

Arguments in Gradatio, Incrementum and Climax; a Climax Ontology

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 - Jeanne Fahnestock, 1996
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 - Future Work

Motivation

- Jeanne Fahnestock: *Series Reasoning In Scientific Argument: Incrementum And Gradatio And The Case Of Darwin*, 1996
“*incrementum and gradatio... embody unique conceptual strategies... critical in many arguments*”
- *incrementum* and *gradatio* are series-constructing figures
- examples from science, e.g. Darwin's *The Origin of the Species*

The Climax Suite

- Three figures in combination:
 - Anadiplosis
 - Gradatio
 - Incrementum
- ...together they form...
 - the figure of Climax

The Climax Suite

... but we're not talking about the common view of what a Climax figure is ...

Look! Up in the sky! It's a bird... it's a plane... it's Superman!

This is not a Climax by our definition, but an Incrementum ...

A Climax must be combined with a Gradatio ...

Anadiplosis

Anadiplosis - Definition

Repetition of the last word or word string of one colon (a clause which is grammatically, but not logically, complete) at the beginning of the subsequent colon

Example

Snow turned to **sleet**, **sleet** to rain.

Gradatio

Gradatio - Definition

One or more Anadiploses in the same passage

Example

Out of joy **strength** came, **strength** that was fashioned to bear **sorrow**; **sorrow** brought forth joy.

Incrementum

Incrementum - Definition

A succession of words with semantic increase; “expresses an ordered series, a series that goes somewhere” (Fahnestock)

Example

Look! Up in the sky! It's a **bird**... it's a **plane**... it's **Superman**!

N.B.

Decrementum is a special case - defined as a decrease in semantic weight. Can be modelled as Incrementum with an increase in a negative semantic weight

Climax

Climax - Definition

Colocation of a Gradatio and an Incrementum

Example

They call for you: The general who became a **slave**; the **slave** who became a **gladiator**; the **gladiator** who defied an **Emperor**.
(Gladiator, 2000)

Example

Men often hate each other because they **fear each other**; they **fear each other** because they **don't know each other**; they **don't know each other** because **they can not communicate**; **they can not communicate** because **they are separated**.
(Martin Luther King, Jr., Stride Toward Freedom: The Montgomery Story, 1958)

The Climax Suite

- Three figures in combination:
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Anadiplosis

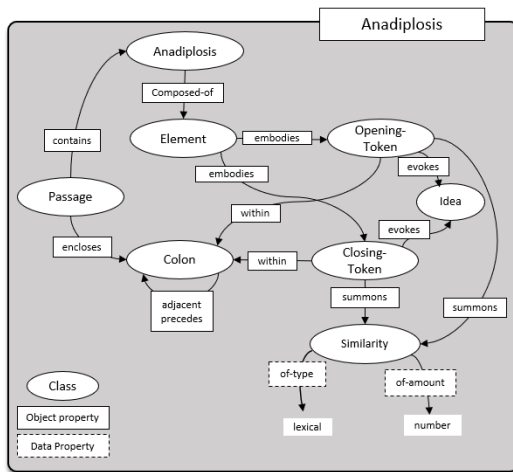


Figure: Our model for the scheme of Anadiplosis

Colon

Colon - Definition

A Colon is a rhetorical structure consisting of a clause which is grammatically, but not logically, complete (plural is *Cola*)

Gradatio

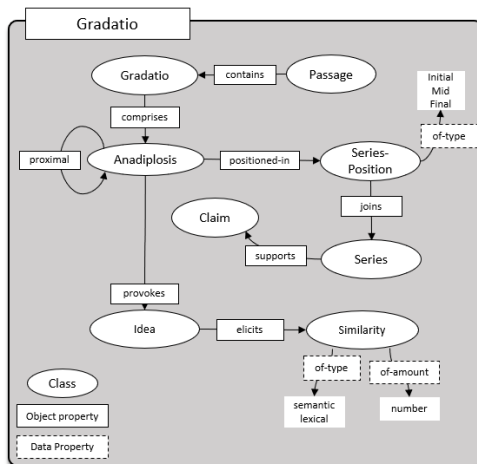


Figure: Our model for the trope of Gradatio

Incrementum

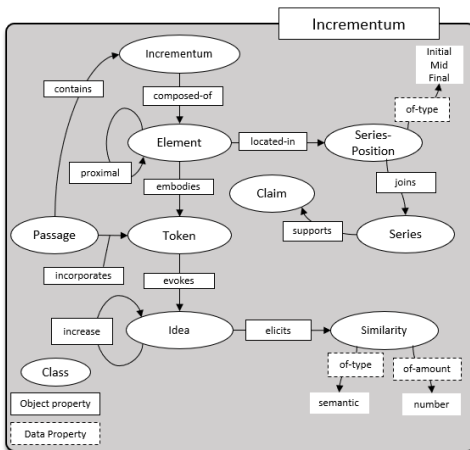


Figure: Our model for the trope of Incrementum

Climax

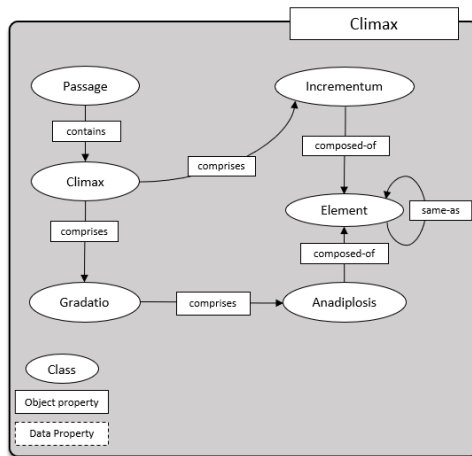


Figure: Our model for the trope of Climax

Climax

Example

One voice can change a **room**^{a1/g1/i1}. And if it can change a **room**^{a1/g1/i1}, it can change a **city**^{a2/g1/i1}. And if it can change a **city**^{a2/g1/i1}, it can change a **state**^{a3/g1/i1}. And if it can change a **state**^{a3/g1/i1}, it can change a **nation**^{a4/g1/i1}. And if it can change a **nation**^{a4/g1/i1}, it can change a **world**ⁱ¹.

(Barack Obama, presidential campaign speech in Des Moines, Iowa, November 5, 2012)

[a=anadiplosis; g=gradatio; i=incrementum]





























Climax

- Obama is arguing that individuals should speak up to make a difference to society - moving from *one voice* to *a world*
- The Incrementum is fairly straightforward:
room → *city* → *state* → *nation* → *world*
- The Gradatio is not so straightforward:
 In contrast to the Incrementum's ordered series, "*they distribute one another's properties in an overlapping way, an n th member of a series sharing one property with $n-1$ and another property with $n+1$, but not the same property in differing degrees with both*" (Fahnestock)
 Repetitions overlap consecutive sentences which gives a fragmented series.
- Modelled by us as a combination of **Similarity** classes in Gradatio and Anadiplosis

Example

FAHNESTOCK/SERIES REASONING

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Examples of Fossil Deposits	Typical Horse	Provincial Age	Epoch
			RECENT
			PLEISTOCENE
		BLANCAN	PLIOCENE OR PLEISTOCENE
		HEMPHILLIAN	PLIOCENE
		CLARENDONIAN	
		BARSTOVIAN	MIOCENE
		HEMINGFORDIAN	
		ARIKAREAN	
		WHITNEYAN	Oligocene
		ORELIAN	
		CHADRONIAN	
		DUCHESNIAN	Eocene
		UINIAN	
		BRIDGERIAN	
		WASATCHIAN	
		TIFFANIAN	PALEOCENE
		TORREJONIAN	
		PUERCAN	

Cretaceous Period-End of Age of Reptiles

Figure 1

(from George Gaylord Simpson. *Horses: The Story of the Horse Family in the Modern Worlds and through Sixty Million Years of History*. New York: Oxford University Press, 1951, p. 100)

Figure: Visual Incrementum/Climax

Example

Certainly no clear line of demarcation has as yet been drawn between species and *sub-species*—that is, the forms which in the opinion of some naturalists come very near to, but do not quite arrive at, the rank of species: or, again, between *sub-species* and well marked *varieties*, or between lesser *varieties* and individual *differences*. These *differences* blend into each other by an *insensible series*, and a *series* impresses the mind with the idea of an actual passage.⁹ (*Origin*, 107; italics added; the passage continues by running this series in reverse.)

Figure: Charles Darwin - Origin of the Species

Argumentation

- The resulting Climax structure is a combination of two ordered series - one in Incrementum (smooth and well-directed) and Gradatio (more fragmented)
- Series in arguments - from a Dialectical tradition of "*arguing from the more or the less*" (cf. Aristotle)
- There are many argument types associated with arguing around a series (**Series-Reasoning**)
- An arguer can use series formation to compare end points with intermediaries, but also to bridge antithetical concepts, e.g. "*present an audience with an apparent antithesis and then undo it with a connecting series*"
- An example of an argument with inference of missing elements is the Periodic Table of Elements (Mendeleev)

Argumentation

- Slippery Slope Argument: an assertion that a relatively small first step leads to a chain of related events culminating in some significant (usually negative) effect. This is a series-reasoning argument where a final step in the series is presumed to occur if the preceding ones are acted out
- We model a **Series** in our ontologies that **Supports** a **Claim** therefore creating a bridge to Argument theory and (as future work) to the Argument Interchange Format (AIF)

Future Work

- Capture and document instances of each of the figures from literature and culture etc in a database, published online, marked-up and annotated for re-use
- Develop the connections to argument processing tools and AIF and Rhetorical Structure Theory
- Explore the cognitive basis for arguments with figures from the Climax suite
- Machine Learning for figure discovery

Thank you