

Making a research poster?

Helpful hints to make it memorable!

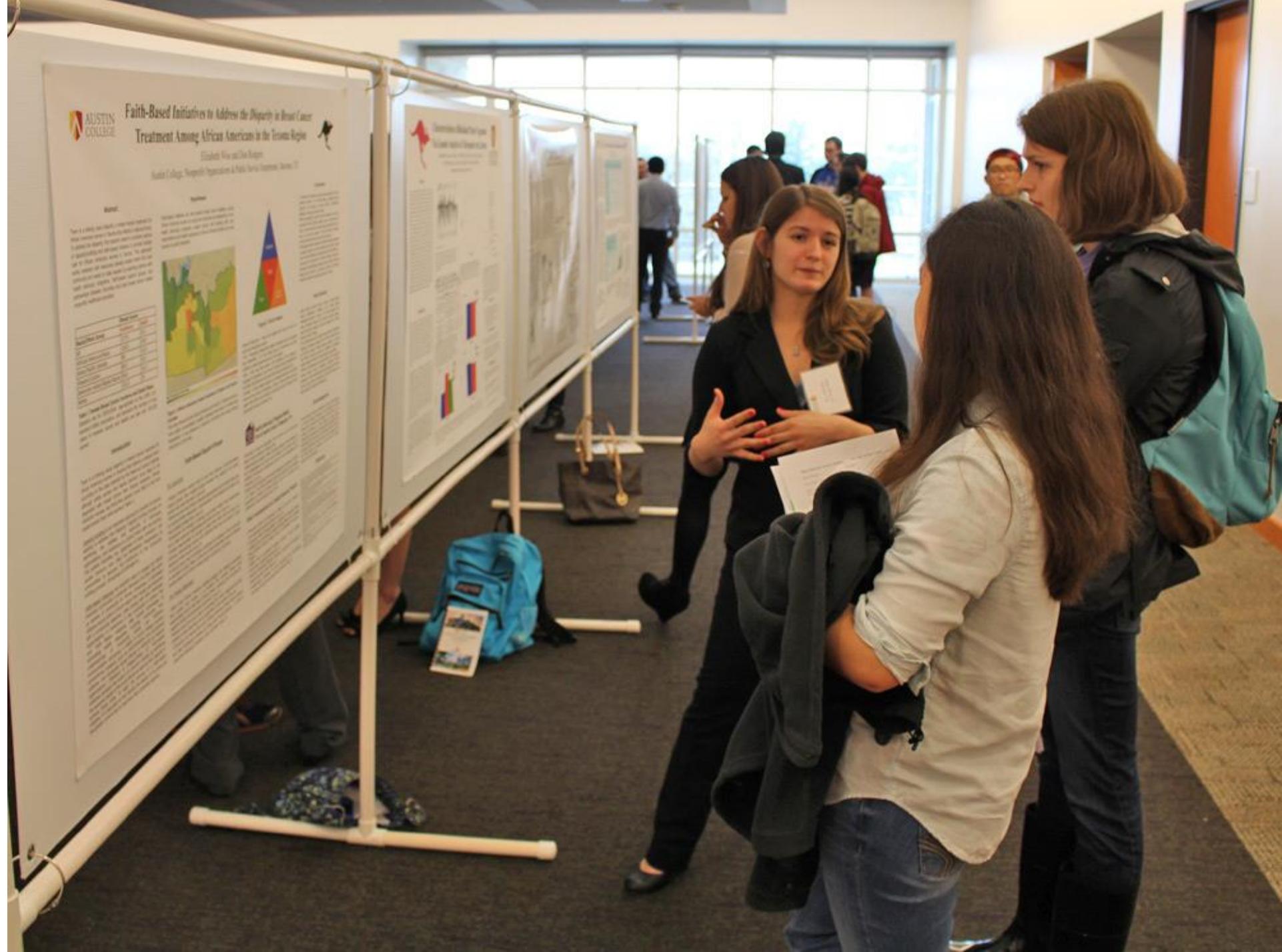
February 22, 2018
WCC255, 4:30pm - 6:00pm



CREATE@AC
presents
Community of Scholars

Dr. Jessica Healy, Interim director CREATE
Dr. Renee Countryman, ACSC Conference Coordinator

- What do research posters look like?
- ACSC poster presentation 2016





Title in large easily readable font

Authors who contributed to the work
Austin College, Biology Department, Sherman, TX (affiliations)



What information should a research poster contain?

Abstract
Copy and paste your final abstract into the space here.
May be smaller text in order to achieve greater fit.

A.

B.

Poster template from ACSC website—download this template to start with

Introduction
Briefly summarize the relevant background information and significance of the project.

Figure 1. Include legends for your figures. The first sentence should be a title for the figure (be conclusive over descriptive here). You should also use legends for brief methods descriptions

Figure 3: Use bold, bright, primary colors to illustrate your images, with a consistent color theme.

Figure 5.

Conclusions

- A bulleted list works best.

A

B.

.

Future Directions

- Include where you may go with this project in the future. A bulleted list works best.

Acknowledgements

Any funding sources, former students who helped with the project, committee members, not authors.

- Hypotheses**
- Hypothesis 1
 - Hypothesis 2

Figure 2. multi-panel figures can be very helpful in explaining your story

Figure 4.

References

You may add a references section, but it is often unnecessary.

• HOW TO DESIGN •

A CAPTIVATING RESEARCH POSTER

Introduction:

This is an exhibition of your research.

- Summarize
- Appeal Visually
- Be Clear
- Look Organized

Method:

People need to be able to read it.

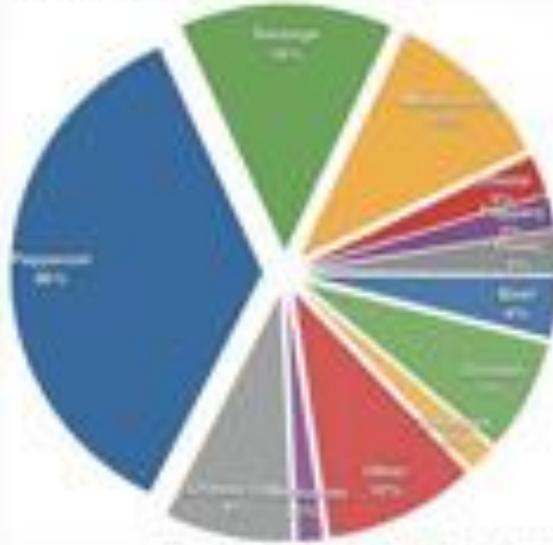
Your text should be readable from four feet away, and your title legible from ten.

Results:

Concisely display your thesis:

What visually represents your study? How does your logic flow?

- Be succinct and consistent
- Use one to three fonts



Discussion:

What makes your research important?

What are other scholars and studies suggesting?

Engage People!

Conclusion:

Include your references.

(Yes, this includes photos!)

Have fun ☺

Laura-Lee Bowers 2014

HOW TO DESIGN A RESEARCH POSTER

POTENT
PRESENTATIONS
MESSAGE • DESIGN • DELIVERY



TOP TIPS TO ROCK YOUR POSTER:

Graphic elements should dominate

Use color to emphasize

Pictures are worth a thousands words

Use bold lines and obvious patterns

Simplify graphs and tables

Don't use a lot of acronyms

Minimum text size should be 18 as it can be read a few feet away

Break text up into digestible chunks

Key takeaway points are highlighted

Use a graphic designer for creative solutions

POPULAR PROGRAMS:

QUICK LAYOUT:
Microsoft Powerpoint
Microsoft Publisher

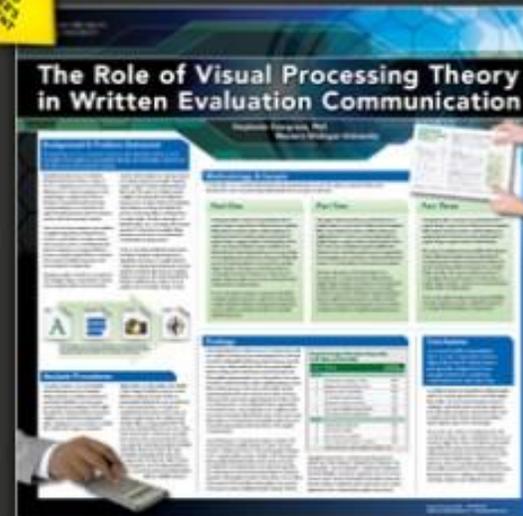
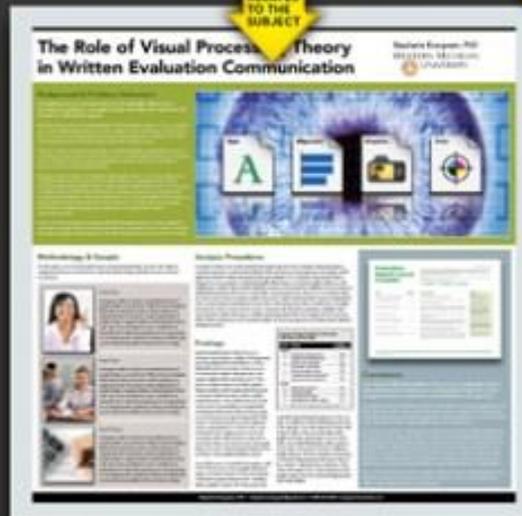
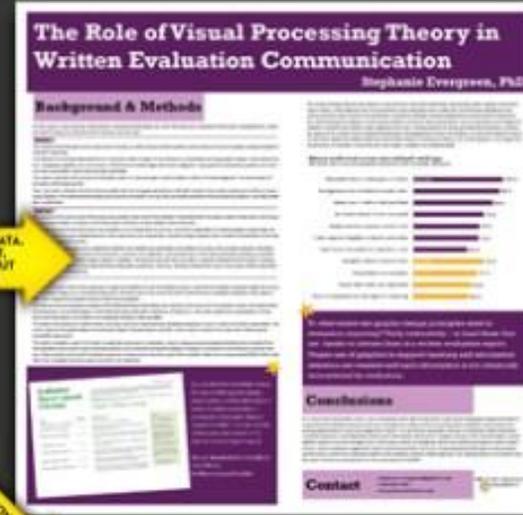
ADVANCED/CUSTOM WORK:
Adobe InDesign
Adobe Illustrator
Adobe Photoshop



VISUALIZE DATA,
CHUNK TEXT,
AND CALL OUT
KEY POINTS

ADD
PHOTOS
AND A
COLD
SCHEME
THAT
RELATES
TO THE
SUBJECT

USE STRONG
COLORS TO
CONTRAST
THE CONTENT



GO HERE:

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<http://p2i.eva.org/index.php/research-poster/>

This version of the poster has the same information included – what is different?

The Role of Visual Processing Theory in Written Evaluation Communication

Stephanie Evergreen, PhD

Western Michigan University

Background & Problem Statement

Research on the cognitive processes of reading, writing, and thinking... The study's findings indicated that aspects of type and color were fairly extensively used among a select sample of evaluation report authors...

Analysis Procedures

For this study, a cross-sectional, multi-method, nonexperimental design was used. The study was comprised of three parts, described here, where the specific design and methods used in each part are discussed.

The Role of Visual Processing Theory in Written Evaluation Communication

Stephanie Evergreen, PhD

Background & Methods

For this study, a cross-sectional, multi-method, nonexperimental design was used. The study was comprised of three parts, described here, where the specific design and methods used in each part are discussed.

The purpose of the first part of the study was to develop an initial instrument that could be used to measure the use of graphic design principles in evaluation reporting.

The selection of principles stemmed from an inductive content analysis of the literature on multimedia learning, graphic design, visual communication, typography, legibility, and color research.

The review continued until the point of saturation, when no new principles could be added to the list of broad categories.

Then, the author reviewed the list for the principles with the strongest agreement in the field, based on the number and recency of the accompanying citations.

The purpose of the second part of the study was to gather input on the first iteration of checklist items through an expert review panel and using a cross-sectional design.

When the first draft of the instrument was complete at the culmination of part one, the author assembled a 4-member graphic design expert review panel.

The goal of the panel review was to determine whether the checklist was exhaustive and whether the items were mutually exclusive.

The purpose of part three of the study was to apply the checklist to a set of evaluation reports, such that the findings could give insight into the extent of graphic design use in evaluation reporting.

The informal Science Education program of the National Science Foundation was selected as the source for the sampled reports.

The author then ranked all reports by their summary score and used maximum variability sampling to select 5 reports for further examination.

The author compiled a panel of 26 raters to apply the instrument to evaluation reports using purposive sampling.

Each panelist received all 3 evaluation reports to review and an electronic copy of the checklist.

As a result of the literature review, the input of the graphic design expert panel, and the piloting by a team of trained evaluators, I produced an Evaluation Report Layout Checklist.

You can download the checklist at <http://bit.ly/EvalReportLayoutChecklist>

Methodology & Sample

The study is a cross-sectional, nonexperimental, nonexperimental design approach. The study also comprised three parts, described here, where the specific design and methods used in each part are discussed.

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Each panelist received all 3 evaluation reports to review and an electronic copy of the checklist.

Findings

Visualized the data, Created digestible chunks of text, Called out key points

Table with 3 columns: Item, Mean, and SD. Lists findings such as 'Narrative text is dark grey or black' with a mean of 100.0 and 'Background has white/shaded color' with a mean of 96.3.

Conclusions

As a result of the literature review, the input of the graphic design expert panel, and the piloting by a team of trained evaluators, I produced an Evaluation Report Layout Checklist.

You can download the checklist at <http://bit.ly/EvalReportLayoutChecklist>

As a result of this dissertation, there is now a somewhat clearer idea of how much visual science and graphic design has been incorporated into evaluation communication and reporting.

Proper use of graphics to support learning and information retention are weakest and such information is not commonly encountered by evaluators.

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stephanie@evergreenevaluation.com

Starburst graphic with text: 'To what extent are graphic design principles used in evaluation reporting? Fairly extensively – at least those that are harder to deviate from in a written evaluation report. Proper use of graphics to support learning and information retention are weakest and such information is not commonly encountered by evaluators.'

Contact information for Stephanie Evergreen, PhD, including email (stephanie.evergreen@gmail.com), phone (1-269-425-1600), website (evergreenevaluation.com), and Western Michigan University logo.



This version of the poster has the same information included – what is different?

The Role of Visual Processing Theory in Written Evaluation Communication

Stephanie Evergreen, PhD

Background & Methods

For this study, a cross-sectional, multi-method, nonexperimental design was used to investigate the specific design and methods used in each part are discussed.

Part One
The purpose of the first part of the study was to develop an initial instrument for evaluation reporting.

The selection of principles stemmed from an inductive content analysis of literature on typography, legibility, and color research. The literature review led to a punctuation section that was later eliminated.

The review continued until the point of saturation, when no new principles could be added to the list of broad categories. The total number of principles at this stage was 46.

Then, the author reviewed the list for the principles with the strongest agreement in the field, based on the number and recency of the accompanying citations. The unidimensional rating scale created to ascertain the use of the principles consisted of three response options, Fully Met, Partly Met, and Not Met.

Part Two

The purpose of the second part of the study was to gather input on the first iteration of checklist items through an expert review panel and using a cross-sectional design. In doing so, the review panel confirmed content validity of the instrument.

When the first draft of the instrument was complete at the culmination of part one, the author assembled a 4-member graphic design expert review panel. The four were selected based on their experience and involvement in graphic design activities, their scholarly contributions on the topic, and their geographic location.

The goal of the panel review was to determine whether the checklist was exhaustive and whether the items were mutually exclusive. Therefore, the panelists were invited to review the instrument, comment on its elements, and provide input on the scale, particularly pointing out whether any principles should have been added, altered, or deleted. The experts were also sent one report, randomly selected from the pool of uniquely authored reports pulled from the Informal Science Education website for reference. Panelists emailed their input to the author of this study. Each panelist received a \$200 gratuity.

Part Three

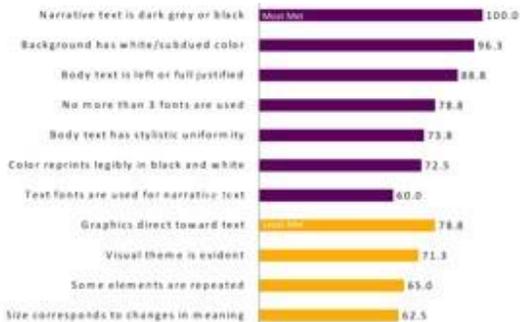
The purpose of part three of the study was to apply the checklist to a set of evaluation reports, such that the findings could give insight into the extent of graphic design use in evaluation reporting. In the third part of the study the author used maximum variability sampling to select reports. Each rater reviewed all sampled reports (a fully-crossed design).

The Informal Science Education program of the National Science Foundation was selected as the source for the sampled reports. All reports listed as Summative or Summative Report in the Informal Science Education website as of February 7, 2011 were copied into a spreadsheet. In total, there were 332 reports, all of which were published between 1999 and 2010.

The author then ranked all reports by their summary score and used maximum variability sampling to select 5 reports for further examination. The author selected the highest (Report 4) and lowest (Report 3) rated reports and then chose 1 report closest to the mean and 2 others spaced around the mean score.

The author compiled a panel of 24 raters to apply the instrument to evaluation reports using purposive sampling. Panelists were recruited from the attendees at the author's two workshop sessions on the checklist and graphic design principles for evaluators at the AEA/CC Summer Institute. Each panelist received all 3 evaluation reports to review and an electronic copy of the checklist. Raters were compensated \$200 for their time when the completed checklist were returned to the researcher.

- Added photos for visual interest
- Chose a color scheme that relates to the subject
- Sectioned out text using more columns



To what extent are graphic design principles used in evaluation reporting? Fairly extensively – at least those that are harder to deviate from in a written evaluation report. Proper use of graphics to support learning and information retention are weakest and such information is not commonly encountered by evaluators.

Conclusions

As a result of this dissertation, there is now a somewhat clearer idea of how much visual science and graphic design have been incorporated into evaluation communication and reporting. According to visual processing theory, evaluation report authors are missing opportunities to more fully engage their readers. The use of color, placement, and size to emphasize critical information could help evaluators more efficiently communicate. Some factors, like choice in typeface and color, that have the ability to impact legibility, appear to be well-managed. Yet, in some areas, authors are designing reports that actively work against reader comprehension. Areas of weakness suggest that authors should expand their discussion of reporting beyond the types of dissemination and the need to match one's reporting method to the intended audience. While important, this research points to the need to add discussion of visual processing theory to the conversations in the field.

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The Role of Visual Processing Theory in Written Evaluation Communication

Stephanie Evergreen, PhD
WESTERN MICHIGAN UNIVERSITY

Background & Problem Statement

Evaluation is a common element of evaluation theory and practice, but positions on graphic design of evaluation reports in the literature of the field is sparse.

For this study, a cross-sectional, multi-method, nonexperimental design was used to investigate the specific design and methods used in each part are discussed.



Methodology & Sample

For this study, a cross-sectional, multi-method, nonexperimental design was used to investigate the specific design and methods used in each part are discussed.

Part One
The purpose of the first part of the study was to develop an initial instrument for evaluation reporting.

Part Two
The purpose of the second part of the study was to gather input on the first iteration of checklist items through an expert review panel and using a cross-sectional design.

Part Three
The purpose of part three of the study was to apply the checklist to a set of evaluation reports, such that the findings could give insight into the extent of graphic design use in evaluation reporting.

Analysis Procedures

Descriptive statistics were used to identify trends and areas of use of graphic design principles in evaluation reporting. To measure the reliability of the instrument, inter-rater agreement and Krippendorff's alpha, the reliability and non-overlap of observed categories, were calculated. Krippendorff's alpha is designed for the use on nominal or ordinal data (Sullivan, 2000; Kruskal & Leibman, 1952) and can be used with multiple raters (Krippendorff, 2004). Reliability measures evaluate that the conditions are met (1) items are independently observed, (2) items are observed by separate raters, (3) the items are mutually exclusive, and (4) items are observed enough to those who could be found elsewhere (Sullivan & Krippendorff, 2007). The procedure described above is part three of the methodology (see 1) and (2) were measured and (3) was not used as that the reports were generally collected via maximum variability rather than selected at random. The range of reliability and the frequency of the items requires that all at the least, 10% of the 4 assessment items, the author selected one of previous agreement and Krippendorff's alpha for reliability measures.

Findings

Items frequently used in fully met were (1) Narrative text is dark grey or black, (2) Background has white/subdued color, (3) Body text is left or full justified, (4) No more than 3 fonts are used, (5) Body text has stylistic uniformity, (6) Color reprints legibly in black and white, (7) Text fonts are used for narrative text, (8) Graphics direct toward text, (9) Visual theme is evident, and (10) Some elements are repeated. These graphic design principles can be categorized in three most commonly used by the authors while creating evaluation reports. These are: Type, Alignment, and Graphics. These are the top three items in the top section of the checklist, representing 67% of the items on that section. These 3 items are also the top three items in the top section of the report, representing 67% of the items on that section. These 3 items are also the top three items in the top section of the report, representing 67% of the items on that section.

Of all 46 reports analyzed for the study, 100% of the reports had no graphic elements in the report layout. 0% had no graphic elements in the report layout. 0% had no graphic elements in the report layout. 0% had no graphic elements in the report layout. 0% had no graphic elements in the report layout.

Evaluation Report Layout Checklist

Principle	Frequency	Reliability
Narrative text is dark grey or black	100.0	1.00
Background has white/subdued color	96.3	0.99
Body text is left or full justified	88.8	0.98
No more than 3 fonts are used	78.8	0.97
Body text has stylistic uniformity	73.8	0.96
Color reprints legibly in black and white	72.5	0.95
Text fonts are used for narrative text	60.0	0.94
Graphics direct toward text	58.8	0.93
Visual theme is evident	51.3	0.92
Some elements are repeated	45.0	0.91
Size corresponds to changes in meaning	42.5	0.90

Conclusions

As a result of this dissertation, there is now a somewhat clearer idea of how much visual science and graphic design have been incorporated into evaluation communication and reporting. According to visual processing theory, evaluation report authors are missing opportunities to more fully engage their readers. The use of color, placement, and size to emphasize critical information could help evaluators more efficiently communicate. Some factors, like choice in typeface and color, that have the ability to impact legibility, appear to be well-managed. Yet, in some areas, authors are designing reports that actively work against reader comprehension. Areas of weakness suggest that authors should expand their discussion of reporting beyond the types of dissemination and the need to match one's reporting method to the intended audience. While important, this research points to the need to add discussion of visual processing theory to the conversations in the field.



As a result of the literature review, the input of the graphic design expert panel, and the piloting by a team of trained evaluators, I produced an Evaluation Report Layout Checklist. It can be used to review your own reports or to plan for a future report layout.

You can download the checklist at <http://bit.ly/EvalReportLayoutChecklist>

- What's wrong with this poster?
- First attempt from 2008
- Text too small
- Spacing uneven
- Not visually appealing
- What's not so bad?
- Large figures draw attention to results
- Bullet points



Serum ghrelin levels in golden-mantled ground squirrels (*Spermophilus lateralis*)

Jessica E. Healy, Heather Craven, and Gregory L. Florant¹
¹Dept. of Biology Colorado State University, Fort Collins, CO 80523



ABSTRACT

Ghrelin is a recently discovered hormone which has profound effects on food intake and lipogenesis in mammals. The golden-mantled ground squirrel (*Spermophilus lateralis*) is a diurnal mammal that hibernates. Hibernating mammals have a robust annual cycle of weight gain and loss which is profoundly impacted by food intake (through both hyper- and hypophagia). There is currently no published data on ghrelin levels in hibernating mammals. We examined plasma ghrelin levels in *S. lateralis* over a 24 hour period and found a diurnal pattern with the highest levels at night and lower levels during the day. We also found an increase in ghrelin levels over a short-term fast; levels in various months corresponded with increasing and decreasing food intake levels. Interestingly, ghrelin is still produced during hibernation although food intake is completely shut off and metabolism is near zero; the reason behind this is unclear.

INTRODUCTION

- ❖ Mammals that hibernate (hibernators) undergo multi-day torpor bouts in winter—food intake ceases and body temperature (T_b) drops to near ambient temperature (T_a)
- ❖ Hibernators become obese in autumn through hyperphagia and anorexic in winter (hypophagia)
- ❖ Ghrelin is a recently discovered appetite hormone which has profound effects on food intake and lipogenesis in mammals—never studied in hibernators
- ❖ Ghrelin is released from stomach in pulsatory manner—circulating levels dependent on feeding condition (1)
- ❖ In rodents, plasma ghrelin levels increase before a meal and decrease immediately following a meal (1, 4)
- ❖ In diurnal mammals, ghrelin are highest during nocturnal fasting (2, 3)
- ❖ *S. lateralis* is a diurnal mammal that hibernates and has a robust annual cycle of mass gain and loss primarily due to food intake—ghrelin could be an important hormone during prehibernation
- ❖ Hypothesis: In summer and early autumn, ghrelin levels in *S. lateralis* should be highest at night, and should increase over a short term fast (1-5 days). Levels should be higher in autumn than in summer.

METHODS AND RESULTS

Adult *S. lateralis* were trapped in Larimer County in the springs and summers of 2004-2007 and kept in an animal facility at Colorado State University under an approved ACUC protocol. In July, 25 animals were fasted for various times (n=5 for each group) then euthanized for tissues and blood samples at 1200. 5 other animals to be used in a catheterization experiment were fed *ad libitum* throughout the fall. In mid October, jugular catheters were inserted under sterile conditions into 5 animals. The animals were allowed to recuperate for one day, then 0.3 ml blood samples were drawn every two hours for 24 hours under natural photoperiod with *ad lib* food and water. Samples were centrifuged and serum was removed and stored at -80C. Red blood cells were re-suspended in 0.3 ml sterile saline and reinjected into each animal through its catheter. In January, 5 GMGS were aroused from hibernation and sacrificed ~4 hrs after becoming euthermic. 5 more GMGS were sacrificed by decapitation while hibernating at low tissue temperature. All serum ghrelin levels were determined using an EIA assay from Phoenix Pharmaceuticals. All statistical analysis was performed using SAS 9.1, and considered significant at p<0.05.

DISCUSSION

- ❖ First report of ghrelin levels and feeding condition in a mammalian hibernator
- ❖ Ghrelin is known to increase during the first hours of sleep and promote slow wave sleep (SWS) (5,6)—SWS is necessary for entry into torpor
- ❖ Ghrelin levels tend to drop through the night, but peak again on waking (6)
- ❖ Serum ghrelin levels were significantly higher during dark hours when squirrels had gone the longest without eating (p<0.05)
- ❖ Ghrelin levels dropped after squirrels ate at start of light period
- ❖ Ghrelin levels increased significantly (p<0.05) between control animals and short term fasted animals, concurrent with previous studies
- ❖ Ghrelin still present in low tissue temperature hibernating GMGS in January, although lower than summer levels
- ❖ Euthermic and low tissue temperature GMGS had significantly different January serum ghrelin levels
- ❖ Ghrelin levels increased significantly (p<0.05) from January to February (when some GMGS are arousing for spring), dropped slightly in July, and increased again in September, when animals are hyperphagic (all samples taken at 1200)
- ❖ No sex differences were seen in GMGS ghrelin levels
- ❖ Ghrelin may be important for regulation of prehibernation food intake cycles in hibernators—possibly linked with the cyclic obesity shown in these animals

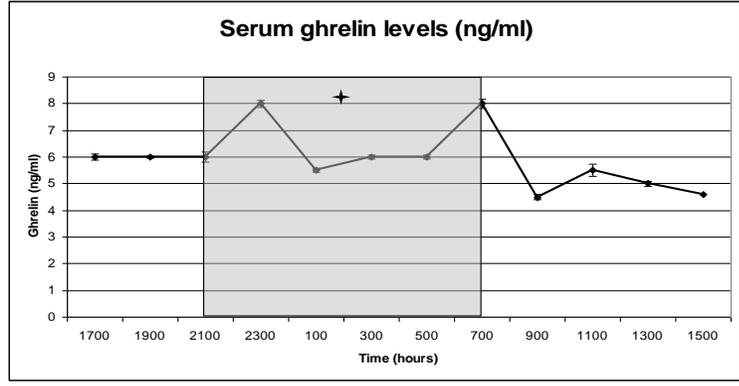


Figure 2: 24-hour secretory pattern of plasma ghrelin in *S. lateralis* (n=5)—shaded area denotes dark hours (lights out), * represents dark hours ghrelin significantly higher than light hours (p<0.05)

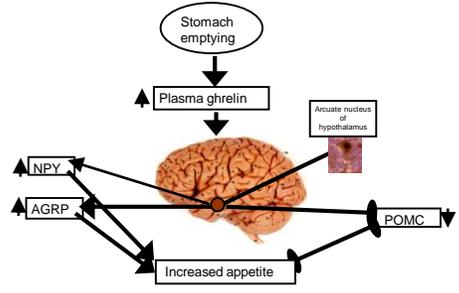


Figure 1: Ghrelin's control of appetite

ACKNOWLEDGEMENTS

Thanks to Dr. Greg Wilkerson for performing surgeries. A part of this work was supported by a Sigma Xi grant-in-aid of research to JEH.

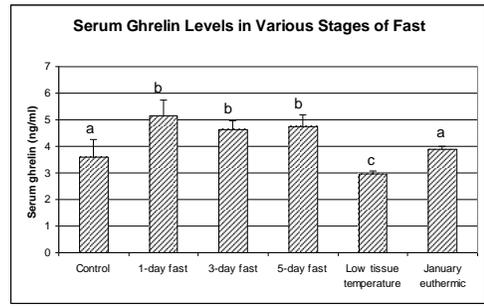


Figure 3: Ghrelin levels in short-term fast, at low tissue temperature, and from January euthermic GMGS (n=5). Letters a, b, & c are statistically different (p<0.05)

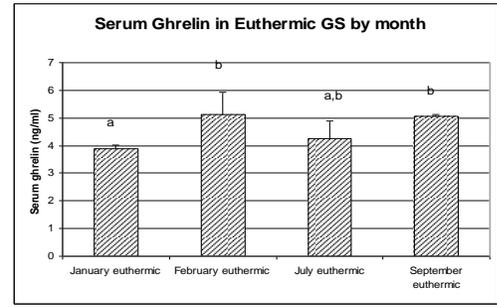


Figure 4: Ghrelin levels in January, February, July, and September euthermic GMGS (n=5). Letters a & b are statistically different (p<0.05)

REFERENCES

1. Beck B et al. 2003. Ghrelin and body weight regulation in the obese Zucker rat in relation to feeding state and dark/light cycle. *Exp Biol Med* 228(10):1124-31.
2. Kingz K et al. 2005. Altered Hypothalamic Signaling and Responses to Food Deprivation in Rats Fed a Low-Carbohydrate Diet. *Obesity Research* 13, 1672-1682.
3. Ortiz R et al. 2003. GH and ghrelin increase with fasting in a naturally adapted species, the northern elephant seal (*Mirounga angustirostris*). *Journal of Endocrinology* 178, 533-539.
4. Toshinai K et al. 2001. Upregulation of Ghrelin expression in the stomach upon fasting, insulin-induced hypoglycemia, and leptin administration. *Biochem Biophys Res Comm* 281(5): 1220-1225.
5. Tolle V et al. 2002. Ultradian rhythmicity of ghrelin secretion in relation with GH, feeding behavior, and sleep-wake patterns in rats. *Endocrinology* 143: 1353-1361.
6. Weikel JC, et al. 2003. Ghrelin promotes slow-wave sleep in humans. *Am J Physiol Endocrinol Metab* 284: E407-E415.



Effects of a High Fat Diet on Physiological Parameters in Prehibernatory Golden-Mantled Ground Squirrels



Isaac Groover, Siena Krueger, Austin Gaddis, & Jessica Healy
Austin College, Biology Department, Sherman, TX



- Visual separation of sections in boxes
- Bulleted text
- Use of images for experimental design
- Still lots of text

Abstract

The entrance of Golden Mantled Ground Squirrels - *Callospermophilus lateralis* into seasonal hibernation bouts is preceded and regulated by a complex change in hormones, neuropeptides and morphological characteristics. The orexigenic hormone ghrelin, the female sex hormone estradiol and bloodstream metabolites such as non-esterified fatty acids (NEFAs) are all relevant to the changes occurring during this time, and can be used as part of any effort to measure current metabolic state and demands. Over four weeks in fall 2014 and 2015 we took blood samples from six different squirrels separated into control or high-fat diet groups and measured the levels at which each molecule was present in the blood. During this time we also measured food intake, body fat content and body mass. We hypothesized that a high fat diet would decrease food intake and increase body mass, and body fat deposits. We also hypothesized that a high fat diet would increase NEFAs, decrease ghrelin, and increased estradiol concentrations in the blood. We found that fat content was consistently higher in females than in males, but that males in both years had significantly higher food intake and that average body mass increased significantly in all animals between the beginning and end of the experiment. NEFAs and estradiol levels were not significantly different between high fat and control diet groups. Diet's effects on ghrelin levels varied weekly. Data appear show that a high-fat diet has no effect on the molecules in question, and we suggest repeating the experiment with a larger sample size for verification.

Introduction

- Human obesity is major problem in several societies
- Seasonal hibernators typically increase fat stores in autumn (adaptive obesity)
- Hibernators reach fat levels that would be considered pathogenic in humans
- Estradiol and Ghrelin affect metabolism
- Non-esterified fatty acids (NEFA) react to energy availability

Question & Experimental design

How does high fat (HF) diet affect pre-hibernation physiology?

Year:	2014-2015- 2 Males, 3 Females (siblings) 2015-2016- 2 Males, 4 Females
Treatments:	Control High fat
Protocol:	-Daily: food intake (Sept-Nov) -Weekly: body mass, body composition, blood draws (Sept-Oct) -Implanted with Temperature data loggers in November -Allowed to hibernate at 5°C -Euthanized April (post-hibernation)

Hypotheses

- HF group will have higher fat content, NEFA levels, body mass, estradiol levels
- HF group will have lower food intake and ghrelin levels
- Positive correlation between ghrelin and food intake

Results

Females had higher fat mass, gained mass earlier than males

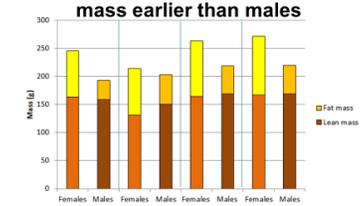


Figure 1. Females (n=4) had a significantly higher fat mass than males (n=2) in each week for the 2015 animals.

Food intake decreased before hibernation

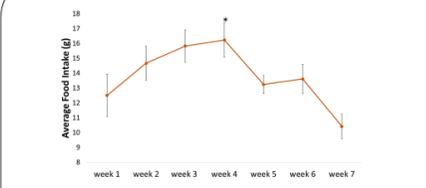


Figure 2. Food intake for both control and high fat diets over a 7 week period. Week 4 (*) features the highest food intake, and is significantly different from week 7 (p=0.00011). Week 1 is not significantly different from week 4 (p=0.068).

Estradiol higher in HF than control (all weeks pooled)

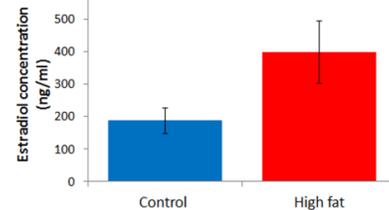


Figure 3. Estradiol concentration (pg/ml) of control vs. high fat diet measured during week 1 to week 4. There was a significant difference in control vs. high fat diet in estradiol concentration when all 4 weeks were pooled together (p=0.023). No other significant differences. Week 1 control (n=2), high fat (n=3); Week 2 control (n=1), high fat (n=0); Week 3 control (n=1), high fat (n=3); Week 4 control (n=2), high fat (n=3).

No significant effect of diet on NEFA concentrations

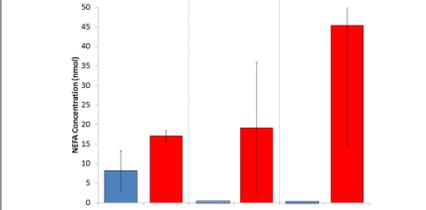


Figure 4. NEFA concentration levels in control and high fat dietary groups in 2014 and 2015. No data was collected for week 2 NEFA concentration in the high fat dietary group. n= 2-3 per group

High fat diet had lower blood ghrelin in week 2; ghrelin decreased with time

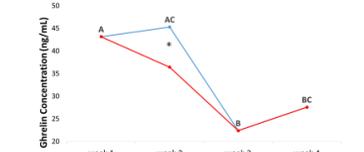


Figure 5. Average ghrelin concentrations for control vs. high fat squirrels over a 4 week span for squirrels in 2015. Ghrelin concentrations are significantly different between diet types only in week 2. Week 1 is significantly different from weeks 3 and 4. Week 3 is significantly different from weeks 1 and 2.

High fat diet disrupts ghrelin/body mass correlation

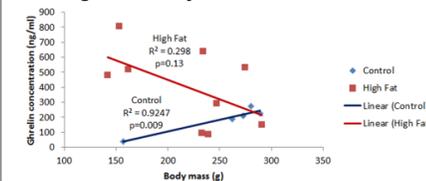


Figure 6. Control (n=5) had significant (p=0.009) positive correlation between ghrelin & body mass; high fat (n=9) had no significant (p=0.13) correlation between ghrelin & body mass. High fat diet may disrupt ghrelin signaling.

Methods

- All animal handling procedures were approved by Austin College IACUC
- Golden-mantled ground squirrels (MGGS) obtained from Colorado State University in September (n=11, 7 females, 4 males).
- Animals divided into a control diet group and a high fat diet group and monitored for 4 weeks
- Control group received standard rodent chow (Purina 5001) *ad libitum*
- High fat group received the same chow soaked in olive oil (10% by mass) along with an additional 10g sunflower seeds/daily
- Measured food intake daily
- Measured body length, girth, weight, and body composition weekly
- Blood drawn weekly (anesthetized using inhaled isoflurane)
- Enzyme Immunoassays (EIA) run on blood plasma to determine NEFA's, estradiol, and ghrelin concentrations
- Analyzed data using t-tests (differences between diets & sexes), 1-way ANOVA's (differences by week), & linear regression (body mass/ghrelin correlation) in Microsoft Excel
- Differences considered significant at p<0.05

Regulation of Hunger & Energetics

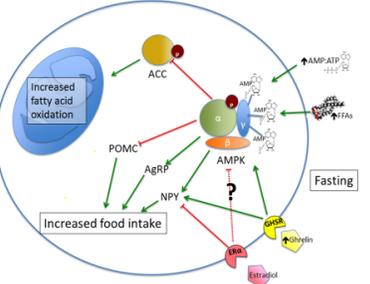


Figure 7. Responses of peripheral signals to energy balance in mammals [Modified from Florant & Healy 2012]

Conclusions

- Females significantly fatter than males
- Ghrelin & food intake decreased prior to hibernation
- High-fat diet increased:
 - Estradiol
 - NEFA (insignificant)
- High-fat diet decreased:
 - Ghrelin in week 2
 - Correlation between ghrelin & body mass
- High-fat diet had no effect on:
 - Body composition
 - Body Mass

Future Directions

- Increase sample size and experiment length
- Follow-up expression studies for Ghrelin, Estradiol, and receptors
- Comparison of MUFA and PUFA effects
- Adjust for sex differences
- Repeat experiment for Testosterone

Acknowledgements

Thanks to the Fall 2015 Physiological Ecology Class for helping collect and analyze data, and to the AC Biology Department for funding.

References

Florant, G. L., & Healy, J.E., 2012. The regulation of food intake in mammalian hibernators: a review. *J Comp Physiol B* 182: 451-467

Public Participation 2.0: A Pilot Assessment of Public Participation via *Regulations.gov*



- Tells story through images
- Little reliance on text
- Uneven color scheme
- Space could be used better

Research Questions: Regulations.gov and Public Participation

Regulations.gov is an e-government website that aims to facilitate public participation in policymaking by allowing anyone to view and comment on proposed rules and regulations.

- What was the nature of public participation in a recent case?
- How can researchers quickly analyze thousands of comments?
- Does *Regulations.gov* meet the aims of a hybrid forum?

The Case: APHIS-2013-0043

The USDA solicited comments on the potential environmental impacts of Monsanto's petition to deregulate its new cotton and soybean seeds, which were genetically modified to withstand an herbicide comprised of *both* dicamba and glyphosate.



Methods

Public Input in Policy



Data Curation and Human Coding



Machine Coding via Natural Language Processing



Outcomes Assessment

Hybrid Forums

"open spaces where groups can come together to discuss technical options involving the collective" (Callon, Lascombe, and Barthe, 18)



Inclusion: includes a range of stakeholders and expertises

Scope: addresses technical, but also social, economic, ethical matters

Authority: distributes authority among participants

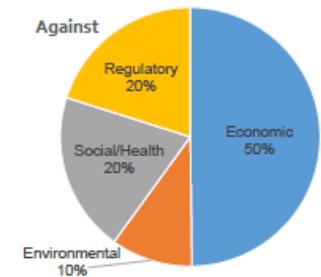
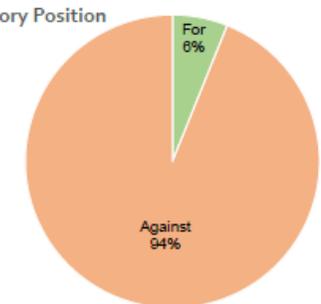
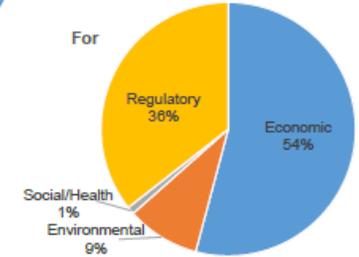
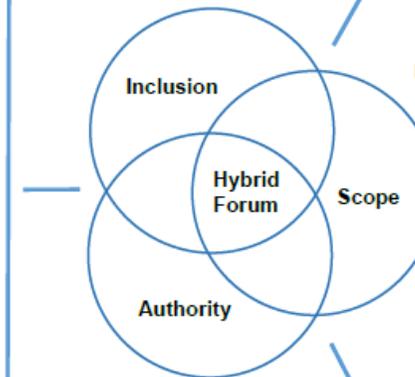
Coding Schema

Coding Schema with Brief Descriptions of Each Code

Position (Comment)	
For	Supports the option to deregulate
Against	Opposes the option to deregulate
Themes (Sentence)	
Economic	Argument grounded in economic consequences
Environmental	Argument grounded in ecological consequences (not explicitly connected to human)
Social/Human Health	Argument grounded in consequences for human health or appeal to social issues and/or community
Regulatory Outcome and Warranting	Explicit statement of the regulatory position of the commenter or argument about the role of the regulatory agency

Participants included:

- Approx 70,000 "public" commenters
- Industry representatives/trade groups
- Academic researchers
- Non-government organizations
- Concerned/affected individuals



Outcome

- APHIS stated they received 4693 comments with the majority in favor of deregulation (not the 70,000 I counted)
- APHIS did not count batch-uploaded comments
- Non-regulated status was granted

- Non-scientific process poster
- Good use of pictures
- ‘Motivation’ and ‘Process’ rather than ‘Introduction’ & ‘Methods’

<https://charlottelwood.files.wordpress.com/2012/10/researchposter3.jpg>

Motivation

Interactive story telling requires a computer engine platform to act as the medium for generated stories. This research is focused on discovering techniques to model and animate 3D characters in Autodesk Maya and export these models to work within the Unreal Tournament 3 (UT3) Game Engine. Furthermore, this research also entails coding the A.I. scripts and agents so that these 3D characters can be used for interactive story telling purposes. Specifically, I am designing 3D dinosaurs and animating them for an interactive Dinosaur Library. This project has moved towards accomplishing this task by thoroughly researching Maya modeling and animation, as well as modification of the UT3 Engine.

Currently, we have discovered the pipeline to create fully customizable models with their own animations within the engine and have also discovered how to give these models their own customizable properties for further manipulation. Further research will allow these models to be manipulated within an interactive environment, in this case a library, which is the end overall goal.

This project will provide a valuable reference tool for working in the Unreal Engine with non-humanoid actors as well as code that is easier to deal with than existing code. The end product needs to provide easy maintainability as well as an easily modifiable design.

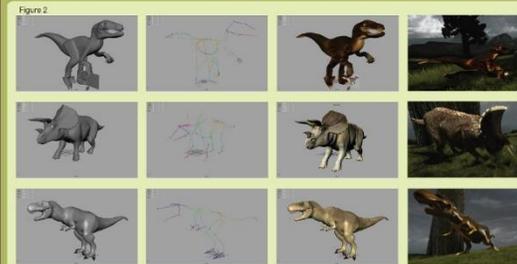
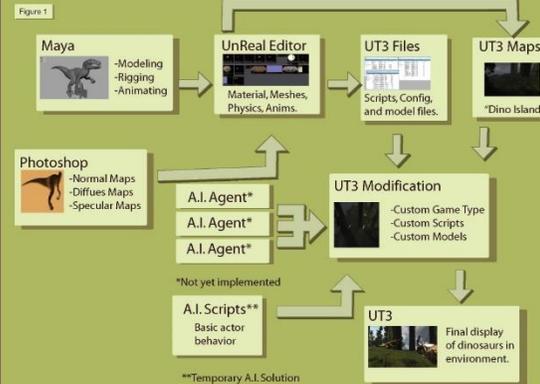
Research Objectives

Discovering techniques in modeling, texturing, animating, and rigging for the UT3 game engine.

Understanding how to import custom material into the UT3 Engine.

Creating interactive A.I. for narrative computing possibilities within the game engine, in this case, for an interactive narrative dinosaur library.

Process



Results



Explanation of Figure 1

Autodesk Maya 2008 was used to model, rig, animate, and (with Adobe Photoshop) texture the dinosaur models (Figure 2).

Models were imported into the Unreal Tournament 3 Editor (UT3 Ed). Here, the model was placed in its own package that included information about materials, physics, and animations.



Configuration files and scripts written in UnrealScript, UT3's Java-like programming language, were created to enable the packages to work within the UT3 Game Engine.

UT3 Ed also was used to create custom jungle environments for the dinosaurs to propagate.

A.I. scripts converted the dinosaurs to actors with basic navigation ability. These A.I. scripts will later be replaced with A.I. agents generated outside of UT3.



The scripts and actors combine together to create a custom modification for UT3. This modification lays the foundation for an interactive narrative dinosaur library.

The methods for creating and importing dinosaurs into UT3 has successfully been established. The current state of the system runs a basic simulation on Dino Island where raptors, triceratopses, and tyrannosaurus walk around and display basic interaction with the environment (Figure 3). Currently, the A.I. is generated by simple behavioral scripts. Realistic dinosaur animations and texturing has also been established in some of the later models developed, such as the tyrannosaurus (Figure 4).

Discussion

This project thus far has been primarily about discovering the process needed to successfully import and manipulate dinosaurs into the UT3 Engine. The discovery of this process came with a great deal of problems to overcome, such as nuisances in game modeling and particular caveats of the UT3 Engine. The initial timeframe to get the first dinosaur into the engine took well over two months of browsing topics concerning the UT3 Engine, modeling, animating, texturing, and rigging. At this stage in the project, making a new dinosaur and getting it to work within UT3 takes just a few days. The increased speed of this process will allow the dinosaur library to easily be expanded.

The current A.I. system is temporary. Basic scripts allow the dinosaurs to navigate and engage in basic interactions within the environment. The Triceratops eats grass as he moves around, for example.

Future Research

This research project is far from completion, as it is currently in the framework development phase. Further research will be applied to researching dinosaur behaviors and applying them to A.I. agents to allow the dinosaurs to interact realistically. These agents need to allow the user to interact with the narrative yet still let the computer generate stories based on the A.I. of the dinosaur characters. These A.I. agents will be created outside of the UT3 Engine, to avoid scripting, the current technique being employed.

Future work will also consist of creating more realistic looking dinosaurs. Better models, textures, and animations have become evident as the team's experience with the project increases.

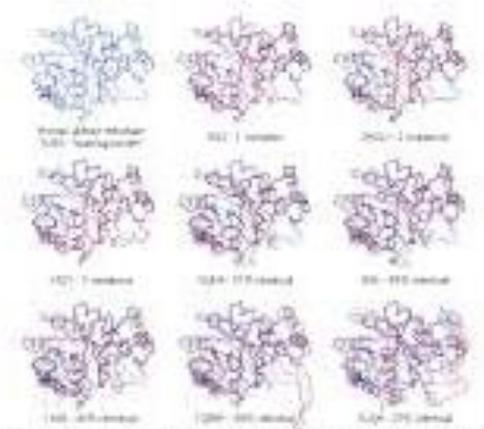
Acknowledgements

This research was funded by Mark Riedl and the Interactive Narrative Computing Lab. I would like to thank past researchers Rachel Keslensky, Richard Klose, Kang Lee, Jacob Sommer, and Jenny Schultz for their work, as well as the UT3 community and the Maya community.

- Numbered sections make it easy to follow
- Good use of pictures
- Text too small to read

1 Abstract

Surprisingly, the frozen structures from ultra-high resolution protein crystallography reveal a pervasive but subtle mode of local backbone motion coupled to small, large, 2 state changes of sidechain conformation. The "backrub" is a previously unrecognized multi-amplitude motion that appears to be an influential and common type of local flexibility in protein backbones. Conserved reorientation of two adjacent peptide rings for central residues perpendicular to chain direction, creating accessible peptide conformations with flexible sidechain substituents. Alternate conformations in rate 14 crystal structures show backrub motions for 23% of significant C α atoms, and 25% of the total residues in these proteins. (529/582) accompanied by 2 state changes of sidechain rotamers. The B3/2M18 modeling tool is effective in crystallographic refinement for backbone modeling in protein redesign. Backrubs can provide robust conformational states to rigid backbones. For large sidechain changes in protein dynamics or single mutations, backrubs allow backbone accommodation while maintaining its length and local geometry.



As protein sequences diverge during evolution, to do two structures, as demonstrated here for some alternative conformations. This work aims to characterize the fundamental structural properties that allow backrubs to adapt to sequence change.

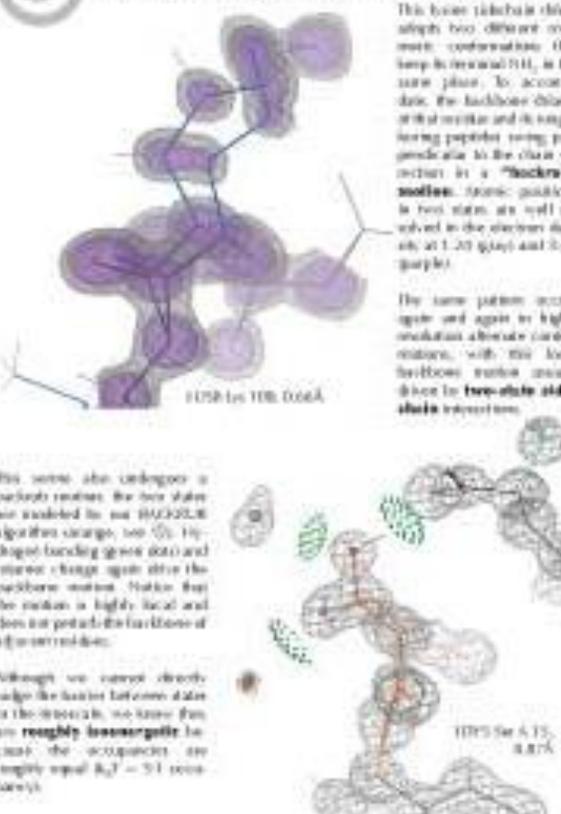
3 Backrubs at atomic resolution

This lower resolution dataset depicts two different conformations that keep its orientation, in the same plane. To accommodate, the backbone (black) or side chain and its length being peptide rings perpendicular to the chain direction is a "backrub" motion. Atomic positions in two states are well resolved in the electron density at 1.20 Å (grey) and 0.80 Å (purple).

The same pattern occurs again and again in high-resolution alternate conformations, with the local backbone motion usually driven by two-state side-chain reorientation.

This same site undergoes a backrub motion. The two states are modeled by the BUCS2.8 algorithm (orange, see 10). Hydrogen bonding (green dots) and rotamer changes again drive the backbone motion. Notice that the motion is highly local and does not perturb the backbone of adjacent residues.

Although we cannot directly judge the faster between states in the structure, we know they are roughly isomeric because the occupancies are roughly equal (0.7 = 0.3 occupancy).



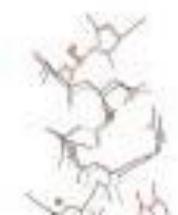
Source: <https://phdposters.com/gallery.php>

2 How to study backbone motion?

Although we are looking for changes in backbone conformation that relate to sequence change, directly comparing protein mutant structures is difficult because we often see multiple states. A single mutation may have complicated, long-range effects, as seen here for T421.



This helix from an R99-91A mutant of T4 lysozyme shows an additional concern in comparing point mutants: the coordinate axes from superimposing



4 How common are backrubs?



One in every 30 residues in these structures showed a backrub motion!

Hints for research posters:

- Use large font – needs to be readable from 3-7 feet away
- Minimize text – use images & fewer words where possible
 - Bullets are your friends
 - 40% images, 40% white space, 20% text
- Use colors for figures & headings – attract your audience!
- Organize top to bottom & left to right
- Make sure images are high resolution
- Tell the story of your research – what was the question? Why care?
 - Poster should step logically through research process
- Print out small color handouts of poster at travel conferences

Printing poster for ACSC?

- Must be submitted electronically before March 7
- Size requirements: 4' wide x 3' high
- Background must be plain white
- Abstract should be included on poster
- Start with template here:
<http://www.austincollege.edu/academics/experiential-learning/student-scholarship-conference/>

Other helpful references:

- Brief video on academic poster format:

<https://www.youtube.com/watch?v=J-SRWog-5Is>

- Websites on scientific poster design:

- <http://uwm.edu/freshwater/pesc-guide/posters/>

- <http://p2i.eval.org/index.php/research-poster/>

- <https://www2.viu.ca/research/create/PosterTips.asp>