
MECH ENG 200: Writing the Abstract and Technical Paper

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- wac
- c4w
- writing initiatives
- webmail
- efs

I'm new to the University of Alberta, having come from the University of Western Ontario where I was Director of the Program in Writing, Rhetoric, and Professional Communication in the Faculty of Arts and Humanities. In my new position here I'll be working with faculty and students across the university as part of the Writing Across the Curriculum initiative. I will also be working with students and faculty in the Department of English and Film Studies.

I am the author, co-author, or editor of five books and 29 articles, including *Writing Instruction in Canadian Universities*. My current research interests include the development of doctoral student writing, writing assignments across disciplinary fields, and rhetorical approaches to text encoding. Currently I serve as co-Vice-President of the Canadian Association for the Study of Discourse and Writing (CASDW) and a member of the Executive Board of the Canadian

Recent presentations

This page contains links to pdfs of slides displayed at presentations I've given.

Books

This page displays the covers and descriptions of books I've authored, co-authored, or co-edited



Blog: Thinking About Writing

A new blog on writing-related issues

<http://www.ualberta.ca/~graves1/index.html>

Centre for Writers



The screenshot shows the homepage of the Centre for Writers at the University of Alberta. The header features the University of Alberta logo, the text "Writing Initiatives University of Alberta", and the "Centre for Writers" logo. A navigation menu includes links for Home, Appointments, Contact Us, Location, Coaches, Resources, FAQ, and WAC. The main content area has a breadcrumb "Home > Home" and a "Welcome to the Centre for Writers" section. This section states that free one-on-one writing coaching is available to all students, instructors, and staff. It lists the types of writing projects that can be assisted, such as theses, essays, and lab reports. A red link "Request a class room visit by a tutor." is provided. Below this, a message welcomes back for the Fall 2009 term, noting that tutoring hours begin on Monday, September 14. A row of three small images shows people in a writing center. On the right sidebar, there is a timestamp "9/2/2009 10:34:15 AM", a section for "Express News", a "Twitter Updates" section with a tweet about the center's opening on September 14, and a "GramWOW" section with a video player showing a person holding a sign.

UNIVERSITY OF ALBERTA
Writing Initiatives
University of Alberta
Centre for Writers

Home Appointments Contact Us Location Coaches Resources FAQ WAC

Home > Home

Welcome to the Centre for Writers

We offer **free** one-on-one writing coaching and support to all students, instructors and staff at the University of Alberta - in any faculty or at any level of study.

Our writing coaches are available to assist clients with higher order concerns in their writing, such as thesis formation, organization and idea development, as well as more specific details, like grammar and documentation style. Clients can bring in any writing project at any stage of development: essays, lab reports, creative pieces, scholarly articles, thesis drafts, application letters - and more. Our coaches will also help students read instructor comments on already-graded papers. ESL and EAL students are welcome!

[Request a class room visit by a tutor.](#)

Welcome back for the Fall 2009 term! Tutoring hours will begin on Monday, September 14. The online appointment-booking schedule will be available to clients as soon as possible prior to this date. We look forward to working with you!

9/2/2009 10:34:15 AM

Express News

Twitter Updates

The Centre for Writers will open for the fall term on Monday, September 14! 5 days ago
[follow me on Twitter](#)

GramWOW



<http://www.c4w.arts.ualberta.ca/>

Communication/Technical Skills

No matter how many technical skills you have, you still need to deal with people at a level they can understand, so communication skills are just as important as technical skills.

Paula Anthony, Industry technical support team leader

Earnings and English



A study reported in *Fortune* magazine showed that the top quartile in university studies earned **three times** what the bottom quartile earned in their lifetimes.

The best communicators among you will earn millions more over your lifetimes than the least effective communicators.

Genres

As you move through your career at U of A you will need to learn new genres

- Engineering genres:
presentations, abstracts, reports
 - Genres in course electives often include:
essays, reflections, summaries, annotated
bibliographies
-

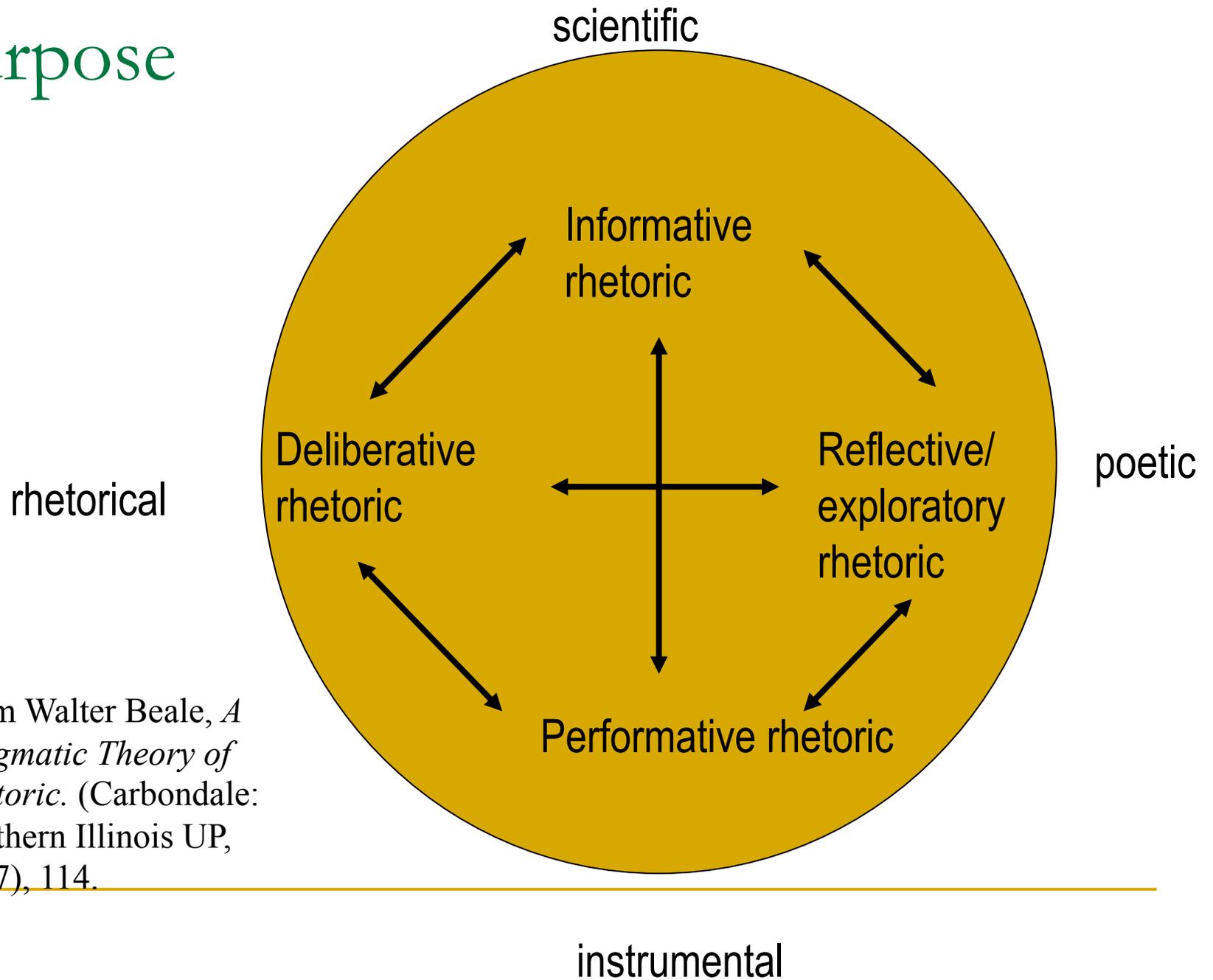
Audiences

You will need to learn to write for distinctly different audiences:

- Co-workers in co-op placements
- Engineering professors
- Professors in elective courses
- Job search documents



Purpose



From Walter Beale, *A Pragmatic Theory of Rhetoric*. (Carbondale: Southern Illinois UP, 1987), 114.

Purpose: The circular model

- Highlights the dual purposes of discourse
- A piece of writing can both persuade and inform (e.g. newspaper report on school lunches)
- Any piece of writing has at least two aims
- E.g Your resume
 - Informative and persuasive

ExpressNews [Home](#)

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BUSINESS

[Alberta Students Finance
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MEDIA

[News Releases](#)
[Guide to Experts](#)
[Media Tips](#)
[Media Clippings](#)
[Media Links](#)

EVENTS

Oct 19, 2009
[Sustainability Awareness
Week 2009](#)

[Athabasca University,
Open Access Week](#)

[ECOS' Free Bike Checks](#)

[Teach English In Japan
\(JET\) Info Sessions](#)

[The heterodonty of
Tyrannosaurids:
Biomechanical implications
inferred through 3D
models](#)

Students stand up to make a difference

By Ilieiren Poon

October 16, 2009 - (Edmonton) The University of Alberta quad was jumping this afternoon as students, staff, faculty and members of the Edmonton community came out to take part in Stand Up Against Poverty.



The annual event is designed to raise awareness of global poverty issues and to connect student groups with each other, as well as with researchers and community groups who are taking action against economic disparity. Students' Union president Kory Mathewson told the crowd that it's up to them to make a difference in

University of Alberta students gathered in quad to take a stand against global poverty.

[Print story](#) | [Email story](#)

[Video coverage of
Stand Up Against Poverty](#)

5 Factors affecting success as a writer

1. Flexibility of your **writing processes**
 2. Ability to get **feedback** on drafts
 3. Familiarity with the **genre**, complexity of the genre
 4. Complexity of the task (**purpose**):
description is less complex than analysis/
synthesis
 5. Number of **audiences**/readers, diversity
within these groups
-

Success in this course

1. **writing processes**
 2. **feedback** on drafts July 5
 3. Familiarity with the **genre**—how many of these have you written this term? (**unknown**)
 4. Complexity of the task (**purpose**): analysis/synthesis is at top end of reasoning skills (**difficult**)
 5. **audiences**/readers—instructor (**relatively easy**)
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Academic writing for engineering students

- Technical engineering documents
 - Email to peers, professors, staff
 - Job application materials
 - Essays for non-engineering courses
 - Lab reports for science courses
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Audience and Purpose

- Understand your audience for a piece of writing
 - Understand your purpose for a piece of writing
 - The better you understand your audience and purpose, the better your document will accomplish your goals
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Technical Paper

- Who is your **audience** for the technical paper?
Describe this reader.
 - What is your **purpose**?
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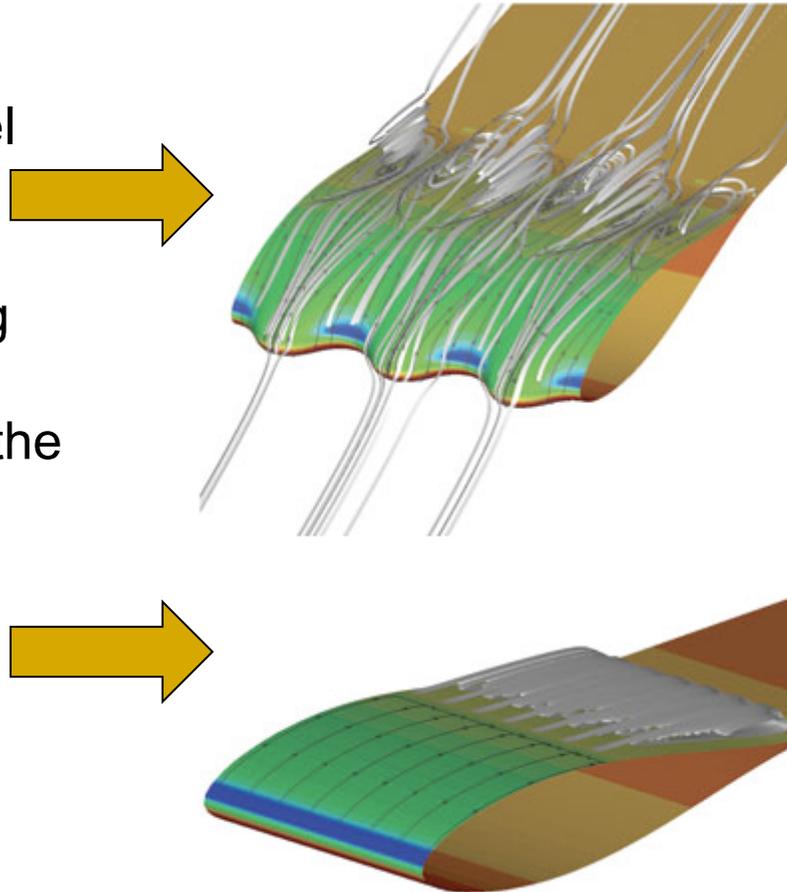
Drafting the paper

From Whales to Fans: *A second look at a piece of sculpture led to a promising technology.*
By Alan S. Brown, Associate Editor

Assuming you were using this article as your ME Magazine source, how would you develop your technical paper?

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- Frank Fish and a partner, Stephen Dewar, founded a company named Whale Power to market the technology, which takes its inspiration from the natural design of the bumps, or tubercles, on humpback whale flippers. According to Dewar, applying to airfoils what Fish and others learned from whales improves lift without increasing drag. He said that 24-foot-diameter fans based on tubercle technology use half the number of blades and move 25 percent more air and consume 25 percent less power than fans with conventional blades turning at the same speed. Whale-inspired fans are already available, and wind and tidal power blades could be next.
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- a CFD model shows how leading edge bumps channel flow into the valleys where they meet counter-rotating flows coming off neighboring bumps. This energizes the flow so it hugs the airfoil as the angle of attack increases. Bottom, a model of an airfoil without bumps.



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- The wind tunnel experiments enabled the team to develop CFD models that showed why tubercles delayed stall. They formed evenly spaced hills and valleys along the leading edge of the flipper. The rounded hills created vortices that they deflected into the valleys.

Each valley was surrounded by two hills, and the vortices from each hill had opposite spins. When they mixed in the valley, they accelerated the flow of liquid to the back of the flipper. “It was like what happens in a pitching machine in a batting cage,” Fish said. “They have two large wheels spinning in opposite directions. When you put a baseball between them, it accelerates it very quickly.”

Ordinarily, the airflow over an airfoil separates from the surface when the angle of attack rises above 11 or 12 percent. The vortices, on the other hand, energized the airflow so that it adhered to the surface all the way back to the trailing edge. The result was more lift and less drag.

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- How is a technical paper different from a magazine article?
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Organization

- Introduction
 - Formulation of the problem
 - Results
 - Conclusion
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Hints for summarizing

- Look in the article's Introduction for the question they are asking (in this case, paragraph 2)
 - Look in the Results for the findings (in this case, the last paragraph of the Results)
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Five Tips for Writing Abstracts

- Limit your use of technical language (jargon)
 - Define essential technical terms (def)
 - Include background information to give some context for your subject matter (backgd)
 - Provide the details that connect your topic and its significance (details)
 - Explain significance explicitly and clearly (you can't expect non-specialist readers to fill in any gaps)
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A Slinky that Lights the Sky

NASA's polar satellite has revealed **one of the power sources behind the gossamer glow of the aurora**: Alfvén waves, oscillations in Earth's magnetic field that resemble the quivering of a Slinky toy. John Wygant of the University of Minnesota and Andreas Keiling of the Center for Space Research on Radiation in Toulouse, France, used Polar's instruments to study energy flowing along the lines of the geomagnetic field. "Field lines have a certain tension. Charged particles are tied to those lines, so when the field wiggles around, they wiggle too," Wygant says. **Magnetic waves moving along those lines can catch electrons and accelerate them to speeds up to 30,000 miles a second. Eventually the particles crash into air molecules, giving up their energy in the form of the green, blue, red, and violet light of the aurora.**

Wherever Keiling and Wygant detected a powerful electromagnetic wiggling, the associated field lines led down to a region of aurora. Polar's instruments also showed that the energy in each electron stream was proportional to the intensity of the display. **Similar Alfvén waves may transport energy away from the surface of the sun, heating the solar atmosphere to millions of degrees.**

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- A. S. Brown. (2011, May). From Whales to Fans: A second look at a piece of sculpture led to a promising technology. *Mechanical Engineering Magazine Online*. Available: http://MEMMagazine.asme.org/Articles/2011/May/From_Whales_Fans.cfm.
 - Keywords: lift, drag, airfoils, aerodynamics, fluid dynamics, vortices
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Sample Abstract

- “From Whales to Fans” describes the inspiration for a new technology that improves the performance of airfoils by improving lift without increasing drag. The technology resulted from the observation that humpback whale flippers have bumps on the leading edge, the edge that on airplane wings is smooth in order to produce a smooth, aerodynamic flow of air. Using 3-d models of the whale flippers, the authors were able to demonstrate through a variety of experiments that the tubercles improved lift and postponed stall. The vortices that developed as a result of the tubercles caused the airflow to adhere longer to the surface of the wing. When these principles were subsequently applied to fans and turbines, the results included less air stratification, higher efficiency through improved airflow, and lower costs (up to 20% savings).
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Looking ahead: Drafts of reports

- Use the C4W as a resource to get feedback before handing in final drafts
 - Work hard at developing broad writing skills to handle the challenges of writing at work and in academic settings
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