

# Scientific Writing

- Lecture Three:

Punctuation, Parallelism, and the Good Sentence.

# Scientific Writing

Lesson One: Our friends the dash, colon, semicolon, and parenthesis...

# Scientific Writing

Note: A clause is a unit of grammatical organization next below the sentence in rank. A clause has a subject and a predicate.

# Scientific Writing

Increasing power to separate:

Comma

Colon

Dash

Parentheses

Semicolon

Period



# Scientific Writing

Increasing formality:

Dash

Parentheses

The Others (Comma, Colon, Semicolon, Period)

# Scientific Writing

## Semicolon

### **Semicolon:**

**Indicates a pause, typically between two main clauses, that is more pronounced than that indicated by a comma.**

**Example: Kennedy could be a cold and vain man, and he led a life of privilege. But he knew something about the world; he also cared about it.**

# Scientific Writing

## Parentheses

**Parenthesis (parenthetical expression):**

**A word, clause, or sentence inserted as an explanation or afterthought into a passage that is grammatically complete without it.**

**→ If you remove the material within the parentheses, the main point of the sentence should not change.**

# Scientific Writing

## The Colon

Use a colon after an independent clause to introduce a list of items, an explanation, an amplification, or an illustrative quotation.

“The colon has more effect than the comma, less power to separate than the semicolon, and more formality than the dash.”--*Strunk and White*

# Scientific Writing

## The Colon (list or explanation)

“The hydrogen bonds are made as follows:  
purine position 1 to pyrimidine position 1; purine  
position 6 to pyrimidine position 6.”

“These pairs are: adenine (purine) with thymine  
(pyrimidine), and guanine (purine) with cytosine  
(pyrimidine).”

From: “*A structure for Deoxyribose Nucleic Acid*”—  
Watson and Crick 1953

# Scientific Writing

## The Colon (list or explanation)

Washington has a simple solution to most governments it doesn't like: isolate them, slap sanctions on them, and wait for their downfall.

# Scientific Writing

## The Colon (list)

- Cross-sectional studies that have measured BMD in formerly anorectic women or elite athletes up to 25 years after diagnosis or cessation of competition have found mixed results, including: normal BMD values for age (5,6,7), moderately reduced BMD (8), and unexpectedly high proportions of osteopenia and osteoporosis (9,10,11).

# Scientific Writing

## The Colon (quote, list)

The “Ask not” line follows right after an exhortation modeled on Franklin Roosevelt’s “rendezvous with destiny”: “In the long history of the world, only a few generations have been granted the role of defending freedom in its hour of maximum danger. I do not shrink from this responsibility—I welcome it.” The note throughout is one of alarm: “The trumpet summons us again”; “the burden of a long twilight struggle”; “that uncertain balance of terror.”

- NOTE: The “rule of three’s” for lists and examples.
- Example: They dramatically reduced the number of series in production: in 1935, fourteen series were circulating; in 1940, nine; by 1980, when the syndicate was in its final years, only four.

# Scientific Writing

## The Colon (to amplify or interpret)

Join two independent clauses with a colon if the second interprets or amplifies the first:

Companies use Marsh for the same reason that home sellers use real-estate agents: the agent's knowledge and experience is supposed to help the client get the right deal at the right price.

# Scientific Writing

## The Colon: Practice

Evidence-based medicine teaches clinicians the practical application of clinical epidemiology, as needed to address specific problems of specific patients. It guides clinicians on how to find the best evidence relevant to a specific problem, how to assess the quality of that evidence, and perhaps most difficult, how to decide if the evidence applies to a specific patient.

# Scientific Writing

## The Colon: join and condense

Evidence-based medicine teaches clinicians the practical application of clinical epidemiology, including: how to find the best evidence relevant to a specific problem, how to assess the quality of that evidence, and how to decide if the evidence applies to a specific patient.

# Scientific Writing

## Colon misuse

### EXAMPLE, what not to do!

“Two aspects of alcohol use are related to brain injuries: as a factor associated with risk of an injury such as a motor vehicle crash, and as a factor in TBI diagnosis, recovery, or survival after injury.”



“Two aspects of alcohol use are related to brain injuries: its association with risk of injury, such as motor vehicle crash, and its post-injury influences on TBI diagnosis, recovery, or survival after injury.”

# Scientific Writing

## Colon misuse

### EXAMPLE, what not to do!

“In one project we have a nutritionist, a psychologist, statisticians, a computer specialist, and dietitians: a whole range of specialties.”



“In one project we have a whole range of specialties: a nutritionist, a psychologist, statisticians, a computer specialist, and dietitians.”

# Scientific Writing

## The Dash

Use a dash to set off an abrupt break or interruption and to announce a long explanation or summary. Helps add emphasis.

- “A dash is a mark of separation stronger than a comma, less formal than a colon, and more relaxed than parentheses.”—*Strunk and White*
- “Use a dash only when a more common mark of punctuation seems inadequate.”—*Strunk and White*  
*i.e.* Reserve this tool for the really tough jobs!

# Scientific Writing

## The Dash

The drugs did more than prevent new fat accumulation. They also triggered overweight mice to shed significant amounts of fat—up to half their body weight. (*emphasis*)

To establish that the marrow cells—also called adult stem cells or endothelial precursor cells—can colonize the eye, Friedlander and his colleagues first transplanted stem cells from an adult mouse into the eyes of newborn mice. (*long summary*)

*How would the feel of these sentences change with parentheses or commas?*

# Scientific Writing

## The Dash

With commas instead...(clunky and long...)

The drugs did more than prevent new fat accumulation. They also triggered overweight mice to shed significant amounts of fat, up to half their body weight.

To establish that the marrow cells, also called adult stem cells or endothelial precursor cells, can colonize the eye, Friedlander and his colleagues first transplanted stem cells from an adult mouse into the eyes of newborn mice.

# Scientific Writing

## The Dash

With parentheses instead...(buries the info.)

The drugs did more than prevent new fat accumulation. They also triggered overweight mice to shed significant amounts of fat (up to half their body weight).

To establish that the marrow cells (also called adult stem cells or endothelial precursor cells) can colonize the eye, Friedlander and his colleagues first transplanted stem cells from an adult mouse into the eyes of newborn mice.

# Scientific Writing

## The Dash

Researchers who study shipworms say these mislabeled animals—they're clams, not worms—are actually a scientific treasure. (*emphasis and added information*)

The store—which is windowless and has clusters of unsmiling security guards standing at its entrances, as if it were the embassy of a particularly beleaguered nation—caters to rich Brazilians, members of the ten per cent of the population who command nearly half the national income, and wear Chanel, Valentino, or Dolce & Gabbana. (*long description*)

# Scientific Writing

## The Dash

### Commas instead...

Researchers who study shipworms say these mislabeled animals, they're clams, not worms, are actually a scientific treasure. *(commas aren't strong enough to set off a clause)*

The store, which is windowless and has clusters of unsmiling security guards standing at its entrances, as if it were the embassy of a particularly beleaguered nation, caters to rich Brazilians, members of the ten per cent of the population who command nearly half the national income, and wear Chanel, Valentino, or Dolce & Gabbana. *(too long-winded without an abrupt pause)*

# Scientific Writing

## The Dash

Researchers who study shipworms say these mislabeled animals (they're clams, not worms) are actually a scientific treasure. *(buries the information)*

The store (which is windowless and has clusters of unsmiling security guards standing at its entrances, as if it were the embassy of a particularly beleaguered nation) caters to rich Brazilians, members of the ten per cent of the population who command nearly half the national income, and wear Chanel, Valentino, or Dolce & Gabbana. *(takes away from the description)*

# Scientific Writing

## The Dash

Baseball is the only game that's played every day, which is why its season often seems endless, right up to the inning and the out—the little toss over to first base—when, wow, it ends.

### Comma instead...

Baseball is the only game that's played every day, which is why its season often seems endless, right up to the inning and the out, the little toss over to first base, when, wow, it ends. (no emphasis on the image)

### Parentheses instead...

Baseball is the only game that's played every day, which is why its season often seems endless, right up to the inning and the out (the little toss over to first base) when, wow, it ends. (makes it seem unimportant)

# Scientific Writing

## The Dash

While all these steps are small and easily reversible—  
Libya is still ruled by a wacky megalomaniac—there is  
some real movement here.

Comma instead...

While all these steps are small and easily reversible, Libya  
is still ruled by a wacky megalomaniac, there is some real  
movement here. (run-on sentence)

Parentheses instead...

While all these steps are small and easily reversible (Libya  
is still ruled by a wacky megalomaniac) there is some real  
movement here. (buries the best part of the sentence!)

# Scientific Writing

## The Dash: Practice

- Finally, the lessons of clinical epidemiology are not meant to be limited to academic physician-epidemiologists, who sometimes have more interest in analyzing data than caring for patients. Clinical epidemiology holds the promise of providing clinicians with the tools necessary to improve the outcomes of their patients.

Weak verb (means)

A long descriptive clause that could be set off by a dash.

# Scientific Writing

## The Dash

- Finally, the lessons of clinical epidemiology are not meant to be limited to academic physician-epidemiologists, who sometimes have more interest in analyzing data than caring for patients. Clinical epidemiology holds the promise of providing clinicians with the tools necessary to improve the outcomes of their patients

Necessary?

No transition.

→ provides

→ patients' outcomes

# Scientific Writing

## The Dash: join and condense

- Finally, clinical epidemiology is not limited to academic physician-epidemiologists—who are sometimes more interested in analyzing data than caring for patients—but provides clinicians with the tools to improve their patients' outcomes.

# Scientific Writing

## The Dash: some technical details

HYPHEN (1 unit): to connect compound words or non-range numbers; to break word that will continue on next line:

→ *little-known fact, en-dash, 723-8222*

EN-DASH (2 units): to indicate range (numbers, dates, time) or collaboration:

→ *pages 1 – 9 , open 9 am – 5 pm, Morris–Hayes lab, Sino–Soviet pact*

→ ***not** a compound name of an individual, as in Catherine Zeta-Jones*

EM-DASH (3 units): to represent a sudden break in thought that causes an abrupt change in sentence structure:

→ *The m-dash is longer—the length of the letter m.*

# Scientific Writing

## Lesson 2: Use Parallel Construction

# Scientific Writing

## Unparallel:

Locusts denuded fields in Utah, rural Iowa was washed away by torrents, and in Arizona the cotton was shriveled by the placing heat.

Vs.

## Parallel:

Locusts denuded fields in Utah, torrents washed away rural Iowa, and blazing heat shriveled Arizona's cotton.

# Scientific Writing

Make a choice and abide by it!

# Scientific Writing

Pairs of ideas—two ideas joined by “and”, “or”, or “but”—should be written in parallel form.

Cardiac input decreased by 40% but  
blood pressure decreased by only 10%.

SVX but SVX

# Scientific Writing

Pairs of ideas—two ideas joined by “and” “or” or “but”—should be written in parallel form.

We hoped to increase the response and to improve survival.

Infinitive phrase and infinitive phrase.

# Scientific Writing

Lists of ideas (and number lists of ideas) should be written in parallel form.

# Scientific Writing

## Parallelism

Not Parallel:

If you want to be a good doctor, you must study hard, critically think about the medical literature, and you should be a good listener.

Parallel:

If you want to be a good doctor you must study hard, listen well, and think critically about the medical literature.  
(imperative, imperative, imperative)

Parallel:

If you want to be a good doctor, you must be a good student, a good listener, and a critical thinker about the medical literature. (noun, noun, noun)

# Scientific Writing

## Parallelism

### Not Parallel:

This research follows four distinct phases: (1) establishing measurement instruments (2) pattern measurement (3) developing interventions and (4) the dissemination of successful interventions to other settings and institutions.

### Parallel:

This research follows four distinct phases: (1) establishing measurement instruments (2) measuring patterns (3) developing interventions and (4) disseminating successful interventions to other settings and institutions.

# Scientific Writing

## Lesson 3: The case of the buried predicate...

subject

confusing garbage

One study of 930 adults with multiple sclerosis (MS) receiving care in one of two managed care settings or in a fee-for-service setting found that only two-thirds of those needing to contact a neurologist for an MS-related problem in the prior 6 months had done so (Vickrey et al 1999).

predicate

# Scientific Writing

The case of the buried predicate...

One study found that, of 930 adults with multiple sclerosis (MS) who were receiving care in one of two managed care settings or in a fee-for-service setting, only two-thirds of those needing to contact a neurologist for an MS-related problem in the prior six months had done so (Vickrey et al 1999).

# Profile writing exercise...

- Pick one person to be the interviewer and one to be the interviewee (we'll swap next time).
- Interview question: “What brought you to Stanford—spiritually, literally, or otherwise?”
- Then each take 10 minutes to write up a 1-2 paragraph mini profile (SHORT, PUNCHY, CLEVER, HUMOROUS) of the other person. Use at least one dash or colon and at least one sentence with parallel construction.

# Scientific Writing

And finally...

Top 5 countdown:

# Scientific Writing

## 1. Farther v. further

Farther is used for distance. (think far)

Further is used for time or quantity. (think future)

I can throw a ball *farther* than you.

I am pursuing that research *further*.

# Scientific Writing

Other similar words:

FORWARD v. FORWARDS v. FOREWORD  
TOWARD v. TOWARDS

- Some sources prefer adverbs *forward* and *toward* to *forwards* and *towards* (a bit more formal without the s; s more common in UK); foreword = preface to a book

# Scientific Writing

## 2. Die of v. die from

People and animals die *of*, not from, specific diseases.

She died *of* a heart attack.

# Scientific Writing

## 3. compliment v. complement

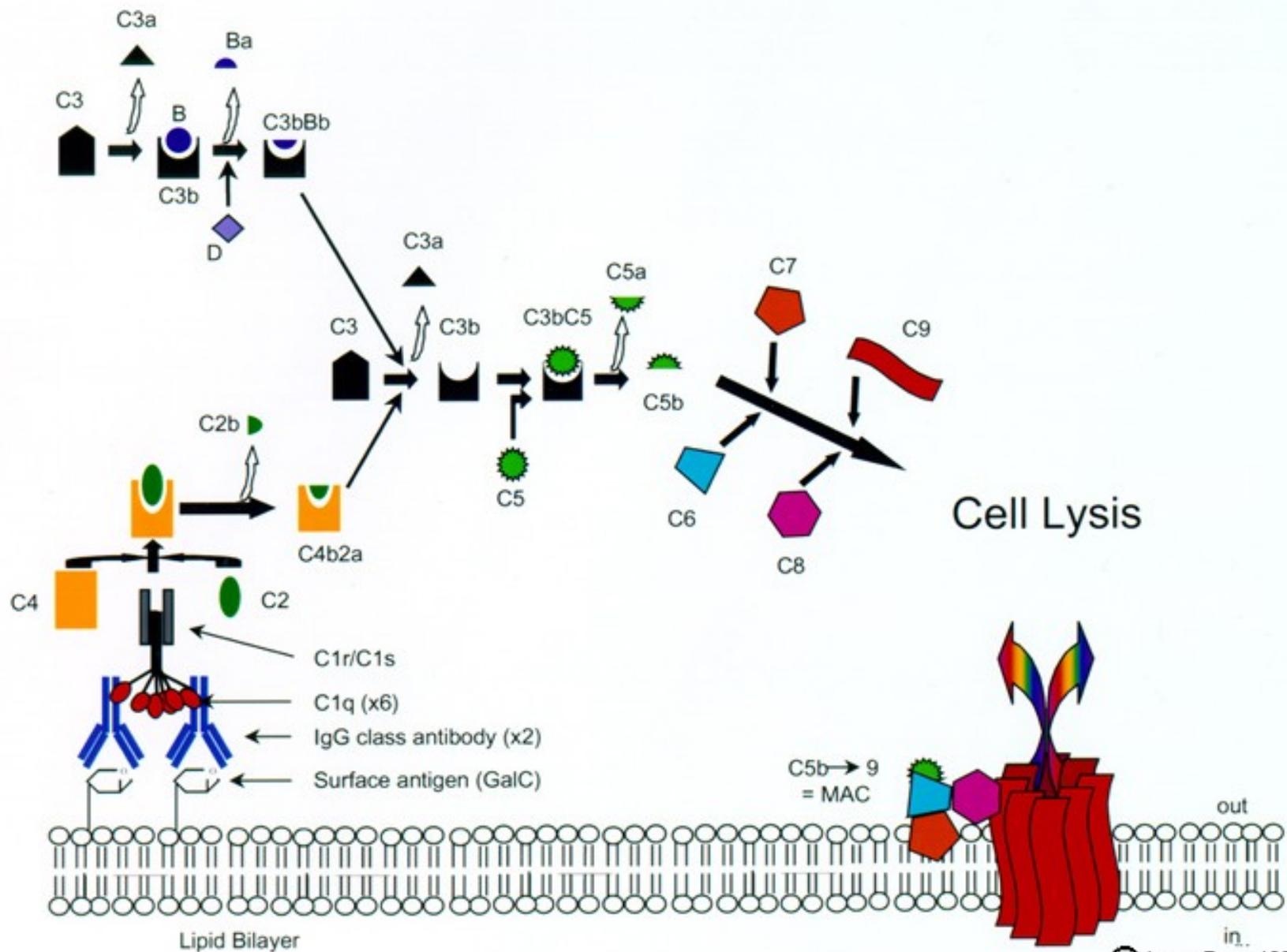
*Compliment* is to praise or to present with a token of esteem.

*Complement* is to mutually complete each other.

She complimented his haircut.

That dress complements your eyes.

- In *complement*, think of “complete-ment”
  - *proteins completing antibodies (complement cascade), angles combining to reach 90 degrees, or musical intervals completing an octave*



# Scientific Writing, HRP

## 4. Comprise v. compose

*Comprise* means to contain. “Comprise” implies a complete listing, whereas “include” may signal an incomplete listing.

*Compose* means to make up.

*The parts compose (make up) the whole; the whole comprises (contains) the parts.*

The USA comprises 50 states. (the whole contains the parts)

Fifty states compose the USA. (the parts make up the whole)

The USA is composed of 50 states. (the whole is made up of the parts)

Fifty states are comprised in the USA. (the parts are contained in the whole)

# Scientific Writing

## 5. locate v. localize

*Locate* is to determine the position of something; to find its location.

*Localize* is to confine or fix in a particular area or part.

*The police located the suspect at the edge of town.*  
*Iodine tends to localize in the thyroid.*

# Scientific Writing

## Preview to next time...

- For next time...
- We continue our systematic review of the basics of writing.

Words → sentences → paragraphs