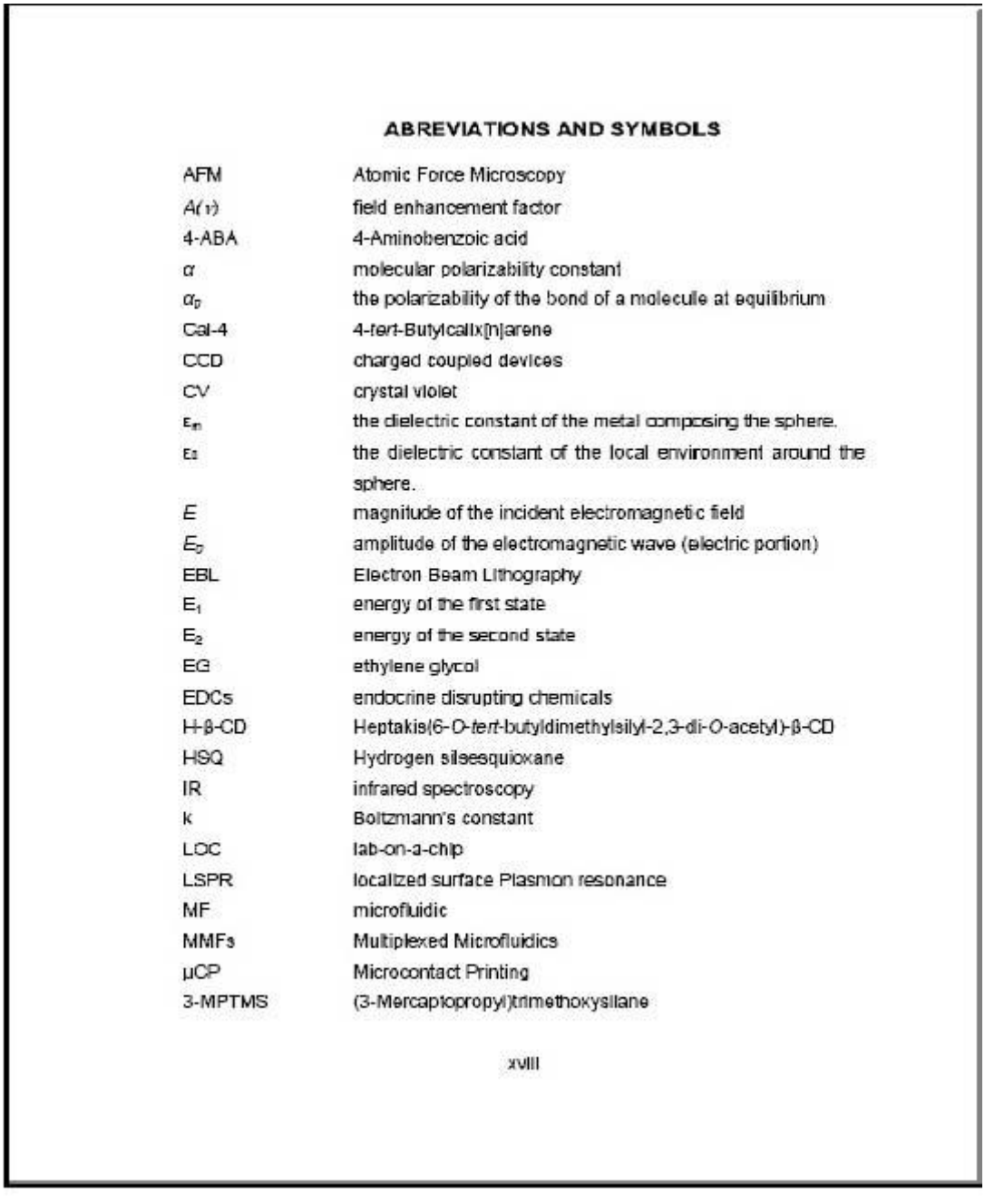
Abstract

Future public relations practitioners may not be as well-equipped as their predecessors due to a faculty shortage. The shortage "is severe because we are faced with a critical gap between available qualified full-time faculty and an enrollment of students that continues to climb year after year" (B. F. Neff, personal communication, September 7, 2006). Additionally, low salaries, limited training, inadequate number of Ph.D. programs and stricter faculty requirements has contributed to this shortage. How do we persuade more practitioners to transition to the classroom? The purpose of this study was to look at the practitioner/professor transition experiences to provide answers to the question above. An examination of the messages, motivators and obstacles was studied using in-depth interviews. Twenty public relations faculty representing ten states were asked to discuss their transitional journeys. Using Strauss and Corbin's (1998) coding paradigm, five themes evolved in the analysis including mentoring, love of academe, rewards, calling and obstacles. Findings indicated that practitioners turned professors made the career transition based on perceived self-efficacy and self-determination. Those who are considering a transition from one career to another, particularly one with less tangible benefits, can be explained by not only self-efficacy as a predictor of "career decision-making intentions and behavior" (Betz & Voyton, 1997, p. 180), but also by self-determination theory (Deci & Ryan, 1985). In addition to the fulfillment of the three psychological needs of self-determination theory--competence, autonomy and relatedness--the study found an additional need, situation, also had to be met. Self-efficacy and self-determination theory with the added element of situation, presents a good model for determining success and fulfillment in career transitions.

Figure A-9. Sample Abstract Page

Source: Patricia Silverman, "Persuasion Strategies, Motivational Factors and Obstacles: Influences in the Evolutional Transition from Public Relations Practitioner to Professor." Doctoral dissertation in Communication and Information, The University of Tennessee, May 2007.



ABREVIATIONS AND SYMBOLS

AFM	Atomic Force Microscopy
$A(\nu)$	field enhancement factor
4-ABA	4-Aminobenzoic acid
α	molecular polarizability constant
α_0	the polarizability of the bond of a molecule at equilibrium
Cal-4	4-*tert*-Butylcalix[n]arene
CCD	charged coupled devices
CV	crystal violet
ε_m	the dielectric constant of the metal composing the sphere.
ε_s	the dielectric constant of the local environment around the sphere.
E	magnitude of the incident electromagnetic field
E_0	amplitude of the electromagnetic wave (electric portion)
EBL	Electron Beam Lithography
E_1	energy of the first state
E_2	energy of the second state
EG	ethylene glycol
EDCs	endocrine disrupting chemicals
H-β-CD	Heptakis(6-*O*-*tert*-butyldimethylsilyl-2,3-di-*O*-acetyl)-β-CD
HSQ	Hydrogen silsesquioxane
IR	infrared spectroscopy
k	Boltzmann's constant
LOC	lab-on-a-chip
LSPR	localized surface Plasmon resonance
MF	microfluidic
MMFs	Multiplexed Microfluidics
μCP	Microcontact Printing
3-MPTMS	(3-Mercaptopropyl)trimethoxysilane

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Figure A-10. Sample Nomenclature Page

Source: Nahla Ahmad Abu-Hatab, "Novel Approaches to Prepare and Utilize SERS Substrates: Multiplex Microfluidics and Nanotransfer Printing." Doctoral Dissertation in Chemistry, The University of Tennessee, May 2008.

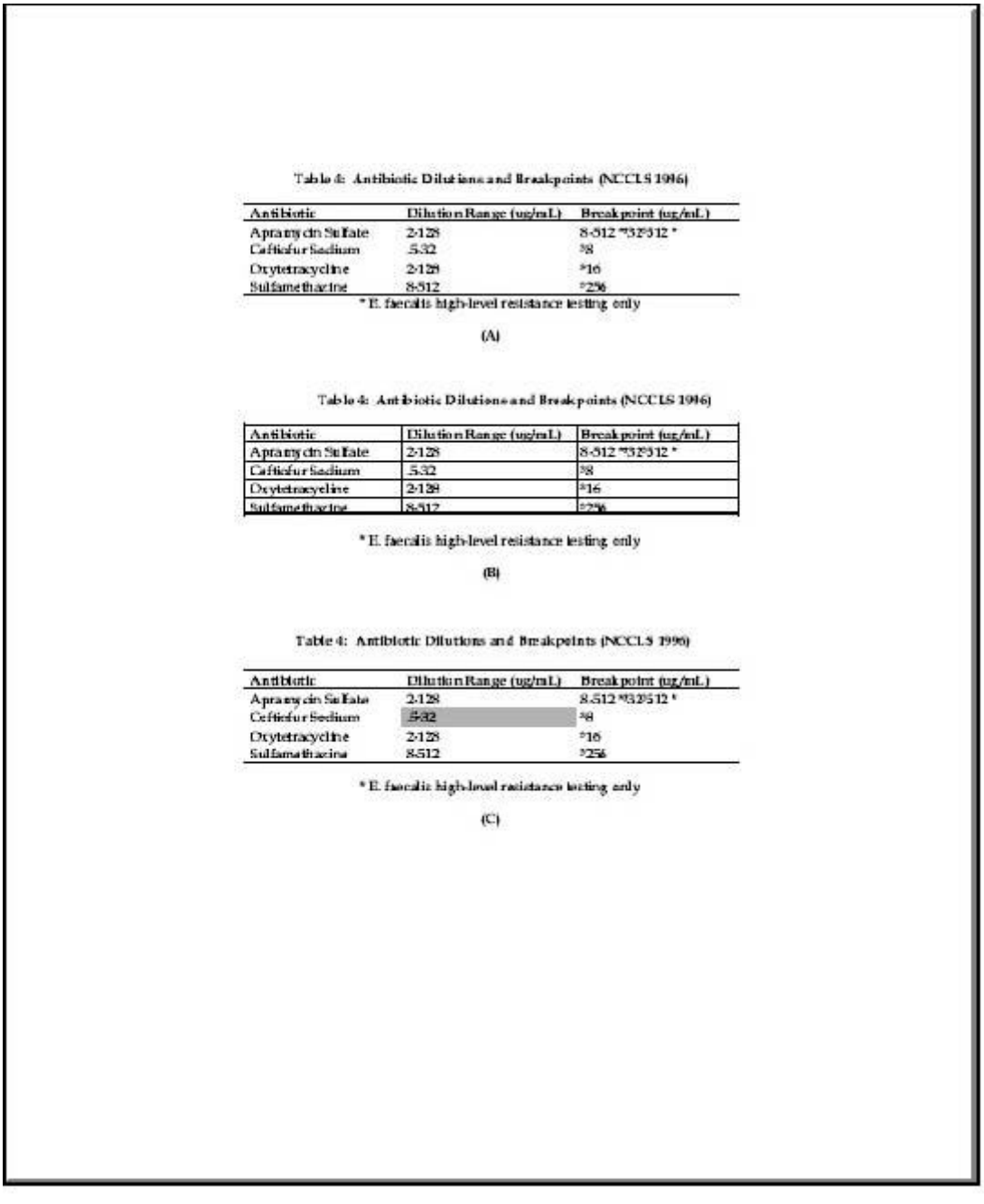

Table 4: Antibiotic Dilutions and Breakpoints (NCCLS 1996)

Antibiotic	Dilution Range (ug/mL)	Breakpoint (ug/mL)
Apramycin Sulfate	2-128	8-512 *32-512 *
Ceftiofur Sodium	.5-32	≥8
Oxytetracycline	2-128	≥16
Sulfamethazine	8-512	≥256

* E. faecalis high-level resistance testing only

(A)

Table 4: Antibiotic Dilutions and Breakpoints (NCCLS 1996)

Antibiotic	Dilution Range (ug/mL)	Breakpoint (ug/mL)
Apramycin Sulfate	2-128	8-512 *32-512 *
Ceftiofur Sodium	.5-32	≥8
Oxytetracycline	2-128	≥16
Sulfamethazine	8-512	≥256

* E. faecalis high-level resistance testing only

(B)

Table 4: Antibiotic Dilutions and Breakpoints (NCCLS 1996)

Antibiotic	Dilution Range (ug/mL)	Breakpoint (ug/mL)
Apramycin Sulfate	2-128	8-512 *32-512 *
Ceftiofur Sodium	.5-32	≥8
Oxytetracycline	2-128	≥16
Sulfamethazine	8-512	≥256

* E. faecalis high-level resistance testing only

(C)

Figure A-11. Sample Table Formats. (A) table formatted with three lines, (B) table formatted with full grid, (C) table with cell highlighted.

Source: (adapted from) Patricia Cullen, "Effects of Management and Environmental Conditions on Antibiotic Resistance in Bacteria Associated with Swine." Master's Thesis in Animal Science, The University of Tennessee, August 2001.

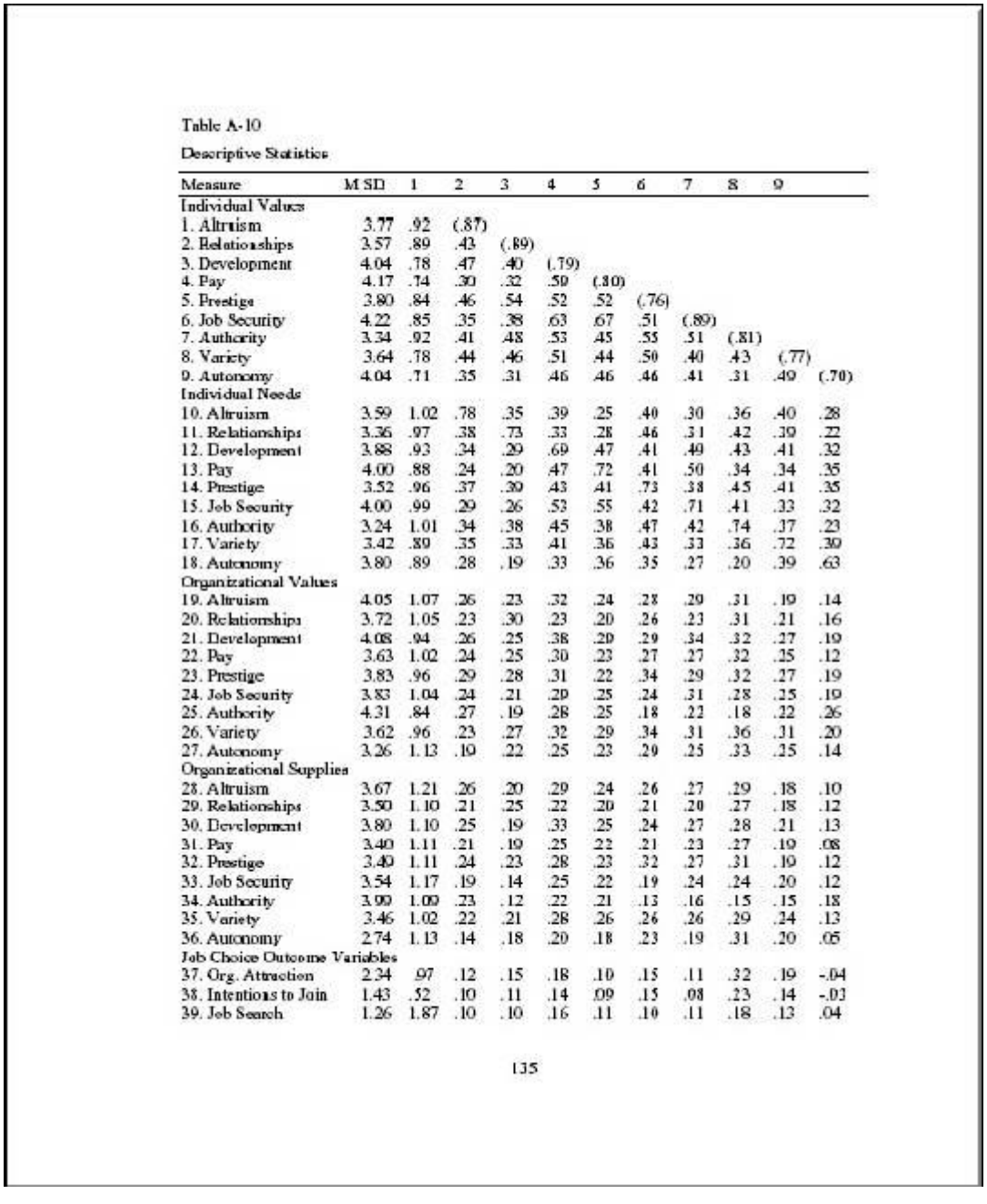

Table A-10

Descriptive Statistics

Measure	M	SD	1	2	3	4	5	6	7	8	9	
Individual Values												
1. Altruism	3.77	.92	(.87)									
2. Relationships	3.57	.89	.43	(.89)								
3. Development	4.04	.78	.47	.40	(.79)							
4. Pay	4.17	.74	.30	.32	.59	(.80)						
5. Prestige	3.80	.84	.46	.54	.52	.52	(.76)					
6. Job Security	4.22	.85	.35	.38	.63	.67	.51	(.89)				
7. Authority	3.34	.92	.41	.48	.53	.45	.55	.51	(.81)			
8. Variety	3.64	.78	.44	.46	.51	.44	.50	.40	.43	(.77)		
9. Autonomy	4.04	.71	.35	.31	.46	.46	.46	.41	.31	.49	(.70)	
Individual Needs												
10. Altruism	3.59	1.02	.78	.35	.39	.25	.40	.30	.36	.40	.28	
11. Relationships	3.36	.97	.38	.73	.33	.28	.46	.31	.42	.39	.22	
12. Development	3.88	.93	.34	.29	.69	.47	.41	.49	.43	.41	.32	
13. Pay	4.00	.88	.24	.20	.47	.72	.41	.50	.34	.34	.35	
14. Prestige	3.52	.96	.37	.39	.43	.41	.73	.38	.45	.41	.35	
15. Job Security	4.00	.99	.29	.26	.53	.55	.42	.71	.41	.33	.32	
16. Authority	3.24	1.01	.34	.38	.45	.38	.47	.42	.74	.37	.23	
17. Variety	3.42	.89	.35	.33	.41	.36	.43	.33	.36	.72	.39	
18. Autonomy	3.80	.89	.28	.19	.33	.36	.35	.27	.20	.39	.63	
Organizational Values												
19. Altruism	4.05	1.07	.26	.23	.32	.24	.28	.29	.31	.19	.14	
20. Relationships	3.72	1.05	.23	.30	.23	.20	.26	.23	.31	.21	.16	
21. Development	4.08	.94	.26	.25	.38	.29	.29	.34	.32	.27	.19	
22. Pay	3.63	1.02	.24	.25	.30	.23	.27	.27	.32	.25	.12	
23. Prestige	3.83	.96	.29	.28	.31	.22	.34	.29	.32	.27	.19	
24. Job Security	3.83	1.04	.24	.21	.29	.25	.24	.31	.28	.25	.19	
25. Authority	4.31	.84	.27	.19	.28	.25	.18	.22	.18	.22	.26	
26. Variety	3.62	.96	.23	.27	.32	.29	.34	.31	.36	.31	.20	
27. Autonomy	3.26	1.13	.19	.22	.25	.23	.29	.25	.33	.25	.14	
Organizational Supplies												
28. Altruism	3.67	1.21	.26	.20	.29	.24	.26	.27	.29	.18	.10	
29. Relationships	3.50	1.10	.21	.25	.22	.20	.21	.20	.27	.18	.12	
30. Development	3.80	1.10	.25	.19	.33	.25	.24	.27	.28	.21	.13	
31. Pay	3.40	1.11	.21	.19	.25	.22	.21	.23	.27	.19	.08	
32. Prestige	3.40	1.11	.24	.23	.28	.23	.32	.27	.31	.19	.12	
33. Job Security	3.54	1.17	.19	.14	.25	.22	.19	.24	.24	.20	.12	
34. Authority	3.99	1.09	.23	.12	.22	.21	.13	.16	.15	.15	.18	
35. Variety	3.46	1.02	.22	.21	.28	.26	.26	.26	.29	.24	.13	
36. Autonomy	2.74	1.13	.14	.18	.20	.18	.23	.19	.31	.20	.05	
Job Choice Outcome Variables												
37. Org. Attraction	2.34	.97	.12	.15	.18	.10	.15	.11	.32	.19	-.04	
38. Intentions to Join	1.43	.52	.10	.11	.14	.09	.15	.08	.23	.14	-.03	
39. Job Search	1.26	1.87	.10	.10	.16	.11	.10	.11	.18	.13	.04	

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Figure A-12. Sample Continued Table Format

Source: Shawn Bergman, "Person-Organization Fit Perceptions and the Job Choice Process: The Impact of Supplementary and Complementary Fit on Attitudes, Intentions, and Job Search Behaviors." Doctoral Dissertation in Industrial and Organizational Psychology, The University of Tennessee, May 2008.

Table A-10 (continued)

Measure	10	11	12	13	14	15	16	17	18	19	20
Individual Values											
1. Altruism											
2. Relationships											
3. Development											
4. Pay											
5. Prestige											
6. Job Security											
7. Authority											
8. Variety											
9. Autonomy											
Individual Needs											
10. Altruism	(.92)										
11. Relationships	.50	(.93)									
12. Development	.48	.45	(.89)								
13. Pay	.38	.38	.67	(.86)							
14. Prestige	.53	.59	.55	.57	(.85)						
15. Job Security	.43	.44	.69	.74	.56	(.94)					
16. Authority	.48	.55	.58	.50	.61	.55	(.88)				
17. Variety	.52	.52	.57	.52	.60	.50	.52	(.86)			
18. Autonomy	.40	.16	.48	.53	.51	.47	.33	.59	(.86)		
Organizational Values											
19. Altruism	.25	.23	.31	.23	.27	.20	.32	.18	.11	(.92)	
20. Relationships	.22	.32	.24	.17	.25	.22	.32	.19	.13	.60	(.93)
21. Development	.28	.27	.40	.28	.29	.33	.35	.27	.18	.72	.62
22. Pay	.25	.16	.30	.21	.26	.26	.35	.24	.09	.62	.58
23. Prestige	.20	.20	.30	.20	.35	.28	.34	.27	.17	.66	.62
24. Job Security	.23	.23	.29	.24	.24	.31	.31	.24	.14	.60	.59
25. Authority	.24	.20	.29	.24	.17	.23	.19	.18	.23	.50	.51
26. Variety	.23	.27	.32	.24	.30	.29	.38	.32	.16	.61	.63
27. Autonomy	.19	.23	.24	.20	.29	.23	.35	.25	.11	.47	.47
Organizational Supplies											
28. Altruism	.33	.27	.36	.29	.31	.33	.35	.24	.15	.72	.46
29. Relationships	.28	.36	.30	.23	.29	.25	.33	.24	.19	.46	.60
30. Development	.31	.29	.43	.32	.30	.34	.36	.28	.20	.53	.44
31. Pay	.29	.27	.34	.27	.28	.29	.35	.27	.15	.51	.41
32. Prestige	.31	.31	.37	.29	.38	.33	.38	.28	.19	.58	.47
33. Job Security	.26	.23	.32	.28	.26	.32	.31	.27	.18	.44	.40
34. Authority	.27	.20	.30	.27	.19	.23	.20	.20	.27	.34	.30
35. Variety	.28	.29	.36	.31	.32	.32	.37	.34	.21	.49	.44
36. Autonomy	.21	.24	.25	.19	.30	.23	.41	.29	.12	.39	.38
Job Choice Outcome Variables											
37. Org. Attraction .18	.23	.23	.12	.19	.12	.37	.22	-.03	.26	.20	
38. Intentions to Join	.14	.15	.16	.09	.15	.09	.26	.16	.01	.21	.13
39. Job Search	.12	.11	.14	.08	.08	.11	.17	.14	.02	.15	.14

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Figure A-12, continued.

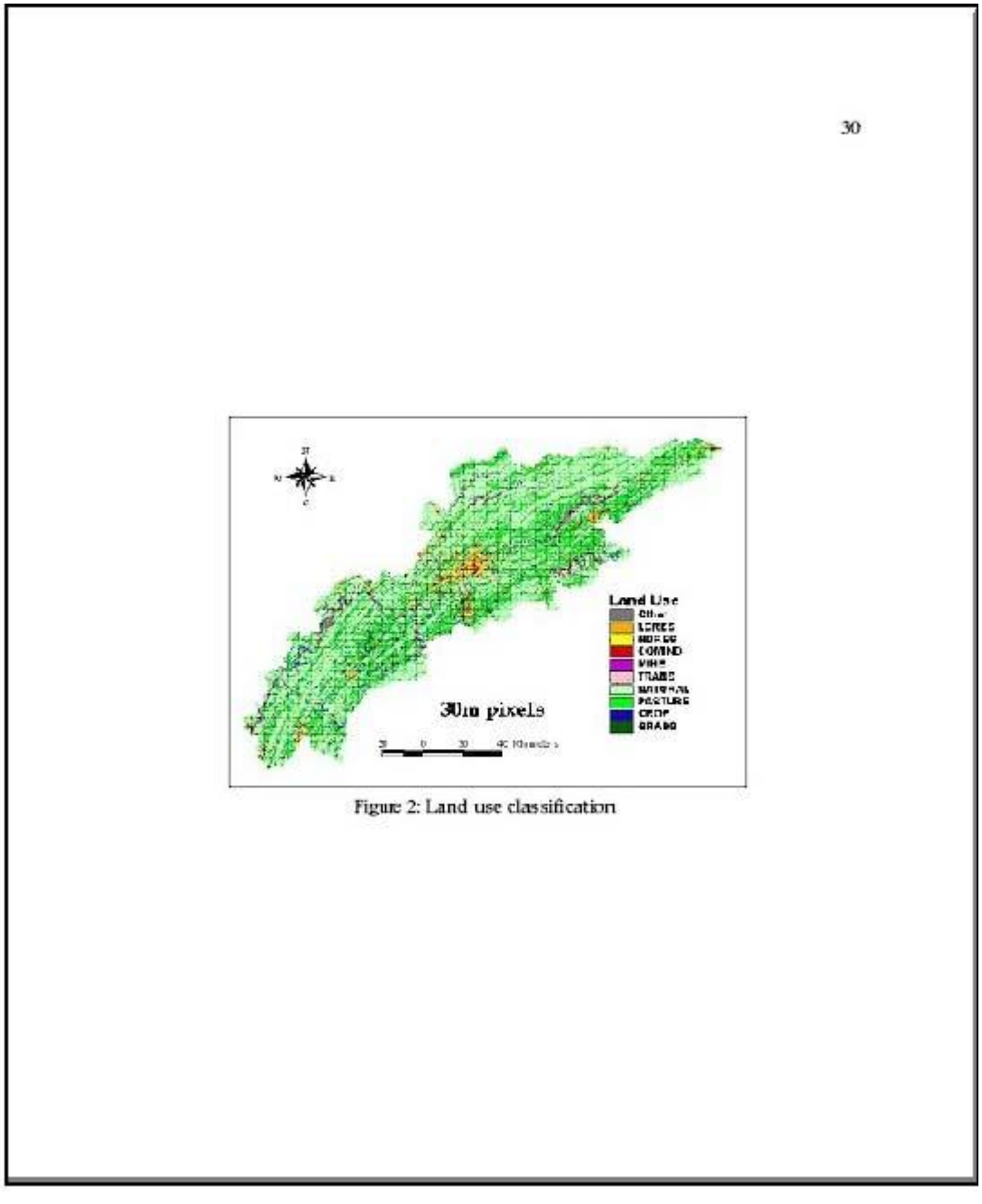

Figure 2: Land use classification

Figure A-13. Sample Figure Format

Source: Karen Burhenn, "Anthropogenic impacts on riparian forest loss in east Tennessee: a GIS analysis." Master's Thesis in Ecology and Evolutionary Biology, The University of Tennessee, August 2001.

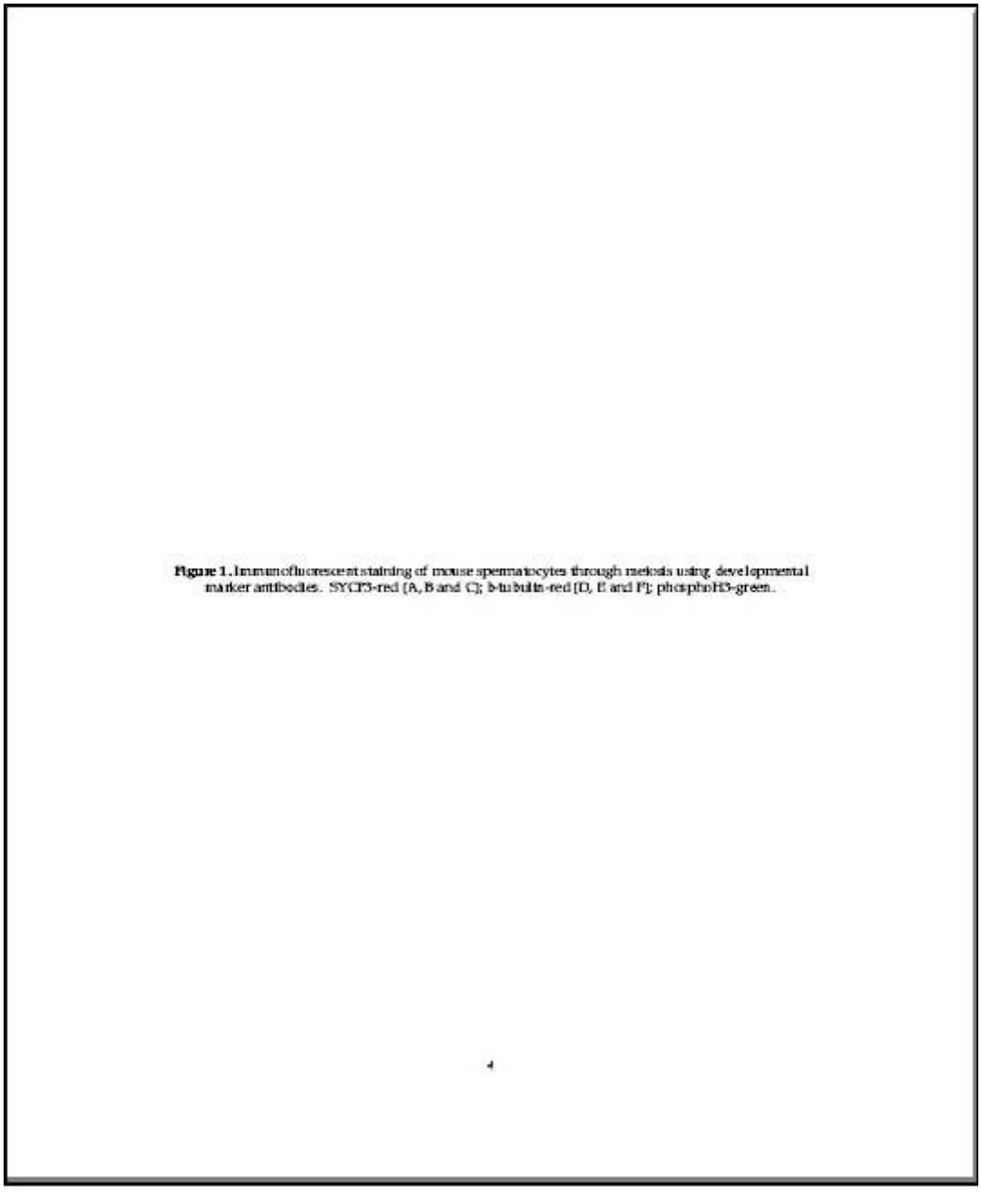

Figure A- 14. Sample Figure with Separate Legend Page

Source: Shannon Eaker, "Analysis of Events Governing the Meiotic Division in Mouse Spermatocytes." Doctoral Dissertation in Biochemistry, Cellular and Molecular Biology, The University of Tennessee, August 2001.

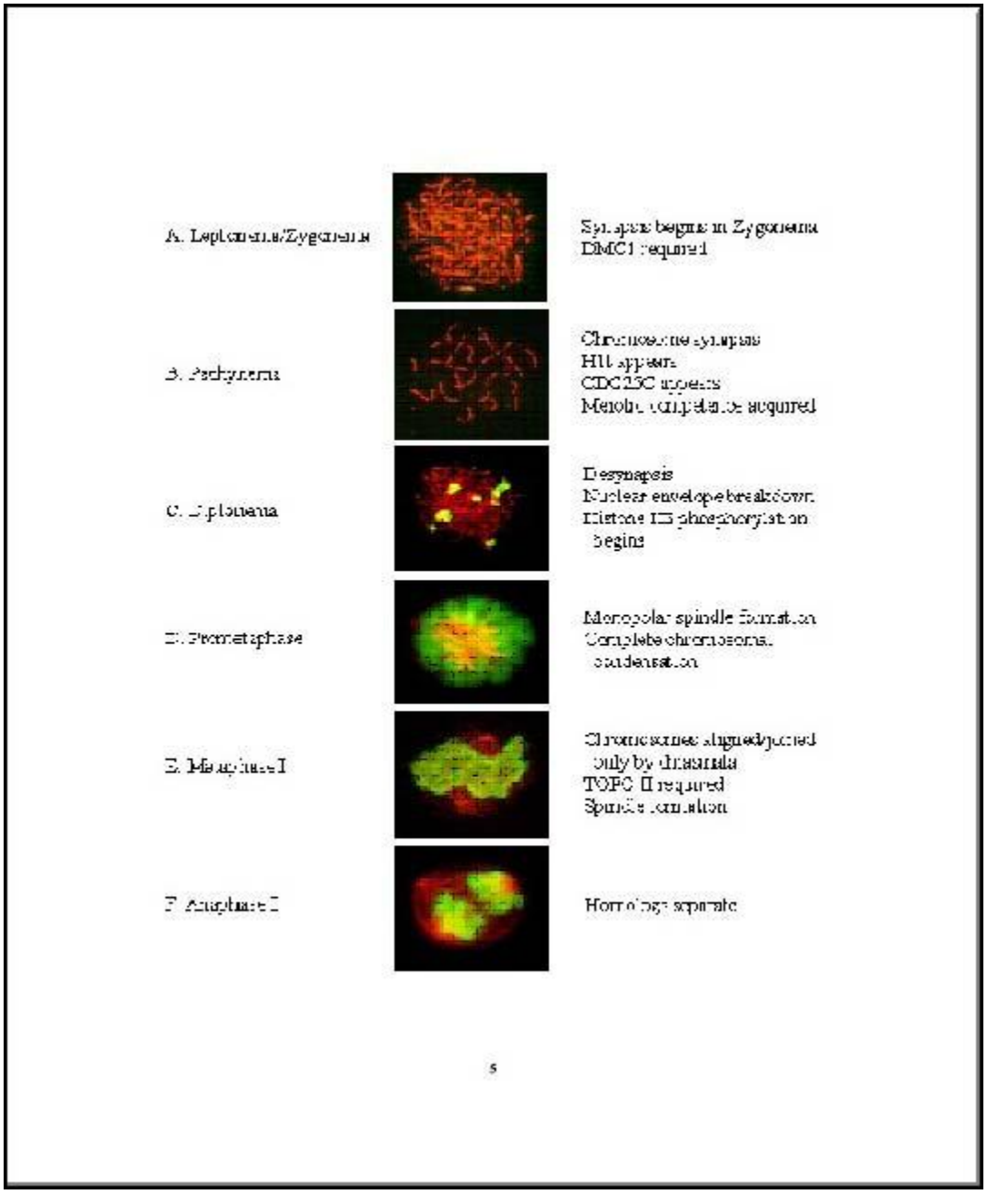

Figure A-14, Cont. Sample Figure with Separate Legend Page.

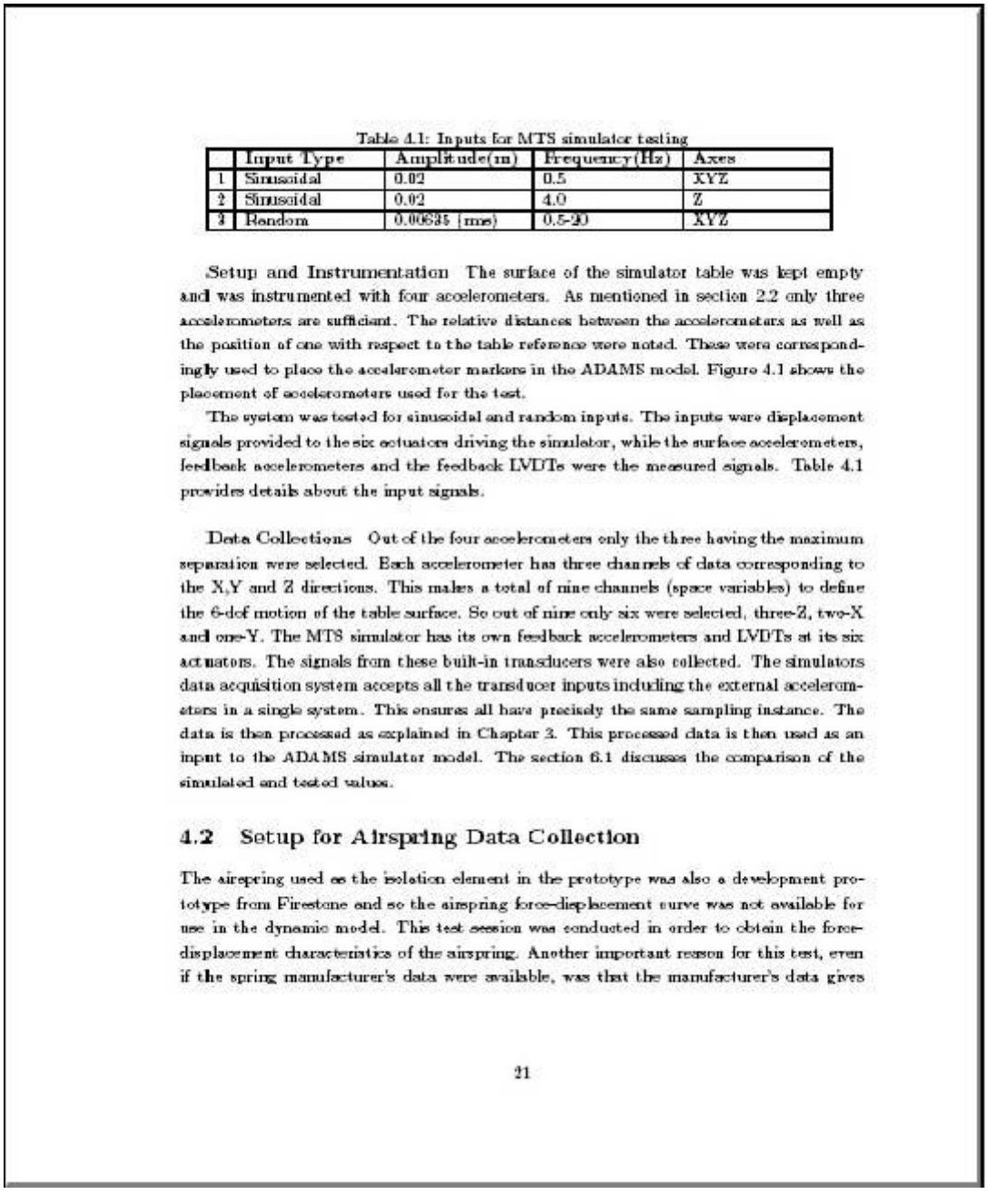

Table 4.1: Inputs for MTS simulator testing

	Input Type	Amplitude(m)	Frequency(Hz)	Axes
1	Sinusoidal	0.02	0.5	XYZ
2	Sinusoidal	0.02	4.0	Z
3	Random	0.00635 (rms)	0.5-20	XYZ

Setup and Instrumentation The surface of the simulator table was kept empty and was instrumented with four accelerometers. As mentioned in section 2.2 only three accelerometers are sufficient. The relative distances between the accelerometers as well as the position of one with respect to the table reference were noted. These were correspondingly used to place the accelerometer markers in the ADAMS model. Figure 4.1 shows the placement of accelerometers used for the test.

The system was tested for sinusoidal and random inputs. The inputs were displacement signals provided to the six actuators driving the simulator, while the surface accelerometers, feedback accelerometers and the feedback LVDTs were the measured signals. Table 4.1 provides details about the input signals.

Data Collections Out of the four accelerometers only the three having the maximum separation were selected. Each accelerometer has three channels of data corresponding to the X,Y and Z directions. This makes a total of nine channels (space variables) to define the 6-dof motion of the table surface. So out of nine only six were selected, three-Z, two-X and one-Y. The MTS simulator has its own feedback accelerometers and LVDTs at its six actuators. The signals from these built-in transducers were also collected. The simulators data acquisition system accepts all the transducer inputs including the external accelerometers in a single system. This ensures all have precisely the same sampling instance. The data is then processed as explained in Chapter 3. This processed data is then used as an input to the ADAMS simulator model. The section 6.1 discusses the comparison of the simulated and tested values.

4.2 Setup for Airspring Data Collection

The airspring used as the isolation element in the prototype was also a development prototype from Firestone and so the airspring force-displacement curve was not available for use in the dynamic model. This test session was conducted in order to obtain the force-displacement characteristics of the airspring. Another important reason for this test, even if the spring manufacturer's data were available, was that the manufacturer's data gives

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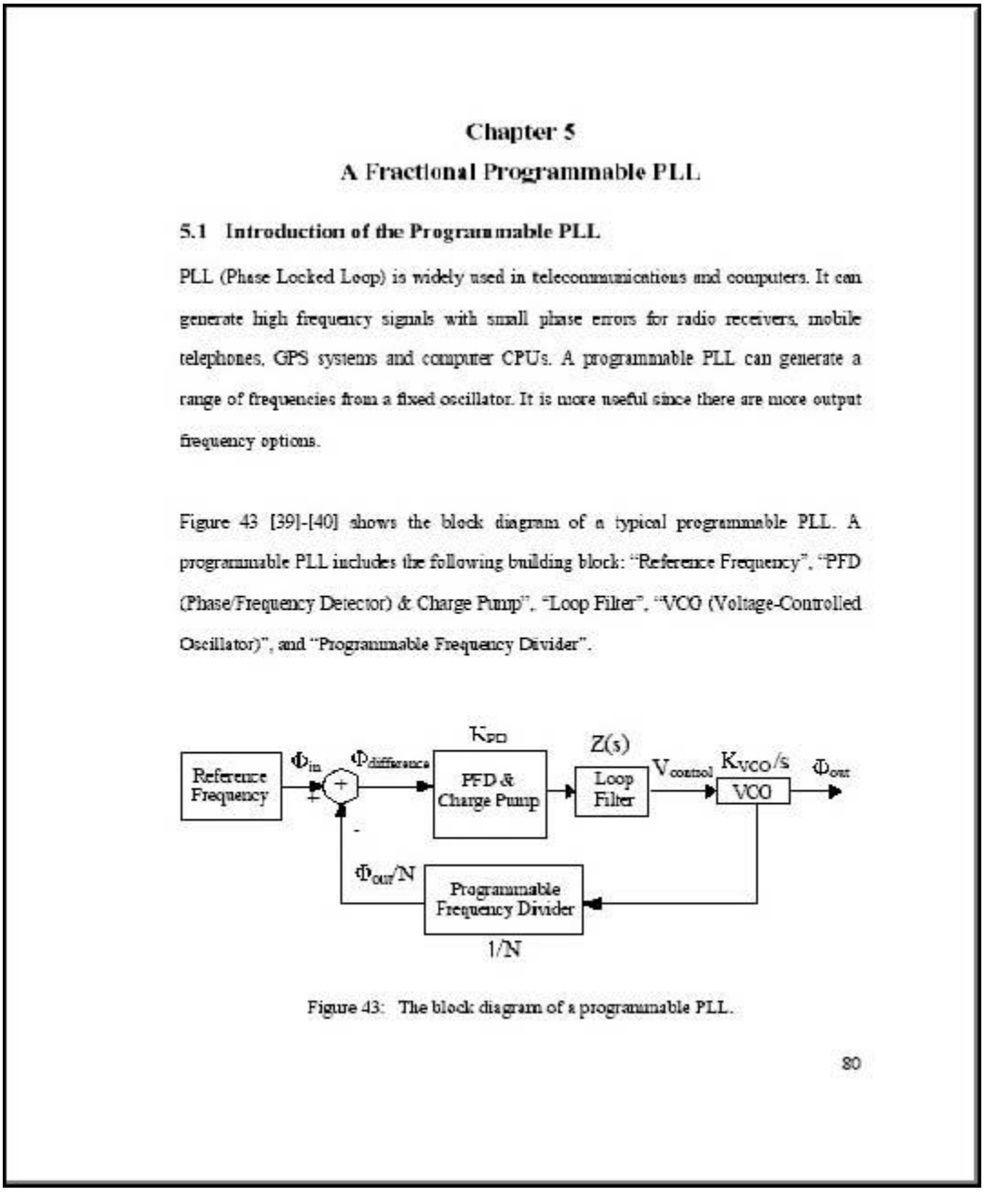
Figure A-15. Integration of Tables and Figures with Text: Sample Table Page

Source: Devdutt Nandkishore Shende, "Virtual Modeling and Verification of Air-Ride Truck Seat Using Multibody Dynamics for Whole Body Vibration Evaluation." Master's Thesis in Mechanical Engineering, The University of Tennessee, December 2007.



Chapter 5

A Fractional Programmable PLL

5.1 Introduction of the Programmable PLL

PLL (Phase Locked Loop) is widely used in telecommunications and computers. It can generate high frequency signals with small phase errors for radio receivers, mobile telephones, GPS systems and computer CPUs. A programmable PLL can generate a range of frequencies from a fixed oscillator. It is more useful since there are more output frequency options.

Figure 43 [39]-[40] shows the block diagram of a typical programmable PLL. A programmable PLL includes the following building block: "Reference Frequency", "PFD (Phase/Frequency Detector) & Charge Pump", "Loop Filter", "VCO (Voltage-Controlled Oscillator)", and "Programmable Frequency Divider".

Figure 43: The block diagram of a programmable PLL.

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Figure A-16. Integration Tables and Figures with Text: Sample Figure Page

Source: Mo Zhang, "A Programmable Frequency Divider Having a Wide Division Ratio Range, and Close-to-50% Output Duty-Cycle." Doctoral Dissertation in Electrical Engineering, The University of Tennessee, May 2007.

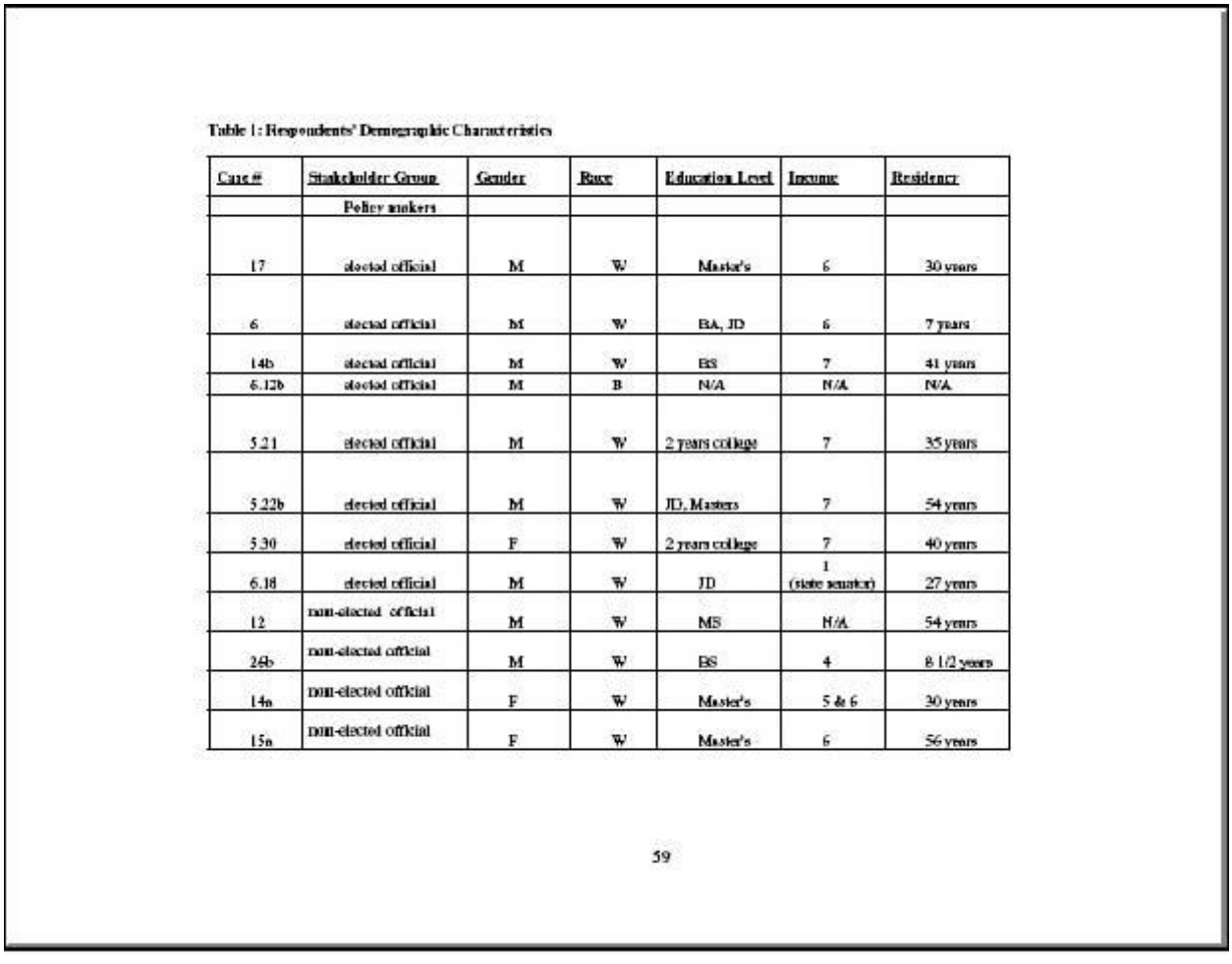

Table 1: Respondents' Demographic Characteristics

Case #	Stakeholder Group	Gender	Race	Education Level	Income	Residency
	Policy makers					
17	elected official	M	W	Master's	6	30 years
6	elected official	M	W	BA, JD	6	7 years
14b	elected official	M	W	BS	7	41 years
6.12b	elected official	M	B	N/A	N/A	N/A
5.21	elected official	M	W	2 years college	7	35 years
5.22b	elected official	M	W	JD, Masters	7	54 years
5.30	elected official	F	W	2 years college	7	40 years
6.18	elected official	M	W	JD	1 (state senator)	27 years
12	non-elected official	M	W	MS	N/A	54 years
26b	non-elected official	M	W	BS	4	8 1/2 years
14a	non-elected official	F	W	Master's	5 & 6	30 years
15a	non-elected official	F	W	Master's	6	56 years

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Figure A-17. Landscape Page: Sample Table

Source: Nancy D . Brannon, "Ground- water: A Community's Management of the Invaluable Resource Beneath its Feet." Doctoral Dissertation in Sociology, The University of Tennessee, December 2007.

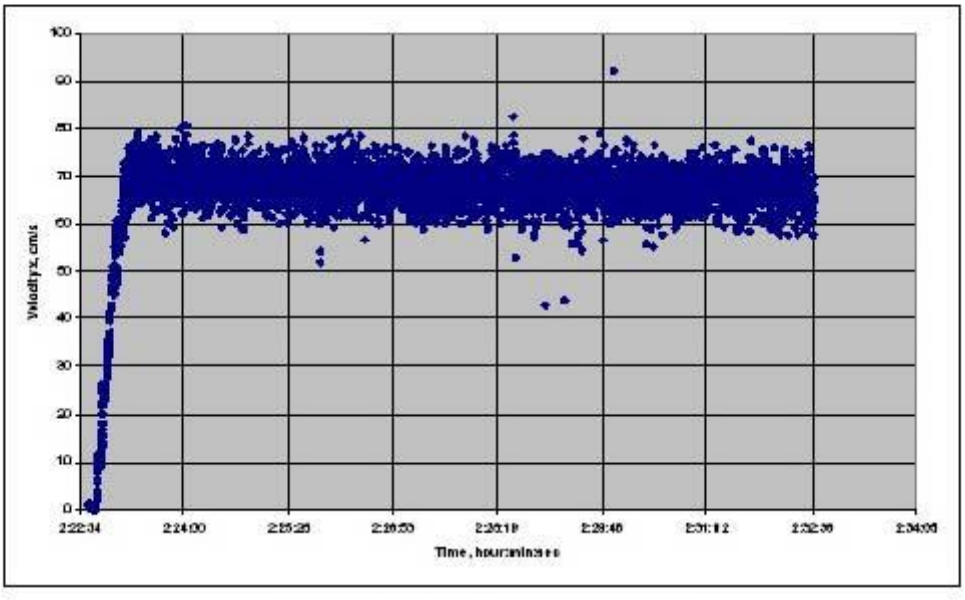

Figure 34. Equilibrium profile with rolling motor setting #3.

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Figure A-18. Landscaped Page Showing Figure

Source: Tara Mallison, "Comparing In Situ Submerged Jet Test Device and Laboratory Flume Methods to Estimate Erosional Properties of Cohesive Soils for Bank Stability Models." Master's Thesis in Environment Engineering, The University of Tennessee, May 2008.

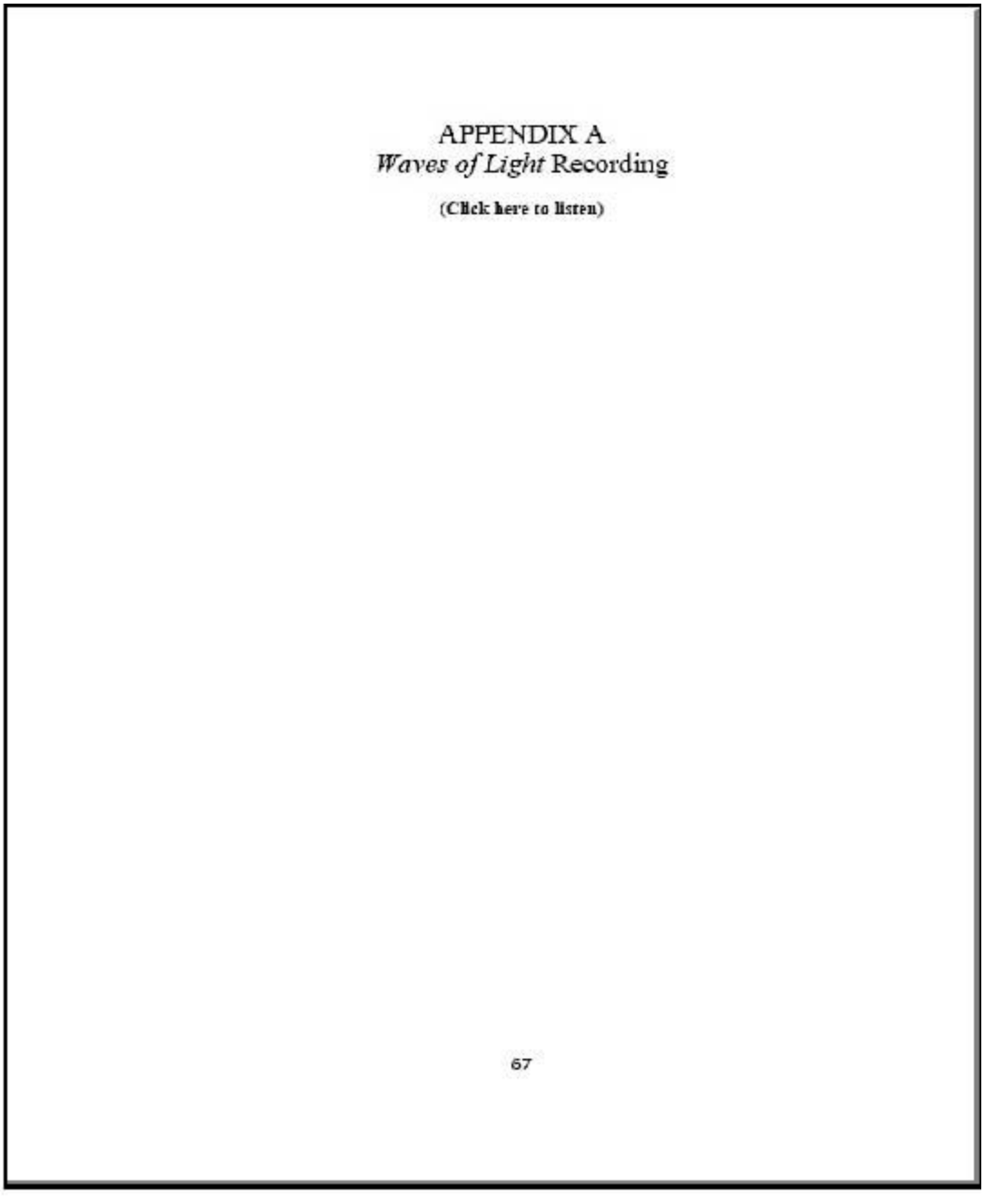
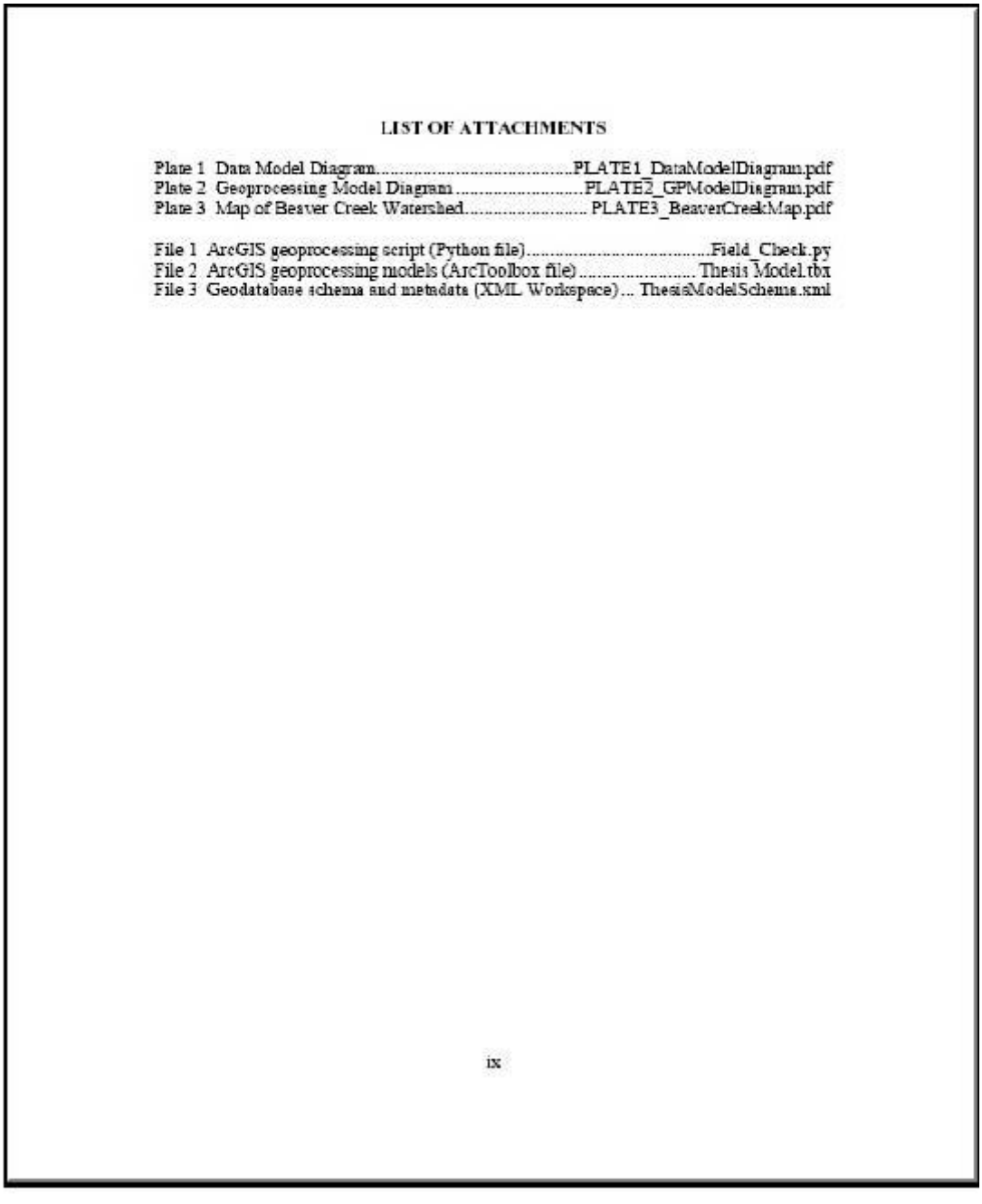


Figure A-19. Attachments: Sample Appendix Link Page

Source: Bruce Johnston, "Waves of Light for Chamber Orchestra." Master's Thesis in Music, The University of Tennessee, May 2008.



LIST OF ATTACHMENTS

Plate 1 Data Model Diagram.....PLATE1_DataModelDiagram.pdf
Plate 2 Geoprocessing Model Diagram.....PLATE2_GPModelDiagram.pdf
Plate 3 Map of Beaver Creek Watershed..... PLATE3_BeaverCreekMap.pdf

File 1 ArcGIS geoprocessing script (Python file).....Field_Check.py
File 2 ArcGIS geoprocessing models (ArcToolbox file)..... Thesis Model.tbx
File 3 Geodatabase schema and metadata (XML Workspace)... ThesisModelSchema.xml

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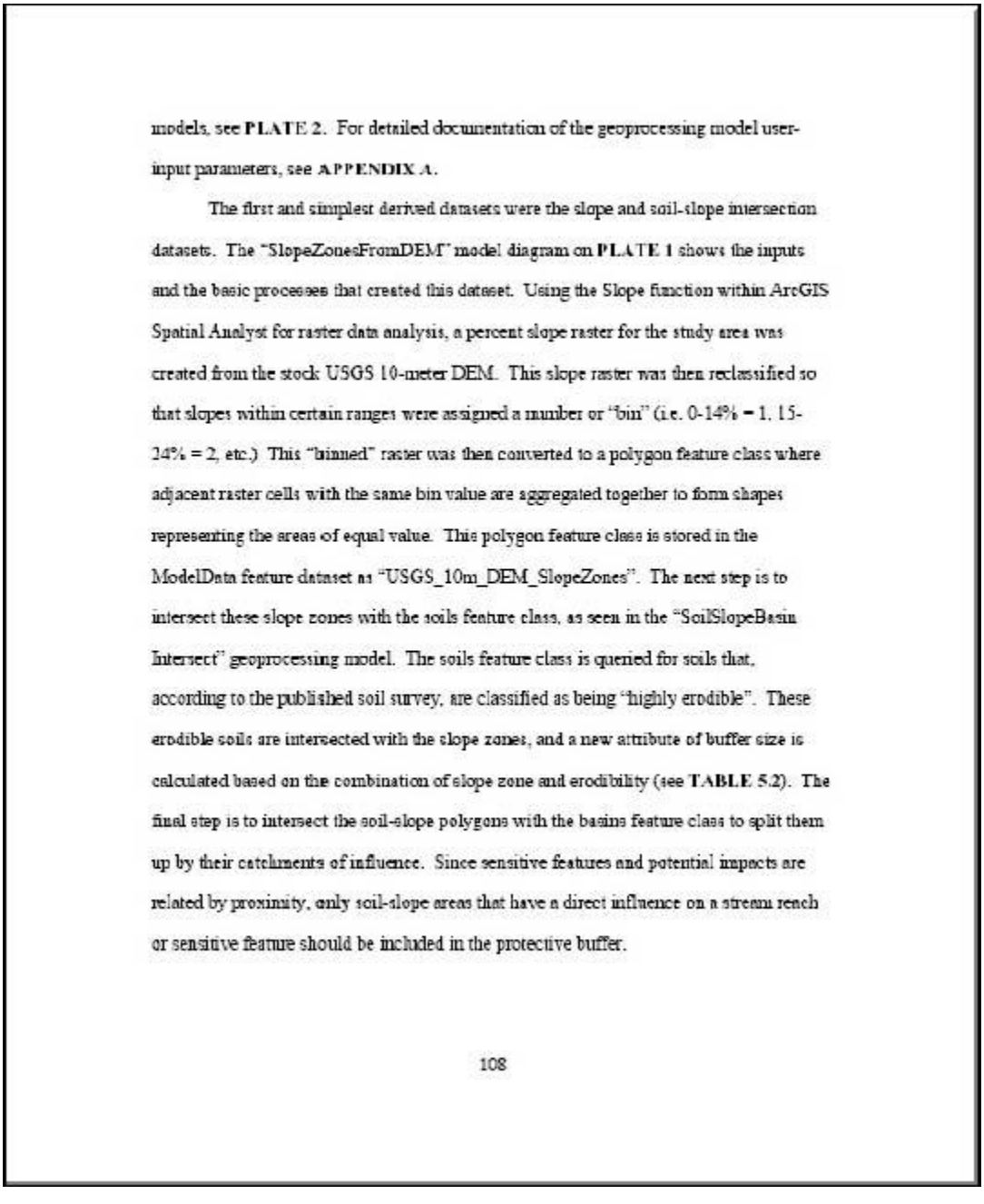
Figure A- 20. Attachments: Sample List of Attachments (with Filenames)

Source: Andrew Wunderlich, "GIS Data and Geoprocess Modeling for Hydrologic Network Conservation Analysis in a Green Infrastructure Plan." Master's Thesis in Geography, The University of Tennessee, December 2008.



models, see **PLATE 2**. For detailed documentation of the geoprocessing model user-input parameters, see **APPENDIX A**.

The first and simplest derived datasets were the slope and soil-slope intersection datasets. The "SlopeZonesFromDEM" model diagram on **PLATE 1** shows the inputs and the basic processes that created this dataset. Using the Slope function within ArcGIS Spatial Analyst for raster data analysis, a percent slope raster for the study area was created from the stock USGS 10-meter DEM. This slope raster was then reclassified so that slopes within certain ranges were assigned a number or "bin" (i.e. 0-14% = 1, 15-24% = 2, etc.) This "binned" raster was then converted to a polygon feature class where adjacent raster cells with the same bin value are aggregated together to form shapes representing the areas of equal value. This polygon feature class is stored in the ModelData feature dataset as "USGS_10m_DEM_SlopeZones". The next step is to intersect these slope zones with the soils feature class, as seen in the "SoilSlopeBasin Intersect" geoprocessing model. The soils feature class is queried for soils that, according to the published soil survey, are classified as being "highly erodible". These erodible soils are intersected with the slope zones, and a new attribute of buffer size is calculated based on the combination of slope zone and erodibility (see **TABLE 5.2**). The final step is to intersect the soil-slope polygons with the basins feature class to split them up by their catchments of influence. Since sensitive features and potential impacts are related by proximity, only soil-slope areas that have a direct influence on a stream reach or sensitive feature should be included in the protective buffer.

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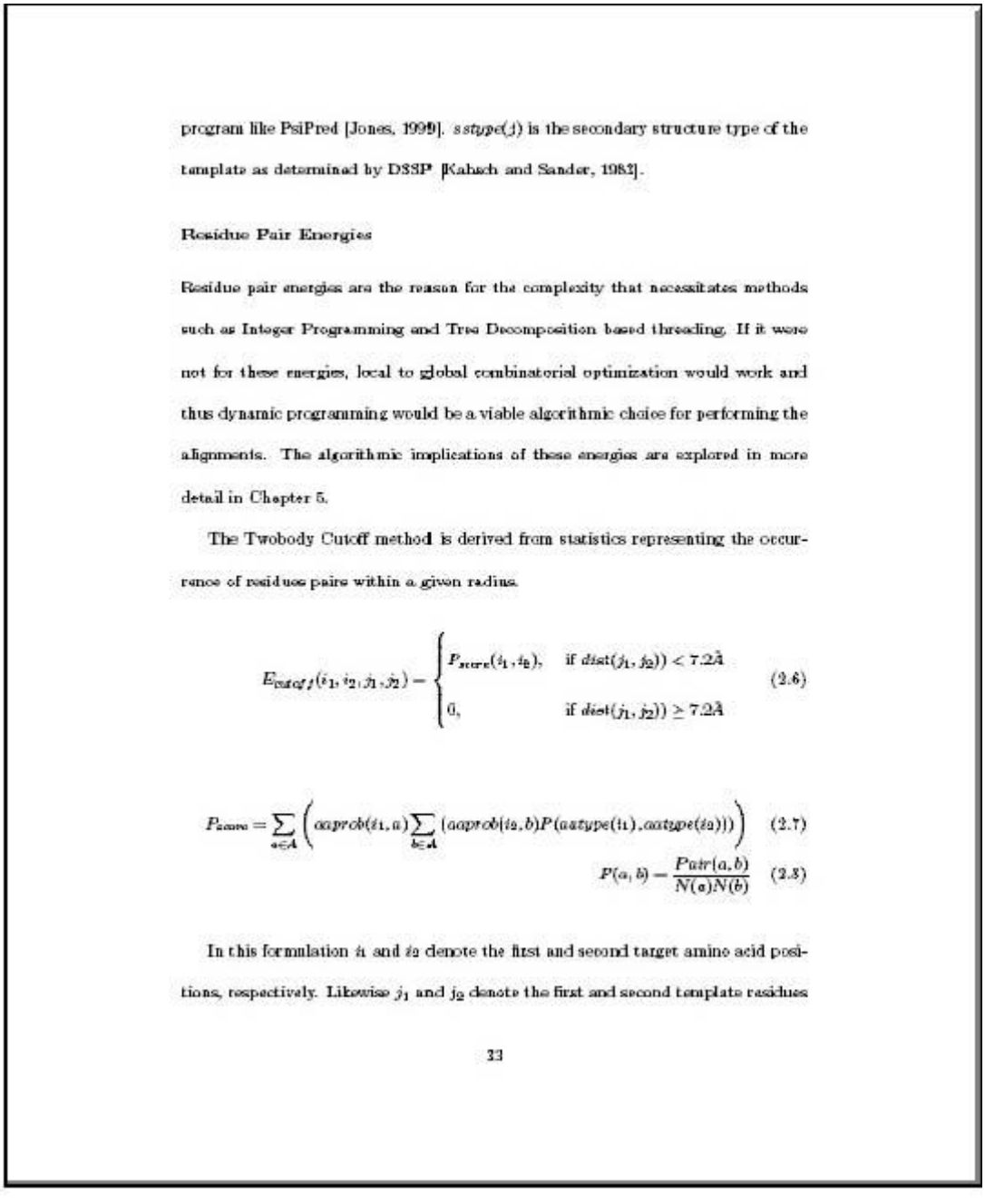
Figure A- 21. Attachments: Sample Text with Reference to Attachments

Source: Wunderlich, 2008.



program like PsiPred [Jones, 1999]. $sstype(j)$ is the secondary structure type of the template as determined by DSSP [Kabsch and Sander, 1983].

Residue Pair Energies

Residue pair energies are the reason for the complexity that necessitates methods such as Integer Programming and Tree Decomposition based threading. If it were not for these energies, local to global combinatorial optimization would work and thus dynamic programming would be a viable algorithmic choice for performing the alignments. The algorithmic implications of these energies are explored in more detail in Chapter 5.

The Twobody Cutoff method is derived from statistics representing the occurrence of residues pairs within a given radius.

$$E_{twobody}(i_1, i_2, j_1, j_2) = \begin{cases} P_{score}(i_1, i_2), & \text{if } dist(j_1, j_2)) < 7.2\text{Å} \\ 0, & \text{if } dist(j_1, j_2)) \geq 7.2\text{Å} \end{cases} \quad (2.6)$$

$$P_{score} = \sum_{a \in A} \left(aaprob(i_1, a) \sum_{b \in A} (aaprob(i_2, b) P(aatype(i_1), aatype(i_2))) \right) \quad (2.7)$$

$$P(a, b) = \frac{Pair(a, b)}{N(a)N(b)} \quad (2.8)$$

In this formulation i_1 and i_2 denote the first and second target amino acid positions, respectively. Likewise j_1 and j_2 denote the first and second template residues

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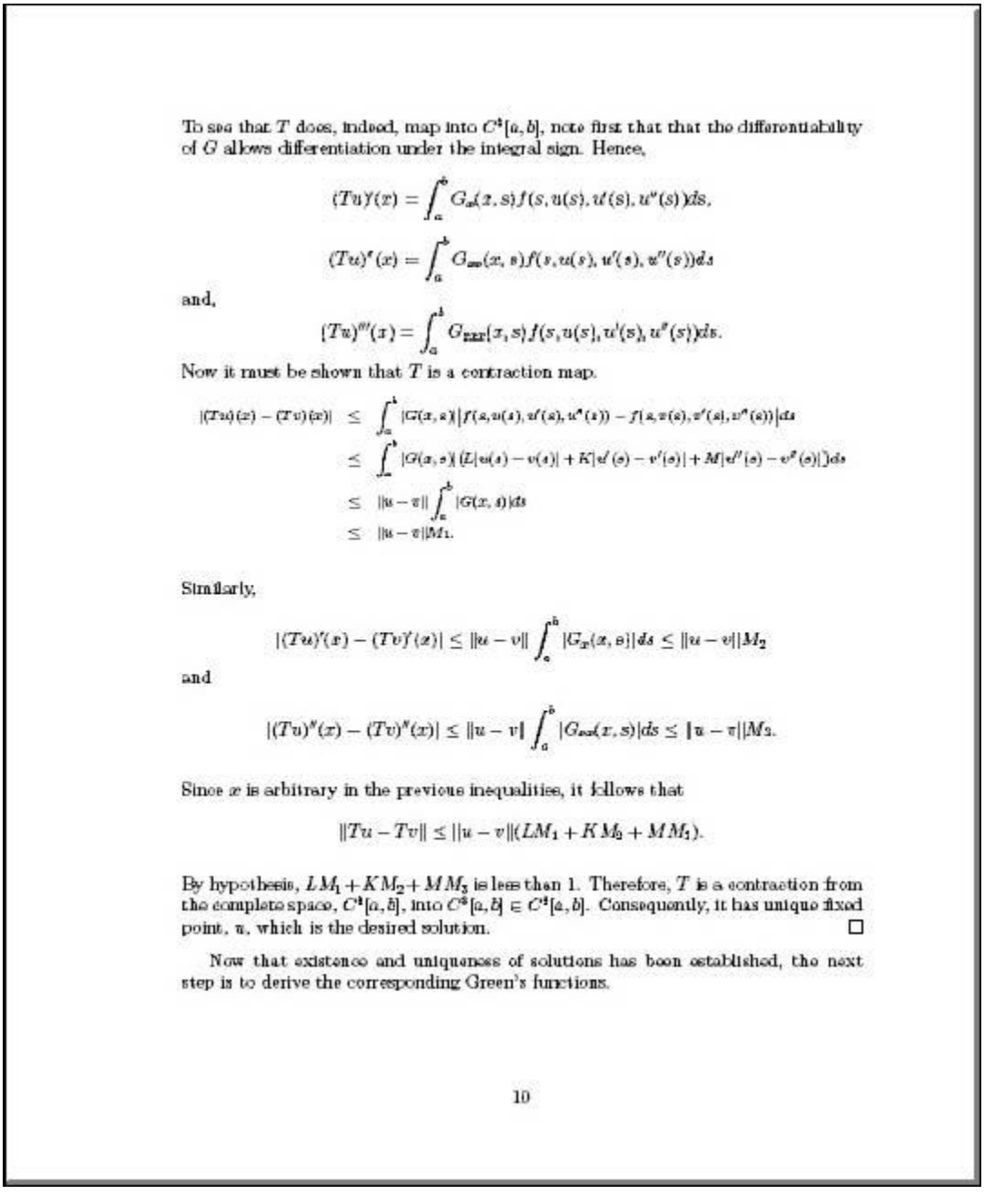
Figure A- 22. Equations: Sample Page with Numbered Equations

Source: Kyle P. Ellrott, "Protein Threading for Genome-Scale Structural Analysis." Doctoral Dissertation in Life Science, The University of Tennessee, December 2007.



To see that T does, indeed, map into $C^1[a,b]$, note first that that the differentiability of G allows differentiation under the integral sign. Hence,

$$(Tu)'(x) = \int_a^b G_x(x,s)f(s,u(s),u'(s),u''(s))ds,$$

$$(Tu)''(x) = \int_a^b G_{xx}(x,s)f(s,u(s),u'(s),u''(s))ds$$

and,

$$(Tu)'''(x) = \int_a^b G_{xxx}(x,s)f(s,u(s),u'(s),u''(s))ds.$$

Now it must be shown that T is a contraction map.

$$\begin{aligned}
|(Tu)(x) - (Tv)(x)| &\leq \int_a^b |G(x,s)|\left|f(s,u(s),u'(s),u''(s)) - f(s,v(s),v'(s),v''(s))\right|ds \\
&\leq \int_a^b |G(x,s)|\left[L|u(s)-v(s)| + K|u'(s)-v'(s)| + M|u''(s)-v''(s)|\right]ds \\
&\leq \|u-v\|\int_a^b |G(x,s)|ds \\
&\leq \|u-v\|M_1.
\end{aligned}$$

Similarly,

$$|(Tu)'(x) - (Tv)'(x)| \leq \|u-v\|\int_a^b |G_x(x,s)|ds \leq \|u-v\|M_2$$

and

$$|(Tu)''(x) - (Tv)''(x)| \leq \|u-v\|\int_a^b |G_{xx}(x,s)|ds \leq \|u-v\|M_3.$$

Since x is arbitrary in the previous inequalities, it follows that

$$\|Tu - Tv\| \leq \|u-v\|(LM_1 + KM_2 + MM_3).$$

By hypothesis, $LM_1 + KM_2 + MM_3$ is less than 1. Therefore, T is a contraction from the complete space, $C^1[a,b]$, into $C^2[a,b] \in C^1[a,b]$. Consequently, it has unique fixed point, u, which is the desired solution. □

Now that existence and uniqueness of solutions has been established, the next step is to derive the corresponding Green's functions.

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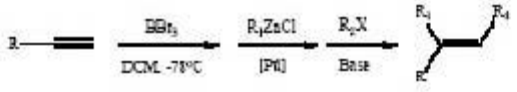
Figure A- 23. Equations: Sample Page with Unnumbered Equations

Source: Shannon Mathis Morrison, "Application of the Green's Function for Solutions of Third Order Nonlinear Boundary Value Problems." Master's Thesis in Mathematics, The University of Tennessee, August 2007.

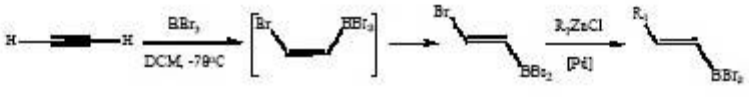
Trisubstituted alkenes were obtained by reacting the *gem*-disubstituted alkenylboron dibromide with an alkyl halide in the presence of base (**Scheme 1-6**).[29]

Scheme 1-6 Synthesis of tri-substituted alkenes



Interestingly, the haloboration of acetylene with boron tribromide followed by coupling with the organozinc compound and palladium catalyst afforded the (*E*)-1-alkenyldibromoborane. It is presumed that the bromoboration of acetylene proceeds with *syn*-addition and spontaneous isomerization to the (*E*)-isomer (**Scheme 1-7**).[30]

Scheme 1-7 Bromoboration of acetylene



Haloboration with *B*-halo-borabicyclo[3.3.1.]nonane (9-BBN) has also been shown to be synthetically useful. Suzuki has developed efficient routes to vinylhalo alkenes and 1,3-enynes (**Scheme 1-8**),[31] stereospecific (*Z*)-δ-halo-γ,δ-unsaturated ketones (**Scheme 1-9**),[32] and (*Z,Z*)-1-bromo-1,3-dienes and (*Z,E*) -1,3-dienes (**Scheme 1-10**).[33]

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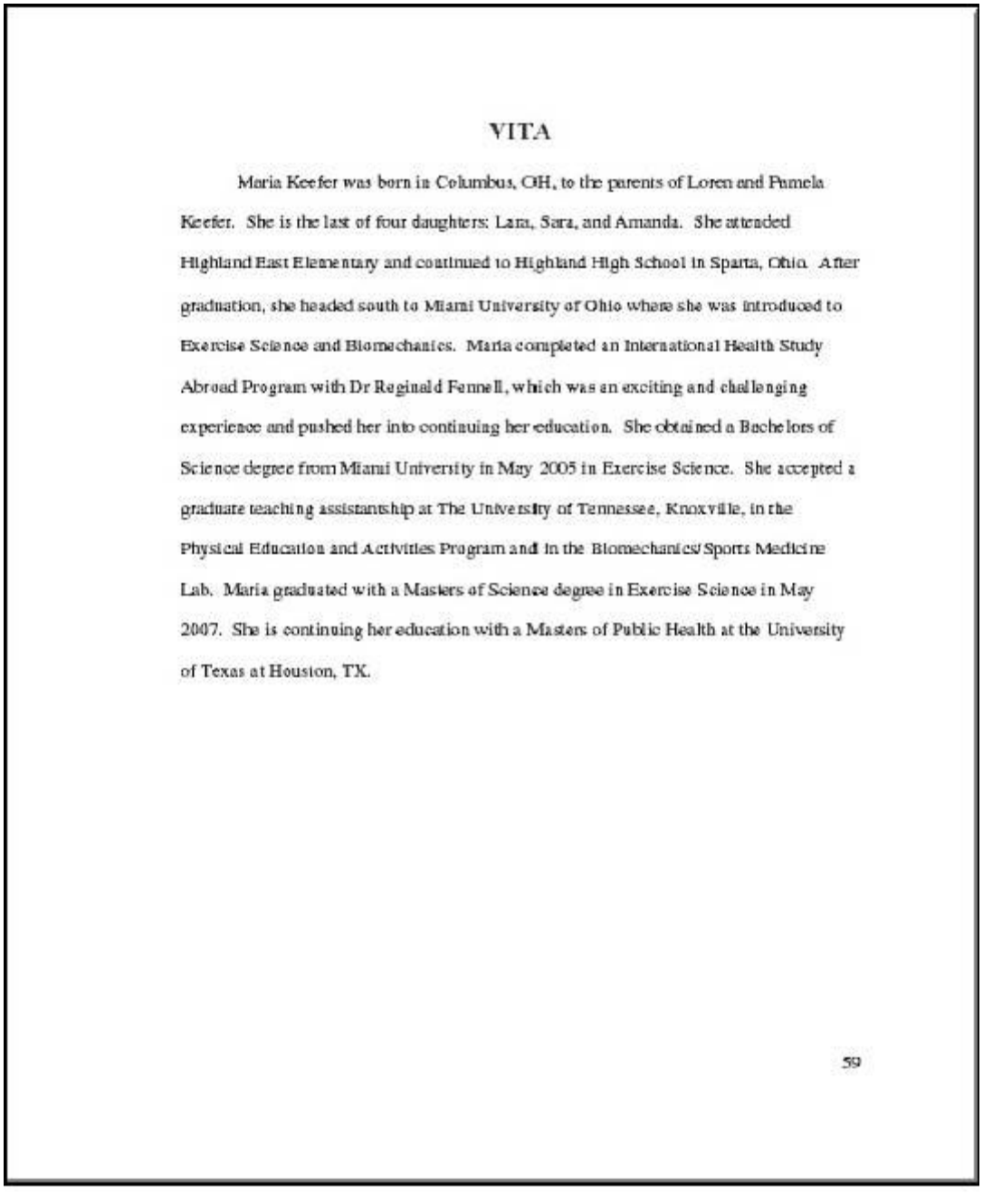
Figure A- 24. Schemes: Sample Page with Numbered Schemes

Source: Scott T. Borella, "Boron and Metal Halides in Organic Synthesis." Doctoral Dissertation in Chemistry, The University of Tennessee, August 2007.



VITA

Maria Keefer was born in Columbus, OH, to the parents of Loren and Pamela Keefer. She is the last of four daughters: Lara, Sara, and Amanda. She attended Highland East Elementary and continued to Highland High School in Sparta, Ohio. After graduation, she headed south to Miami University of Ohio where she was introduced to Exercise Science and Biomechanics. Maria completed an International Health Study Abroad Program with Dr Reginald Fennell, which was an exciting and challenging experience and pushed her into continuing her education. She obtained a Bachelors of Science degree from Miami University in May 2005 in Exercise Science. She accepted a graduate teaching assistantship at The University of Tennessee, Knoxville, in the Physical Education and Activities Program and in the Biomechanics/Sports Medicine Lab. Maria graduated with a Masters of Science degree in Exercise Science in May 2007. She is continuing her education with a Masters of Public Health at the University of Texas at Houston, TX.

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Figure A-25. Sample Vita

Source: Maria Keefer, "Ground Reaction Force Characteristics Associated with Modified Short-leg Walkers." Master's Thesis in Exercise Science, The University of Tennessee, May 2007.

Chapter 3

Increased Transcription of the Phosphate Specific Transport (Pst) System of *Escherichia coli* O157:H7 Exposed to 0.5% Sodium Benzoate Determined with High-density Oligonucleotide Microarrays and Reverse-transcriptase Polymerase Chain Reaction

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Figure A- 26. Sample Title Page for a Part in a Multi-Part or Manuscript-Style Dissertation (no publication statement required)

Source: Faith Critzer, "Transcription Analysis of *Escherichia coli* O157:H7 Exposed to Sodium Benzoate." Doctoral Dissertation in Food Science and Technology, The University of Tennessee, May 2008.

Chapter 3 Stress-Strain Behavior of Granular Materials under Confined Compression Using In-situ Neutron Diffraction

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This chapter is revised based on a paper published by Xin Luo and Dayakar Penumadu:

X. Luo, D. Penumadu, R. An, F. Tang, C.R. Hubbard, Stress Strain Behavior of Particulate Materials Using Neutron Diffraction and Discrete Element Modeling, Materials Science and Technology (MS&T) 2006: Fundamentals and Characterization, Volume 1, 2006, pp.243-249

My primary contributions to this paper include (i) development of the problem into a work, (ii) identification of the study areas and objectives, (iii) design and conducting of the experiments, (iv) gathering and reviewing literature, (v) processing, analyzing and interpretation of experimental data, (vi) pulling various contributions into a single paper, (vii) most of the writing.

Abstract

Stress-strain relationship of particulate materials is complex, and depends on the initial state of packing, past stress history, and the applied stress path (compression, shear, or extension). The present study aims to develop an experimental approach to provide a fundamental understanding of the macroscopic stress-strain relationship to its microstructure (particle contacts and void size distribution) and the meaning of terms "stress" and "strain" in particulate materials subjected to various types of loading conditions. An assemblage of the particulate silica with controlled initial state was subjected to compression, and the deforming specimens were studied by in-situ neutron diffraction at the High Flux Isotope Reactor using the recently developed load frame associated with Neutron Residual Stress Facility (NRSF2). A monochromator of Si400

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Figure A- 27. Sample Title Page and Publication Statement for an Essay within a Multi-Part (Manuscript) Dissertation

Source: Xin Luo, "Study on Infrastructure Materials Using Neutron Radiography and Diffraction." Doctoral Dissertation in Civil Engineering, The University of Tennessee, August 2007.

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