

The 1999 Society of Geologists
Employers' Survey rated
"Oral presentation, report
writing, and making diagrams
To show data" as the most
important non-geological skills
For potential graduate
employees"

EAS 467: Review Paper

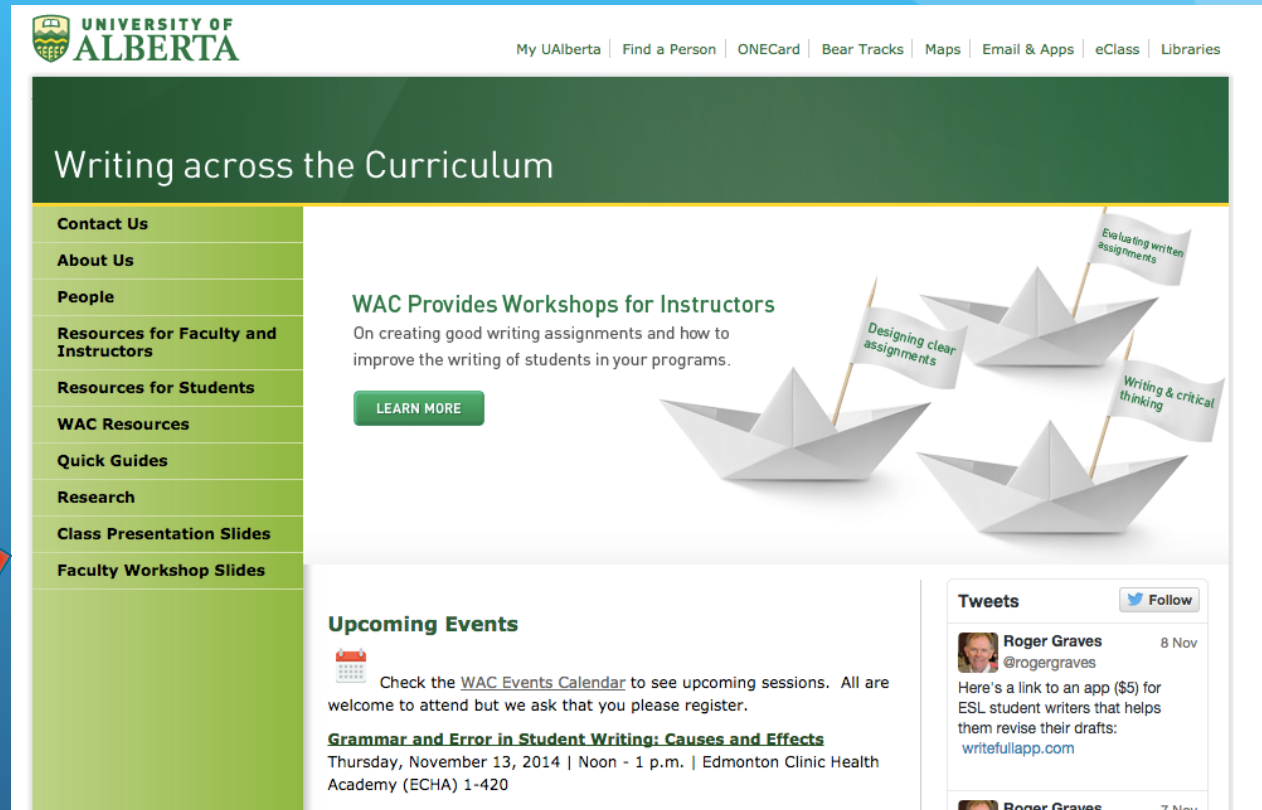
Dr. Roger Graves

Director, Writing Across the Curriculum

Associate Director, Centre for Teaching and Learning

Professor, English and Film Studies

Roger Graves



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Upcoming Events

Check the [WAC Events Calendar](#) to see upcoming sessions. All are welcome to attend but we ask that you please register.

Grammar and Error in Student Writing: Causes and Effects
Thursday, November 13, 2014 | Noon - 1 p.m. | Edmonton Clinic Health Academy (ECHA) 1-420

Tweets

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 **Roger Graves** @rogergraves 8 Nov
Here's a link to an app (\$5) for ESL student writers that helps them revise their drafts: writefullapp.com

 **Roger Graves** 7 Nov

<http://wac.ctl.ualberta.ca/>

The plan today

- Examine the assignment guidelines
- Familiarize ourselves with the genre of the review paper
- Organize the paper
- Identify next steps for writing
- Set-up group writing tutorials

Purpose

For a group of meteorites, identify what we know about the meteorite group collectively, and what we know about the parent body or asteroid

or

report on a research problem using data

Grading criteria

- Depth (number of papers cited)
- Degree of critical assessment of ideas; synthesis/ comparison of ideas within the literature
- Quality of writing (standard edited English; academic prose; concise prose)
- Paraphrase and summary valued more highly than quotations

Audience: Readers

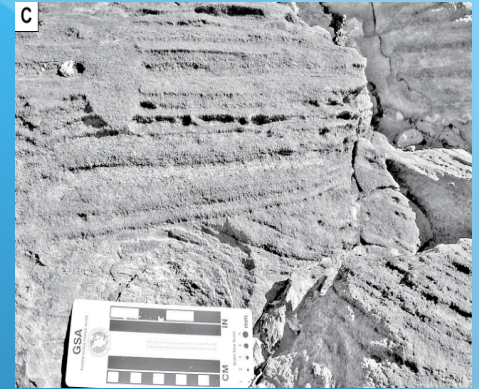
- What do you know about these readers?
- What do they value in a text?
- How do you adjust your prose to suit these readers?

Genre: Review Paper

- In a review of 10 dissertations in EAS, H. Graves found that the method of argument in geology was cumulative rather than argumentative

Example of critique

“Various geometrical arguments **cast doubt** on the inference of an originally continuous, basal detachment surface. This **poses a challenge** to the rolling hinge interpretation. Although evidence for the migration of extension has been suggested to imply a rolling hinge (e.g., Hamilton, 1988; Holm, et al., 1992; Snow and Lux, 1999; Snow and Wernicke, 2000; Niemi, 2001), **such diachrony is not unique to that model**. Migration of extension across the region at large can be accommodated by separately rooting fault systems” (6).



B. Renik, “Distribution of Neogene Extension and Strike Slip in the Death Valley Region, California-Nevada,” Ph.D., Columbia University, 2010.

Features of Cumulative Argument

8 of 10 theses (& dissertations) used a cumulative argument

Goal is
Additive

Explains how
this work adds
to knowledge

Summarizes
existing research

Notes gap in
literature

Does not argue
that this work is
superior

Avoids critique
of existing
literature

Cumulative Argument in Geology

- “In the Mississippi Alluvial Valley where much **previous research has emphasized** whole-valley evolution, detailed analysis of a study area can be evaluated within a regional geologic framework. This **approach provides control and depth** to the interpretations made on a local scale. In turn **more detailed local data helps refine** broader understanding of valley evolution” (60).
- Rains, Daniel S. “Origin of Quaternary deposits west of Marianna Gap, Mississippi Alluvial Valley, Eastern Arkansas.” M.Sc. University of Arkansas, 2010.

Summary: No critique, just add on

“The Gayna River Zn-Pb deposit . . . is located 80 km west of the proposed Mackenzie Valley pipeline route. If this pipeline project is completed it could supply access and power to any future mine development at Gayna River

“The Gayna River deposit is potentially one of the **world’s largest undeveloped carbonate hosted Zn-Pb deposits**. . . .

“Despite the importance of the deposit, **there have been few studies carried out** on the Zn-Pb mineralization at Gayna River. . . .

“This study was **undertaken to delineate** the nature of mineralization and the origin of the mineralizing fluids at Gayna River with an ultimate goal **of determining the main controls on mineralization**.” (p. 12)

Rationale

Gap in knowledge

Purpose of paper

Organization ideas

Group of meteorites	
Introduction to meteorite group	Introduction to meteorite group
Minerals	Review of studies by topic (not historical)
Analyses done	Recent results
Processes of formation	Conclusion: what models explain the characteristics of the group?
Overview of what the parent body looks like	
Conclusion: what models explain the characteristics of the group?	

Organization of review paper

Title	Topic + focus
Introduction	General to thesis
Mineralogy	One way to find genesis
Chemical characteristics	Clues to processes of formation
Igneous models	More clues to formation; competing models here
Ureilite parent body	One body or more? Chemical analyses
Almahata Sitta Meteorite	Specific example: tracked upon entry to earth; this section functions as conclusion
References	

Decision point

Not much literature	Large corpus of articles
Example: mesosiderites	Example: iron meteorites
Compare with other groups of meteorites	Pick one of the 13 groups within this major group
Add your own “take,” critical inferences, or speculation	Compare your sub-group with another sub-group



Introduction → thesis

- The characteristics that set ureilites apart from other achondrites include: a high CaO content in olivine and pigeonite, high Cr_2O_3 in olivine, relatively high amounts of carbon, reduced olivine isotopic composition and an oxygen isotope composition that falls along the carbonaceous chondrite anhydrous mineral line (CCAM) (T. on G., 1.05.4.2.4). **From these, and other characteristics, the unique petrogenesis of ureilites can be inferred.**



Thesis

Sub-section argument

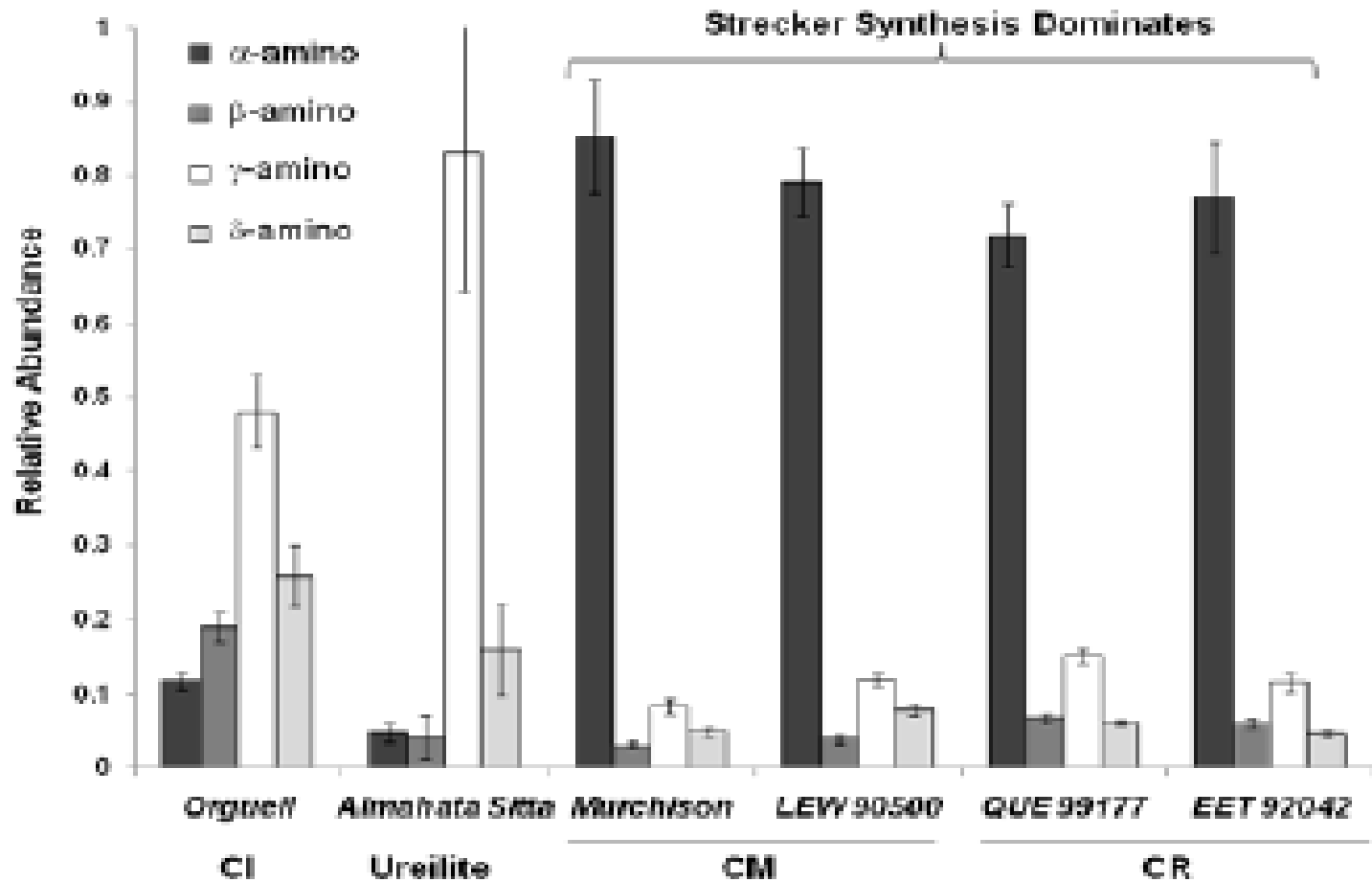
- The characteristics of ureilites cause difficulty in the development of petrogenetic models for their formation. Because certain elements point to high temperature processes, **the two dominant models for ureilite genesis that emerged** involve igneous processing of the ureilite parent body. Ureilites were suggested to be **either** the mantle melt residue of the ureilite parent body that had undergone partial melting, **or** they were cumulate ultramafic rocks.

Conclusion

- The current consensus is that monomict ureilites are largely the result of residual melting with some of the augite-bearing ureilites being cumulates though certain chemical characteristics of ureilites are not explained by either model and therefore attributed to initial heterogeneity in the parent body (Mittlefehldt *et al.*, 2005).

Visuals

Figure : Amino acid distribution of Almahata Sitta compared to distributions from selected carbonaceous chondrites (Glavin *et al.*, 2010)



Photographs



Figure : Satellite photo with the approach path of asteroid 2008 TC₃ and distribution of located fragments (Jenniskens *et al.*, 2009)

Sample thesis

Several unique features of magmatic arcs are thought to contribute to the formation of ore deposits. These features vary somewhat depending on the specific formations they occur in. Recent research in magmatic-hydrothermal ore systems suggests that exsolved volatiles can account for ore deposits.² Other researchers have identified the 'delamination' of cumulates as a process that turns basaltic crusts into andesitic continental crust.¹

Model A

Model B