

The University of Michigan
Engineering 100

Winter 2015

Technical Communication

Accuracy

Organization

Plain Language

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From USA Today



Transcripts Research Issues Politics World Markets Science Tech History Books Religion

September 26, 2011

Embarcing Climate Science Through Free Market Principals

 *USA Today, USA Today*



<http://www.realclearmarkets.com/>

An example of student work

“This design exhibits negative utility.”

What can this possibly mean?



An example of student work

“Sometimes the impossible happens.”

What can this possibly mean?



What can this possibly mean?

- “The design doesn’t work.” (probably)
- “Using this design is worse than not using it at all.” (actually)

Organization of documents

- Purpose helps determine organization
- There are some basic principles

Consider a sentence

What is a sentence?

A subject and a predicate

Consider a sentence

What (generally) comes first, the subject or the verb?

Consider a sentence

What comes first in an indicative sentence?

- The subject comes first, of course.
- But why?

Simple sentences

- The dog barks.
 - I understand.
 - Ashley sees.
- What's really going on here?

Predication is going on

- A subject is introduced. (Noun)
- Something is predicated (asserted) about the subject.

Predicate: (Verb + Object + Any Necessary Complements of the object)

Predication

- The dog bites.

Predication

- The dog bites.
- The dog bites the man.

Predication

- The dog bites.
- The dog bites the man.
- The dog that lives next door bites the man.

Predication

- The dog bites.
- The dog bites the man.
- The dog that lives next door bites the man.
- The dog that lives next door bites the man who sells shoes.
 - *So, what's the point of all this?*

What about emphasis?

The dog that lives next door bites the man who sells shoes which are worn by basketball players who work at summer camps.

In each example given

- A subject is introduced;
- An assertion is made concerning it.

The verb form, part of the assertion about the subject implies that the statement is

- True (or false)
- Contingent (its truth depends on some other event taking place)
- Contrary to fact (hypothetical)

The verb form implies that the statement is about the

- Present
- Past
- Future

And sometimes about two of these at once...

Do we always make statements that are true?

No! We can make conditional, hypothetical, or counterfactual statements. But how?

How about these?

- The dog *would* bite the man if he *lived* next door.
- You *would* get a perfect score if you *studied* more.

Do we always make statements that are true?

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No! We can make conditional, hypothetical, or counterfactual statements. But how?

Subjunctive statements

- Susan's father asks that she *call* him on Sunday evenings.
- I would prefer it if my roommate *were* quieter than he is.
- If I *had* more money, I would travel to Australia.

Note the verb forms: call (not *calls*), were (not *was*), had (not *have*)

Conditional statements

- If I had more money, I *would travel* to Australia.
- If he were a better student, he *would win* a scholarship.

Modal auxiliaries and subjunctive verbs express

■ Conditionality

- The truth of a conditional statement depends on the outcome of some event.

■ Hypotheticality

- A hypothetical statement is one that involves a conjecture or assumption, often for the sake of argument.

■ Counterfactuality

- A counterfactual statement is one that expresses a condition that doesn't exist.

Modal auxiliaries

- Would
- Could
- Should
- Might
- Ought

Modal auxiliaries and their indicative correspondences

■ Would

■ Could

■ Should

■ Might

■ Ought

■ Will

■ Can

■ Shall

■ May

■ Owe

The truth (or conditionality or hypotheticality) of what you assert depends upon your use of the the proper verb form in your predication.

Misuse of a verb will generally result in an untrue or inaccurate statement.

Thus verbs are the key to accurate statement at the level of the sentence

- A verb's voice (active or passive) indicates whether a subject acts or is acted upon.
- A verb's mood or modality indicates the degree of truth asserted.
- A verb's tense indicates when an action took place.
- A verb's aspect indicates the degree of completion of an action.

Organization

You may state things accurately, but that's not enough: you need to organize your information properly.

A simple point

- Introduce an idea.
- *Then* assert something about it. *Accurately.*
 - You establish an understanding between the reader and yourself-- and *then* you modify it.

So, what follows from this?

- Thought is sequential.
 - General information precedes specific.
 - Old information precedes new.
- Remember these simple points; they apply to all writing.

Paragraphs

There are some principles behind writing them.

Terrorists will use technology against us, so we have to fight fire with fire. We should use any technological means to fight terrorism. We shouldn't be afraid of infringing on people's civil rights because new technologies should allow us to fight terrorism without violating privacy. Only technology will allow us to fight an enemy who can hide in any country, and so we have no choice anyway. Information-mining is actually a good intelligence technique because it pinpoints suspects for surveillance, and the FBI won't have to snoop on people at random. This will ensure that most people's privacy is preserved.

What is a paragraph?

What is a paragraph?

- A subdivision of written text

What is a paragraph?

- A subdivision of written text,
- Consisting of several sentences,

What is a paragraph?

- A subdivision of written text,
- Consisting of several sentences,
- Dealing with one topic.

What is a paragraph?

- A subdivision of written text,
- Consisting of several sentences,
- ***Dealing with one topic.***

Because a paragraph deals with one topic

- It has two qualities

Because a paragraph deals with one
topic

It has two qualities

- Unity

Because a paragraph deals with one topic

It has two qualities

- Unity
- Coherence (often called “Flow”)

Unity

“The state or condition of being one; oneness; singleness; being united.”

Webster's New Universal Unabridged Dictionary, New York: Simon & Schuster, 1983.

Unity

As far as paragraphs are concerned, what does this mean?

Unity

As far as paragraphs are concerned, what does this mean?

It means that a paragraph should only deal with one subject. When you deal with another subject, then deal with it in another paragraph.

"The first rule of style is to have something to say; the second rule of style is to control yourself when, by chance, you have two things to say; say first one, then the other, not both at the same time."

-- George Polya

Unity

A paragraph should only deal with one subject.
When you deal with another subject, then deal with it in another paragraph.

Basically, this means say one thing, and then another.

Terrorists will use technology against us, so we have to fight fire with fire. We should use any technological means to fight terrorism. We shouldn't be afraid of infringing on people's civil rights because new technologies should allow us to fight terrorism without violating privacy. Only technology will allow us to fight an enemy who can hide in any country, and so we have no choice anyway. Information-mining is actually a good intelligence technique because it pinpoints suspects for surveillance, and the FBI won't have to snoop on people at random. This will ensure that most people's privacy is preserved.

One problem with that paragraph is that it deals with two topics.

First topic

We are obliged to use technology to fight terrorism:

Terrorists will use technology against us, so we have to fight fire with fire. We should use any technological means to fight terrorism. Only technology will allow us to fight an enemy who can hide in any country, and so we have no choice anyway.

Second topic

Technology will allow us to fight terrorism without undue violation of people's rights:

We shouldn't be afraid of infringing on people's civil rights because new technologies should allow us to fight terrorism without violating privacy. Information-mining is actually a good intelligence technique because it pinpoints suspects for surveillance, and the FBI won't have to snoop on people at random. This will ensure that most people's privacy is preserved.

Coherence (Flow)

What is it?

Coherence

- “Connection; suitable connection or dependence proceeding from the natural relation of parts or things to each other, as in the parts of a discourse, or of a system; consistency.”

Webster's New Universal Unabridged Dictionary, New York: Simon & Schuster, 1983.

Coherence

- “. . . suitable connection or dependence proceeding from the natural relation of parts. . . .”

What does this mean?

Coherence implies

- A certain flow
- A logical progression from one thing to another

Coherence implies

- A certain flow
- A logical progression from one thing to another

So, one thing should lead naturally to another.

But how is that done?

Coherence is achieved by giving your paragraphs an appropriate structure.

From Richard Dawkins, *The Blind Watchmaker*.

The herbivores have keen senses with which they are continuously alert for predators, and they are usually capable of running very fast to escape them. To this end they often have long, spindly legs, and they typically run on the tips of their toes, which have become specially elongated and strengthened in evolution. The nails at the ends of these specialized toes have become large and hard, and we call them hooves. Cattle have two elongated toes at the extremities of each leg: the familiar 'cloven' hooves. Horses do much the same thing except that, probably for reasons of historical accident, they run on only one toe instead of two. It is derived from what was originally the middle one of the five toes. The other toes have almost completely disappeared over evolutionary time, although they occasionally reappear in freakish 'throwbacks'.

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General to Specific Structure

- Topic Sentence
- Details
- Details
- Details

Let's think of another sort of cohesion in the Dawkins paragraph...

Another look at coherence

Consider “weaving” your paragraphs.

From Richard Dawkins, *The Blind Watchmaker*.

The herbivores have keen senses with which they are continuously alert for predators, and *they* are usually capable of running very fast to escape them. To this end *they* often have long, spindly legs, and *they* typically run on the tips of their toes, which have become specially elongated and strengthened in evolution. The nails at the ends of these specialized toes have become large and hard, and we call them hooves. Cattle have two elongated toes at the extremities of each leg: the familiar ‘cloven’ hooves. Horses do much the same thing except that, probably for reasons of historical accident, they run on only one toe instead of two. It is derived from what was originally the middle one of the five toes. The other toes have almost completely disappeared over evolutionary time, although they occasionally reappear in freakish ‘throwbacks’.

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Dawkins paragraph

- Has good topic sentence
- Goes from broad to narrow
- Developed with examples
- Is woven together sentence by sentence with common topics and subjects

Any paragraph you write should

- Have a good topic sentence
- Go from broad to narrow
- Be sewn together sentence by sentence with common topics and subjects

General to specific structure

- Topic Sentence
- Details
- Details
- Details

General to Specific Structure

- **General**
- **Specific**
- **Specific**
- **Specific**
- **Conclusion**

General to specific structure

General
Specific
Specific
Specific
Conclusion



Some call this the teacup pattern

<http://www.teatresures.com/images/queen-victoria-teacup-large.jpg>

I prefer to call this the pilsner glass design

General

Specific

Specific

Specific

Conclusion



<http://www.weepingradish.biz/store/images/curvy-pilsner-glassware.jpg>

Topic sentences

- Do use a topic sentence.
- State the main idea of the paragraph in the topic sentence.

A reader often needs his or her attention focused in order to easily grasp what follows.

Paragraphs are often underdeveloped.

How can they be developed?

Paragraphs may be developed several ways

- Giving details
- Giving examples
- Narrating a series of events
- Explaining a process
- Comparing and contrasting
- Classifying and dividing
- Defining

U.S.S. Casco



www.sonofthesouth.net/leefoundation/monitor-m...

The job was done, but it cost a great deal of money and resulted in the creation of one of the most heterogeneous fleets ever seen in the waters of the globe. Anything that would float and carry a gun or two would serve, for most of these blockaders would never have to fight; they were simply cops on the beat, creating most of their effect just by being on the scene. Vessels of every conceivable variety were brought into service, armed, after a fashion, and sent steaming down to take station off Southern harbors: ferryboats, excursion steamers, whalers, tugs, fishing schooners, superannuated clippers—a weird and wonderful collection of maritime oddities, which in the end gave more useful service than anyone had a right to expect. They made the blockade legally effective, and their work was aided by the Confederate government's folly in withholding cotton from the overseas market. At the very least they gave the navy time to build some new vessels specially designed for the job.

-- Bruce Catton, *The Civil War*, p. 72

These included two dozen 500-ton gunboats, steam powered, of shallow draft and moderate armament—“ninety-day gunboats,” they were called, because it took just three months from keel-laying to final commissioning. Deep-sea cruisers to run down Confederate commerce destroyers were built, along with forty-seven double-enders—unique, canoe-shaped side-wheelers, with rudders and pilothouses at each end, for use in the narrow rivers that fed into the coastal sounds where there was no room to turn around. The double-enders could change course by reversing their engines.

-- Bruce Catton, *The Civil War*, p. 72

Review: general to specific structure

- **General**
- **Specific**
- **Specific**
- **Specific**
- **Conclusion**

But this principle has broader application

A memo has

- Foreword
- Summary
- Details

The foreword and summary are broad pieces of information, the details are the specifics.

Within each section of a report

- Background (Broad)
- Specifics
- Specifics
- Specifics

So a report might be organized this way:

- General point

- Specific paragraph
- Specific paragraph
- Specific paragraph

- General point

- Specific paragraph
- Specific paragraph
- Specific paragraph

- General point

- Specific paragraph
- Specific paragraph
- Specific paragraph

- General point

- Specific paragraph
- Specific paragraph
- Specific paragraph

- General point

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- Specific paragraph
- Specific paragraph

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- Specific paragraph
- Specific paragraph
- Specific paragraph

So a report might be organized this way:

- General point
 - Specific paragraph
 - Specific paragraph
 - Specific paragraph
- General point
 - Specific paragraph
 - Specific paragraph
 - Specific paragraph
- General point
 - Specific paragraph
 - Specific paragraph
 - Specific paragraph

- Topic sentence (General)
 - Details
 - Details
 - Details
- Topic sentence (General)
 - Details
 - Details
 - Details
- Topic sentence (General)
 - Details
 - Details
 - Details

Remember the sentence

Subject (general) + Verb (specific) + Other Modifiers

Remember the sentence

Subject (general) + Verb (specific
modifier) + Other Modifiers

Plain Language

And I would rather be understandable than seem eloquent.

--Johann Joseph Fux, *Gradus Ad Parnassum*

The move from a structuralist account in which capital is understood to structure social relations in relatively homologous ways to a view of hegemony in which power relations are subject to repetition, convergence, and rearticulation brought the question of temporality into the thinking of structure, and marked a shift from a form of Althusserian theory that takes structural totalities as theoretical objects to one in which the insights into the contingent possibility of structure inaugurate a renewed conception of hegemony as bound up with the contingent sites and strategies of the rearticulation of power.

--Name Withheld

So, what's wrong with this paragraph?

The English language

What is it?



<http://shopping.corbis.com/search/details.asp?imageid=13126874>

Battle of Hastings 1066



William the Conqueror

“Je ne parle pas Anglais.”

<http://www.maxwell.syr.edu/maxpages/classes/His311/Lecture%20Four/william.htm>

English

- Is very large (at least 500,000 words)
- Has distinct vocabularies
 - Germanic
 - Latin-based (most often French)

English vocabulary

- Germanic-- short, concrete words
- French-- longer, more abstract words

Machine à vapeur

La machine à vapeur est une invention dont les évolutions les plus significatives datent du XVIII^e siècle. C'est un moteur thermique à combustion externe. Il transforme l'énergie thermique que possède la vapeur d'eau fournie par une ou des chaudières en énergie mécanique.

Comme première source d'énergie mécanique constructible et maîtrisable par l'Homme (contrairement à l'énergie de l'eau, des marées ou du vent, qui nécessitent des sites spéciaux et que l'on ne peut actionner facilement à la demande), elle a eu une importance majeure lors de la Révolution Industrielle. Mais au XX^e siècle, la machine à vapeur « alternative » a été supplantée par la turbine à vapeur. Le moteur électrique et le moteur à combustion interne l'ont aussi remplacée dans la mise à disposition d'énergie mécanique.

http://fr.wikipedia.org/wiki/Machine_à_vapeur

French, based on Latin, shares some of its abstraction.

Latin verb: **Cedo**

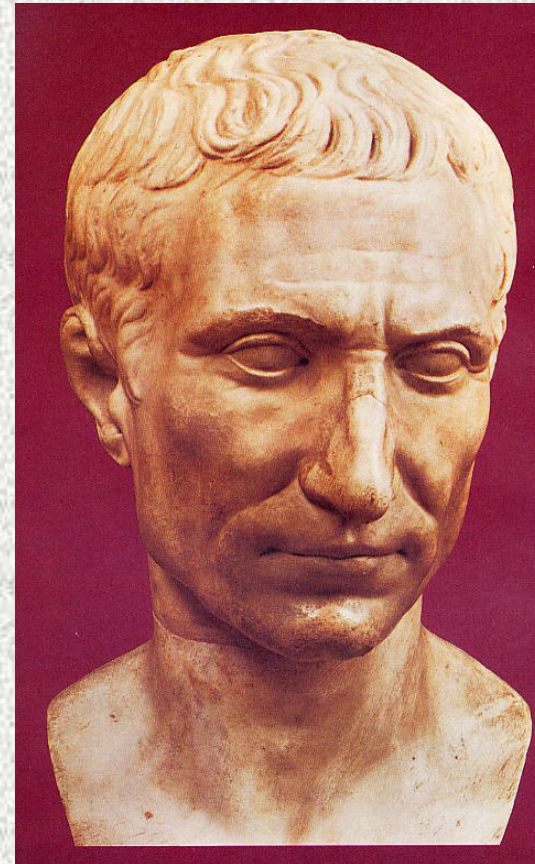
Cedo

- Grant
- Concede
- Yield
- Give Up
- Go
- Move
- Walk
- Depart
- Withdraw
- Befall
- Submit
- Be Inferior To
- Comply With
- Conform To
- Obey
- To Result In

Abstractions and Concretes

- Primate
- Homo Sapiens
- Roman
- Gaius Julius Caesar

A Concrete?



Remember: If a thing is too abstract,
it's hard to think about.

English vocabulary

- Germanic-- short, concrete words
- French-- longer, more abstract words

encourageurge

continuekeep up

supplementadd to

acquireget

English vocabulary

- Germanic-- short, concrete words
- French-- longer, more abstract words

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So what might we do?

What are the Germanic equivalents?

■ Accelerate

■ Augment

■ Conceal

■ Possess

■ Encounter

■ Exist

■ Speed up

■ Add to

■ Hide

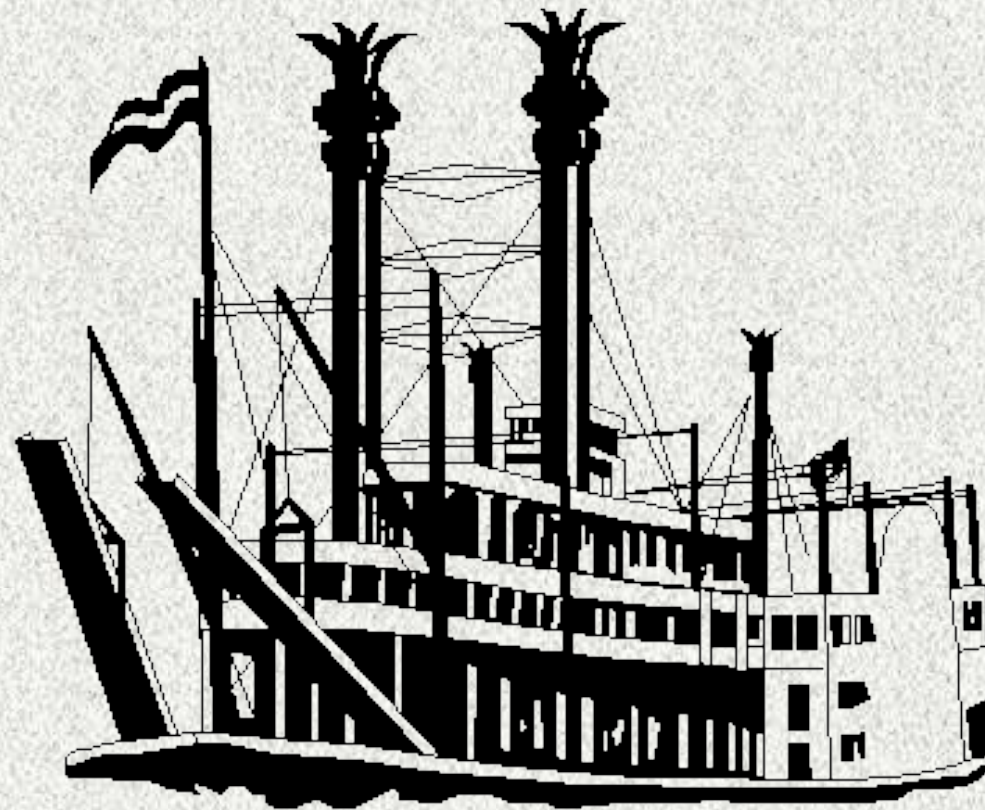
■ Have

■ Meet

■ Be

We might consider writing more plainly and with stronger simpler words-- particularly verbs.

Perhaps something more interesting...





Be good, you will be lonesome
Mark Twain

*“Be good and
you will be
lonesome.”*

Mark Twain

The fifth night below St. Louis we had a big storm after midnight, with a power of thunder and lightning, and the rain poured down in a solid sheet. We stayed in the wigwam and let the raft take care of itself. When the lightning glared out we could see a big straight river ahead, and high, rocky bluffs on both sides. By and by says I, "Hel- lo , Jim, looky yonder!" It was a steamboat that had killed herself on a rock. We was drifting straight down for her. The lightning showed her very distinct. She was leaning over, with part of her upper deck above water, and you could see every little chimbly-guy clean and clear, and a chair by the big bell, with an old slouch hat hanging on the back of it, when the flashes come.

Well, it being away in the night and stormy, and all so mysterious-like, I felt just the way any other boy would a felt when I see that wreck laying there so mournful and lonesome in the middle of the river. I wanted to get aboard of her and slink around a little, and see what there was there. So I says:

"Let's land on her, Jim."

Mark Twain, *The Adventures of Huckleberry Finn*, Chapter 12

Another riverboat: J. S. Delux



www.steamboats.com/museum/jc.html

Tests show that

- The more syllables a text has per 100 words, the harder it is to grasp.

Therefore?

Tests show that

- The more syllables a text has per 100 words, the harder it is to grasp.

Therefore, the longer the words you use and the longer the sentences, the more difficult it will be for your readers to grasp what you write.

Broad simple rules

- Keep your sentences to a reasonable length.
- Don't use more long, abstract words than you need.

The move from a structuralist account in which capital is understood to structure social relations in relatively homologous ways to a view of hegemony in which power relations are subject to repetition, convergence, and rearticulation brought the question of temporality into the thinking of structure, and marked a shift from a form of Althusserian theory that takes structural totalities as theoretical objects to one in which the insights into the contingent possibility of structure inaugurate a renewed conception of hegemony as bound up with the contingent sites and strategies of the rearticulation of power.

(94 words)

--Name Withheld

Latinate words removed

The from a in which is understood to in ways to a of in which are to and brought the of into the thinking of, and a shift from a of that takes as to one in which the insights into the of a of as bound up with the and of the of.

(54 words)

Previous paragraph

- It consists of one giant sentence.
- Half of the words are abstract.

Latinate words and function words removed

is understood ways are brought thinking shift takes one
insights bound up

(12 words)

Dawkins Paragraph

The herbivores have keen senses with which they are continuously alert for predators, and they are usually capable of running very fast to escape them. To this end they often have long, spindly legs, and they typically run on the tips of their toes, which have become specially elongated and strengthened in evolution. The nails at the ends of these specialized toes have become large and hard, and we call them hooves. Cattle have two elongated toes at the extremities of each leg: the familiar 'cloven' hooves. Horses do much the same thing except that, probably for reasons of historical accident, they run on only one toe instead of two. It is derived from what was originally the middle one of the five toes. The other toes have almost completely disappeared over evolutionary time, although they occasionally reappear in freakish 'throwbacks'.

(141 words)

Dawkin's paragraph with latinate words removed

The * * * have keen * * * with which they are * * * for * * *, and they are * * * * * of running very fast to * * * them. To this end they often have long, spindly legs, and they * * * run on the tips of their toes, which have become * * * * * and strengthened in * * *. The nails at the ends of these * * * toes have become * * * and hard, and we call them hooves. Cattle have two * * * toes at the * * * of each leg: the * * * 'cloven' hooves. Horses do much the same thing * * * that, * * * for * * * of * * * * * , they run on only one toe instead of two. It is * * * from what was * * * the middle one of the five toes. The other toes have almost * * * * * over * * * time, although they * * * * * in freakish 'throwbacks'.

(113 words: 28 latinate words removed)

Readability stats on Dawkin's text

- Reading ease: 51.3
 - (100 = extremely easy)
 - (0 = unreadable)
- Flesch-Kincaid grade level: 11

The fifth night below St. Louis we had a big storm after midnight, with a power of thunder and lightning, and the rain poured down in a solid sheet. We stayed in the wigwam and let the raft take care of itself. When the lightning glared out we could see a big straight river ahead, and high, rocky bluffs on both sides. By and by says I, "Hel- lo , Jim, looky yonder!" It was a steamboat that had killed herself on a rock. We was drifting straight down for her. The lightning showed her very distinct. She was leaning over, with part of her upper deck above water, and you could see every little chimbly-guy clean and clear, and a chair by the big bell, with an old slouch hat hanging on the back of it, when the flashes come.

Well, it being away in the night and stormy, and all so mysterious-like, I felt just the way any other boy would a felt when I see that wreck laying there so mournful and lonesome in the middle of the river. I wanted to get aboard of her and slink around a little, and see what there was there. So I says:

"Let's land on her, Jim."

[208 words]

Mark Twain, *The Adventures of Huckleberry Finn*, Chapter 12

The fifth night below St. Louis we had a big storm after midnight, with a *** of thunder and lightning, and the rain poured down in a solid sheet. We stayed in the wigwam and let the raft take care of itself. When the lightning glared out we could see a big straight *** ahead, and high, rocky bluffs on both sides. By and by says I, "Hel- lo , Jim, looky yonder!" It was a steamboat that had killed herself on a rock. We was drifting straight down for her. The lightning showed her very ***. She was leaning over, with part of her upper deck above water, and you could see every little ***-guy clean and ***, and a *** by the big bell, with an old slouch hat hanging on the back of it, when the flashes come.

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"Let's land on her, Jim."

[ca. 201 words: seven latinate words removed]

Mark Twain, *The Adventures of Huckleberry Finn*, Chapter 12

Readability stats on Twain text

- Reading ease: 81.8
 - (100 = extremely easy)
 - (0 = unreadable)
- Flesch-Kincaid grade level: 6.4

Readability stats on postmodern text

- Reading ease: 0
 - (100 = extremely easy)
 - (0 = unreadable)
- Flesch-Kincaid grade level: 12 (The scale just broke!)
- Gunn Fog Index Number (grade equivalent level): **50.37**

Summation

Summation

- Introduce information, then assert something about it (the sentence)
- General information precedes specific.
- Old information precedes new.

Summation

■ Paragraphs

- Have unity
- Have coherence

Summation: paragraphs

- Organize them (ex. broad to narrow).
- Use topic sentences.
- Develop them.
 - With details
 - With examples
 - With process descriptions, etc.

Summation: plain language

- Use concrete words.
- Use manageable sentences.