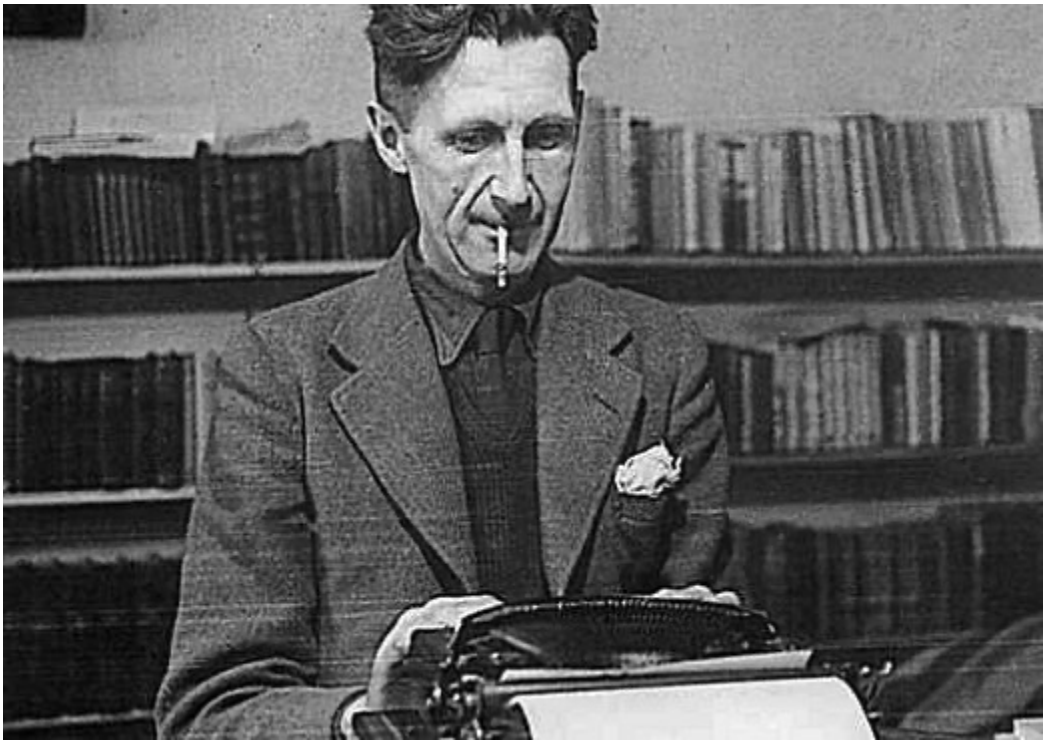
# SAASS 690

# THESIS GUIDE

## ACADEMIC YEAR 2020-2021



ERIC ARTHUR BLAIR (PEN NAME GEORGE ORWELL)
AT HIS BELOVED REMINGTON HOME PORTABLE #3.
"WRITING A BOOK IS A HORRIBLE, EXHAUSTING STRUGGLE, LIKE A LONG BOUT OF SOME PAINFUL ILLNESS. ONE WOULD NEVER UNDERTAKE SUCH A THING IF ONE WERE NOT DRIVEN ON BY SOME DEMON WHOM ONE CAN NEITHER RESIST NOR UNDERSTAND."

## INTRODUCTION

This guide comprises a common reference of expectations concerning the thesis for SAASS students and faculty. It provides to students, particularly those who may be writing a master's thesis for the first time, guidance in meeting these expectations. Great research and exposition are the products of a fruitful collaboration between diligent, inspired students and a supportive but academically critical faculty. Thus, this guide leaves great latitude to the student and his or her committee to collaborate in a manner that produces the finest possible product in terms of originality of questions posed; depth and sophistication of research; logic and balance of argumentation; conciseness, clarity, and elegance of expression; and, of the utmost importance, a project appropriate in scale to the time available for its completion. Guidance in these areas is therefore facilitating but not binding. The guide is, however, subordinate to any contrary instructions that might be found in the *Air University Style and Author Guide*, directive in all issues of format. Examples of required format are provided in the appendices. Supplementary instructions regarding mechanics of topic selection, assignment of advisors, and timing of requirements have been issued separately in the Course 690 syllabus.

1. **What is a Thesis?** According to *Webster's*, a thesis is a "proposition maintained and defended in argument." In academic terms, a thesis is a **sustained**, **written argument** that **answers** a particular **research question** with **evidence** and **logic**.

2. **Why the SAASS Thesis?**

   a. The mission of SAASS is to develop future strategists. One of the presumptions upon which the School was founded is that the design and implementation of future strategies will require creative and critical thinking in complex, ambiguous environments. Beyond encouragement, little can be done in an academic environment to enhance creativity, but much can be done to develop high standards of fact finding, analysis, and expression, all of which are vital to the evolution of sound strategy.

   b. With this in mind, the paramount rationale for the SAASS thesis is that requiring the student to 1) develop a narrowly focused but relevant research question; 2) design a research methodology appropriate to that question; 3) search out the essential facts related to the question; 4) assess the significance of these facts in light of specified analytical criteria; 5) determine the most supportable answer to the question; and 6) express the logic of the argument in cogent, sustained, analytical prose, all under the guidance of an experienced researcher and writer, will *significantly enhance the student's ability to develop, articulate, and implement sound strategy.*

   c. Additionally, the corpus of SAASS theses, published in a variety of direct and derivative formats, will, over time, *make a positive contribution to the corpus of literature about strategy and air, space, and cyber power.*

3. **Choosing a Topic**

   a. The thesis topic is developed by the student, subject to the approval of the assigned thesis advisor and the SAASS faculty. The topic should be interesting to the student, subject to the accessibility of appropriate sources, and, most critically, able to be completed in the allotted time for the project. It should involve original research, original ideas, and original postulates. Ideally, it should address an area of research or doctrine where a void exists.

b. Following are some specific factors to consider in developing your topic:

- Your own interest and expertise in the subject. Some tradeoff between these two criteria may be required, because you may wish to write a thesis that broadens your knowledge into a new arena

- The topic's suitability for treatment within the prescribed number of pages and time allowed for research and composition

- The availability of sources

- The topic's significance for security studies

- The potential for further research into the topic

4. **The Thesis Advisor**

a. The thesis advisor is responsible for guiding the student in the development of his or her thesis, from start to finish. All faculty members, to include the Commandant, may serve as thesis advisors.

b. The thesis advisor will have sufficient knowledge of the subject area to assist the student in the preparation of the prospectus and guide him or her through the entire process of research, analysis, and exposition. The advisor's role is to ask probing questions, recommend sources, and critique the outlines and drafts, in effect, undertaking an extended dialogue with the author. The advisor may also recommend specialists and experts who can provide the student particular expertise regarding his or her topic.

c. The thesis advisor helps keep the student on track by establishing deadlines for thesis outlines and drafts and monitoring progress toward these deadlines. The advisor will critique the writing produced by the student, as well as research methodology. In short, the advisor is involved at every stage of thesis development. Thesis advising is one of the most important teaching tasks for SAASS faculty and requires that detailed, timely, and consistent evaluations be provided to the student as the work progresses.

5. **The Thesis Reader**

a. The thesis reader assists the advisor in the direction of the thesis and provides the student an additional informed perspective from which to enhance and evaluate the work as it progresses. The reader's additional knowledge and perspective also enhances the student's intellectual development.

b. The reader is responsible for keeping the advisor fully informed of his feedback to the student. As a minimum, he or she should provide the advisor copies of all written communication to the student and may, at personal discretion, elect to route such communication through the advisor. As in the case of the advisor, the reader's evaluations of the work in progress must be detailed, timely, and consistent.

c. In the unlikely event that a student perceives that advice from the advisor and reader is in conflict, it is the student's responsibility to raise the issue with either or both parties as seems most appropriate. The advisor and reader must then act quickly and decisively to resolve the issue and communicate the resolution to the student.

6. **The Sequence of Thesis Development**

a. The steps listed below are a suggested sequence for the orderly research, analysis, and composition of your thesis. Some of these steps are ongoing throughout thesis development.

(1) Select a general subject area

(2) Narrow the scope of the thesis to a more specific topic

(3) Develop a focused, well-defined research question

(4) Conduct a survey of available sources

(5) Select a working title

(6) Develop a prospectus, to include

(a) a working bibliography

(b) an outline

(c) presentation of the draft prospectus to peers and professors

(d) submission of final version to thesis advisor

(7) Conduct the research and take notes

(8) Analyze your findings

(9) Conduct progress reviews

(10) Continually revise the thesis outline

(11) Conduct supplementary research

(12) Write a first draft

(13) Revise and submit a completed manuscript

(14) Comply with all administrative requirements

b. *Select a General Subject Area*: This provides the broad arena in which you will conduct your investigation.

c. *Narrow the Scope*: This step requires the student to provide limits to the research and may involve selecting a particular time, type of unit, or specific campaign function to study. As the scope changes, the title should be changed accordingly.

(1) It is not unusual for the advisor(s) and student to conduct a series of scope widening and narrowing exercises to hone in on an appropriate subject.

(2) NOTE: By this point, you should have discussed your intents and interests to several SAASS faculty. Indeed, the more uncertain you are about a topic, the more vital it is to request assistance in selecting one.

d. *Formulate the Research Question*: The student should address a particular problem or issue that is as a single question. When the research is completed and the results assessed, the answer to the question is then stated as the thesis or conclusion. Formulating the precise research question is one of the most important and difficult parts of the research process.

(1) SAASS professors have various techniques for arriving at a research question. Social scientists, for example, prefer the question posed in traditional if *x*, then *y* format, while historians pose questions in an interrogative form.

(2) Note that in order to conduct research effectively it may be necessary to have a presumed or suspected answer to the research question after a preliminary exploration of the topic. This answer should be stated in terms of a working hypothesis, one that is constructed as a falsifiable statement of cause and effect. Having an unbiased research agenda does not mean that one has no idea what the answer is. Unbiased research is that in which the researcher suspects he or she has made a good guess as to what the answer is, and in collecting evidence to affirm the working hypothesis does not ignore or discard evidence to the contrary. An unbiased researcher rarely finds that the original answer sought, the working hypothesis, remains essentially intact through the process.

e. *Survey the Sources*: In this step, you determine the quality and quantity of available material related to the thesis. Discussions with the thesis advisor, the SAASS bibliographer, and experts from other schools, as well as the use of Internet searches, published bibliographies, guides to periodical literature, other survey aids, and existing secondary works in the field are all important.

f. *Select a Working Title*: Your title should blend appropriateness to the thesis with attractiveness to grab the prospective reader's attention.

g. *Develop a Prospectus*: The thesis prospectus outlines the scope, methodology, and preliminary bibliography of the thesis. It demonstrates the feasibility of the research effort and serves as an initial agreement between researcher and director. A sample prospectus is at appendix A.

h. *Prepare a Working Bibliography*: The working bibliography takes the writer several steps deeper into research than the preliminary bibliography; it provides the initial body of evidence that the author will consult in attempting to answer the research question.

i. *Prepare a Conceptual or Question Outline*: This outline derives from the general questions addressed in the prospectus a series of very specific questions related to the evidence at hand. The conceptual outline may be as detailed as the researcher and advisor deem necessary, the amount of detail being dependent upon the familiarity of the researcher with his or her evidence. In its most fully developed form, the conceptual outline contains questions, the answers to which will become the topic sentences of each paragraph of the thesis. It is therefore important that these questions are linked both logically and factually.

j. *Present Draft Prospectus to Peers and Professors*: You will give a ten-minute talk on your thesis prospectus to a seminar composed of peers and professors. You should evaluate and incorporate commentary and critiques received into the final version of your thesis, with your advisor's concurrence.

k. *Conducting Research and Taking Notes*: Note cards are useful for recording information. It is also possible to take notes electronically and move the material from the notes directly into the text. No matter how notes are made, a single entry should be used for each separate item or topic. Each entry should also include the topics to which it relates and a paged reference for the source.

l. *Analyze the Findings*: Here the researcher confronts the meaning of the evidence. In this process, he or she must strive for impartiality, review all arguments, and develop balanced conclusions. In formulating conclusions, it is helpful to return to the original problem statement and research question. Have your conclusions addressed the original problem, and has the research question been answered? At this point, the researcher becomes analyst and is obligated to build a case that can stand up to logical questioning by informed readers. This is best accomplished by identifying specific, evaluative criteria and objectively applying those criteria to the evidence. The thesis, the author's principal conclusion, must be based on a coherent, balanced argument.

m. *Conduct Progress Reviews*: The thesis advisor will periodically review the progress or research and findings. The format for this review is left to the discretion of the advisor. Some approaches are:

(1) The submission of a written report of research, and a general outline

(2) An information briefing or the discussion of findings, accompanied by an outline

n. *Continually Revise the Thesis Outline* : Your original outline is a living document, constantly being tweaked as you develop your project. It may be of benefit, once you've completed sufficient research, to craft a Topic Sentence Outline. This outline contains the topic sentence of each paragraph in the thesis, and the answers to the conceptual outline questions (if the outline has been pursued to this level of detail). There are two points worthy of note concerning this outline.

(1) First, it is based on the **evidence** accumulated during research. That is, each sentence/paragraph can and should be substantiated by specific facts that will become the developing sentences of the final paper.

(2) Second, the sentences are arranged in a **logical** order that takes the reader through the evidence, periodically pausing to summarize the evidence, and leading the reader to the next logical inference, **ultimately** and **inescapably** leading to the conclusion.

o. *Conduct Supplementary Research*: This is research conducted to fill gaps in the argument after a chapter or several chapters have been drafted. Obviously, the more thorough the original research effort has been and the more precisely defined the research question has been focused, the less supplementary research will be required. Some such research, however, is virtually unavoidable.

p. *Write the First Draft*: If the research has been careful, the analysis conducted logically and objectively, and a proper outline completed, the first draft should be a straightforward writing task. Insofar as possible, students should write this draft quickly, without dwelling on the details—considerable refinement will be carried out later.

q. *Revise and Submit the Completed Manuscript*: After completing the first draft, the writer should make a fresh appraisal of the thesis. This appraisal should take place at least several days and, preferably, at least a week after the initial draft has been completed. When you come back to the work, your perspective should be fresh. Conduct your review in several stages.

(1) First, examine the macro logic of the argument: Is it in the proper sequence? Are there any gaps? If either of these conditions exists, re-structure or conduct supplementary research as needed.

(2) Next, proofread for correctness of spelling, punctuation, word choice, and usage. Various software programs are available to help in this phase, but there is no substitute for personal knowledge of the rules for correct writing.

(3) Proofread again to tighten the prose: eliminate unnecessary words, combine thoughts wherever possible, and make smooth transitions.

(4) The *final* editing step is to revise for polish, style, and grace. The best way to do this is to read the paper aloud and let the ear direct the pen or the keyboard as the case may be. We are not all capable of constructing elegant prose, and a thesis is neither an epic poem nor a novel. Nevertheless, the more pleasing and memorable your words are to your readers, the more likely they will be to accept your ideas.

r. *Complete all administrative requirements.* The job's not finished until all the paperwork's done! During the final stages of the thesis process, you will need to complete several Air Force, Air University, and SAASS administrative requirements which will be explained in detail to you by the SAASS faculty and staff.

7. **Writing and Style**

a. Several writing guides are highly recommended. The *Air University Style Guide* trumps all others for the correct format of grammar, style, footnotes, endnotes, abbreviations, and so on for all works published by the Air University Press. As all SAASS theses are eligible for publication, **all must follow this guide**.

b. Other writing aids have been issued to help you in proper research methods, style, and grammar: Strunk and White, *The Elements of Style*, the most widely used and probably the best American style guide ever written; and *The Chicago Manual of Style*, the foremost authority on academic writing in the humanities and social sciences, which goes into extreme detail concerning almost every conceivable appropriate style and grammar question for your thesis that is not apparent in the *AU*

*Style Guide*. You will also find the following works of use: Cook, *Line by Line: How to Edit Your Own Writing* and Pellegrino *A Writer's Guide to Powerful Paragraphs*. There are additional 690 texts and copious online sources available. Each is worth perusing before you begin research.

c. The above guides provide the basics regarding proper sentence structure, capitalization, grammar, punctuation, citation, and logical composition. In addition, a copy of Booth, Gregory, and William's *The Craft of Research* provides useful analyses of research methodologies. George and Bennett's *Case Studies and Theory Development in the Social Sciences,* King, Keohane, and Verba's *Designing Social Inquiry,* and Tractenberg's *The Craft of International History* offer more specific guidance on methodology.

d. Finally, you will also receive scheduled didactic instruction in the principles of composition and editing. Early in the academic year you will be assigned a faculty Writing Mentor who will provide you with additional comments and warnings, as well as tips and techniques, to help you improve the quality of your written work. Take these suggestions and warnings from your professors to heart. **You will save yourself a good deal of grief, especially during the thesis writing, editing, and submission process, by paying close attention to this instruction.**

8. **The Use of Evidence**

a. Your knowledge of the topic is demonstrated by the comprehensiveness of your research, which should reveal the important facts and ideas related to the topic. Thesis writers are cautioned, however, that the sheer weight of facts does not constitute effective argument. Many papers incorporate exhaustive factual details, bogging down the reader in trivia, without ever drawing conclusions. Use your facts tellingly, presenting only those details that are necessary to your argument. This does **not** mean you are to present only **one** side of an argument, merely that you are to exercise judgment as to how much (and what type of) evidence is presented.

b. When presenting evidence, assume that you are writing to convince a skeptical audience. Put yourself in the position of a critical reader who does not accept your position. Anticipate objections to your analysis that your audience might have, and structure your arguments to counter them. One problem that

SAASS students have had in the past, and one that may be increasing generally, is an uncritical approach to evidence. Arguments that seem self-evident to you, coming from your particular branch of service or Air Force specialty, might not be so self-evident to those outside your specialty. The writer should strive to assemble facts and figures, to develop an analysis that is so logical and comprehensive that even a highly critical audience will see at least some merit in his or her position.

c. An argument that relies heavily upon quotations, anecdotes and memoirs is likely to be unconvincing. That is not to say that such sources should not be used. They should, rather, be used carefully and sparingly, in conjunction with such factual evidence as statistical analyses or historical examples. A thesis that contains wonderful ideas but lacks the supporting evidence will not be remembered for those wonderful ideas.

9. **The Logical Development of the Argument**

a. The argument of the paper should follow a logical problem-solving process, derived from the research and analysis. Argument, in this context, is defined as the layout of research and analysis in written form. The writer may find that the best sequence for organizing the thesis is not the same sequence in which he or she arrived at the conclusions of the study. Discovery and exposition, though related, are two different processes.

b. The structure of the thesis must possess a logical unity. It should have a recognizable beginning, middle and end. Remember: you are presenting the results of research and analysis in logical, expository fashion in order to secure the reader's understanding and acceptance. The written monograph should be approached as a report of your research and findings, not the research and findings themselves.

c. Sections of the thesis should be organized appropriately to the subject being presented and the nature of the argument. Listed below are four models:

(1) SEQUENCING: Presenting material in a chronological fashion. Problems and issues are presented as events in a narrative.

Example: Tracing the origins of strategic bombing doctrine.

(1) CATEGORIZATION: Breaking down material into its component parts and analyzing the problems and issues associated with each part.

Example: Examining the role of Space Command in the Gulf War.

(2) COMPARING & CONTRASTING: Studying the similarities and differences between subjects, concepts, and ideas.

Example: Comparing carrier strike aviation with USAF attack missions in the Gulf War.

(3) CAUSE & EFFECT: Studying the reasons for occurrences or outcomes of decisions and actions.

Example: Determining why the Japanese surrendered in World War II.

d. It is possible to use combinations of these models. The important thing is for you to determine the method of presentation that best represents your findings.

10. **A General Outline for a Thesis**

I. Introduction

A. Statement of the Research Question

B. Background and Significance of the Problem

C. Limitations of the Study

D. Definitions and Assumptions, as necessary

E. Preview of the Argument

II. Thesis Body

A. Facts, Explanations, Information

B. Inferences and Preliminary Conclusions

C. Case Studies

III. Analysis and Evaluation

A. Discussion of Issues

B. Principal Findings

C. Conclusions

NOTE: Parts II and III may be combined in a sequence of chapters which link evidence and argument.

IV. Conclusion and Summary

A. Summary of Findings

B. Principal Conclusions Restated

C. Implications of the Study

11. **Variations**. As suggested in section 8, there are a number of possible variations to the above general outline that depend on the author's decision concerning how best to structure the argument. One specific variant is the framework to evaluate public policy questions, outlined at Appendix M.

12. **Academic Integrity**. The process of developing and implementing effective air strategies presupposes among the strategists involved complete candor and absolute integrity. The same standards are naturally expected in all SAASS work, including the thesis. The most commonly experienced violation of integrity in research products is the commission of plagiarism. The student handbook contains a definition of plagiarism and helpful hints on how to avoid it. **Please review this material closely.** If you have any questions at all concerning the techniques or spirit of proper citation, address them with your advisor *before* you submit your first written product. All thesis drafts, as well as final submissions, must meet the standards outlined in the SAASS Student Handbook. Those who wish to explore this issue in more detail are encouraged to read Thomas Mallon, *Stolen Words: Forays into the Origins and Ravages of Plagiarism* (New York: Ticknor & Fields, 1989) for a well-researched and well-argued critique of this particular form of intellectual theft.

13. **The Air University Research Database**. SAASS students have occasion to use the Muir S. Fairchild Research Information Center (MSFRIC) Research Database literally every day in their year here. In two preeminent activities, described here, it must be consulted, but students

are wasting an incredible advantage if they do not peruse this trove of information early and often. The first is using it during the topic identification and selection process. The second is using it during development of the thesis to provide information to other researchers. These extraordinarily useful databases are located at http://www.au.af.mil/au/aul/db4.htm and http://www.au.af.mil/au/aul/wsites.htm. See also MSFRIC's SAASS-specific research page at http://www.maxwell.af.mil/au/aul/school/saas/saass.htm, and take the time to introduce yourself and visit with the MSFRIC's very capable SAASS liaison, Ms. Sandhya "Sandy" Malladi.

a. *During topic selection*: The topics portion of the database contains a searchable list from which one may choose a potential thesis research topic. These research ideas are contributed by Air Force and Department of Defense agencies worldwide and offer up-to-date information on the kinds of questions that various operating agencies believe are relevant. In addition to the topics themselves, the database also contains points of contact for further information. A topic's presence on the database does not guarantee that it will eventually turn into an appropriate research question for a SAASS thesis; but it can, at a minimum, spark useful thought on what a useful research topic might be.

b. After the security and policy review has been completed, SAASS administrative personnel will provide the entire thesis and the computer-assisted briefing to the Air University Research office for posting to the database.

14. **Summary**. The thesis will challenge your ability to ask good questions, find relevant facts, interpret the significance of those facts, communicate both the facts and your interpretation of them in a balanced, yet persuasive prose, and defend your findings verbally. **These skills have great transferability to the realm of the strategist.** As you encounter the inevitable frustration that arises from these challenges, work your way through them in the certain knowledge that the process will not only give you greatly increased expertise in the subject area of your thesis, it will also produce demonstrable intellectual growth and confidence in your ability to reason your way through tough problems. The bottom line is that the benefits of the task will equal the intellectual and psychic energy invested. As you have done with every other challenge that got you to where you are now, tackle the thesis with enthusiasm and zest. It will pay great dividends in the end. One final warning to the wary – **procrastination is the thief of all time!**

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## Appendix A

## PROPOSED THESIS TOPIC FORMAT

**DATE:**_____

1. SUBMITTED BY:

2. PROPOSED RESEARCH TOPIC: In no more than one paragraph explain the nature of your proposed research and the question that you are trying to answer by writing a thesis on this issue.

3. SIGNIFICANCE OF THE TOPIC: In no more than one paragraph describe the strategic relevance of your research topic.

4. PREVIOUS SAASS THESES ON OR RELATED TO THIS TOPIC: Provide a list of SAASS theses on or related to this subject that you have found and reviewed.

Faculty Endorsement:_____

## Appendix B

## SAASS THESIS PROSPECTUS

DATE:

1. SUBMITTED BY:

2. WORKING TITLE:

3. RESEARCH QUESTION: In one interrogative sentence, state what question you want your thesis to answer.

4. PROBLEM BACKGROUND AND SIGNIFICANCE: In a brief paragraph, describe the historical or contextual background and strategic relevance of your research question.

5. METHODOLOGY: Describe how you will find the answer to your question. Include in this description the general bodies of evidence you intend to use, the techniques you will use to gather and assess this evidence, the major questions you will ask of the evidence, and the criteria you intend to apply to possible answers to your research question to assess their validity.

6. STRUCTURE: Indicate the major sections of the research paper from problem statement to conclusion. This conceptual outline must logically link the major subordinate questions of your work, answers to which will lead to the answer to your overall question. Estimate the number of pages that will be required for each section.

7. PRELIMINARY BIBLIOGRAPHY: List the major books, articles, and documents that will form the basis of evidence of your argument.

NOTE: Sections 1-5 should comprise a single page. Section 6 should not exceed a single page. Section 7 should provide sufficient detail to indicate the direction of your research; it should not be padded with extraneous sources.

## Appendix C

## MANUSCRIPT SPECIFICATIONS

The following guidelines comprise the standardized manuscript format.

1. **Margins**: Left = 1.5 inch, Right = 1 inch, Top = 1 inch, Bottom = 1 inch

2. **Paragraph Indentation** = .5 inch Tab

3. **Spacing**:

   a. *Text*: 1.5 line spacing. Front matter (disclaimer, abstract, about the author, and acknowledgments) pages should be ***single spaced text*** with a blank line and a half between each paragraph. Do not create fancy fonts or combinations of fonts and type sizes, special coding or spacing.

   b. *Quoted material*: Should be (10 lines or more) single space and indent *both* margins by .5 inches from the body's margin. If less than 10 lines, incorporate in the thesis body as part of a sentence and enclose in quotation marks.

4. **Illustrations**: Number consecutively throughout the manuscript, e.g., Figure 1, Figure 2, etc. Illustrations include charts, maps, line drawings, photographs, painting or graphs. Table titles appear across the top of table illustrations, flush left margin. All other illustration titles (for figures, charts, maps, photographs, etc.,) are included across the bottom of illustrations, flush left margin. If an illustration is not your own, or is derived from another source, identify the source with a credit line across the bottom (below the illustration title). See *AU Style Guide* page 8 for the definition of an illustration. List all illustrations on the contents page *by title, verbatim* as they appear in the manuscript.

5. **Tables**: Number consecutively throughout the manuscript. Include a source line beneath the table itself (see Appendix L), with appropriate footnote. Title of the table should be entered across the top and source line beneath.

6. **Footnotes**: Number consecutively within each chapter beginning with number one (1). Print notes as footnotes at the bottom of each page. NOTE: The first time an entry is used in each chapter it must include the **complete** citation of the work; subsequent entries within the same chapter are then cited in short form: the last name of the author(s),

an abbreviated title that clearly identifies the work, and page number(s). Ensure the complete citation is entered again the first time it is used in subsequent chapters.

7. **Page Numbers**: *Front Matter* (preliminary pages—title page, disclaimer, abstract, about the author, acknowledgments, contents, etc.) are numbered in *italics* beginning with the Roman numeral ii on the Disclaimer page. *Thesis body* (chapters, bibliography, etc.) are numbered using Arabic numbers beginning with number 2 on the second page of the Introduction. All page numbers should be at the bottom center of the page.

8. **Chapter Numbers**: Use Arabic numbers in chapter titles on contents page as well as on the front page of each chapter, e.g., Chapter 4.

9. **Headings & Subheadings**: Headings and subheadings are used to divide a chapter into logical portions; they are typed in bold font, with upper and lower case. A brief introduction to the chapter does not require a heading. Headings should not be "stacked," but separated by text. The *Air University Style and Author Guide* (Paragraph 1.53, p. 15) provides for up to three levels of division. This should be sufficient for any SAASS thesis. The first level of division is centered in the text. The second level is entered flush with the left margin, or "flush and hang." The third level is entered with a 0.5 inch indentation from the left margin, or "run-in." See samples in Appendix M.

**10. Odds and Ends**:

- **a.** Begin each chapter with a one-inch top margin and the words "Chapter *" followed by two hard returns (1.5 spacing) and the complete chapter title verbatim as it appears on the contents page.

**11. Disks:**

a. Clearly label each CD with the title of the thesis, author, contents of the disk, and software used (including version number.)

| |
|---|
| "Making the Grade:<br>Graduation Bound"<br>by Major N. A. Tight<br>front matter, chaps 1-5, biblio<br>& graphics<br>*Word* 2013 / Power Point 4.0<br>June 2020 |

b. Only CDs are acceptable. If more than one CD is needed, include a line to indicate disk/set number (e.g., disk 1/4, 2/4, 3/4, 4/4). If artwork is created from a software source such as Excel, that material should also be stored on the disk as a separate file (as well as incorporated in the chapter/body of work.)

c. Microsoft Word is the only acceptable word processing format and should be saved on the CD as such (not '.pdf')

d. The entire work should be in a single file.

12. **Font**: Either *Bookman Old Style* or *Times New Roman* is acceptable. Acceptable pitches are 11 or 12.

13. **Paper turn in**: Submit *original* signed approval page; be sure to include the date approval was signed. One copy of title page and the completed AU Security & Policy Review checklist.

14. **Copyrighted material**: Copyrighted maps, photographs, etc., may generally be used in an academic paper such as a thesis provided the copyright holder is properly cited and written permission is obtained. If the thesis is published, this material cannot be used without copyright permission. Therefore, you are encouraged to use non-copyrighted material wherever possible. Official histories and other government publications are excellent sources of non-copyright supporting material.

15. **Submitting Images for Publication.** When possible please submit original images such as photos, maps, or figures (line drawings). NOTE: .gif and .jpg files are not normally acceptable for printing due to their low resolution.

## Appendix E

## ORDER OF FRONT MATTER

Title Page

Approval Page (do not number this page)

Disclaimer

About the Author

Acknowledgments

Abstract

Contents (including List of Illustrations; e.g., Figures and Tables)

## Appendix F

## SAMPLE TITLE PAGE

"Wheels on the Screen Keep on Turning":

Information Scarcity and Access in an Era of Diamond-Class Information Technology

BY

Elliot J. Ness

A Thesis Presented to the Faculty of

the School of Advanced Air and Space Studies

for completion of graduation requirements

Air University

Maxwell Air Force Base, Alabama

June 2020

## Appendix G

## SAMPLE APPROVAL PAGE

APPROVAL

The undersigned certify that this thesis, written
by_____,
meets master's-level standards of research, argumentation, and expression.

_____
CHARLES W. KINGSFIELD JR. (Date)

_____
PHILLIP BARBAY (Date)

## Appendix H

## SAMPLE DISCLAIMER PAGE

DISCLAIMER

The conclusions and opinions expressed in this document are those of the author. They do not reflect the official position of the US Government, Department of Defense, the United States Air Force, or Air University.

## Appendix I

## SAMPLE ABOUT THE AUTHOR PAGE

ABOUT THE AUTHOR

Major Elliot J. Hess was a 1998 graduate of the USAF Academy, where he majored in cyberspace engineering. His 10-year career on active duty with the Air Force has taken him to a variety of assignments and places, including Allsafe Cybersecurity and the Pentagon, where he had his own office cubicle, which was nice.

## Appendix J

## SAMPLE ACKNOWLEDGMENTS PAGE

ACKNOWLEDGMENTS

I would like to acknowledge several people without whose support and help I would never have gotten off the ground with this study. I want to thank Captain Robert Daly, commander of U.S.S. Callister, and Commander Peter Quincy Taggart, NSEA Protector, for granting me numerous interviews and guiding me through mountains of documents in my quest for knowledge to complete this paper. Their patience and understanding were unmatched in this effort.

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Most importantly, I want to express my sincere appreciation to my family for their love, patience, and understanding during those times when I was absent in spirit, off struggling with this paper. Their presence was very important to me and made all the difference in ensuring my success in completing this work.

## Appendix K

## SAMPLE ABSTRACT PAGE

ABSTRACT

This study comprises an analysis of the historical adoption, expansion, and growing pains of the information technology infrastructure at Air University. The author assesses the importance of access to sufficient volumes of information and data quickly and expediently at Air University. The conclusion is that acknowledgement of the problem must be accompanied by swift and decisive action, lest the idea become bogged down in numerous exploratory committees and externally imposed constraints. In addition, while perfect network security in theory can be obtained by denying users access to information, such denial can have cascading consequences in practice. The writer begins with a background chapter on the history of collaborative computing at Air University and how the so-called "network revolution" passed the institution by. Next, the author assesses the range of exogenous and endogenous factors that slow network access to a crawl. The author explores these factors through three cases of planning and execution: the Air University Research Information Management System (AURIMS); Defense Research and Engineering Network (DREN); and the AU Student Information System (AUSIS). The results of this process demonstrate that the rhetoric of "diamond-class IT" has not be matched by the reality of its architecture or use. The final section of the study includes proposals for improving connected and collaborative information access and sharing through a .edu domain.

## Appendix L

## SAMPLE CONTENTS PAGE

CONTENTS



Illustrations

## Appendix M
## Sample Thesis Chapter

Chapter 2

Theoretical Foundations Of Military Genius

> *If I always appear prepared, it is because before entering on an undertaking, I have meditated long and have foreseen what may occur. It is not genius that reveals to me suddenly and secretly what I should do in circumstances unexpected by others; it is thought and preparation.*
>
> Napoleon Bonaparte

Genius is often the subject of historic review and analysis because the resounding impact of individual genius on the course of mankind. Subsequently, the study of genius represents a desire to improve personal skills or to better the conditions of life. Military genius appears as an exemplary model of man's behavior under the deadliest conditions. This chapter defines those key attributes of a military genius across three perspectives to include the rare natural genius, the synthetic genius nurtured through artificial means, and the collaborative genius of the modern age.

### Natural Genius

The Age of Enlightenment accelerated man's intrigue with his own psyche and genius is a human rarity demanding deeper exploration. The theory of natural genius was developed from Carl von Clausewitz's seminal work On War through the influence of the philosophy of fellow Prussian Immanuel Kant.[1] Kant asserted that genius is a natural gift and is only applicable to art and not science.[2] Clausewitz devoted one of the longest

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[1] Christian Stadler, "The Dialectical Dimension of Moral Military Decision Making: An Idealistic Approach." *Journal of Power and Ethnics* 2, no. 1, 2001. The Prussian philosopher, Immanuel Kant (1724-1804), is better known for providing the foundations of democratic peace theory. His hopeful internationalism can be contrasted against his firm stance on genius. He says genius is a natural gift, characterized by originality and unable to be imitated. Immanuel Kant, *Critique of Judgment*, trans. John Henry Bernard New York: Hafner Publishing, 1951), 150-164.

[2] His assertion regarding art and science is much to the chagrin of the likes of Newton and Einstein. This distinction is based on the inseparable qualities of intellect and

chapters of his manuscript to attributes of military genius. His assessment of true genius, albeit rare, can serve as a guidepost for individual and institutional improvement in modern warfare. Clausewitz's theory of military genius can be divided into three sections. First, the context of his analysis will be presented in order to establish the demands of genius. The next area is the broader theory of the commander's relationship to the overall context of the conflict. The third area, specifically qualifies the individual attributes of military genius.

Historic context for Clausewitz's analysis on military genius provides insight into how command and control was accomplished in the late 18th and early 19th century. For the most part, Clausewitz draws from the campaigns of Frederick the Great and Napoleon. Each pre-industrial age leader served simultaneously as a head of state and as the supreme military commander in the field centrally controlling their forces. Aided by a telescope, Frederick was able to command the battlefield from a fixed headquarters.[3] However, the transition from Frederick's dynastic wars to Napoleon's wars of nationalism included a vast increase in numbers of men and equipment, and increased span of control problems. For instance, the average size of an army in battle during the Wars of Frederick was 47,000 men. During the Wars of Napoleon, there were an average of 84,000 men; although, Napoleon's Grand Armee numbered as many as 180,000 men on campaign.[4] "Napoleon lived near the end of the very long period in history in which during battle the commander might actually see most of his troops, as well as many of the enemy's."[5] From this context, Clausewitz's genius theory developed to account for command excellence despite an inability to see all things clearly.

The military genius recognizes the responsibility of his command in relation to the national objectives and commitment of people. Clausewitz's war

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personality with art, whereas, science is repeatable and objective with no room for personality. For more, see Ernst Cassirer, *Kant's Life and Thoughts*, (New Haven, Conn.: Yale University Press, 1981), 321-325.

[3] Martin Van Creveld, *Command in War*, (Cambridge, Mass.: Harvard University Press, 1985), 10.

[4] R.R. Palmer, "Frederick the Great, Guibert, Bulow: From Dynastic to National War," and Peter Paret, "Napoleon and the Revolution in War," ed. Peter Paret, *Makers of Modern Strategy from Machiavelli to the Nuclear Age* (Princeton, N.J.: Princeton University Press, 1986), 100, 106, 123.

[5] Paret, 133.

theory is built around the trinitarian relationship between the government, the commander and his army, and the people. The people represent the natural passions and unpredictability of mankind. The army faces danger, physical exertion, uncertainty, and chance due to the ambiguity of the enemy situation and friction in its own operations. In response, the genius marshals his intellect, boldness and decisiveness. The government develops policy and objectives reflecting the needs of the people and subordination of the army.[6] Success is achieved by harmonizing these three relationships.

As responsibility increases, military command positions portend more emphasis on horizontal and vertical communication and integration. Clausewitz adds, "Appropriate talent is needed at all levels if distinguished service is to be performed. But history and posterity reserve the name of 'genius' for those who have excelled in the highest positions—as commander-in-chief—since here the demands for intellectual powers are vastly greater."[7] However, military expertise is not the only requirement. "We argue that a commander-in-chief must also be a statesman, but he must not cease to be a general. On the one hand, he is aware of the entire political situation; on the other, he knows exactly how much he can achieve with the means at his disposal."[8] Beyond relationships, the military genius has certain natural gifts of intellectual synthesis and calm decisiveness.

The natural genius has an innate superior intellect. Clausewitz describes the military genius as originating from a rare and special cast of mental and moral powers.[9] Clausewitz rhetorically mocked that "everything in war is simple, but even the simplest thing is difficult."[10] He clarifies, that knowledge appears simple, but "the difficulty increases every step up the ladder; and at the top it becomes among the most extreme to which the mind can be subjected."[11] He also adds, "Boldness governed by intellect is the mark

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[6] Carl von Clausewitz, *On War*, ed. and trans. Michael Howard and Peter Paret (Princeton: N.J.: Princeton University Press, 1976), 89.
[7] Clausewitz, 111.
[8] Clausewitz, 112.
[9] Clausewitz, 100.
[10] Clausewitz, 119.
[11] Clausewitz, 146.

of a hero…[but] so rare in the higher ranks."[12] The natural genius is able to respond to "continual change…[and] bring forth the appropriate decision."[13] These powers or gifts provide the commander "a sense of unity and a power of judgment raised to a marvelous pitch of vision, which easily grasps and dismisses a thousand remote possibilities, which an ordinary mind would labor to identify and wear itself out in so doing."[14]

Superior intellect leads to intuitive observation and bold responsiveness. Clausewitz boils it down to two qualities essential to dynamic decision-making. "If the mind is to emerge unscathed from this relentless struggle with the unforeseen, two qualities are indispensable: first, an intellect that, even in the darkest hour, retains some glimmering of inner light which leads to truth; and second, the courage to follow this faint light wherever it may lead. The first of these qualities is described by the French term, Coup d'oeil; the second in determination."[15] Because of the complexity of the battlefield, "Clausewitz's commander turns inward to rely on his intuition and subjective assessment," rather than rely on ambiguous intelligence reporting.[16] The bottom-up communications of the pre-industrial age such as dispatch runners and guidons made battlefield reports unreliable. Therefore, a genius' temperament in the form of coup d'oeil and determination allow a commander to make calm, dynamic decisions under the most extreme battlefield conditions and physical exertion.

This level of confidence and decisiveness develops from contemplative strategic planning. Frederick the Great observed that: "War is not an affair of chance alone. A great deal of knowledge, study, and meditation is necessary to conduct it well and when blows are planned whoever contrives them with the greatest appreciation of their consequences will have a great advantage."[17] Clausewitz highlights the importance of the strategist's role in campaign planning.

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[12] Clausewitz, 192.
[13] Clausewitz, 147.
[14] Clausewitz, 112.
[15] Clausewitz, 102.
[16] Michael I. Handel, *Masters of War: Sun Tzu, Clausewitz, and Jomini*, (London: Frank Cass, 1992), 122.
[17] Frederick the Great, *Instructions for His Generals*, trans. by Brig Gen Thomas R. Phillips, (Harrisburg, Penn.: Military Service Publishing Company, 1944), 66.

> The strategist must therefore define an aim for the entire operational side of the war that will be in accordance with its purpose. In other words, he will draft the plan of the war, and the aim will determine the series of actions intended to achieve it: he will, in fact, shape the individual campaigns and, within these, decide on the individual engagements. Since most of these matters have to be based on assumptions that may not prove correct, while other, more detailed orders cannot be determined in advance at all, it follows that the strategist must go on campaign himself. Detailed orders can then be given on the spot, allowing the general plan to be adjusted to the modifications that are continuously required. The strategist, in short, must maintain control throughout.[18]

Furthermore, strategic planning is more demanding of genius. "In strategy, everything has to be guessed at and presumed. Conviction is therefore weaker. Consequently, most generals, when they ought to act, are paralyzed by unnecessary doubts."[19] Clausewitz acknowledges the importance of planning and study when he echoes Frederick's maxim that knowledge required by the commander is distinguished by the fact that it can only by attained by a special talent through the medium of reflection, study, and thought.[20] Clausewitz concedes that "no activity of the human mind is possible without a certain stock of ideas; for the most part, these are not innate, but acquired, and constitutes a man's knowledge."[21] Clausewitz caveats that acquired knowledge in the form of theory is always subordinate to natural genius. "What genius does is the best rule, and theory can do no better than to show how and why this should be the case.[22]

In summary, Clausewitz's natural genius must be both a superior commander and statesman, intellectually informed and boldly creative, and contemplative in planning and decisive in battle. Although Clausewitz spends significant analysis on the ideal, he does mention 'acquired' knowledge as requisite for any military professional. Qualities of natural genius then become

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[18] Clausewitz, 177.
[19] Clausewitz, 177-179.
[20] Clausewitz, 146.
[21] Clausewitz, 145.
[22] Clausewitz, 136.

personal goals for leaders at any level of command in order to compensate for lack of innate talent.

**Table 2: Attributes of Natural Genius**

| Attributes of Natural Genius |
|---|
| Superior Statesman and Commander |
| Superior Intellect |
| Intuitive Observation and Bold Responsiveness |
| Strategic Planner |
| Adjusts theory as required |

*Source: Author's Original Work*

Every commander must have the courage to take responsibility for individual preparedness and the readiness of subordinates. Confidence and clarity of direction are manifest without hesitation when that leader has the intellect to appreciate the greatness of their task, to recognize individual strengths and weaknesses, and to understand the importance of the interrelationships involved.

**Synthetic Genius**

Clearly, the virtues of natural genius are desirable, but in the early 19th century, an increasingly expansive battlefield and the advent of the industrial revolution, synthetic genius developed as a deliberate and pragmatic effort to institutionalize excellence and to cope with an increased span of control. As noted above, the context was significantly changing at the twilight of Napoleon's empire. Clausewitz's contemporary Baron Henri Antoine Jomini noted, "[Napoleon] fell from the height of his greatness because he forgot that the mind and strength of man have their limits, and that the more enormous the masses which are set in motion, the more subordinate does individual genius become to the inflexible laws of nature, and the less is the control which it exercises over events."[23] The realities of decentralized leadership with larger armies and small maneuver units were becoming the norm. "The exercise of generalship today

[23] Quoted in Handel, 150.

carries with it tremendous difficulties. A division [in 1987] is expected to cover a frontage comparable to that assigned to corps in World War II."[24] Harnessing the elements of synthetic genius can be thought of as the pursuit of incremental improvements through individual knowledge, institutionalized education, organizational efficiency, and technological enablers.

**Individual Knowledge**

A military professional has a need for individual effort to guide for the mastery of the appropriate skills. The modern war scholar, Sir Michael Howard, says that a military officer has an individual obligation to expand his breadth, depth, and context of knowledge.[25] Synthetic genius, in this respect, represents the individual pursuit of an intuitive sense of knowledge through history and experience or under great physical exertion.

**Experience**. Synthetic genius recognizes the value of physical conditioning under the uncertain conditions of warfare. Experience is the only true lubricant to ease the friction and fog of war.[26] Considering the enemy faces similar uncertainty, "the man with enough talent and experience to overcome [the lack of information] will have a real advantage."[27] Exposure to the stress of battle helps prepare the body's strength and the mind's intuitive clarity; "as man under pressure gives in to physical and intellectual weakness, only great strength of will can lead to the objective."[28] Clausewitz says, "The experienced soldier reacts rather in the same way as the human eye does in the dark."[29] Decisions become intuitive and instinctive. Clausewitz encouraged the recruiting experienced foreign soldiers as trainers and sending soldiers abroad as observers in order to prepare an army for combat; peacetime maneuvers can train officers' judgment, common sense, and resolution.[30] However, the opportunity for combat experience cannot be guaranteed; therefore,

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[24] Quoted in Maj John Vermillion, "The Pillars of Generalship," *Proceedings*, Summer 1997, 43.
[25] Michael Howard, "The Use and Abuse of Military History," in *The Causes of War and Other Essays*, (Cambridge, Mass: Harvard University Press, 1983), 196-197.
[26] Clausewitz, 122.
[27] Clausewitz, 109.
[28] Clausewitz, 193.
[29] Clausewitz, 122.
[30] Clausewitz, 122.

professionals turn to the lessons of history.

**Study**. The synthetic genius recognizes the value of mental conditioning associated with disciplined study. Study strengthens intellect. Clausewitz differentiates natural genius by the instinctive recall and application of this knowledge "that the mind would ordinarily miss or perceive after long study and reflection."[31] Contrary to Clausewitz's inward source of genius, Sun Tzu's 2500-year-old perspective argues genius comes from outside sources.[32] In addition to a heavy reliance on intelligence, Sun Tzu advocates the value of study and reflection. The complexities of war are documented in his writings with the statement, "Warfare is the greatest affair of the state…[I]t must be thoroughly pondered and analyzed."[33] Jomini acknowledged the existence of genius, but acknowledged the use of building it synthetically instead of passively anticipating genius. He says that "the natural genius will doubtlessly know how, by happy inspirations, to apply principles as well as the best studied theory could do it; but simple theory…based upon a few fundamental maxims, will often supply genius and will even extend its own development."[34] Clausewitz did admit, "A commander-in-chief…must aim at acquiring an overall knowledge of the configuration of a province, of an entire country…of course, he can draw general information from reports of all kinds, from maps, books, and memoirs."[35] The development of foundational intellect becomes an institutional goal rather than an individual pursuit. As Jacob Burckhardt philosophized, "The study of war is not to make men clever for next time; it is to make them wise forever."[36]

**Institutionalized Knowledge**

Institutionalized knowledge represents the foundation of doctrine and formal instruction as made available throughout a military force. Professional

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[31] Clausewitz, 102.
[32] Handel, 122.
[33] Sun Tzu, *Art of War*, ed. and trans. Ralph D. Sawyer (Boulder, Col.: Westview Press, 1994), 167.
[34] Quoted in Major Gregory R. Ebner, "Scientific Optimism: Jomini and the U.S. Army," Combat Studies Institute, 1, on-line, Internet, 16 January 2004, available from http://www-cgsc.army.mil/csi/research/writing/Papers%20C600/Commendebner2.asp
[35] Clausewitz, 110.
[36] Jacob Burckhardt, *Force and Freedom: Reflections on History*, ed. and trans. by James Hastings Nichols, (New York: Stratford Press, 1943), 86.

military education is the most overt manifestation of this type of synthetic genius. An educational system complete with a common language, and common set of operating procedures can reduce friction and provide insight in future wars.[37] Synthetic genius requires the cautious avoidance of blind acceptance of institutionalized principles of war. Therefore, synthetic genius, must deliberately and aggressively keep shared knowledge from becoming unimaginative platitudes.[38]

Clausewitz emphasized the role of theory in his analysis of warfare. "Theory exists so that one need not start afresh each time."[39] However, only after analytical investigation and thorough familiarity can theory fulfill its main task of stimulating intellectual development.[40] While Clausewitz eschewed over-prescription, others argued for a more structured and scientific approach to warfare. After the bloodshed of WWI, British Colonel J.F.C. Fuller first used the term synthetic genius is his book, The Foundations of the Science of War.[41] "We cannot endow [the average man] with a natural faculty, but we can supply him with a synthetic substitute."[42] Fuller dedicated his analysis to institutionalizing the profession of war. He surmised, "If we can establish a scientific method of examining war, then frequently shall we be able to predict events—future events—from past events, and so extract the nature and requirements of the next war possibly years before it is fought."[43] With his prescriptive nine principles and his law of economy of force, Fuller suggests, "A synthetic genius can be cultivated" through the analysis of the mental, moral and physical spheres of war.[44] "This is the object of my method—to create a workable piece of mental machinery which will enable the student of war to sort our military values."[45]

The students of war require an educational institution to learn and share

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[37] Harold Winton, "On Doctrine," lecture, School of Advanced Air and Space Studies, Air University, Maxwell, AFB, Ala., 5 September 2003.
[38] Clausewitz, 185.
[39] Clausewitz, 141.
[40] Clausewitz, 141.
[41] J. F. C. Fuller, *The Foundations of the Science of War*, (London: Hutchison & Company, 1925), 94-99.
[42] Fuller, 94.
[43] Fuller, 37.
[44] Fuller, 99.
[45] Fuller, 34.

these accepted truths, doctrine, or theory. "One of the most important points of the military policy of a state is the nature of its military institutions."[46] Jomini lists "an organization calculated to advance the theoretical and practical education of its officers" as a requisite for a good army's success under the command of an ordinary [non-genius] general.[47] The Kriegsakademie, the early prototype of Professional Military Education (PME), was developed by General Gerhard von Scharnhorst, Clausewitz's mentor.[48] Soon after, Major General von Clausewitz served as the school's senior director, but due to a reactionary mood within the Prussian military, Clausewitz became marginalized within the institution he helped create.[49] Despite the political oscillation, the Kriegsakademie's competitive selection process and rigorous curriculum ensured the most prepared minds were placed in positions to influence strategic and operational decisions.

Synthetic genius requires constant attention and adjustment. Fuller recommended "pruning with an axe" in order to keep institutions designed to propel synthetic genius from strangling it.[50] Sir Michael Howard argues that the military is disadvantaged by not being able to practice its profession with any regularity.[51] The military is also a bureaucracy where "disciplined acceptance of traditional values and of traditional solutions is the natural product of a military environment."[52] As with any large bureaucracy, the military is resistant "to absorb, encourage, and nurture outstanding original thinkers in their midst."[53] Synthetic genius represents a deliberate effort on the part of the resistant hierarchy to build what it most fears, original and intuitive thinkers. Morris Janowitz states, "Entrance into the military elite comes only after many years of professional education, training, and experience...[While]

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[46] Antoine Henry Jomini, *The Art of War*, ed. and trans. by Charles Messenger (Pennsylvania: Stackpole Books, 1992), 43.
[47] Jomini, 43.
[48] Dupuy, T. N., *A Genius for War: The German and Army General Staff, 1807-1945*, (London, U.K.: MacDonald and Jane's Publishing, 1977), 30
[49] Dupuy, 39-40.
[50] J.F.C. Fuller, *Generalship: Its Diseases and Their Cure*, (Harrisburg, PA: Military Services Publishing Company, 1936), 13.
[51] Michael Howard, "Military Science in an Age of Peace," *Journal of the Royal United Services Institute for Defense Studies* 119, March 1973, 3.
[52] Howard, "Military Science in an Age of Peace," 6.
[53] Howard, "Military Science in an Age of Peace," 4.

concern with military tradition is tempered with an emphasis on a critical approach, teaching methods, semantics, [and] concern with communication skills divert attention from subject matter and analytic skills."[54] Synthetic genius absolutely requires institutionalized educational opportunities, but military education has regularly received criticism for being too prone to bureaucracy. It takes a conscious, continuous effort to not become obsolescent through overemphasis on tradition and custom.[55]

**Organizational Constructs**

Synthetic genius is readily apparent in organizational choices made by a commander to accommodate the greater span of control and the ability to operate in a decentralized fashion. Clausewitz summarizes the role of strategy in organizational decisions, "A prince or general, who knows how to organize his war exactly according to his object and means, who does neither too much or too little, furnishes thereby the greatest proof of genius."[56] With unity of effort, properly organized staffs can optimize the economy of force required to meet the objectives.

In order to assist the commander in acquiring an overall knowledge of the situation, Clausewitz recognizes that staff officers will play a role by supplying planning details and general information to the commander in chief.[57] Jomini lists a good organization as another prerequisite for a good army. Jomini recognized the synthetic nature of creating a good general staff to advise the commander and influence operations in the absence of natural genius. "A well-instructed staff is one of the most useful of organizations; but care must be observed to prevent the introduction of false principles."[58] "Superior generals surround themselves with staff officers who complement them by covering their blind spots."[59] Additionally, Liddell Hart characterizes the general staff as "a

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[54] Morris Janowitz, *The Professional Soldier* (New York: The Free Press of Glencoe, 1960), 143-144.
[55] Dupuy, 305.
[56] Clausewitz, 177.
[57] Clausewitz, 110.
[58] Jomini, 57.
[59] Vermillion, 44.

collective substitute for genius."[60] Clearly, the staff fulfilled a growing need to augment a commander's increased span of control responsibilities.

As the battlefield expanded, so followed the blind spots and the need for more efficient and capable staff organizations. Napoleon's staff was composed of hand-selected general officers "capable of all missions from the negotiation of a truce to the command of a special task force."[61] In the late 19th Century, "[Field Marshall] Helmut von Moltke saw the industrial revolution had let loose the powers to mobilize, equip, and direct enormous armies, and that this development demanded the creation of complex and highly professional staff" to maintain unity of effort.[62] "He reasoned that war…gives rise to rapidly changing situations that render a commander's decisions obsolete. Hence, subordinates had to think and act according to the situation…"[63] Moltke's genius now rested on his ability to communicate broad operational guidance to his subordinates and provide them decentralized tactical authority.

Like institutionalized education, organizations are often considered as counter-genius due to the tendency toward bureaucratic rigidity. More appropriately, organizations must be looked upon as extensions of the commander's intellect with the processes in place to constantly act as adaptive sources of learning and optimization.

**Technological Enablers**

The first three elements of synthetic genius focused on gaining and optimizing basic knowledge. Technology enables synthetic genius by accommodating for the loss of observation and situation awareness across the broader battlefield. As Jomini noted earlier, Napoleon's genius was becoming over-extended at Waterloo.[64] Soon after, the industrial revolution ushered in technological advances that would change the role of genius and eventually bring technologically enhanced Coup d'oeil to the commander.

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[60] Quoted in Vermillion, 44.
[61] Gen Anthony Zinni, Col Jack Ellertson, and Maj Bob Allardice, "Scrapping the Napoleonic Staff Model," *Military Review*, July 1992, 83.
[62] Vermillion, 44.
[63] Echevarria, Antulio J., "Moltke and German Military Tradition: His Theories and Legacies," *Parameters*, Spring 1996, 95.
[64] See note 24.

Because of more men, improved communications, and enhanced mobility, dispersed operations both enabled the exploitation of the battlefield and diluted the commander's direct control. Moltke the Elder succeeded by balancing the technological impacts brought about by vastly improved firearms, transportation, and communications, together with larger armies, that required corresponding changes in strategy, tactics, command, and organization.[65] "The forces Moltke directed were much larger than the Napoleonic armies and more widely dispersed, and although the electric telegraph provided an instrument of strategic direction, it was not flexible for operational control."[66] Similarly, one of America's most celebrated military geniuses, General George S. Patton maximized his available technology resources. Patton's audacious speed through France was fueled by information and airpower. When ULTRA reporting was declassified in 1974, it was revealed that Patton's intuition was empowered by near-perfect information. "Patton knew where the enemy was, where he would be, and in what numbers…[A]ny unforeseen German countermoves could be rapidly dealt with by airpower."[67] His recognition and willingness to use this information resource and his boldness set him head and shoulders above his peers.

Improvements in the access to the air, space, and information mediums have allowed increased intelligence collection, processing, and dissemination. Jomini acknowledged the need to exploit technologies involving improved intelligence collection. "Jomini completes his examination of intelligence most appropriately with a comprehensive analysis of the value of visual telegraph and an efficient communications system in war – as well as a strong recommendation that balloons be used for battlefield reconnaissance.[68] The unreliability of intelligence is often cited in Clausewitz, but Frederick the Great and Napoleon clearly grasped the empowerment of information in the right hands. Frederick actively sought out strategic and battlefield intelligence

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[65] Gunter Rothenberg, "Moltke, Schlieffen, and the Doctrine of Strategic Development," edited by Peter Part in *Makers of Modern Strategy,* (Princeton, N.J.: Princeton University Press, 1986), 297.
[66] Rothenberg, 301.
[67] Lt Col Bradford Swedo, *XIX Tactical Air Command and ULTRA*, (Maxwell AFB, Ala.: Air University, 2001), 84.
[68] Handel, 132.

sources, but always with suspicion.[69] Similarly, Napoleon admits, "I must have precise information to adjust my movement and formulate my plan."[70] Both men of genius effectively exploited the information resources at hand.

Today, synthetic genius pays off in the form of information superiority in which the U.S. wishes to dominate. In 1993, Alvin and Heidi Toffler defined the advances in information technology as instrumental in bringing a transition from industrial age war to what they labeled as Third Wave Warfare.[71] Technology provides the information backbone enabling battlefield observation and commanders' situation awareness. In relative terms, there is little to argue about the value of information. "Whether these [information-intensive interactions] are focused on commerce, education, or military operations, there is 'value' that is derived from the content, quality, and timeliness of information moving between nodes on the network. This value increases as information moves toward 100% relevant content, 100% accuracy, and zero time delay--toward information superiority relative to the adversary."[72]

Current efforts to improve communications and responsiveness represent a technology-based approach to achieving genius by integrating the enduring principles of command and control with shared situation awareness, communications links, and near-persistent force application options. Technology advancements bring the ability to centralize operations back to the commander with a flattened, more responsive command hierarchy. Furthermore, technology must be accompanied with the mindset of collaboration and shared risk in order to achieve economy of force and unity of effort.

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[69] David Fraser, *Frederick the Great*, (New York: Fromm International, 2001), 215.
[70] Napoleon, *Napoleon on the Art of War*, ed. and trans. Jay Luvaas (New York: The Free Press, 1999), 10.
[71] Alvin and Heidi Toffler, *War and Anti-War*, (New York: Little, Brown, and Co., 1993), 64.
[72] Arthur K. Cebrowski and John J. Garstka, "Network Centric Warfare: Its Origin and Future," *Proceedings* 124, January 1998, 30.

**Table 3: Synthetic Genius Areas and Attributes**

| Synthetic Areas | Enhances Genius by… |
|---|---|
| Individual Knowledge | Experience Fosters Intuition |
| Institutional Education | Builds Baseline Intellect |
| Organizational Efficiency | Augments Commander's Intellect |
| Technology Enablers | Restores Coup d'oeil |

*Source: Author's Original Work*

**Collaborative Genius**

"None of us is as smart as all of us."[73] Synthetic genius methods will eventually run into span of control limitations. Conceivably, a group of talent, unified under a common goal, can accomplish more an individual. "[I]n a global society, in which timely information is the most important commodity, collaboration is not simply desirable, it is inevitable. In all but the rarest cases, one is too small a number to produce greatness."[74] The concept of the collaborative genius relies on cooperation within a social network. This network is globally interconnected and composed of harmonized relationships capable of synchronized planning and rapid adjustment due to the current level of interconnectivity. Collaboration is the central concept to this theory and it is described as: "Collaboration is a process in which individuals work together to achieve a common goal. It is important because it enhances the degree of shared awareness in a group focused on solving a specific problem or arriving at an agreed decision. Several reasons point to why collaboration might be expected to improve the degree of shared awareness, including the potential for increased sharing of information and experience as well as synergy of

[73] Warren Bennis and Patricia Biederman, *Organizing Genius*, (Cambridge, Mass.: Perseus Books, 1997), 1.
[74] Bennis, 3.

inference."[75] Collaborative genius, therefore, uses a web of relationships to guarantee access to collective experience, mutual trust in shared knowledge, and a medium for sharing the risks of decision-making. Synthetic genius stressed the importance of internal organization and efficiency within the hand-selected staffs proximate to the commander. External efficiency is now the focus of improvement in an age when widely dispersed information resources and expertise replace the comfort of proximity and cause the reduction of personal interaction.

The Defense Transformation Office includes collaboration as a core competency of leadership in the information age. They incorporate the following aspects as essential to collaborative leadership: building coalitions, building consensus, building social networks, and taking the risk to step beyond one's own organization.[76] Collaboration is a natural outgrowth of increased physical as well as social connectivity. Their analysis highlights the transition from the industrial age behavior to information age behavior that provides baseline attributes for collaborative genius shown below.

**Table 4: Comparison of Industrial and Information Age Attributes**

| Industrial Age Attributes | Information Age Attributes |
|---|---|
| Inward Focus | Externally Oriented |
| Information Hoarding | Information Sharing |
| Vertical Integration | Lateral/Virtual Integration |
| Local Awareness | Increased Transparency |
| Sequential | Synchronization and Agility |

*Source: Adapted from John J. Garstka, Asst. Director for Concepts and Operations, Office of Force Transformation, "Integrating Innovation, Leadership, and Cultural Change," lecture to the Workshop on Transforming the Culture of the DoD, 21 Oct 03.*

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[75] Walter Perry, *Measures of Effectiveness for the Information-Age Navy,* (Arlington VA: RAND, 2002), 46.

[76] Adapted from John J. Garstka, Asst. Director for Concepts and Operations, Office of Force Transformation, "Integrating Innovation, Leadership, and Cultural Change," lecture to the Workshop on Transforming the Culture of the DoD, 21 Oct 03.

A similar recognition of the transformation from individual leadership to collaborative leadership comes from a leading civilian expert on leadership. Professor Warren Bennis, University of Southern California, with journalist Patricia Biederman recently published a collection of narratives on seven great groups in recent history to form a model for the power of collaboration.[77] These great groups from Skunk Works and Manhattan Project to Disney animation exhibited common traits that reinforce the military's application of collaborative genius. These five traits complement the attributes of information age leadership shown in Table 4.

1. Greatness starts with great people. Collaborative genius theory recognizes a high caliber of professionalism and expertise exists out on the network and recognizes the need to tap that potential. These great people are motivated to look outside of their lanes. "They are not so immersed in one discipline that they can't see solutions in another…They have a knack for discovering interesting, important problems as well as the skill in solving them."[78]

2. Great groups and great leaders create each other. The great groups show innovative organizational flexibility to facilitate collaboration. "The standard models…simply won't work. The heads of great groups have to act decisively, but…[t]hey have to make decisions without limiting the perceived autonomy of the other participants."[79] Communication flows vertically through the clear expression of commander's intent to maintain unity of effort and it flows horizontally through informal habitual relationships.

3. Every great group has a strong leader. This is one of paradoxes of creative collaboration. "In virtually every [great group] there is one person who acts as maestro, organizing the genius of others."[80] This leader is externally focused in order to loosen the tethers of bureaucracy and has the respect of the team.

4. The leaders of great groups love talent and know where to find it. Dr. Bennis says "Great groups are headed by people confident enough to recruit people better than themselves."[81] This infers a certain commitment to the development of tomorrow's leaders.

5. Great groups are full of talented people who can work together. "Certain tasks can only be performed collaboratively, and it is madness to recruit

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[77] Bennis, 196-218. The following is extracted from last chapter "Take-Home Lessons."
[78] Bennis, 198.
[79] Bennis, 199.
[80] Bennis, 200.
[81] Bennis, 201.

people, however gifted, who are incapable of working side by side toward a common goal." The mission often bonds teams together, but unchecked bureaucratic friction can impede progress. "Sharing information and advancing the work are the real social obligations."[82]

To summarize, Dr. Bennis says the American fixation with concept of the individual hero is on the way out.[83] The more appropriate paradigm is his great group. It combines innovative teamwork freely sharing information, under an externally focused leader who provides clear intent, adaptive organizational constructs, and trusted talent to the mission. These concepts may not seem new, but for a military facing bureaucratic tensions and adaptive enemies, collaborative genius finds a necessary role in planning and conducting military operations.

Collaborative genius extends well beyond military matters. Collaborative genius exploits the expertise at hand by establishing habitual relationships with peer organizations as well agencies that will support operations. Clausewitz's call for statesmanship from the theater military commander infers the commander must understand and contribute to the integration of instruments of national power, across diplomatic, information, and economic levels. With out this harmonization, a military commander's strategy may inadvertently defy the principle of unity of effort. The next echelon below, at the component commander level, must understand and contribute to the integration of military forces. This horizontal and vertical integration of expertise and information presents the commanders with more responsibility than may have been previously expected, but in the end, improves the chances to successfully reach military and national political objectives.

**Table 5: Attributes of Collaborative Genius**

| Collaborative Attributes | Approaches Genius by |
|---|---|
| Harmonized Relationships | Shared Risk/Boldness |
| Synchronized Planning | Shared Knowledge/Determination |
| Global Interconnectivity | Situation Awareness/Coup D'oeil |

*Source: Author's Original Work*

[82] Bennis, 203.
[83] Bennis, 1.

Collaborative genius requires leadership that is networked both physically on an information backbone and socially through habitual relationships across multiple areas of expertise. In terms of risk-taking, trust in shared awareness and shared knowledge allows commanders to synchronize complementary capability and share risk with unprecedented economy of force. Under the conditions of Dr. Bennis' great group, collaborative genius will display harmonization, synchronization and agility, and boldness. The great group represents a body of talented, motivated, and innovative individuals accessible at any node of this network. Additionally, horizontal integration breaks down bureaucratic barriers to effective and efficient use of the national instruments of power.

**Summary**

The three categories of genius have been presented within this chapter. They are best portrayed and understood alongside each other graphically, as extracted from knowledge management table shown below. Natural genius represents perfect command and the ideal to approach. With an inward eye, the natural genius can observe, process, analyze, and harmonize the broadest effort with the least hesitation. Synthetic genius focuses on equipping individuals with the tools of genius, and the factor of technology broadens the scope by enhancing both individual and group decision-making. Collaborative genius builds on the foundations of synthetic genius by creating an interconnected, unified group of talent. Using the connectivity of a physical network and the trust of a social network, collaborative genius can overcome normal bureaucratic barriers. Considering the advances of technological synthesis and accessibility of observed data, collaborative genius approaches the ideal genius by harmonizing shared awareness, shared knowledge, and shared risk outside the normal chain of command.

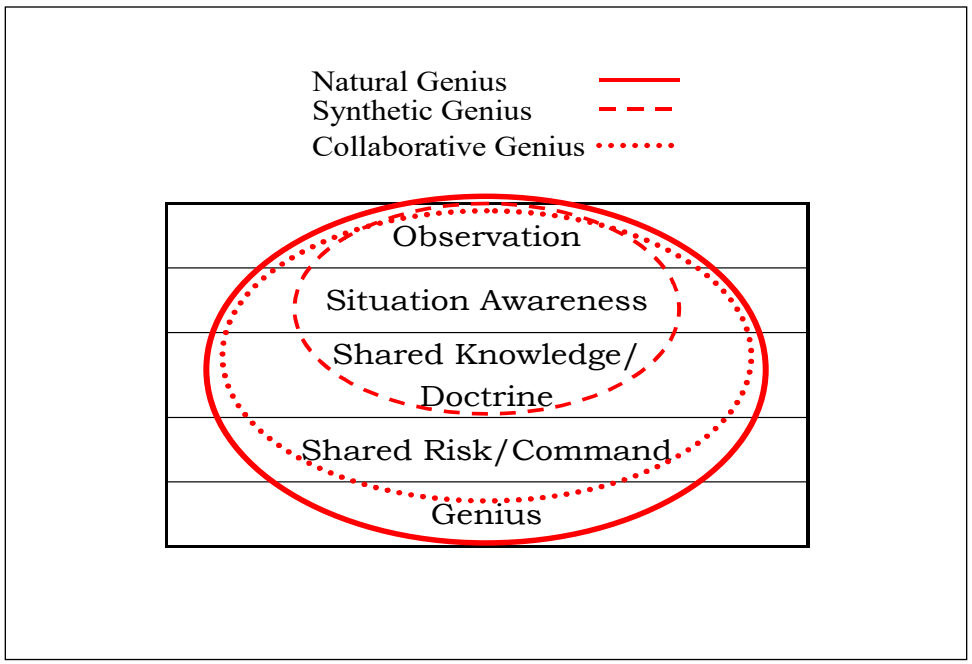


**Figure 1: Genius Framework Applied to Knowledge Management Continuum**
*Source: Adapted from Theories of Concepts Model 1*

The United States military has made substantial efforts to incorporate genius over the years. This study next looks at how the characteristics of synthetic genius can be seen in four service perspectives.

**Appendix N**

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## Appendix O

## ORDER OF BACK MATTER

Appendices (optional)

Glossary (optional)

Bibliography

**Appendix P**
**THESIS CHECKLIST**

***Disk Check***

- ☐ Disk received; labeled with author's name and final title of thesis
- ☐ Thesis in *Word* for Windows format
- ☐ One file for single file for body of the thesis
- ☐ Label contains the name of software program used to create art work

***Hard Copy Check***

- ☐ Hard copy received; approval page with **original** signatures of advisor and reader
- ☐ Original art work, charts, graphs, pictures received

**Layout**

- ☐ Margins - left = 1.5"; right = 1"; top = 1"; bottom = 1"
- ☐ Paragraph indentation set with tab key at .5"
- ☐ Spacing = 1.5 (except quoted information of 5 lines or more)

**Front Matter**

(title page, *signature page*, disclaimer, about the author, acknowledgments, abstract, contents,)

- ☐ Use lower case Roman numerals when numbering pages for disclaimer, contents, abstract, about the author, and acknowledgments. The signature page should not be in your Table of Contents or the final e-copy submitted.

**Contents**

- ☐ Chapters listed by title and number
- ☐ Chapter titles correspond with Contents page
- ☐ Page numbers of lead chapter pages correspond with Contents page
- ☐ Illustrations/tables listed in Contents by title and page number

**Body**

- ☐ Tables/illustrations labeled appropriately (i.e., source document line; no footnote reference numbers on titles)
- ☐ Does thesis contain any copyrighted information? (Y/N)

**Footnotes**

- ☐ Begin with number 1 for each chapter
- ☐ Located at the bottom of the page

**Back Matter**

(Appendix(es), glossary, bibliography)

- ☐ Contents in order and numbered consecutively, continued from the body of the paper

## FINAL TURN-IN

**1) E-copy (on a CD)**
**2) Original signed approval page**
**3) Copy of title page**
**4) Completed AU Security & Policy Releasability Checklist**

## Appendix Q

## A FRAMEWORK TO EVALUATE PUBLIC POLICY QUESTIONS

1. Statement of the Problem or Objective

    a. Ensure the problem/objective statement reflects the real problem
    b. Why is the problem important?
    c. What is our goal to solve?
    d. How will I solve the problem? Quantitative, qualitative, or mixture of data?

2. Assumptions, Criteria for Study

    a. Are all assumptions and criteria identified?
    b. Are the assumptions and criteria unduly restrictive?
    c. How do your assumptions and criteria treat uncertain events?
    d. How will you treat unquantifiable factors?
    e. Are the major assumptions reasonable?

3. Alternatives

    a. Is the current or status quo "base case" considered?
    b. Are all possible significant interfaces with existing systems compared before specifying alternatives?
    c. Are all combinations of feasible systems considered among alternatives?
    d. Any feasible alternatives omitted?

4. Comparison of Alternatives

    a. How are alternatives compared? What factors will you use?
    b. Will we compare alternatives using the status quo as the baseline, a set of
        - objective criteria or some other standard?
    c. Are models or information sources identified?
    d. What information is relevant?
    e. How will you portray data/evidence?
    f. Will we use a "standard" series of criteria for each alternative?

5. Recommendations/Conclusions

    a. Are the recommendations/conclusions logically derived from the study?
        I. Have all significant consequences been considered in arriving at recommendations/conclusions?
    b. Are the recommendations/conclusions possible under current policy/fiscal/doctrinal conditions?
    c. Are the recommendations/conclusions intuitively satisfying?

## Appendix R

## SECURITY REVIEW SPECIFICATIONS

**SECURITY REVIEW IS REQUIRED FOR ALL SAASS STUDENT THESES**

**Why?** SAASS publishes all releasable student theses electronically, and some are published in print. Therefore, make every attempt to keep your thesis unclassified.

**Student Responsibilities** (after your thesis is accepted as meeting graduation requirements and is revised as required):

a. Fill out the Releasability Checklist form (Attachment 1) for submission in accordance with releasability checklist.

b. Write a memorandum addressing the following security issues as they apply to your work (negative responses required) :

- Does the work reveal sources or methods of collecting information? You may use commercially published historical accounts (e.g. *ULTRA and the Army Air Forces in W.W.II*, Putney). You need to control specific sources or methods used in recent operations, particularly if it's not in open press (e.g., ACME Gizmo Corp provided Desert Storm planners the location of the Frisbee training facilities).

- Does the work contain specific targeting information for real, future operations? Target information gleaned from unclassified sources and used for wargames and exercises is allowed, even if the exercise event is in the future (e.g. North Korean airfield in ACES). You must control information from a recent or standing CINC's OPORD.

- Does the work identify specific vulnerabilities of the US or her allies? You may use the fact that the US garbage collection system is vulnerable to attacks at the landfills. You must control the fact that welding-shut the dumpster behind the commissary will disrupt base garbage collection for a week and cause famine, pestilence, and disease.

- Does the work include "plug and play" models? State-of-the-art targeting **algorithms** or systems-analysis algorithms may require control, particularly if they are accompanied by real **data**

- Does the work identify speakers or guests of AU?
  You can only use the name of a speaker if they have given you written permission. This supports the AU non-attribution policy

- Include a statement that your work has been through the security releasability checklist process internal to SAASS.

- Address classification recommendation use the guidelines given in attachment 2. Note: You have **NO** classification authority - that rests with HQ AU/PA.

c. Provide the SAASS Secretary items a & b above (with original signatures), along with one (1) final copy of your thesis, prior to the beginning of thesis briefings.

**Appendix S**
**Attachment 1**

## *Request for Public Release Clearance*
## (In Accordance With 35-102)

**A.** ***DOCUMENT TYPE*** (Submit only complete documents including all figures, charts, photographs and text.)

☐ Presentation/Brief ☐ Video
☐ Brochure ☐ Journal Article ☐ Speech ☐ Other _____
☐ Book ☐ *Student Research ☐ Maxwell Paper
☐ Photo ☐ Poster ☐ Book Review
Included?
☐ Fact Sheet ☐ Curriculum

Is a **Script**
☐ Yes ☐ No

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**B. DOCUMENT TITLE & NUMBER OF PAGES:** _____

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**C.** ***AUTHOR(S) NAME, DUTY TITLE*** **OFFICE SYMBOL** _____

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***D. RELEASE AND DISTRIBUTION:*** Release clearance is **not required** for material presented only in a **closed** meeting which will not be placed in the public domain. Originators must not release copies of the material outside official channels until the security and policy review authority confirms clearance. DoD personnel should make no commitments, including date of delivery to any public access source or non-DoD publications until cleared through security and policy review channels. Completion of the Security and Policy review is not an official endorsement from either the host organization or PA as to the scholarly quality of the submission or endorsement as to its suitability for public release.

***E. EVENT/PUBLICATION/SPONSOR:***

Publication Name _____ Submittal Deadline _____

Conference/ Event Name _____ Date _____

**GENERAL INSTRUCTIONS:** Submit one copy each of the Worksheet and document. To expedite processing of your request, please print legibly and complete all sections of the worksheet. Space is provided in Section I for additional remarks. If used, please specify the section commented on.

**Please Note:** Public release implies the material may be made available to a general, world-wide public, including users of the Internet, and public access library databases. All **OPSEC**, **Critical Information (CI),** and **Critical Program Information (CPI)** reviews must be accomplished by the submitter prior to submission. Public Affairs only **clears** for public release. The information owner or submitter is responsible for determining how, when, where, and to whom the material is **released**.

**F. Author's Acknowledgment of US Government Prerogatives of Document Ownership**

I am currently assigned to duty at Air University and hereby acknowledge understanding that research papers or any other materials produced by me as a requirement for course completion are the property of the United States Government pursuant to Title 17, United States Code, Section 101. I understand that any work of authorship that is prepared as part of my official governmental duties is not subject to copyright protection. I acknowledge that all such written materials belong to the United States Government and may be published by Air University to include electronic publication through the Internet.

Date: _____ Author's Signature: _____

**G. REFERENCES:**

□ Yes □ No Are all **references** unclassified/unlimited and available to the public? If your answer is 'NO', your paper may not be releasable. (For clarification, consult your security manager)

***H. CONTENT***

□ Yes □ No All content is unlimited, open source, with no inclusion of Unclassified But Sensitive information? [i.e., For Official Use Only (FOUO), No Foreign dissemination (NOFORN), No Contractor dissemination (NOCONTRACT), or Limited Distribution (LIMDIS)] If your answer is 'NO', consult your school's security manager before proceeding further.

□ Yes □ No Does product contain personally identifying information (PII)? Example-- personal information such as family member names, number and gender of children should not be included in acknowledgements.

□ Yes □ No Are there issues or content in this document that should be reviewed by another organization or higher headquarters? (If yes, explain in Section I).

□ Yes □ No Does product include the results of a survey of Air Force or other DOD personnel? If yes, survey procedures must comply with AFI 38-501.

□ Yes □ No Does product have the potential to become, an item of national or international interest or have national security policy or foreign relations implications?

□ Yes □ No Does product discuss actual or potential military operations, operation planning factors, operations security, readiness issues, significant exercises? Does the information reveal any weakness, vulnerability, threat assessment information or mission effectiveness profiles?

□ Yes □ No Does product discuss military activities or applications in space; nuclear weapons or technologies, including weapon-effects research; chemical and biological warfare; defensive biological or toxin research; or high-energy lasers and particle beam technology; arms control treaty implementation?

□ Yes □ No Does product address new weapons or significant modifications/improvements to existing weapons, systems, equipment, or techniques?

□ Yes □ No Contains technical data, including data developed under contract or independently developed and controlled by the International Traffic in Arms Regulations (ITAR) that may be militarily critical and subject to limited distribution, but on which a distribution determination has not been made.

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H. ***REMARKS*** **(Pleas**e reference the section to which remarks apply.)

**Approving Official Certification (Delegated Commander/Commandant Representative)**

The attached material submitted for public release has been properly staffed and reviewed by this division/organization for technical operational and information security issues and is appropriate for public release. I certify the information contained in the attached document has been thoroughly reviewed and is technically accurate and does not disclose classified, sensitive, or military critical technology and does not violate proprietary rights or copyright restrictions. Any references to classified documents has been highlighted and explained

☐ I recommend public release. I believe reviews by other organizations or higher HQ is not required.

☐ I recommend document also be reviewed by: Organization: _____

Contact/Phone Number _____

Approving Official: _____

Signature: _____ Date: _____

Office Symbol/Organization/Phone Number: _____

## Public Affairs Notification of Final Release Clearance

Based on review of the topic and above recommendations, the product under review is:

___ Cleared for Public Release

___ Cleared "with Recommendations" for Public Release

___ Cleared "as Amended" for Public Release

___ *Not Cleared for Public Release*

Date: _____ PA Release Authority_____

*Document may be appealed. To appeal the decision, submit in writing within 30-days. (See AFI 35-102, para. 14 for guidance).

Appendix T
**Attachment 2**

**SECURITY REVIEW CRITERIA**

- Security Classifications

  -- Top Secret (exceptionally grave damage)

  -- Secret (serious damage)

  -- Confidential (cause damage)

    --- Information that indicates strength of ground, air, and naval forces in the United States and overseas areas: disclosure of technical information used for training, maintenance, and inspection of classified munitions of war; revelation of performance characteristics, test data, design, and production data on munitions of war

  -- Compilation of Information

    --- Certain information that would otherwise be unclassified may require classification when combined or associated with other unclassified information. However, a compilation of unclassified items of information should normally not be classified. In **unusual** circumstances, classification may be required if the combination of unclassified items of information provides a added factor that warrants classification under subsection 2-202. Classification on this basis shall be fully supported by a written explanation that will be provided with the material so classified (DOD 5200.1-R)

  -- Specific Classifying Criteria (DOD 5200.1-R)

    --- Information shall be considered for classification if it concerns:

      ---- Military plans, weapons, or operations

      ---- Vulnerabilities or capabilities of systems, installations, projects, or plans relating to the national security

      ---- Foreign government information

      ---- Intelligence activities including special activities or the US

---- Foreign relations or foreign activities or the United States

---- Scientific, technological, or economic matters relating to the national security

---- US Government programs for safeguarding nuclear materials or facilities

---- Cryptology

---- A confidential source

---- Other categories of information that are related to national security and that require protection against unauthorized disclosure as determined by the Secretary of Defense or Secretaries of the Military Departments

## Appendix U
## Orwell's Six Rules of Writing

*(i)* *Never use a metaphor, simile, or other figure of speech which you are used to seeing in print.*

*(ii)* *Never use a long word where a short one will do.*

*(iii)* *If it is possible to cut a word out, always cut it out.*

*(iv)* *Never use the passive where you can use the active.*

*(v)* *Never use a foreign phrase, a scientific word, or a jargon word if you can think of an everyday English equivalent.*

*(vi)* *Break any of these rules sooner than say anything outright barbarous.*

George Orwell
"Politics and the English Language"
From *Why I Write*, Penguin Books Great Ideas Series.
1984, p. 103.