CONTENTS

INTRODUCTION

The purpose of a thesis or dissertation is to contribute knowledge to your field of study through the pursuit of research and scholarship. The process includes defining a topic, assembling a committee, executing the research, writing and submitting a manuscript, and defending your findings. This is a complex process requiring sustained work. You will take justifiable pride in this project since it not only satisfies a degree requirement but also positions you within your discipline and advances your field of study, especially when your thesis or dissertation is circulated to other scholars and readers.

The Graduate School encourages and upholds the University's standards of accuracy and soundness of research, as well as the requirements of the individual graduate programs regarding the Master's Thesis and the Doctoral Dissertation. In addition, the Graduate School provides assistance in the preservation and circulation of your manuscript through the University Library System and through the services of University Microfilms International (UMI).

You will be required to submit two copies of your thesis or dissertation to the Graduate School. One copy will be available to the public as a circulating copy, shelved in the W.E.B. Du Bois Library or the appropriate branch. The other copy will be an archival copy housed in the Library's Special Collections and Archives Department. A microfilm copy of all doctoral dissertations is held in the Microforms Room of the W.E.B. Du Bois Library.

How to Use This Manual

This manual is designed to aid you in the process of submitting your thesis or dissertation to the Graduate School. **The guidelines provide you with a numbered list of the basic *rules* for proper preparation and form of the manuscript.** You can use this list as both a starting point and a quick reference as you prepare your thesis or dissertation. The manual also contains further explanations of form and style as well as a wide range of suggestions and advice that should clarify the rules and explain possible options in areas where decisions about form and layout are at your discretion. It is important that you read the entire manual *before* you begin preparing your thesis or dissertation so that you understand the format and the purposes behind the rules.

Once you are familiar with the specific regulations, you must consult a current and appropriate style manual recommended by your department and used by your discipline for all other issues of form and content. When submitting your manuscript, you will be asked to designate the particular style guidebook you have used. There is also a recommended list of recent style guidebooks in Appendix B of this manual. Regulations from the Graduate School take precedence over rules found in style manuals (when they differ from one another) because issues of clarity and legibility are extremely important for purposes of microfilming and archival permanence. For example, although you may prefer a particular font, your selection may not be acceptable because it does not reproduce clearly on microfilm.

Specific rules for the form and style of your thesis or dissertation are numbered and boldfaced. Additional information and suggestions are included following the rules for each aspect of the manuscript preparation. Sample pages are provided in the Samples section.

In addition to this manual, the Graduate School offers several other avenues of assistance to the thesis or dissertation writer. You are strongly encouraged to make use of these resources **throughout** the process of writing your thesis or dissertation, since they exist to assist you in the satisfactory completion of your thesis or dissertation. In particular, the staff at the Office of Degree Requirements in the Graduate School are knowledgeable and familiar with many of the issues you will encounter. The Office of Information Technologies also offers excellent assistance with technological aspects of formatting and organizing your thesis or dissertation. It is our experience that students encounter fewer obstacles when they consult with these individuals along the way rather than at the end of their project.

Resources for the Thesis or Dissertation Writer

Office of Degree Requirements
Goodell Building, Room 534
telephone: (413) 545-0025
email: degreq@umassp.edu
web page: http://www.umass.edu/gradschool/

Office of Information Technologies (O.I.T.)
Help Desk
Lederle Graduate Research Center, Room A109
telephone: (413) 545-9400
email: help@oit.umass.edu
web page: http://www.oit.umass.edu/help/

University Store
(purchasing materials: paper, software supplies, etc.)
telephone: (413) 545-2619
email: ustore@admin.umass.edu

RULES AND ADVICE FOR PREPARING THESIS AND DISSERTATION MANUSCRIPTS

Mechanics

This section explains some of the preliminary information you will need in order to produce your thesis or dissertation manuscript.

Reprographic Processes

1. Print on one side of the page only.
2. Maintain clear, dense letters with high-quality contrast.
3. Begin each new chapter on a new page. Continue the text to the bottom of the page unless you are at the end of a chapter.
4. Do not leave widow lines or headings. A widow is defined as less than two lines of text in a paragraph at the beginning or end of a page. Include at least two lines of the end or beginning of a paragraph at the top or bottom of the page.
5. Do not split references in your bibliography; always complete an entry on a single page.
6. Do not split captions in the lists of tables and figures. Complete each on the same page. Multiline captions must be single spaced and not run into the page number.

The thesis or dissertation must be produced with a word processor, computer, or typewriter. If a computer is used, the printing must be on a laser printer or a printer of similar quality (i.e., a printer with a resolution of 300 dots per inch or greater). *A dot matrix printer is not acceptable.* If you have any questions about the acceptability of the quality of the print or the type style you intend to use, take a sample to the Office of Degree Requirements for approval before proceeding with reproduction.

High-quality xerographic, multilith offset, or computer-generated copies are acceptable, provided the print is sharp, uniformly dense, and permanently fused to the page.

If you are using a word processor or computer to produce your manuscript, print the original out on standard printer paper and then photocopy it onto the archival quality paper. Before you print out the entire manuscript, it is a good idea to print out a single page and copy it onto the paper you are using, double-checking for accurate margins and good quality of print.

Please see Using Technology section for more specific information about producing your manuscript using a computer, various software packages, and other technical needs.

Corrections

7. Corrections must be made by retyping and/or reprinting the entire page.
8. Corrections made with correction fluids or tapes are not acceptable.
9. Strikeovers and penciled corrections are not allowed.

Type: Size, Fonts, Style

10. For consistency, the same 10- to 12-point font is to be used for the following:
    Preliminary pages
    Text (main body of the thesis/dissertation)
    Table and figure captions
    Chapter titles
    Cover sheets
    References
    Page numbers
    Appendix titles
    Bibliography

    The font must be easy to read when it has been microfiched: specifically, choose a font that has true descenders, such as Times Roman, Helvetica, or Courier. Most standard fonts are acceptable: always submit a sample to the Office for Degree Requirements before printing out your entire manuscript if you have a question about a particular font.
11. The pitch may be either proportional or an established measurement of 10 to 12 characters per inch.
12. Do not vary fonts in the main text of the thesis or dissertation.
13. Use standard numerals (1, 2, 3) in text and pagination.
14. Do not use script, italic or other typefaces for numerals (except in equations).

Tables and figures proper, appendices and equations may be reproduced in different size and style fonts than those of the main text of the thesis or dissertation. For further information, see Tables and Figures section.

Different fonts may be used for poetry, dialogue, and other special circumstances. Boldface may be used for headings, chapter titles, subheadings, title and signature pages, within footnotes and bibliographic entries, and in tables or figures and their legends.

Italics may be used sparingly only for special emphasis, foreign words, technical or key terms, mathematical expressions, or book and journal titles.

Special symbols may be drawn neatly and uniformly with a template or lettering device and black ink. Press-on letters may be used but you must submit **copies** of these pages, since this type of lettering is not permanent. Handwritten characters are acceptable if no other options are available (i.e., accents, foreign characters) and must be done in permanent black ink.

Margins

15. **The margins for each page (including preliminaries, text, appendices, reference materials, tables and charts) must be no narrower than the following, measuring from the edge of the paper to type:**

left	1 1/2 inches
right	1 inch
top	1 inch
bottom	1 inch

16. **The left edge margin must be larger to accommodate the binding process.**
17. **All typing must fall within the remaining 6"x 9" typing area (except page numbers).**
18. **Margins must be uniform throughout the thesis or dissertation.**

Margins are particularly important because they affect the ability of the Library and Office of Degree Requirements to bind your thesis or dissertation properly in a permanent manner. Before you print and copy the manuscript, double-check the margins: printer paper is not always exactly the same size as the archival paper, even if the paper is listed as the same size. It is a good idea to print out one page of your manuscript on low-quality copy paper, then photocopy it onto the archival quality paper and measure the margins for accuracy.

Page Numbers

19. **Page numbers must be centered 1/2" from the edge of the paper on the bottom of each page.**
20. **Every sheet must be counted for purposes of numbering pages. Every page must have a page number printed on it, except the title page, copyright page, signature page, dedication page, and epigraph page.**
21. **All pages must be paginated consecutively.**

Spacing

22. **The text of the thesis or dissertation must be double-spaced. This includes the Acknowledgments and Abstract Pages.**
23. **No large spaces or gaps are allowed in the text.**

24. **Single spacing is required for footnotes, captions and identification text related to tables, figures, graphs, or other illustrative materials. Single spacing is also required for bibliographic entries, and for all block quotations.**
25. **A double space must be used to separate footnote and reference citations.**
26. **Single spacing is permitted within—but not between—items in lists, multiline captions, and within appendices, if done in a consistent manner throughout the manuscript.**

The general rule for spacing is to choose a consistent format and stick with it throughout the entire manuscript. Irregular or single spacing also may be used for poetry and scripts at the option of the department and the student.

If there are large gaps in the text, the manuscript will be returned to you for reformatting. Be sure that spacing is consistent above and below headings. If you use extra spacing before each paragraph, be sure the spacing is used consistently.

Using Technology

Almost all theses and dissertations are produced on computers, and a variety of software packages are used. It is important to consider the content and length of the thesis or dissertation when choosing a software package. Also consider the printers that will be available for the final printing of the thesis or dissertation.

Computer printouts and all computer-generated figures and graphs must meet the same standards as the rest of thesis or dissertation; i.e., must fit within the specified margins, be copied on the same paper as the rest of the thesis or dissertation, and have consecutive numbering.

A little forethought will greatly reduce the time and effort needed to format a thesis or dissertation. The first step is to learn how to use the power of your word processor. Most popular programs come with extensive documentation and toll free telephone help lines. Check with your Graduate Program Director about computer resources before you begin your thesis or dissertation. The Office of Information Technologies (OIT) offers classes on computing designed to assist people with various levels of computer literacy. Every semester and during the summer OIT also offers Thesis Workshops that provide instruction and templates for certain software packages. For a list of courses, please contact the OIT Help Desk, either in person or by Web page, phone, or email. The following sections provide more information about computer-related resources at the University.

The OIT Help Desk

The Office of Information Technologies operates a Help Desk in Room A109, Lederle Graduate Research Center, lowrise. Currently, their hours are Monday through Friday, 9 a.m. to 5 p.m., but it is best to call them at (413) 545-9400 for the most up-to-date information. OIT also provides an email address (as follows) and will promptly respond to your questions:

> **help@oit.umass.edu**

More information is available on the homepage:
> **http://www.oit.umass.edu/help/**

Help Desk consultants field computer questions on a wide array of topics including: OIT host computers and their associated applications; personal computers and their applications; telecommunications devices and software; and Internet-related issues. They disseminate up-to-date documentation for OIT host computers and Internet information as well as issuing OIT and UMAccess accounts.

Your packet of information contains a list of the most recent courses and information from OIT. Please be sure to check or call for course availability. **We recommend that you take a course as early as possible in the process of writing your thesis or dissertation.**

The Graduate School Web Page

The Graduate School maintains a website with information about resources, requirements, and other issues related to graduate student needs. This manual is also available on-line at:

> **http://www.umass.edu/gradschool/**

Parts of the Thesis or Dissertation

This section addresses the Graduate School requirements for the arrangement of the thesis or dissertation and some particulars about format. Your manuscript will consist of three parts:

> Preliminaries
> Text
> Reference materials

Specifications for each of these pages are explained in the following sections. Samples are presented in the Appendix at the end of this manual. For people using computers, some templates are available from the Graduate School Web Site and from taking the OIT Thesis Workshops. Please see Using Technology section for more on templates.

PAGE	MASTER'S	DOCTORAL	INFORMATION
Title Page	required	required	p. 7
Copyright Page	optional	required	p. 7
Signature Page	required	required	p. 8
Dedication	optional	optional	
Epigraph *(Frontispiece)*	optional	optional	
Acknowledgments	optional	optional	p. 8
Abstract Page	optional	required	p. 8
Preface	optional	optional	
Table of Contents	required	required	p. 9
List of Tables	when appropriate	when appropriate	p. 10
List of Figures	when appropriate	when appropriate	p. 10
List of Symbols or Abbreviations	when appropriate	when appropriate	
Appendices	when appropriate	when appropriate	p. 10
Bibliography	required	required	p. 11

Preliminary Pages

27. For dissertations, you must have a Title Page, Copyright Page, Signature Page, Abstract Page, and Table of Contents. For master's theses, you must have a Title Page, Signature Page, and a Table of Contents.
28. For both master's theses and dissertations, a List of Tables, List of Figures, and/or List of Symbols or Abbreviations are required when appropriate.
29. The preliminaries must be arranged in the order listed in the chart on page 6.
30. The pages must be numbered in lower-case Roman numerals beginning with the Acknowledgments Page (see Samples section). The Title Page is considered page i, but it must not be numbered.

Title Page (required)

Please refer to the Sample Title Page before proceeding. **We highly recommend that you check your title page with the Office of Degree Requirements before you have copies made.** Use the same thesis quality paper and type style you plan to use for the final copy of the manuscript.

31. The Title Page is considered page i, but it must *not* be numbered. Each line of the Title Page must be centered. The *title, your name,* and *the degree* are all to be typed in capital letters.
32. The *title* must include key words to make it easier for people to locate it using library information retrieval systems. Check with the reference librarians if you need help in determining what the key words in your area might be.
33. Word substitutes must be used for items such as formulas and symbols. If you have any questions about the use or presentation of scientific terms, please check with your committee chair.
34. Use your full legal *name* as it appears on your academic records in the Graduate School at the time of graduation. If you have changed your name in any way, apply to have your name officially changed at the Graduate Records Office before you submit your manuscript.
35. Be sure to correctly designate the *degree* you will be receiving.
    For example:
       DOCTOR OF PHILOSOPHY
       MASTER OF SCIENCE (not master's)
       DOCTOR OF EDUCATION
       MASTER OF ARTS (not master's)
       MASTER OF SCIENCE IN ENGINEERING
         MANAGEMENT
       MASTER OF FINE ARTS

Certain professional degrees have more specific degree titles. A list is provided in Appendix A. Your Graduate Program Director or the Office of Degree Requirements will assist you if you have any questions.

36. The *date* listed on the Title Page must be the actual month and year of degree conferral, not the date of the defense or the date you submitted your manuscript.

Degrees are formally conferred, by vote of the Board of Trustees, in February, May, and September. Never use a comma between the month and year (September 1998 is correct).

37. Your *official graduate program name* must be listed below the date.

If you have any questions about the correct title of your program, consult your Graduate Program Director, the Office of Degree Requirements, or the *Graduate School Bulletin* under the Programs Offered section. Please note that your graduate program name may differ from your department name. For example, Psychology is the official department name, but your program name may be Clinical Psychology.

Areas of specialization or concentrations within a program can also be listed on the Title Page. For example, your graduate program name might be listed as:
   Education
   Public Health
   Polymer Science and Engineering

Additionally, under your graduate program name, you may also want to list:
   Early Childhood Education
   Biostatistcs and Epidemiology
   Computer Systems Engineering

Copyright Page (required for dissertations)

38. A dissertation must be copyrighted. This is achieved by including a copyright page. Registration is optional and requires a fee. A copyright is optional for a master's thesis. The year listed must be the year in which copyright is secured, which is also the year of degree completion.
39. The copyright page is the second page of the manuscript and is counted as page ii, but it is never numbered.

The official copyright notice is horizontally centered on this page, single- or double-spaced. The format of the notice is as follows:

© Copyright by Jane Ann Brown 1998

All Rights Reserved

For information about copyright registration, please see the UMI booklet provided with these guidelines. Extra copies are available from the Office of Degree Requirements.

Signature Page (required)

40. The Signature Page follows the Copyright Page and is counted as page iii, but do not type a number on it. (If no copyright is used, this will be page ii.) See the Samples section for a specimen of a Signature Page.

41. The Signature Page must be signed in *black ink* (not felt tipped pen or other non-waterproof inks: they smudge and fade) on the same archival paper as the rest of the manuscript.

42. Make three high quality copies and obtain your committee members' black ink signatures on all of them. The Graduate School requires *two* originals of the signature page on archival paper with signatures in ink. You will also want one additional Signature Page for your own files.

43. The *title* and *student name* must be centered on the page. The title must match exactly the title on the Title Page and must be in capital letters. The name of the student must match exactly the name on the Title Page. Both names must match the name on your official records in the Graduate School.

44. The Signature Page must read, "Approved as to style and content by:" and then provide enough signature lines for all members of your committee, indicating "Chair" or "Member" following each name. You must also provide a signature line for your Department Head and include the name of the department under the typed name. A sample of a traditional Signature Page is provided in the Samples section.

45. Do not use professorial titles. Do not include administrative titles for anyone except the department or program head/chair. Do not use "Ph.D." or "Dr." on the Signature Page.

46. Each committee member must sign *above* her or his typed name.

47. If corrections are required on this page, a new Signature Page must be produced. No correction fluid or cut-and-paste is allowed because it will appear as a blot on the microfilm.

This page is a mandatory part of your thesis or dissertation. Your committee members' signatures indicate their approval of the thesis or dissertation and that no further changes are required. Please note that the format of the page may vary if you have more than three committee members.

If you have any questions about accuracy, it is **highly recommended** that you have the Office of Degree Requirements check your **blank** Signature Page before making copies for signing. Make at least three high-quality copies and obtain your committee members' black ink signatures on all copies.

Although there is no correct order for the names, the committee chair's signature is traditionally first or most prominent on the page. Again, please be sure to have the committee members sign in black ink and on the correct line on the page. Students are advised to double-check the spelling of committee members' names **before** having them sign the Signature Page.

Acknowledgment Page (optional)

On the Acknowledgment Page, the author expresses her or his professional and personal indebtedness, including any permission to use previously copyrighted material. The text is limited to thanks for or recognition of special assistance.

The Acknowledgment Page follows the Signature Page and is numbered in lower case Roman numerals accordingly. **This is the first page on which a page number should appear.** For consistency, the page should begin with the title ACKNOWLEDGMENTS.

Acknowledgments are written in a dignified and professional manner. When writing the acknowledgments, be sure that your use of "person" is consistent. If you begin with "the author," use third person throughout. If you begin with the first person (I, me, my), use first person throughout.

Abstract Page (required for dissertations)

48. The abstract must not exceed 350 words. The words in the heading do not count in the 350-word limit.

The abstract is a brief summary of the contents of the thesis or dissertation. For a master's thesis, the abstract is optional. The abstract will be published without editing or revision, so take care in preparing it. Symbols and foreign characters or phrases must be printed clearly and accurately to avoid misinterpretation. Mathematical formulas, diagrams, and other illustrative materials are not recommended for the printed abstracts. You are encouraged to incorporate key words that would allow for library searches. For example, the UMI microfilming form asks you to include a list of key words for database access.

The title ABSTRACT is centered. The heading of the abstract is as follows; double spaced, centered, and in capital letters (with the exception of the last line):

ABSTRACT

TITLE OF DISSERTATION

DEGREE DATE

NAME OF STUDENT, B.A., COLLEGE/UNIVERSITY

M.A., COLLEGE/UNIVERSITY

Ph.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor (Fill in Full Name here)

Please note that there is no comma between Massachusetts and Amherst. The last line of the heading must include the name of the chair (or co-chairs) of your committee. The text of your abstract begins on the fourth line below the heading and is double-spaced. It is unsigned: no approval form accompanies this abstract.

Table of Contents (required)

49. The basic rule is, as with the rest of your manuscript, to strive for consistency. Double space between new levels of subheading. It may be titled "Table of Contents" or "Contents."
50. For the Table of Contents, do not mix organizational schemes: if you begin with decimal headings, use decimal headings throughout. If you list subordinate headings for one chapter, list them for all the chapters where they appear. Samples of the three most common organizational schemes are provided in the Samples section.
51. Do *not* list the Title Page, Copyright Page, Dedication, Signature Page, or Table of Contents pages in the Table of Contents.
52. The page numbers for the following pages should all be in lower case Roman numerals: the Acknowledgments, Abstract, List of Tables, List of Figures, Glossary, and Preface.
53. List all chapter divisions. If you list subdivisions, indicate subordinate headings by indentation.
54. When used, the Introduction is the first page of the body of the text and is numbered as page 1. It is listed in the Table of Contents one double space below the word Chapter and aligned with the title of Chapter 1.
55. Be sure that the headings in the text match in punctuation, word for word, letter for letter, the headings listed in the Table of Contents, List of Figures, and List of Tables. Capitalization must match exactly.
56. Each chapter must have a title in the text and the Table of Contents. The title of a chapter or Appendix is always listed in all capital letters. Do not underline.
57. Chapters must be numbered using either Roman (I, II, III) or Arabic (1, 2, 3) numerals. Do not spell out numbers (ONE, TWO is not acceptable). The numbering system and form must be consistent in both the Table of Contents and the text.
58. Do not use underlining in the Table of Contents except for titles of books.
59. Use dot leaders (...) to connect headings to page numbers. Be sure to use page numbers accurately. If titles cover more than one line, text must not run into the page number. Dot leaders should follow the *end* of the title.
60. All Appendices must have a title. Do not designate an Appendix "A" unless there is an Appendix "B". List Appendix titles, with page numbers. See sample in Samples section of this manual.
61. When using a display page at the beginning of the Appendices, indicate its page number and use dot leaders in the Table of Contents.

Fundamentally, a Table of Contents is a topic outline of the manuscript. Remember that it is the only index to the content of the manuscript; therefore, it must accurately reflect the organization within the text. Since a manuscript is longer than a paper or article, you will need to carefully consider the organization of its parts. Major divisions are chapters. Often, it is necessary to subdivide chapters. Organizational schemes help you arrange numerous parts into a unified, cogent whole. Whether you use a traditional outline, a system of headings indicated by location and underscoring, or a decimal numbering of

headings, your ideas will develop in a logical way from general to specific. A reader will be able to tell at a glance which ideas are of parallel importance because the heading will appear in parallel form.

Your Table of Contents will follow the organizational scheme used in your text. While you are not required to list headings subordinate to the chapter level, you should remember that your Table of Contents is the only index to the thesis or dissertation. Samples of the three most common organizational schemes are provided in the Samples section. Only three levels of subdivisions are given in these examples, but each of these schemes may be expanded. Whenever possible, you should avoid splintering your manuscript into minute fragments. Often, a heading can be incorporated into the flow of the text. Always check with the Office of Degree Requirements if you have any questions about the subdivision of your thesis or dissertation as it appears in the text and the Table of Contents.

If you decide to use another format you should have your scheme checked by the Office of Degree Requirements staff before you invest too much time in it. Bring a copy of your Table of Contents and samples of the headings system as used in the text; the staff will gladly check it and offer comments.

Text

62. **The body of the manuscript must follow a consistent format throughout.**
63. **Chapters must follow a consistent format and match the subdivisions, numbering sequence and format presented in the Table of Contents. The style or format must not change at any point in the text.**
64. **Subheadings must match the scheme presented in the Table of Contents and must not change or combine styles or formats at any point in the text.**

Tables and Figures

A table is a columnar arrangement of information, often numbers, organized to save space and convey relationships at a glance. A figure is a graphic illustration such as a chart, graph, diagram, map, photograph, or plate.

65. **Follow the style for tables and figures that is standard for your discipline. The format and styles must remain consistent throughout your thesis or dissertation.**
66. **Tables and figures may be placed in one of four places consistently throughout the manuscript: within the text, at the end of each chapter, at the end of the main text, or in an appendix.**
67. **Within a table or figure, you can use a different font from the rest of your manuscript as long as it is large enough to be clear when the image is photocopied or reproduced.**

68. **Margins for Tables and Figures must be the same as for the rest of the manuscript. All text and images must fit within the 6" x 9" area.**
69. **Tables and figures may be reduced in size, but titles, figure numbers, captions, and page numbers must be the same size as the text of the manuscript for readability. Do not reduce standard type more than 25 percent.**
70. **Tables and figures must be numbered in a consistent manner, using Arabic numerals (1, 2, 3). The numbering of tables must be consistent with what is listed in your List of Tables or List of Figures. They must either be numbered sequentially throughout the document (1, 2, 3), or within chapters and appendices (1.1, 1.2, A.1, A.2). If you use the within chapter numbering option, use this option throughout the thesis or dissertation. You must use a consistent numbering sequence for both tables and figures.**
71. **All table captions must be placed in a consistent location. While figure captions do not need to be placed in the same location as table captions, all figure captions must be placed in a consistent location (relative to each other).**
72. **Oversized materials such as maps may be included as pocket material. Pocket materials must be submitted in a manila clasp envelope labeled with:**
    Author's name
    Date of thesis/dissertation
    Title of thesis/dissertation
    Degree conferring department
    Copyright notice

    List and number all pocket material in the List of Tables and List of Figures and, rather than a page number, indicate "in pocket."

There are no size, margin, or paper requirements for pocket material. When the manuscript is bound, the material will be placed in a special pocket bound into the inside back cover of the thesis or dissertation. If you have any questions about the formatting of tables and figures or the use of oversized materials, please bring samples to the Office of Degree Requirements for approval.

Reference Materials

Reference materials include appendices, notes, and bibliographies. The most important factor is consistency in handling your references according to the method you select. Whatever system you use, reference material within the thesis or dissertation may include the following major divisions, which must be numbered consecutively in Arabic numbering: Appendices, Notes, Bibliography.

Appendices may be useful, particularly as a place for explanations too long for the main text and for documents, charts, copied forms or data sheets related to the main text.

Notes serve the purpose of acknowledging facts, ideas, or materials from the works of others: they serve as amplification or parenthetical remarks (content notes) within the texts or as citations of literature referred to in the text (reference notes). They may be placed at the end of the thesis, at the end of each major section or chapter (endnotes) or on the page where the reference occurs (footnotes).

Bibliography is a list of the sources quoted or used in the thesis or dissertation. This list of sources must be comprehensive: that is, including all sources of cited material and other works consulted even if not formally cited within the main text.

73. A *Bibliography* is required, even if you have included references throughout your thesis or dissertation. This list of sources must be comprehensive—that is, including all sources of cited material and other works consulted even if not formally cited within the main text.
74. The Graduate School recommends that you follow the standard citation format used by a major journal in your field and the style manual recommended by your department. For both Bibliographies and References, the Graduate School requires single spacing of reference entries with double spacing in between (instead of the double spacing required by the Modern Language Association, MLA).
75. On the checklist provided by the Office of Degree Requirements, you must indicate what single approved style you are using in your manuscript (e.g., MLA).

Materials

This section covers materials you will need in order to complete your thesis or dissertation manuscript.

Paper

Because your thesis or dissertation will be bound and become a permanent part of the University Library collections, it must be printed on archival quality paper. Final materials must meet the highest standards of permanence, legibility, uniformity, and reproducibility.

76. Paper must be archival quality, size 8 1/2"x 11", white 20 lb. weight and acid-free.
77. Use the same paper (brand, weight, color) for all pages of the final submission. The only exceptions are singleweight photographic plates, foldouts, and pocket material.

78. Do not use paper with pre-printed margin lines (often called Thesis Paper) or paper with holes for ring binders. Do not use easy-erase paper for any copies of the manuscript.
79. Before you print and copy the manuscript, double-check the margins; printer paper is not always exactly the same size as the archival paper, even if the paper is listed as the same size. Furthermore, photocopying does not always place the image in the same position as the original.

If you use a laser printer, it is a good idea to print onto ordinary paper and then photocopy it onto the archival quality paper.

The following papers are acceptable:

    Permalife Bond (Fox River)
    Crane's thesis 100% pH Neutral
    Gilbert NEU-Tech 25% cotton bond
    Archival Bond XXV
    Nuanse-text (Mohawk)
    Archival Permdura

Permalife Bond, made by Fox River, is available from various commercial copy centers, the University Store, wholesale and retail outlets throughout the country, and from several mail order companies.

Getting Paper Outside the United States

Students living outside the United States may have difficulty finding an approved paper. You may wish to order Permalife Bond from the University Store or a mail order company. Please call the Office of Degree Requirements if you would like information about where to get paper. We advise you to place your order **six weeks** before you will need the paper. Some companies will deliver paper within 48 hours in the continental United States or Canada.

Non-Print Media

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Acknowledgments   page v (if you have one), and the **first page actually numbered**

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Table of Contents   page vii (required for both theses and dissertations)

List of Tables   optional (numbered)

List of Figures   optional (numbered)

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Notes

Appendices

Bibliography

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by

ZOE B. RUBINSTEIN

Submitted to the Graduate School of the
University of Massachusetts Amherst in partial fulfillment
of the requirements for the degree of

DOCTOR OF PHILOSOPHY
(or DOCTOR OF EDUCATION)

Month Year

Official Graduate Program Name

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Jane P. Wong, Chair

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Thomas H. Pickles, Member

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Charles M. Waldau, Member

_____

Frances S. Keegan, Department Head
Department Name

DEDICATION

To my patient and loving husband.

ACKNOWLEDGMENTS

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ABSTRACT

TITLE OF DISSERTATION

DEGREE DATE

NAME OF STUDENT, B.A., COLLEGE OR UNIVERSITY

M.A., COLLEGE OR UNIVERSITY

Ph.D., UNIVERSITY OF MASSACHUSETTS AMHERST

Directed by: Professor Jane P. Wong

CONTENTS

CHAPTER

APPENDICES

TABLE OF CONTENTS

CHAPTER

1. FIRST CHAPTER TITLE

2. SECOND CHAPTER TITLE

APPENDICES

CONTENTS

LIST OF TABLES

SAMPLE

LIST OF FIGURES

SAMPLE

CHAPTER I

SOCIAL INTERACTION AND PUBLIC PLACES

Introduction

Many scholars have explored the decline of the public sphere, citing the increasing privatization

of contemporary social life and its subsequent sublimation into consumption. This chapter explores the

ways that people's social lives have been constrained by capitalism and suggests that although this is a

dominant trend throughout westernized countries, there are countervailing tendencies that should be

explored. According to Habermas, if the conditions for the possibility of knowledge are constrained, then

the task of the intellectual is to explore what conditons or actions would be necessary to reopen those

areas of social life.

The Decline of the Public Sphere

In 1990, Habermas argued that the public sphere has been radically transformed by the rise of

social institutions such as newspapers, coffeehouses, and reading societies that provided for the formation

and articulation of public opinion. However, public opinion came to be assigned specific political

responsibilities within liberal democracies. Although historically, they allowed for the rise of a politically

active and informed public in Europe, the emergence of the modern social welfare state circumscribed

their power such that socioeconomic, political and cultural conditions were radically altered. Public

opinion and the public sphere are limited and linked to specific interests as certain people began to control

public forums such as the mass media.

The Coffeehouse as Exemplar

Before the closing off of the public sphere, certain spaces existed where free discourse and

debate took place, where people engaged in real opinion-making about public issues. One arena for

critical rational discourse was the coffeehouse. In its earliest formation, the coffeehouse provided people

with a respectable reason to get out of the house and spend the evening in the company of others, to be

entertained, to see, and be seen. They were comfortable places that encouraged patrons to stay a while.

People from a variety of socioeconomic backgrounds went to coffeehouses, although evidence suggests

that different venues were stratified by class and other social arrangements. In other words, particular coffeehouses catered to specific audiences.

<u>Coffeehouses in Europe</u>

The lapsing of the licensing acts of 1652 marked the beginning of coffeehouses in England. In 17th and 18th Century London, coffeehouses were the crossroads of intellectual life. Discussions were led by speakers concerning politics. Literary and scientific debate occurred as people sipped their beverages at small tables across from political and social rivals. In England, the Royal Society used the coffeehouse as a public place in which to spread their ideas about scientific method. The rise of experimentalism and the debates between Hobbes and Boyle owe a great deal to the public forums provided by coffeehouses. The coffeehouse was one of a number of public gathering places in Europe at the time, however it had a particular character that made it the site of intellectual debate. Unlike the salon or dance hall, the coffeehouse was both accessible and reputable.

English Coffeehouses as Public Sphere

Known as Penny Universities, the English coffeehouse was a space where dialogue, conversation, questioning, solidarity, and community were enacted on a daily basis. People met without express intent to do business or to create public policy, and yet, in that atmosphere, interactions occurred beyond the realm of technical rationality. Although the coffeehouse was a money-making venture for its owners, its role as public space was more significant than its function as a business.

   <u>The Class Character of Coffeehouses.</u> Although the coffeehouses were relatively open in a hierarchical society, different coffeehouses existed for every profession, trade, class, and party. Paralleling contemporary differences between Starbucks and Dunkin Donuts, English coffeehouses catered to different strata of society, offering both space and entertainment that matched the perception of separate interests of laborers, gentry, artisans, and intellectuals. Although patrons in different coffeehouses may have been discussing the same issues, they were often doing so within the confines of their occupational and class groupings.

2

The similarity indices are based on various metrics for determining the nature of the contention for each of the resources in the scheduling problem associated with the case. The underlying data structure for these metrics is a contention curve. This curve represents the ratio of the demand over supply across the time extent of the relevant scheduling problem. There are are four types of contention curves: 1) resource, 2) normalized resource, 3) global, and 4) normalized global.
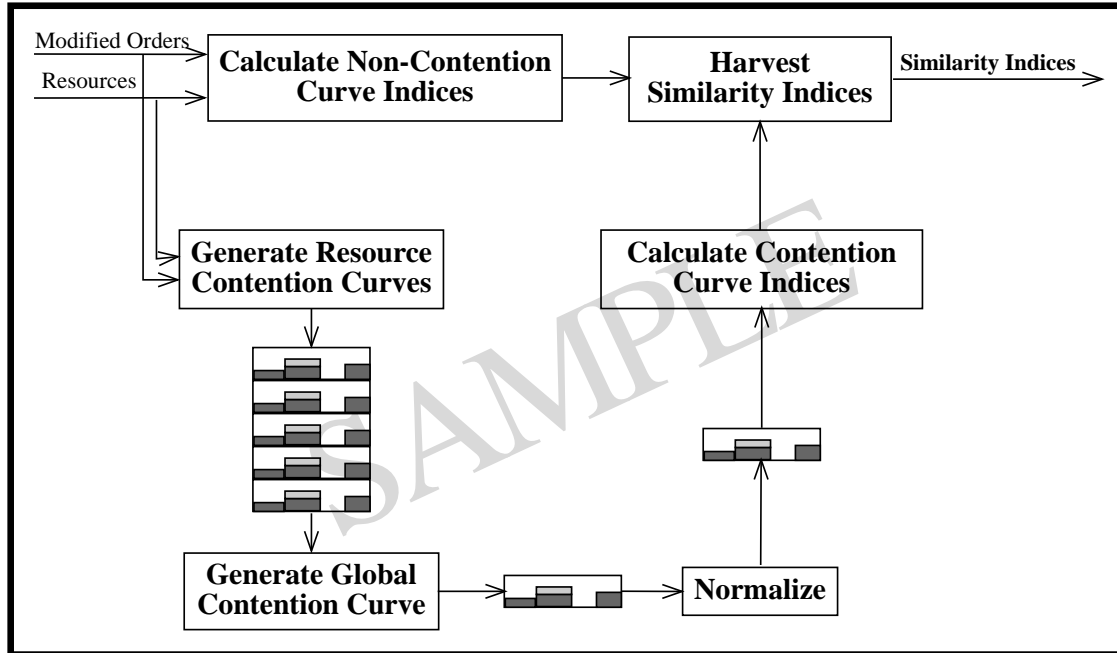

Figure 1: Overview

A resource curve is the ratio for a particular resource type over the time extent of the scheduling problem. The resource type is in bottleneck status anytime the value of the ratio exceeds one. Figure 1 is an overview that includes an example of a resource contention curve.

A normalized resource curve is simply a resource contention curve normalized to have a fixed size for each scheduling domain. The point of normalizing is to permit comparisons between cases with problems of different time extents. The reason the normalized fixed size is dependent on the scheduling domain is because different scheduling domains can have radically different time measurements. For example, some measure time in terms of thousands of milliseconds, while others measure it in terms of

13

To obtain estimates of C4.5 Size, RC4.5 Size and % Kept for a given dataset, we generated 10-fold cross-validated estimates of those quantities on 20 different permutations of the data, and averaged the results over the 20 permutations. The goal of averaging the results over multiple runs of cross-validation was to reduce the variance in our estimates. Given an estimate of the number of training instances that RC4.5 can be expected to discard for a dataset, RDR Size was estimated via 10-fold cross-validation on 20 new permutations of the data where each of the 10 training sets in each run of cross-validation were reduced by randomly discarding the same number of instances that RC4.5 would discard.

Table 3: A decomposition of the effect of RC4.5 on tree size into components attributable to reduction in training set size and to the method for choosing which training instances to discard.

Dataset	C4.5 Size	RC4.5 Size	% Kept	RDR Size	% of RC4.5 Effect Due to RDR
australian	61.58	48.48	92.19	58.89	20.53
breast-cancer-wisc	20.25	18.25	97.48	20.08	8.5
cleveland	44.61	35.13	88.58	41.70	30.70
diabetes	124.96	65.99	83.11	107.24	30.05
german	157.37	108.65	84.01	131.11	53.90
glass	50.21	41.33	89.34	46.02	47.18
heart	44.26	36.28	90.68	41.31	36.97
hepatitis	14.02	11.5	90.32	14.27	-9.92
lymphography	26.10	23.98	90.14	23.62	116.98
segment	83.05	78.47	98.48	82.48	12.45
tic-tac-toe	131.55	119.67	89.44	119.35	102.69
vote 1	21.96	18.32	93.17	20.14	50.00

Table 3 shows the results for datasets for which RC4.5 achieved a 5\% or greater reduction in tree size over C4.5. On the hepatitis dataset, random data reduction actually results in a larger tree than the one that C4.5 builds on the full dataset. Reduction of training set size accounts for only about 10\% of RC4.5's effect on two of the datasets (breast-cancer-wisc and segment), and it accounts for 100\% of RC4.5's effect on two other datasets (lymphography and tic-tac-toe). On average, 41.67\% of the decrease in tree size that RC4.5 obtains is attributable to the fact that it is simply reducing the size of the training set. What do these results mean? First, it is clear that tree sizes obtained through random data reduction should serve as a baseline against which other data reduction techniques measure their success, much as default accuracy or Holte's one-rules serve as a baseline for classification accuracy (Holte 93). If a data reduction

Notes

[1] Jurgen Habermas, <u>The Structural Transformation of the Public Sphere: An inquiry into a Category of Bourgeois Society</u> (Cambridge: MIT Press, 1990), p. 76.

[2] The Medieval origins of coffeehouses are discussed in detail in R. Hattox, <u>Coffee and Coffeehouses: The Origins of a Social Beverage in the Medieval Near East</u> (Seattle: Univ. of Washinton Press, 1985). Hattox covers the relationship between coffee drinking and religious activity both for Islamic and Sufi practices. Although there are similarities between this use and tribal use in the early Americas, no specific anthropological or historical study has been made connecting the two. For further evidence of this connection, see Schivelbusch, W., <u>Tastes of Paradise: A Social History of Spices, Stimulants, and Intoxicants.</u> (New York: Pantheon, 1992).

[3] Although there are popular images of publicly owned community gathering spots, such as the village common or parks in urban environments, in contemporary society most of the expanding and enduring public places are being created by private corporations rather than the government. For the popularized version of this argument, one can look to any of the materials put out by Starbucks and its corporate founders. It originates in R. Oldenberg's <u>The Great Good Place</u> (New York: Paragon House, 1989). He presents a more accessible and certainly de-politicized version of Habermas' arguments, ending up with a conciliatory and upbeat appraisal of the commercialization of public space and public debate.

[4] According to an employee at Java Net, "There is a considerable growth spurt considering that cyber cafes are founded on the odd proposition that people will leave their home computer and trek to a bar—just so they can stare at a computer screen again. People think it's anti-social to sit at a computer terminal at a cafe." (personal interview 5/5/95) Most magazine articles and advertisements for these spots stress unique social activity of interacting both with individuals far away and right next to you. For a typical example, see A. Fryer, "Gathering 'round a virtual campfire: shunning isolation, computer users bask in the florescent glow of monitors in cyber cafes." <u>The Christian Science Monitor</u>, May 14, 1996.

APPENDIX E

THE DARWINIAN REVOLUTION

One of the major controversies of Darwin scholarship is whether or not there is a "Darwinian revolution." I agree with those who consider that Darwin's insights, arguments and impact are significant enough to warrant the title "revolution." Of course, no intellectual revolution occurs without a context. Darwin did not invent the idea of evolution; there were major forces for intellectual change in science in general as well as social change. Nevertheless, most educated people still believed in special creation and the Argument from Design; naturalists expected and hoped that the study of nature would "reveal some meaning in it, something about man's place in nature, man's relation with God." Darwin's study did just that—but hardly what had been expected or hoped for.

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APPENDIX A: LIST OF GRADUATE DEGREES AWARDED AT THE UNIVERSITY OF MASSACHUSETTS AMHERST

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Doctor of Philosophy

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Master of Arts in Teaching
Master of Business Administration
Master of Education
Master of Fine Arts
Master of Landscape Architechture
Master of Music
Master of Public Administration
Master of Public Health
Master of Regional Planning
Master of Science
Master of Science in Accounting
Master of Science in Chemical Engineering
Master of Science in Civil Engineering
Master of Science in Electrical and Computer Engineering
Master of Science in Engineering Management
Master of Science in Environmental Engineering
Master of Science in Industrial Engineering and Operations Research
Master of Science in Manufacturing Engineering
Master of Science in Mechanical Engineering

Professional Master of Business Administration

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