THE ART AND SCIENCE OF SCIENTIFIC WRITING

Howard Hughes Medical Institute’s Program in the Biological Sciences

Presented by
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# The Art and Science of Scientific Writing

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PRINCIPLES OF EFFECTIVE COMMUNICATION

• All written communication is affected by a larger context or situation.

• Effective communication is receiver centered.

• Writing is a decision-making process.

• The quality of your scientific work is often judged by the quality of your written work.

Communication Model
(Derived from Roman Jakobson)
DESIGN OR PROBLEM SOLVING APPROACH TO WRITING

The writing process described here is not intended to be strictly linear: effective writers work in many different ways.

Analyzing: Understanding the Situation
• Decide on your purpose.
• Identify your readers.
• Examine the use of the document.
• Be aware of constraints.

Planning: Getting Organized
• Identify major blocks of content.
• Examine alternative structures.
• Select an overall pattern.
• Develop detailed content.
• Interpret and reveal the meaning of the content.

Writing: Creating a Draft
• Choose your voice.
• Concentrate on flow.
• Make notes to yourself.
• Keep up the momentum.

Revising: Editing Your Own Writing
• Create distance between you and your material.
• Watch out for inappropriate tone.
• Evaluate appropriateness of content and organization.
• Focus on accuracy, clarity, and effectiveness of statement.
• Proofread for correct grammar, spelling, and usage.
ANALYSIS OF COMMUNICATION PROBLEMS

Some general observations about the Analysis Stage

• Starting point in communication as in scientific work.

• Continuing activity underlying the whole of the writing process.

• Related to all other decisions:
  - Defining goals and determining informational needs
  - Researching, selecting, and organizing material
  - Writing and revising
  - Producing document

Focus points and their impact on later decisions

Purpose affects writing decisions involving:
• Selection of content
• Organization and layout of content
• Emphasis
• Word choice and sentence structure

Use affects:
• Organization
• Form
• Heading and subheading layout
• Publication characteristics—paper, binding, size, reproduction process, color of paper, thumb tabs, etc.
ANALYSIS OF COMMUNICATION PROBLEMS, CONT.

Readers' abilities, background, interests, and purposes affect:

- Level of presentation (technical, mathematical, conceptual, practical)
- Order of presentation (summary, need for background, acceptability of information)
- Emphasis of material (significance to readers' decisions, interests, involvement)
- Language and style (how simple or complex)
- Tone (reflects reader-writer relationship, e.g., friendly, formal)

Constraints

- Time
- Budget
- Staff support
- Software and computer tools
- Editorial requirements of journal editors and granting agencies
The following letter was sent by a school district to the parents of students. Read it and decide how well the author analyzed the situation and audience.

Dear Parents:

In 1979, the Seattle School District cooperated with the EPA in a voluntary program to identify and remove asbestos containing materials from certain schools. Over 125,000 square feet of such material was identified and removed. In addition, as part of the Seattle School District's actions to comply with the Friable Asbestos Containing Material Identification and Notification rule, each school was inspected during the spring of 1983 by CMB/Kiko Architects and Engineers. Small amounts of material suspected to be asbestos containing materials were found in a friable condition. The material was sampled, tested, and found to contain asbestos. Test results are available in the office of Risk Management, Facilities Building, 740 Sako Way. The District then took measures necessary to assure that the risks of exposure to airborne asbestos fibers were eliminated in the schools affected, prior to reopening of school in September 1983.

A twice yearly inspection program was established in August of 1984 throughout District facilities to ensure adequate corrective measures for any newly identified asbestos containing materials. At each inspection, some friable asbestos containing material has been discovered, primarily in damaged or deteriorated steam pipe insulation. As this occurs, the asbestos containing material is encapsulated or eliminated and replaced with fiberglass insulation. The results of the most recent inspection for a facility may be found posted in the custodian's office, the teachers' lounge(s), or the main office.

Changes in state regulations which went into effect on July 29, 1985, specifically prohibit removal or encapsulation activities to be performed by personnel who have not been trained and certified by the Department of Labor and Industries. Further, it is important that material suspected of containing asbestos not be damaged or disturbed by persons who have not been trained to work with asbestos. Touching or handling friable asbestos containing materials can cause microscopic fibers to be released into the atmosphere, greatly increasing the health hazards associated with asbestos. The EPA has stated that:

Any exposure to asbestos involves some health risk. No safe level of exposure has been established. Further, it is impossible at this time to confidently estimate the exact degree of risk associated with low level exposures. Where possible, all exposure to asbestos should be eliminated, controlled, or avoided. It is important to note that not all friable asbestos containing material need be removed from schools. Once such material has been identified, a program can be implemented to ensure that the material is maintained in good condition, and that appropriate precautions are followed when the material is disturbed for any reason.

Further information may be obtained from the District Facilities Dept. Risk Manager.

Sincerely,

Superintendent of Seattle School District
PLANNING: GETTING ORGANIZED

Purposes
• To define possible content
• To identify alternative structures
• To determine the overall pattern that will best serve the reader
• To develop a detailed guide for writing

Products
• Formal Outline (useful when working with others or on complex pieces)
• Informal (useful when working alone or on short pieces)
  - Dendrogram (tree-structure)
  - Flow Chart
  - Notes (scribbles?)

Elements of Organization
• Order—showing sequence and logic
• Group—showing relationships and categories
• Reveal—showing organization through language and layout

Patterns
• Overall pattern: one pattern for the document, the report, the letter
• Internal patterns: a variety of patterns for sections and subsections

Methods
• Deductive (whole to parts)
• Inductive (parts to whole)
SCRATCH OUTLINE TECHNIQUE

(An inductive way of getting started at any level of the document)

1. **State the core idea.**
   State in a single sentence the main idea you want to develop in your letter, report, etc. *This statement may need to be revised later.*

2. **Brainstorm.**
   Jot down a list of all the ideas you think may help develop the core idea. Put down quickly whatever comes to mind. *Do not worry about order, overlap of ideas, or anything else.* *This is no time to be critical.*

3. **Eliminate irrelevant items.**
   After you have run dry of lesser ideas needed to develop the core idea, begin to get critical. Using the core ideas as a guide, go down your list and cross out the items that are not truly related to what you want to say. *This process can work two ways. You may eliminate some items, but in considering what you have in the list, you also may need to revise and refine the core idea.*

4. **Group related items.**
   Looking over your list, start putting together two or more groups of items that have obvious similarities. Rewrite the list revealing the newly found groups. *At this point you may begin to think of ideas which you overlooked in jotting down your preliminary list. These new ideas may go into groups you already are forming, or they may form a new group. In the latter case, check these latecomers with your core idea.*

5. **Balance or relate the groups of similar items.**
   Once your groupings or ideas are fairly well along, think of headings (sentences or phrases) to indicate why the items in each group are related to each other and how the group is related to the core idea. *These headings will show the pattern of relationships in what you want to say. Again, new ideas may occur to you, or refining the core idea may be necessary. Also you should look to see if the headings of some groups are so similar that these groups and their headings should be placed under a still broader common heading.*

6. **Arrange the final order of the groups and the items within the groups.**
   To develop your core idea most effectively, decide which group of items to write about first, which next, and so on. Do the same for items within each group. *Indicate the best order by putting numbers before the headings and the items.*
When writers compose, they visualize their outline and see its hierarchical organization. Readers, on the other hand, see the material linearly—one sentence at a time, one idea at a time, one page at a time.

The writer sees much more than the reader does:

- In the writing
- In the data and the implications of the data
- In the illustrations and in the graphics

If it's obvious to the writer, is it necessarily obvious to the reader?
ORGANIZATION WORKSHOP

The Scott Testing Machine: Version A

1. Case as a whole
2. External components of the case
3. Internal components of the case
4. Appearance and functions of the response wheel
5. Holes and numbers in the response wheel
6. Wheel separator
7. Appearance and functions of the question wheel
8. Holes and numbers in the question wheel
9. Appearance and functions of the operating lever
10. Components of the operating lever
11. Setting the machine
12. Answering question 1
13. Answering the remaining questions
ORGANIZATION WORKSHOP, CONT.

The Scott Testing Machine: Version B

CONSTRUCTION
Case as a whole
External components of the case
Internal components of the case
Response wheel: Appearance and functions
Response wheel: Holes and numbers
Wheel separator
Question wheel: Appearance and functions
Question wheel: Holes and numbers
Operating lever: Appearance and function
Operating lever: Components

OPERATION
Setting the machine
Answering question 1
Answering the remaining questions
The Scott Testing Machine: Version C

I. CONSTRUCTION
   A. Case
      1. Case as a whole
      2. Components of the case
         a. External components of the case
         b. Internal components of the case
   B. Mechanism
      1. Wheels and separator
         a. Response wheel
            1) Appearance and functions
            2) Holes and numbers
         b. Separator
         c. Question wheel
            1) Appearance and functions
            2) Holes and numbers
      2. Operating lever
         a. Appearance and function
         b. Components

II. OPERATION
   A. Setting the machine
   B. Answering questions
      1. Answering question 1
      2. Answering the remaining questions
(The following is from a report analyzing the damage to water sheding through soil erosion caused by the use of non-system "jeep trails" in a ranger district.)

II. Land Use
3. Specific Use
   (1) Livestock management—Salting and fencing. Trucks are used to haul horses over system roads to a point near the salt area. Salt may be distributed in some areas with four wheel drive vehicles. Little or no damage is caused by this use.
   (2) Hunting—Four wheel drive vehicles are likely to be seen in any area that is not closed due to slope, timber, or rocks. This travel is generally during the wet season, resulting in rutting and severe damage.
   (3) Vehicle "venture"—This type of travel is generally over existing, well traveled roads. There is a small amount of non-system travel and causes a little damage.
   (4) Post and Wood Cutters—This type of travel is generally over main and logging spur roads where material is easily reached. Little or no damage is caused by this use.
   (5) Trail maintenance—Travel is by horseback from system roads.
   (6) Fishing—Only about 5 percent of the travel is over non-system roads. This travel is generally during dry summer months.
   (7) Prospecting and Mining—This type of use has resulted in most of our poorly constructed non-system roads. Following construction these roads receive extensive use by other forest users. This excessive use and poor construction has resulted in extensive damage.
   (8) Timber operators—This use is generally over recently developed spur roads and main roads. Reconnaissance work is done by travel over any road that is safe for passage. This does not create any damage.
   (9) Recreation (mining cabins)—Travel is generally over old non-system roads during the hunting season. This often results in badly rutted conditions.

Problems can be expected in these remote areas until an adequate transportation system has been constructed and/or an effective traffic control system is perfected. As our transportation system is developed, additional non-system roads can be expected.
ORGANIZATION WORKSHOP, CONT.

Problems Writers Encounter
1. Lack of concentration
2. Not able to get ideas on paper
3. Sentence structure—syntax
4. Grammar
5. Vocabulary
6. Too wordy
7. Writing persuasive requests
8. Reviewer problem
9. Insincerity
10. Too formal
11. Not right for reader
12. Redundancy
13. One sentence paragraphs
14. Punctuation
15. Lack of focus
16. Lack of clarity
17. Lack of cohesiveness
18. Obfuscation
19. Pet phrases
20. Not knowing where letter (or report) is going
21. Lack of time
22. Editing
23. Technical language
24. Use of pronouns
25. Active verbs
26. Lack of flow
27. Too soft in tone
28. Lacking test
29. Jargon
30. Too many acronyms
31. Repetitive arguments
32. Hazy opening
33. Poor conclusion
34. Lack of completeness
35. Overuse of qualifiers
Additional equipment that may be used include:

- Stainless steel bowls
- Stainless steel spatulas
- Stainless steel extruder
- Distilled water
- Stainless steel spoons
- Disposable gloves
- Stainless steel trays
- High density polyethylene buckets

This next paragraph is from another report. What is the paragraph discussing?

D. **Wildlife**

**Big Game.** Abundant signs of deer and elk were noted at nearly all stops made within the area. Browse and herbaceous forage is abundant on these summer ranges. Winter ranges were not delineated so their condition was not evaluated. Domestic grasses have been seeded on some steep slopes and roadsides and this contributes considerably to the elk food supply. Some localized tree thinning operations have been completed. These tend to improve the browse and herbaceous understory. Game damage to planted tree seedlings is an important problem. One pine plantation on a burn in the Pine Creek drainage was spot checked and found to have a large percentage of tree leaders removed. According to district personnel present, this damage was largely caused by elk. This problem is widely recognized and is the subject of current research—particularly with chemical repellents. Available repellents do not protect growth made subsequent to treatment. Losses to small plantings probably are proportionately higher than would occur on large plantations. However, tree damage may be substantial, wherever large populations of big game animals frequent the area during the critical spring period. A detailed knowledge of animal movements and concentration areas would be useful when selecting planting sites.
REVEALING THE DOCUMENT’S ORGANIZATION

How do we help the reader to perceive the writer's view?
What are the tools and devices?

**Verbal Strategies**
- Introductions
- Transitions
- Topic sentences
- Overviews and map paragraphs
- Summaries
- Tables of contents

**Visual Strategies**
- Headings and subheadings
- Layout Devices
VERBAL STRATEGIES

OVERVIEW AND TOPIC SENTENCES

In the following passages, look for the presence/absence of a topic sentence and the linkage between it and material that follows it. Are readers' expectations met?

Example 1
a. Late in 1996, the agency implemented a major change in its operations. Emphasis shifted from.

b. Various dredging activities have occurred within the PARE in recent years. A series of dredging projects were conducted from 1989-1997. These projects involved dredging materials.

Now consider topic sentences and overviews. Are they present and clear?

Example 2
The potentials for such a monitoring system are mind boggling. Creating the "expert" information needed to give the computer the necessary information to monitor the data would be a major project. The cost of such a system was not discussed, but no doubt would be substantial. Employing the computer to analyze the many lines of financial information available from the periodic reports, do an analysis of historical information, evaluate other data such as examination report data, financial market information, real estate data, etc. would no doubt represent a substantial improvement over the current systems of analyst/examiner review of this data. The system could be sophisticated enough to prepare monitoring reports, suggest scopes of examination, provide quality control over monitoring efforts, provide information for unsophisticated persons doing the edit process, etc.

Example 3
Located at the heart of one of the largest urban-seaport complexes in the U.S., the Portland River Estuary (PORE) is surrounded by industrial, commercial, and recreational facilities. Industrial facilities include manufacturing, container on- and off-loading, and shipbuilding. Commercial, recreational, and retail areas include the Teasback Bay Development, Teasback Marina, Beach Harbor, Aquarium SW, Shorewood Village, and Uptown Marina. The Queen Elizabeth has a permanent berth on the south shore, near the estuary mouth.
VERBAL STRATEGIES
OVERVIEW AND TOPIC SENTENCES, CONT.

How well do the organizational cues reveal the structure of the information?

The research design is divided into three sections. In the first section, experiments are outlined to investigate the relationship between metastin (and kisspeptin-10) and the LH surge in the adult. These experiments include determining whether or not expression of KiSS-1/GPR54 is dependent on the LH surge and whether or not expression can be influenced by concentration of sex steroid hormones in the adult. The experiments in the second section are designed to evaluate the role of GPR54 and kisspeptin in sexual development. It will be determined whether or not KiSS-1/GPR54 expression changes over development and once again, if they are influenced by sex steroid concentrations. Secondly, it will be determined if metastin can induce precocious puberty by administering variable doses to prepubertal animals. Finally, it will be determined if metastin is essential for the onset of puberty and how specific metastin is for the GPR54 receptor using a GPR54 knockout model. The third section is designed to map out where in the brain KiSS-1/GPR54 are expressed and what areas of the brain are responsive to metastin and GPR54 receptor activation.
How well do the overviews and topic sentences work with this report page?

Test Quality Assurance/Quality Control
Sediment toxicity tests will incorporate standard QA/QC procedures to ensure that the test results are valid. Standard QA/QC procedures include the use of negative controls, positive controls, reference sediment samples, replicates, and measurements of water quality during testing.

Negative Controls
The negative control to be used. . . . Sleuihf eoerl leidhd llijl llk uw/qoi dkjk woc dleoo. Pelqwj kjw oe Ikhe Ikuensmdlkl al ek wlki alhdkdle peirna Isienr aijdlij xxuyelk leij gj elkcuydkg kelgloiedn gleaptue.

Positive Controls
A positive control will be run. . . . Bpeodkw klxkdmmi xxyueny ytlspe ok ijdmg lkokd djls uw/qoi, dkjk woc dleooelqwj kjw oe Ikhe Ikuensmdlkl. Ral ek wlki alhdkdle peirna Isienr aijdlij xxuyelk leij gj elkcuydkg elidlkg lk laklkjd lkiumk, ydkg kelgloiedn gleaptue.

Reference Sediment
A reference sediment will also be included with each bioasay. . . . Sleuihf eoerl leidhd llijl llk uw/qoi dkjk woc dleoo. Keldikenm mnnwioprnl kd klkuw lkki ikkelekhja: lkdkel lliemt aolicjw pmdkwotlak al ek wlki alhdkdle peirna Isienr aijdlij xxuyelk leij gj elkcuydkg kelgloiedn gleaptue.

Replicates
Five laboratory replications. . . . Eijf lkleiuldmkn aoptkly aldlg zpdlkek aob,dk akj eoillakj gleopigalkjlett.

Water Quality Monitoring
Water quality monitoring will be. . . . Auwqoi dkjk woc leidhd llijl llk dleoo. lkhe Ikuensmdlkl al ek wlki alhdkdle peirna Isienr aijdlij kelgloiedn gleaptue xxuyelk leijj sleuihf eoerl pelqwj kjw oe elkcuydkg.
**VERBAL STRATEGIES**

**INTRODUCTIONS**

The next two pages present introductions from three reports. Analyze how these introductions differ in terms of the way in which they (1) introduce the topic, (2) present background information, (3) state project goals, and (4) reveal the author’s persona.

Introduction

Neuronal nicotinic acetylcholine receptors (nAChR) are pentameric, ligand-gated cation channels found mainly in the central and peripheral nervous systems (Anand et al., 1991; Cooper et al., 1991). They are located both pre- and post-synaptically throughout the CNS, and therefore both mediate and modulate neuronal communication (McGehee and Role, 1995; Colquhoun and Patrick, 1997b). Their function, or dysfunction, has been implicated in cognition, arousal, nicotine addiction, Alzheimer’s disease, Tourette’s syndrome, antinociception, and other topics of interest in neuropharmacology (Lindstrom, 1997; Changeux et al., 1998; Jones et al., 1999; Paterson and Nordberg, 2000; Picciotto et al., 2000; Dani and De Biasi, 2001; Dani et al., 2001). This diversity of function has been attributed to the diversity of nAChR subtypes expressed in the CNS.

Molecular studies have described two families of neuronal nAChR subunit proteins, α and β. To date, genes for nine α-subunits (α2-α10) and three β-subunits (β2-β4) have been described in vertebrates (Le Novere and Changeux, 1995). In most cases, both α-subunits and β-subunits are necessary to form a pentameric nAChR, and different combinations usually form receptors with distinct biophysical and pharmacological properties (Boulter et al., 1987; Luetje and Patrick, 1991; Papke, 1993; Sargent, 1993; Lindstrom et al., 1996; Chavez-Noriega et al., 1997). Message RNA studies show that many regions of the brain express more than one α and/or β subunit, suggesting that some brain regions may express multiple or complex nAChR subtypes (Wada et al., 1989; Wada et al., 1990; Dineley-Miller and Patrick, 1992a; Seguela et al., 1993; Zoli et al., 1995b). Although there are many pharmacological tools available to study nAChR, few drugs are selective for distinct nAChR subtypes (an exception is α-bungarotoxin for the α7 subtype). This has made precise identification of native neuronal nAChR subtypes difficult.

One of the predominant nAChR expressed in the brain is presumed to be the α4β2 subtype, based on mRNA, antibody, gene deletion, and pharmacological studies (Clarke et al., 1985; Wada et al., 1989; Flores et al., 1992; Zoli et al., 1998; Marubio et al., 1999). . . .
VERBAL STRATEGIES
INTRODUCTIONS, CONT.

Introduction
For my thesis project, I have pursued forward and reverse genetic approaches to study mechanisms of synaptic transmission in Drosophila melanogaster. The forward genetic approach consisted of a classical genetic screen to identify mutations in genes that function in synaptic vesicle trafficking. The reverse genetic approach entailed generating mutations in the Drosophila SNAP gene and analyzing the resulting phenotypes of these mutants. The SNAP gene was specifically selected for genetic analysis to document the role of SNAP in synaptic transmission and to address conflicts in the literature concerning SNAP function.

A brief history of chemical synaptic transmission
Since the beginning of civilization, humans have been driven by an overwhelming desire to decipher the complex workings of the human brain. It is certainly the magnificent capacity of the brain to learn, process complex thoughts, and produce language that distinguishes Homo sapiens from all other life forms on this planet. The ability of the estimated 100 billion neurons residing within the brain to rapidly transmit, receive, and integrate chemical signals is at the root of these behaviors. Furthermore, it is likely the inherent complexity of these neurons that makes this tissue susceptible to a plethora of neurological conditions including neurodegenerative diseases, mental retardation and mental illnesses. Given the inherent importance of the neuron, scientists continue to investigate the basic mechanisms of neuronal function and how aberrant neuronal biology relates to disease etiology.

Introduction
To probe the sequence determinants of protein folding and to investigate the selection pressures that have shaped protein evolution, it is desirable to generate novel proteins in the laboratory and to study their biophysical characteristics. There are two powerful approaches to generating such artificial proteins: combinatorial library selections and computational protein design. In this paper, we describe our results using both applications and present the results of an investigation of protein evolution by “mini-exon shuffling.”
VISUAL STRATEGIES

Form (Conventional correspondence and report forms: Memos, letters, IRS-1040, brochures, proposals, feasibility reports, recommendation reports, etc)

• Serves as the container for the written and graphic presentation
• The outside (most visible at the beginning and end of documents)
• Related to the document's distribution, use, and audience
• Comes in a variety of sizes (memos to formal reports)
• Depends on amount and complexity of content
• Often prescribed and standardized by management and/or tradition

Layout (Format)

• Arranges content inside the container
• Reveals organizational relationships
• Provides visual impact and emphasis
• Provides clarity, brevity, and accessibility to the content
• Prescription and standardization can be dangerous

Some Useful Layout Devices

• Different type styles or sizes—italics, bold (BE CAREFUL)
• White space and margins
  - Line spacing (single versus double)
  - Columns
  ▪ Vertical lists (Consider using a hanging indent.)
• Numbered parallel ideas in a sentence, paragraph, or vertical list
• Distinctive markings to direct the reader's eye
  ▪ Boxes around important content

Note: Writers should not expect the clerical staff to guess what layout devices to use, as these decisions are intimately related to the purpose, content, and audience.
Gorge Dam and Reservoir would be constructed on Mill Creek in a deep, rather narrow, steep-walled canyon about 10 miles upstream from the confluence of that creek and the South Yamhill River. The 272-foot high rock and earth dam would store 53,000 acre-feet and would achieve full control of the runoff at this site. Storage space in Gorge Reservoir would provide an opportunity for lake recreation, including boating, swimming, water skiing, and fishing, and an effective means of reducing flood conditions in the lower reaches of Mill Creek and in the City of Sheridan. Releases from this reservoir would provide water for enhancement of the fishery resources of Mill Creek, a municipal and industrial water supply for the City of Sheridan, an irrigation water supply to 15,500 acres of good quality land, and a substantial contribution toward meeting future minimum water quality flows in the South Yamhill and Yamhill Rivers.
Gorge Dam and Reservoir would be constructed on Mill Creek in a deep, rather narrow, steep-walled canyon about 10 miles upstream from the confluence of that creek and the South Yamhill River. The 272-foot high rock and earth dam would store 53,000 acre-feet and would achieve full control of the runoff at this site. Storage space in Gorge Reservoir would provide (1) an opportunity for lake recreation, including boating, swimming, water skiing, and fishing, and (2) an effective means of reducing flood conditions in the lower reaches of Mill Creek and in the City of Sheridan. Releases from this reservoir would provide (1) water for enhancement of the fishery resources of Mill Creek, (2) a municipal and industrial water supply for the City of Sheridan, (3) an irrigation water supply to 15,500 acres of good quality land, and (4) a substantial contribution toward meeting future minimum water quality flows in the South Yamhill and Yamhill Rivers.
Gorge Dam and Reservoir would be constructed on Mill Creek in a deep, rather narrow, steep-walled canyon about 10 miles upstream from the confluence of that creek and the South Yamhill River. The 272-foot high rock and earth dam would store 53,000 acre-feet and would achieve full control of the runoff at this site.

Gorge Reservoir would provide:

1. An opportunity for lake recreation, including boating, swimming, water skiing, and fishing.
2. An effective means of reducing flood conditions in the lower reaches of Mill Creek and in the City of Sheridan.

Releases from this reservoir would provide:

1. Water for enhancement of the fishery resources of Mill Creek.
2. A municipal and industrial water supply for the City of Sheridan.
3. An irrigation water supply to 15,500 acres of good quality land.
4. A substantial contribution toward meeting future minimum water quality flows in the South Yamhill and Yamhill Rivers.
(Strong Emphasis)

Gorge Dam and Reservoir would be constructed on Mill Creek in a deep, rather narrow, steep-walled canyon about 10 miles upstream from the confluence of that creek and the South Yamhill River. The 272-foot high rock and earth dam would store 53,000 acre-feet and would achieve full control of the runoff at this site.

The Gorge Reservoir would provide two kind of benefits: those from reservoir storage and those from reservoir releases.

**Storage Benefits**

1. An opportunity for lake recreation, including boating, swimming, water skiing, and fishing.

2. An effective means of reducing flood conditions in the lower reaches of Mill Creek and in the City of Sheridan.

**Release Benefits**

1. Water for enhancement of the fishery resources of Mill Creek.

2. A municipal and industrial water supply for the City of Sheridan.

3. An irrigation water supply to 15,500 acres of good quality land.

4. A substantial contribution toward meeting future minimum water quality flows in the South Yamhill and Yamhill Rivers.
MEAP may be coupled to the NO-cGMP pathway (figure 1). We have shown that MEAP is vagolytic. Initial observations indicate that its effect was reversed by L-arginine. Our preliminary data suggest some type of interaction. There multiple plausible targets that MEAP could be affecting. 1.) MEAP could be directly inhibiting NOS, guanylate cyclase or cGMP. 2.) MEAP could be inhibiting calcium channels located on parasympathetic nerve terminals. This would lead to lower calcium levels and decreased NOS activity. 3.) MEAP could be acting as a competitive inhibitor of NOS. 4.) MEAP could be limiting substrate for NOS. Although the purpose of this grant is to establish, first, that MEAP interrupts the NO-cGMP pathway to suppress vagal bradycardia, the potential mechanisms represent future directions. The gap in understanding in this respect, its potential therapeutic value, and our preliminary data warrant investigation of this interaction.
Component behavior as it relates to other system components is generally absent from this phase of R and D testing. Nevertheless, component testing is a necessary prerequisite to the next step in engineering research and development systems testing.

**Systems Testing.** To assure proper operation of the FFTF initially, and to provide continuing assurance that satisfactory long-term test-reactor operation can be achieved with a variety of test loadings and closed loop cooling systems, it is necessary for extensive systems testing to be performed. This systems testing will take place (a) before initial startup and (b) after startup to verify the operational practicality and safety of proposed tests and related specified test conditions.

Systems testing for the FFTF will be performed in the Engineering Test Facility.

2.12.3 Engineering Test Facility Application

**Systems Testing**

The prime functions of the Engineering Test Facility (ETS) will be systems testing of FTR systems prior to startup, and operations support systems testing following startup. Prestartup systems testing will be performed under prototypical conditions with fully controlled environments to ensure reliable, integrated operation of reactor systems. Problems which may arise can be corrected before reactor startup. Operations support systems testing is required because the FFTF is a test reactor, designed to explore unknown regions of technology; for assurance of reliable operation under these extreme conditions it is necessary to carry out extensive out-of-reactor systems test of proposed fuels and test loop equipment.

Prestartup systems testing, frequently slighted in many reactor research and development programs, is the key to satisfactory reactor startup and operation. It includes system evaluation and component interaction under prototypical operating.
November 1996

Jo Steer
4128 Maple St.
Seattle, WA 98123

Dear Mr. Steer:

Please accept our deepest gratitude if you've already responded to the appeal we sent to you a few weeks ago, but have yet to receive our formal "thank you."

We are truly grateful for your caring. Thanks to you, the future is brighter for the people we serve.

Last year, 500 critically ill and premature babies were lovingly cared for in the 36-bed Special Care Nursery at Swedish Medical Center. Gifts such as yours enable us to reach out to these special infants with a dedicated team of highly trained health care professionals and specialized, high-tech equipment such as ventilators, warming beds, and medication pumps. Because of your help, premature babies have a better chance of surviving than ever before.

We're raising funds now to ensure that these life-saving programs and services continue.

If you haven't had time to make a contribution to our Special Care Nursery Fund during this busy holiday season, won't you do so now while you're thinking of it? Your gift of $100, $50, $35, or even $25 will make an important difference in the community.

On behalf of the members of the Swedish Medical Center family, I thank you.

Sincerely,

Lucius A.D. Andrew, III
Chairman, Foundation Board of Directors

P.S. If you've already sent your gift, you'll receive a formal acknowledgment from us for your tax records. If you haven't yet contributed, I hope you'll do so soon.

Your kindness and compassion during this season of giving will touch many lives.
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ILLUSTRATIONS

Illustrations as Textual Support

Use illustrations to:

• Add information
• Show relationships of ideas discussed in the text
• Reveal detail that is difficult to describe verbally
• Display an overall view of some concept or piece of equipment
• Emphasize and clarify the discussion

Techniques for Using Illustrations Effectively

• Label figures at the bottom and tables at the top.
• Use consistent terminology between the text and the illustrations.
• Highlight important information in the illustrations with arrows, boxes, differentiated data points, etc.
• Place figures as soon as possible after referring to them in the text. (Don't break a paragraph in half!)
• Guide readers through the illustrations. Tell readers:
  - When to use them
  - Where to find them
  - What to look for
  - What is significant
**ENCYCLOPEDIC VERSUS ANALYTICAL PRESENTATION**

Pervasive in detail oriented professions

Operates at various levels

<table>
<thead>
<tr>
<th><strong>Element</strong></th>
<th><strong>Encyclopedic Approach</strong></th>
<th><strong>Analytical Approach</strong></th>
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<tr>
<td><strong>Content</strong></td>
<td>Irrelevant content</td>
<td>Content chosen for purpose &amp; reader</td>
</tr>
<tr>
<td></td>
<td>Unclear importance of content</td>
<td>Detail vs. general content clarified</td>
</tr>
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<td></td>
<td>Lack of development</td>
<td>Ideas fully developed</td>
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<td></td>
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<td>Apparent order and groups</td>
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<td></td>
<td>Lack of development</td>
<td>Detail &amp; generalizations balanced</td>
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<td>Isolated parts</td>
<td>Use of transitions &amp; overviews</td>
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<td>Emphasis on pieces</td>
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<td></td>
<td>Lack of relationships</td>
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<td><strong>Illustrations</strong></td>
<td>Separated from writing</td>
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<tr>
<td></td>
<td>No verbal &amp; visual guidance</td>
<td>Written cues, graphic highlights</td>
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<td></td>
<td>Visual data dumping</td>
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<tr>
<td><strong>Style</strong></td>
<td>Overuse of one sentence type</td>
<td>Sentence structure matches content</td>
</tr>
<tr>
<td></td>
<td>Indiscriminate use of modifiers</td>
<td>Modifiers chosen with care</td>
</tr>
</tbody>
</table>
Writing quality depends on revision.

Different attitudes are required: Writing—Creative

Revising—Critical

These attitudes won't mix.

**Writing—Putting Ideas Down on Paper**

- Start where you are best prepared and write by section.
- Write rapidly—don't stop to rework.
- Get ideas down on paper.
- Keep moving and maintain momentum.
- Make notes of critical ideas that occur during writing.

**KEEP ON WRITING—DON'T STOP TO REVISE!**

**Revising—Producing Quality**

- Let draft cool off—Create distance between you and copy.
- Go through it several times.
  
  1st—Content and organization
  
  2nd—Clarity, accuracy, and effectiveness
  
  3rd—Mechanics, layout, etc.
AVOIDING WRITER'S BLOCK

Causes of Writer's Block
- Faulty view of writing process: expecting final document quality at draft stage
- Inadequate sense of reader
- Fear of reviewers
- Poor working environment
- Sense of inadequacy as a writer

Solutions to Writer's Block
- Attempt to brainstorm; edit for elegance later.
- Get down key words or ideas; flesh them out and rearrange them later.
- Don't expect composing to be a linear process; jump into different parts of the document.
- Ignore typos, spelling errors, and grammar glitches as you compose; fix these problems more easily and more productively later.

Tips on Composing with Computers
- Take advantage of computer tools and keyboarding speed.
- Get to know your computer and programs.
- Don't slip into the view that the computer can give you a final product in one draft.
- Don't use the computer as new type of avoidance strategy.
ISSUES OF STYLE AND GRAMMAR

Style is the result of the words you choose and how you put those words together. An **effective** style is one that the intended reader can easily and accurately decipher.

**Characteristics of Effective Style**
- Clear
- Concise
- Accurate and precise
- Coherent
- Graceful

**Problems that Detract from Effectiveness**
- Mechanical, usage, and spelling errors
- Vagueness and indirectness
- Unnecessary jargon and pompous language
- Disconnected sentences and lack of transitions
- Overly long sentences and tangled syntactic structures

In summary, style should always reflect the communication situation. There is no one style that fits all occasions. Just as you don't speak to everyone the same way, you shouldn't write the same way all the time. Be adaptable and responsive to your reader and your message. Also, of course, be true to yourself—your best self.
A PROFESSIONAL EXAMPLE—EFFECTIVE STYLE?

State of Washington
DEPARTMENT OF GENERAL ADMINISTRATION
218 General Administration Building, Mail Stop AX-22
Olympia, Washington 48504

August 3, 1997

Federal Security Bank
1511 3rd Avenue
Seattle, WA 98101

Dear ____:

Based on integral subsystem considerations, a large portion of the interface coordination communication recognizes the importance of other systems and the necessity for the philosophy of commonality and standardization. In particular, the characterization of specific criteria adds overriding performance concerns on any discrete configuration mode. As a resultant implication, the independent functional principle maximizes the probability of probe success and minimizes the costs of the structural design, based on system engineering concepts. Thus, the fully integrated test program requires considerable systems analysis and trade off studies to arrive at the greater field-worthiness concept.

On the other hand, a primary interrelationship between system and/or subsystem technologies must utilize and be functionally interwoven with the subsystem compatibility testing. For example, a large portion of the interface coordination communication adds explicit performance limits on the evolution of specifications over a given time period. In respect to specific goals, the product configuration baseline adds overriding performance concerns on any discrete configuration mode.

Sincerely,
**THE CLAUSE**

**The Clause**— The basic grammatical unit that expresses an event or idea and contains a subject and a verb.

- **Clause**
  - **Independent Clause**
  - **Dependent Clause**

**The Sentence**— The basic punctuated unit that can stand by itself:
- Composed of clauses.

1. Simple
   "The student discussed the report."

2. Compound
   "The student discussed the report and the professor listened."

3. Complex
   "The scientist discussed the report while the professor listened."

4. Compound-complex
   "Although the student was uneasy about the results of the test, she calmly discussed the report and her professor listened attentively."
JOINING CLAUSES

Clauses can be joined together by:

• Certain marks of punctuation: the comma, the colon, the semi-colon, and the em-dash.

• Certain kind of linking words
  Conjunctions
    Coordinating (and, but, or, for, yet)
    Subordinating (when, if, since, where, although, etc.)
    Conjunctive adverbs (however, moreover, therefore, etc.)
    Relative pronouns (who, which, that)

• More often by a combination of 1 and 2.

"Please do not hesitate to contact me if you have any questions."

vs.

"If you have any questions, please do not hesitate to contact me."
In professional writing, to form compound, complex, or compound/complex sentences, you should always link clauses with at least a structural link and frequently with a semantic link as well.

Most links between clauses function as both structural and semantic links.

There is, however, one exception:

- Conjunctive adverbs are the one type of semantic link that do not function as a structural link. To provide the necessary structural link, when you use a conjunctive adverb between independent clauses, insert a semicolon before it and a comma after it.

### Clause Links

<table>
<thead>
<tr>
<th>Structural and Semantic</th>
<th>Semantic</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Conjunctions</strong></td>
<td><strong>Punctuation</strong></td>
</tr>
<tr>
<td>Coordinating</td>
<td>Relative Pronouns</td>
</tr>
<tr>
<td>Subordinating</td>
<td></td>
</tr>
<tr>
<td>And</td>
<td>Because</td>
</tr>
<tr>
<td>But</td>
<td>If</td>
</tr>
<tr>
<td>Or (nor)</td>
<td>While</td>
</tr>
<tr>
<td>Yet</td>
<td>When</td>
</tr>
<tr>
<td>For</td>
<td>Although</td>
</tr>
<tr>
<td>So  <em>(in informal prose)</em></td>
<td>Since</td>
</tr>
<tr>
<td></td>
<td>Whereas</td>
</tr>
<tr>
<td></td>
<td>etc.</td>
</tr>
</tbody>
</table>
1. How can the relationship of these ideas be made clearer?

   The contractor is still operating in two shifts. Clearing debris is now being piled. No burning at all is being permitted. The continued dry weather has produced extreme fire hazard conditions. No power equipment is permitted to operate when the relative humidity is below 20%.

2. Compare paragraphs A and B. What happened to the prepositional phrases in paragraphs B?

   A. In recognition of the need for information of importance in the evaluation of the hazards of nuclear systems intended for auxiliary power use, the U.S. Atomic Energy Commission has initiated aerospace safety studies as part of its overall nuclear safety programs under the nuclear safety and engineering test branch of the division of reactor development.

   B. The U.S. Atomic Energy Commission recognizes that important information is needed for evaluating the hazards of nuclear systems which may be used for auxiliary power. Consequently, it has initiated aerospace safety studies which, as part of its overall nuclear safety programs, are directed by the nuclear safety and engineering test branch of the reactor development division.

STRUCTURING YOUR IDEAS TO ACHIEVE CLARITY, CONT.

Ideas need to be combined or separated in a way that reveals the relationship of the ideas. In the example below, notice how the importance of some information changes as the information is rearranged when the sentences are combined.

1. The polyurethane foam suppresses fire and prevents explosion.
2. The polyurethane foam is mixed in aircraft fuel.

A. The polyurethane foam, which suppresses fire and prevents explosion, is mixed with aircraft fuel.

B. The polyurethane foam, which is mixed with aircraft fuel, suppresses fire and prevents explosion.

Practice
In the following sentence, combine or separate ideas to bring together related ideas or to highlight important ideas. Remember, some ideas are best conveyed in simple sentences.

1. In general, a CEC of 10 to 20 is considered normal. Soils with a CEC above this range have a high adsorptive capacity.

2. The current application for obtaining a zoning permit does not address the minimum requirements described in the State Policy Guidelines. The guidelines are contained in State Bulletin 86-4. The revised draft application does meet these guidelines.

3. One of the requirements of the cited federal regulation is that a signed exemption form be obtained from the taxpayer's institution. This is also a requirement of NSF.

4. The increase in transplacental passage was almost abolished in association with glucocorticoid-induced fetal-placental growth retardation while reduced glucocorticoid synthesis enhanced both fetal-placental growth and leptin transplacental passage, consistent with the proposed role of leptin as a fetal growth factor.
5. In IHH patients that possess the GPR54 mutation, and mice with a null mutation for GPR54, the pituitary gonadotropes are still responsive to exogenous GnRH stimulation, indicating that the delay in puberty onset is not associated with the migration of the GnRH neurons or pituitary gonadotropes, but rather with the generation of the GnRH pulse.

6. As a result of the lack of knowledge pertaining to what governs the initiation of puberty after it is turned off in early life and the multitude of syndromes that occur when this signal is not perpetuated in appropriate fashion, there is a great interest in deciphering the signal responsible for turning GnRH secretion back on at puberty.
TOWARD PRECISENESS AND CONCISENESS

(Concrete Subjects and Verbs, Denominalization, Active Voice)

The most important ideas in a sentence should occur in clauses and the most important clauses are independent clauses.

Writers should use:

• Concrete words in the subject and verb slots.
• Verbs that actually convey meaning (denominalize nominalizations).
• Active voice verbs when possible and appropriate.

<table>
<thead>
<tr>
<th>Abstract Subject</th>
<th>Conceptual Subject</th>
<th>Awkward Construction</th>
</tr>
</thead>
<tbody>
<tr>
<td>The purchase</td>
<td>of the new machine</td>
<td>would result in an increase in operating expenditures in the approximate amount of $1,800.</td>
</tr>
<tr>
<td>The nature</td>
<td>of the case</td>
<td>is such that the supervisors were puzzled.</td>
</tr>
<tr>
<td>The reason</td>
<td>that he was indicted</td>
<td>was due to the fact that he embezzled 3 million dollars.</td>
</tr>
</tbody>
</table>

The new machine will increase operating expenditures by about $1,800.

The case puzzled the supervisors.

He was indicted because he embezzled 3 million dollars.

Identifying Style Weaknesses with Your Word Processor

Use the search or find function to hunt for:

• Weak subjects and verbs: Words such as There is, There are, It is, It was.
• Passive voice: Helping verbs such as are, is, were, was.
• Nominalizations: Word endings such as tion, ence, ance, ment, ary.
I. Using Concrete Subjects and Verbs

*Revise the following sentences so that the subjects and verbs convey more concrete meaning.*

1. It is estimated that approximately 2.5 million cubic meters (m3) of contaminated sediments will need to be dredged from the ports and harbors of San Diego County over the next five years.

2. On branches where new growth has been removed, it has been noted that the older foliage does not decline in photosynthetic capacity.

3. It is a well known fact that the relationship between the percent degradation and the log can be approximated as a straight line with a stress dependent slope.

4. It appears at 0.1 nmol and 0.3 nmol there was perhaps a saturation effect of the receptors and at higher doses there was down regulation of the stimulatory effect of metastin on LH release.

II. Denominalizing Nominalizations

*Eliminate any unnecessary nominalizations—see if you can transform them into verbs.*

1. There was a development of extensive surface mats in the early summer.

2. Surface dissolved oxygen concentrations showed a decline early in the season; however, an increase was noted late in the season.

3. Prior to performing the analytical testing necessary to complete the risk-based analysis, a meeting with appropriate regulatory agency representatives will take place in order to determine their level of acceptance of risk-based analysis.

4. Long and Morgan (1990) presented a compilation of data comparing levels of chemical contamination of metals and organize compounds with biological effects.
5. The following is a proposed draft outline for . . .
6. This memo is intended as a summary of x . . .
7. It is our opinion that . . .
8. The amount was in excess of . . .
9. It is our recommendation that . . .
10. As per our discussion . . .
11. It is necessary for us to . . .
12. Accuracy is dependent on . . .
13. The intent of the memo was to address . . .
14. We have done an analysis . . .
15. This report provides discussion . . .

III. Revising Unnecessary Passive Voice Constructions

Identify the passive constructions and make them active where appropriate.

1. In addition to its mutagenic properties, chloroacetaldehyde has been shown to inhibit protein synthesis in cultures of mouse fibroblasts.
2. The largest increase in serum LH was observed at 0.1 nmol and 0.3 nmol.
3. During the blending process, dust clouds may be formed that contain some of the additive material (such as lime).
4. Within the San Diego County Region, it is estimated that approximately 3 million m$^3$ of contaminated sediments will need to be dredged from ports and harbors of San Diego County over the next five years.
5. It was theorized that the modified bucket was creating a low-pressure region near the sediment surface as the bucket was retracted. Since the dredge area was fully enclosed with a silt curtain, it was speculated that the resuspended sediments would resettle to the bottom surface in the dredge area.
THE CASE OF THE MISUNDERSTOOD PASSIVE

In scientific fields, passive voice is often favored over active voice for a variety of reasons—some more legitimate than others.

Advantages
- Enforces the myth of objectivity in science.
- Eliminates inappropriate focus on the writer.
- Keeps the focus on the topic.
- Helps writers create cohesion.

Disadvantages
- Suppresses the role of argument in the document.
- Reduces the ability to express personal views.
- Invites the dangling modifier.
- Distances the reader from the writer.
- Results in longer sentences.

Choose the passive voice with a clear purpose in mind—in situations when it is appropriate for your intentions and your audience. Avoid the “automatic” passive!
THE CASE OF THE MISUNDERSTOOD PASSIVE, CONT.

If the personal pronoun is inappropriate in a specific part of a document (such as a methods section), there are ways other than the passive voice to express your ideas. Note how the writer eliminated a number of passive constructions without bringing in personal pronouns. The piece overall now reads more directly and concisely.

Overview

The approach used for collecting and organizing passenger preparedness information from U.S. airport web sites consisted of a Web content analysis based on specific web design heuristics for each airport that was evaluated. The heuristics for this study were chosen stemmed from Web heuristics (navigation, comprehension, and information display) developed in a collaborative effort between faculty members of the Technical Communications Department at the University of Washington in Seattle and the Language and Communication Group from the University of Twenty (Enschede, the Netherlands) in 1999 (van der Geest et al. 304). Their results were reported appeared in Technical Communication.

These heuristics are an appropriate model for this particular study because they are intended for concerned informational web sites as opposed to sites oriented toward entertainment, e-business, news, instruction or forums. Airport web sites may be considered are informational web sites in that their purpose is to inform air travelers about items such as flight arrivals and departures, airport parking, terminal facilities, and ground transportation. This study focuses on the informational elements of passenger preparedness information that these days are (or should be) integral parts of the information airport web sites impart to air travelers.

In addition to their suitability and adaptability to the requirements of this study, these heuristics were chosen because of the rigorous and iterative research and development process with which they were developed. This process included:

- A thorough literature review in the form of a meta-analysis that included both empirical research and what was termed “anecdotal evidence and analytical communications theories that open up new ways of looking at Web communication (van der Geest 305).
- The creation of set of draft heuristics based on the literature review. The findings gleaned from the literature review were translated into guided the development of sets of heuristics that would relate to the requirements of web designers (305).
- A three-part review of the draft heuristics, the first taking place during a 1999 summer workshop in Seattle by a group of international communication students and faculty as well as various Web design practitioners in corporate settings. The researchers of the study first presented their heuristics and the literature they were based on to these “users.” Then each group of users was assigned reviewed a Web site to review with using the draft heuristics. Based on their feedback on the usefulness of these heuristics, the authors revised the heuristics that were then tried out by what they termed and then tested them with “student reviewers” during a 1999 fall workshop. Once again both individual workshop participants and four-person teams The reviewed the usability of the heuristics was, once again reviewed by both individual workshop participants and four-person teams.
THE CASE OF THE MISUNDERSTOOD PASSIVE, CONT.

In the following example, the writer is using both passive and active voice—a stylistic strategy that can be appropriate. But here there is no rhetorical reason for the choice of one over the other—and in fact, the topic tends to jump from sentence to sentence.

*Can you find a way to make the sentences more consistent?*

**Introduction**

To identify and characterize novel molecules functionally important for sperm-egg interactions, we are examining mutants that are male sterile due to defects in fertilization. Specifically, we are focusing on a class of mutants that produce sperm that enter into the egg cytoplasm but fail to activate. In previous studies, our group cloned one gene in this class, known as *sneaky* (*snky*), which encodes a sperm-specific protein (Fitch and Wakimoto, 1998). By monitoring the integrity of the sperm plasma membrane, it was shown that the *snky* mutation prevents breakdown of the sperm plasma membrane after sperm entry into the egg. In addition, a Snky-Green Fluorescent Protein (GFP) fusion localizes to the acrosome in mature sperm establishing a molecular link between an acrosomal membrane protein and sperm activation. Because *snky* is one of five genes that when mutated prevent sperm activation, we suspect the genes in this class act in a common pathway. Here we report on another gene in this phenotypic class, *space needle* (*spnl*), which when mutant allows Snky-GFP to properly localize to the acrosome. However, unlike *snky*, *spnl* mutant sperm undergo plasma membrane breakdown in the egg cytoplasm. Despite the fact that membrane breakdown occurs in *spnl* mutants, the sperm nucleus remains tightly condensed. Taken together, these results indicate that Spnl functions downstream of Snky in the sperm activation pathway.
CONCISENESS REVISITED

To make your writing more concise, consider the following stylistic elements.

<table>
<thead>
<tr>
<th>Stylistic Elements</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Easily inferred pieces</td>
<td>in my opinion, in order to</td>
</tr>
<tr>
<td>Redundant pairs</td>
<td>willing and able, full and complete</td>
</tr>
<tr>
<td>Redundant modifiers</td>
<td>period of time, big in size</td>
</tr>
<tr>
<td>Hedges and emphatics</td>
<td>a good deal, usually, often, virtually</td>
</tr>
<tr>
<td>Pompous diction</td>
<td>pursuant to, it is incumbent</td>
</tr>
<tr>
<td>A phrase vs. a word</td>
<td>due to the fact that vs. because</td>
</tr>
<tr>
<td></td>
<td>in the event that vs. if</td>
</tr>
<tr>
<td></td>
<td>has proved itself to be vs. has proved</td>
</tr>
<tr>
<td></td>
<td>prior to the time vs. before</td>
</tr>
<tr>
<td></td>
<td>in a situation which vs. when</td>
</tr>
<tr>
<td>Metadiscourse</td>
<td>I was concerned</td>
</tr>
<tr>
<td></td>
<td>I attempted</td>
</tr>
<tr>
<td></td>
<td>I think</td>
</tr>
<tr>
<td>Affirmative vs. negative</td>
<td>not many vs. few</td>
</tr>
<tr>
<td></td>
<td>not different vs. similar</td>
</tr>
<tr>
<td></td>
<td>not the same vs. different</td>
</tr>
</tbody>
</table>

Caution

- Don't be so concise that your meaning becomes cryptic.
- Be careful not to use your expertise on a topic to decide that something is easy to infer. Think about your readers—will they be able to make the same inference?

Practice

*How could the following sentences be more concise and direct?*

1. Please don’t hesitate to contact me if you require any additional information or details on this subject matter.

2. It did not escape our notice during our visit that the elections were in full swing, with placards just everywhere, one saying "Vote Carlos Rivera."

3. Prior to initiation of the amphipod toxicity testing. . . .

4. Recently, we have reported excess fetal exposure to glucocorticoids delays the subsequent onset of puberty.

5. The present work confirms the extension of these observations showing fetal glucocorticoid exposure can program the normal postnatal development.
NOUN STACKS—A CASE OF BEING OVERLY CONCISE?

To make text concise, some writers rely on noun stacks—a series of nouns (and sometimes adjectives) that work as modifiers on each other and on the final noun in the stack.

*Are the following "noun sandwiches" easy to read and comprehend? Can you revise them, using a few more words if necessary?*

1. EBA Environmental consultants toxicity testing laboratory located in North Seattle, Washington, performed all sediment bioassay tests.

2. Field quality assurance samples will be used to evaluate the efficiency of field decontamination procedures and variability resulting from sample handling or site heterogeneity.

3. With this information, regional dredged material management decisions regarding use of appropriate remediation technologies can be made.

4. The increase in transplacental passage was almost abolished in association with glucocorticoid-induced fetal-placental growth retardation while reduced glucocorticoid synthesis enhanced both fetal-placental growth and leptin transplacental passage, consistent with the proposed role of leptin as a fetal growth factor.

5. The subjects for this study were drawn from a cohort of high-risk female HIV-1 seronegative commercial sex workers from Mombasa, Kenya who were followed monthly prior to HIV-1 seroconversion and approximately every three months thereafter.

5. Patients with IHH have complete or partial absence of endogenous GnRH-induced luteinizing hormone (LH) pulsations.

6. Metastin has been identified as an endogenous ligand of G-protein coupled receptor 54 (GPR54). GPR54 is a newly characterized G-protein coupled receptor that is implicated in the onset of puberty.
One way to achieve credibility through your writing is to choose your words as carefully as you design your research. Any imprecision in your writing can suggest imprecision in your research!

*In the following sentences, find the words that are incorrectly used and therefore cause a lack of precision.*

1. Unfortunately, the mechanisms underlying the neuroendocrine and genetic control of sexual maturation at puberty are largely unknown.

2. As leptin is thought to provide a signal governing puberty onset (Cheung *et al.* 1997), and its secretion appears to be regulated by glucocorticoids (Slieker *et al.* 1996, Masuzaki *et al.* 1997), we proposed that the delay in puberty be caused be alterations in the concentration of plasma leptin.

3. The dose of metastin administered was a serial 2-fold dilutions in aCSF (5 nmol to 0.1 nmol), while control mice received aCSF alone.

4. Leptin radioimmunoassay and binding assays were performed on plasma samples while Western blot analysis for Ob-Rb protein was performed on hypothalami.

5. As the reductions in birthweight after maternal dexamethasone treatment were comparable between this and the original study it is likely that the cause of the apparent discrepancy between the two studies occurred after birth. Interestingly, subtle changes were made in the diet administered to the rats after the original study concluded.

6. Since the median interval of the CD4 measurement was not significantly different for the two groups of women, this implies that women with a heterogeneous virus have a faster decline in absolute CD4 count over time.

7. Quality writing can be achieved by complying with the rules past by the International Committee of Biomedical Journal Editors which have been adopted by a great number of scientific journals as publication requisites.

8. The goals of this research proposal are to elucidate the role and action of metastin and GPR54 in release of gonadotropins in the prepubertal rodent and the adult.
Cohesion and coherence are related principles of style, concerned with the flow of ideas between sentences and throughout a paragraph.

**Cohesion**—how sentences stick together—is achieved by placing *known* (or *given*) information at the beginning of a sentence and *new* information at the end of a sentence. The next sentence can begin with what was *new* in the previous sentence (since it is now *known*) and then add more *new* information. This linkage of *old* to *new* provides a clear pathway for the reader to follow.

*Example of Cohesion*

Reflecting Absence is a plea for **calm**. **Tranquility** has been in short supply in **Lower Manhattan**. Perhaps the **city** is ready to let this quality rise to the surface for a time.

**Coherence**—how ideas stick together—is achieved by repeating the topic (with the same or similar words) at the beginning of most sentences in a paragraph. This strategy keeps the writer from shifting from one topic to another in a paragraph and helps the reader stay on track with the topic.

*Example of Coherence*

**Reflecting Absence** is a plea for calm. Tranquility has been in short supply in Lower Manhattan. Perhaps the city is ready to let this quality rise to the surface for a time. Designed by Michael Arad, **Reflecting Absence** is the winning entry in the competition to design a memorial to the victims of 9/11. **First presented** last month with seven other finalists at the Winter Garden of the World Financial Center, **the proposal** is being redesigned by Mr. Arad and the landscape architect Peter Walker. **The version** unveiled yesterday is still a work in progress.

*(from the New York Times, Herbert Muschamp)*

*In the following examples, evaluate the cohesion and coherence, and suggest changes where necessary.*

1. **3.2.1 Capture Zone Analysis**

   Ground water wells can also be used to capture contaminated groundwater. The extent of groundwater that will be captured by a well or set of wells is referred to as the capture zone.
2. Sediment boring samples will be collected using a vibracorer. The vibracorer unit consists of two contra-rotating electric motors encased in an aluminum housing. An electric generator on the vessel via a submersible tether cable powers the vibracorer. When energized, the motors produce a high-frequency vibration capable of penetrating most unconsolidated strata.

3. This study confirms that variations in fetal exposure to glucocorticoids impact upon the subsequent timing of puberty in postnatal life. Specifically, the results show dexamethasone treatment during pregnancy causes a substantial delay in the subsequent offspring timing of puberty similar to that seen previously (Smith & Waddell 2000). In the previous study, variations seen in puberty onset could not be attributed to changes in either prepubertal or postpubertal plasma leptin and this was again seen here. Similarly, in this study, plasma leptin binding and hypothalamic Ob-Rb protein expression were examined and neither of these differed among treatment groups around the time of puberty onset. Thus, it seems that the variations seen in offspring timing of puberty after manipulation of fetal glucocorticoid exposure are not due to any programming effects on peripubertal leptin actions.

4. Women from Africa may be initially infected with multiple HIV-1 viral variants or a single viral genotype. To understand the factors that influence the genetic complexity of the infecting HIV-1 virus population and its impact on disease progression, we examined viral diversity during primary infection in women from Kenya. Hormonal contraceptive use at the time of infection was associated with initial viral diversity. In addition, women with viral heterogeneity had a higher viral set point and lower CD4 count as compared to women with an initial homogeneous virus population. Therefore, initial infection with a heterogeneous virus population accelerates disease progression.
5. In 1999, Lee and colleagues identified a novel G-protein coupled receptor, termed GPR-54 [4]. Since then, a GPR54-like receptor has been described in the rat (rOT7T175) [5] and human (AXOR12) [6]. The GPR54 gene was shown to encode a G protein-coupled receptor that shares a modest, but significant, homology with the known galanin receptors, GalR1 (45%), GalR3 (45%), and GalR2 (44%) [4]. GPR54 mRNA is expressed throughout the brain, but is notably abundant in the pons, midbrain, thalamus, hippocampus, amygdala, cortex, frontal cortex, striatum, and hypothalamus [4]. Several of these areas are reminiscent of GalR1 expression in the brain (hypothalamus, amygdala, hippocampus, and locus coeruleus) [7]. GPR54 expression is also seen in peripheral organs including the liver and intestine [4], and in theory, it would seem conceivable that the GPR54 is yet another galanin receptor.
COMMON GRAMMAR AND USAGE ISSUES

Pronouns—Uses and Abuses

1. Principles
   Pronouns have certain qualities but also certain requirements. They:
   • Increase conciseness and avoid repetition of nouns.
   • Endanger credibility of the writer and the precision of the text if not used carefully.
   • Need clear antecedents.

   As readers, we use many cognitive skills. This is demonstrated in the following study. (what does "this" refer to?)

   Joseph Spindler kept coming to meetings late, which irritated his boss. (what does "which" refer to?)

   • Must agree in number with the nouns they represent.

   Everyone going to the meeting needs to bring their badges.

   The board has changed their mission.

3. Pronoun Practice
   a. The board is requested to expand the section of their present fund-raising policy.

   b. Significant inhibition of nociceptive response of Pf neurons was observed after EA (n=11, P<0.01). It indicates that EA can inhibit the nociceptive responses of Pf neurons. The nociceptive responses of Pf neurons were also inhibited after exciting Cd (n=13). The difference was significant when the effects of exciting Cd were compared with effects of microinjection of saline into Cd (n=10, P<0.05). It suggests that exciting Cd can inhibit the nociceptive responses of Pf neurons.

   c. Consumer Civil Rights Regulations. Again, although individually these may appear to be minor regulatory regulations, in total they create an image of substandard lending practices.

   d. In some operations, additional sediment loss can occur when a haul barge is loaded beyond capacity and overflow occurs. However, this would not be employed for this project and will be a condition for the contractor.
1. **Principles**

   When "which" or "that" could be the subject of an adjective clause:
   
   - Use "that" when you do want the clause to restrict the term's meaning.
   - Use "which" when you do not want the clause to restrict the meaning of the term it's modifying.

   A description of the testing process that demonstrates the document's continued efficiency can be found on page 12.

   vs.

   A description of the testing process, which demonstrates the document's continued efficiency, can be found on page 12.

2. **Which/That Practice**

   a. These fractions are based upon the physical structure of the compounds and the equivalent carbon number which is a function of the boiling point.

   b. Sea Turtles which are sighted sporadically in the area are most common in tropical and subtropical waters and are, therefore, considered rare and occasional visitors to the harbor area.

   c. The presence of selenium in water is due to contact with soil and rocks which naturally contain selenium.

   d. Leptin is 16 kDa peptide hormone which acts to regulate food intake and energy expenditure at the hypothalmic level (Campfield *et al.* 1995, Pellymounter *et al.* 1995).

   e. A secreted form (Ob-Re), that lacks both the intracellular and transmembrane domains, serves as a plasma leptin binding protein and is thought to restrict access of leptin to target tissues (Gavrilova *et al.* 1997).

   f. Previous studies have shown that the level of plasma viremia 4 months post-infection corresponds to the viral set point which has been shown to predict progression to AIDS and death.
GRAMMAR AND USAGE ISSUES, CONT.

Modifiers

1. Principles
   • Words, phrases, and clauses must be placed in a specific position in a sentence and must clearly modify another word.
   • Misplaced Modifiers: Modifiers should be placed as close as possible to the noun they modify.
     The basic phases used are similar in creating a simulation model to those used in any system development.
     vs.
     The basic phases used in creating a simulation model are similar to those used in any system development.
   • Dangling Modifiers: Modifiers must modify a noun that appears in the sentence.
     When allocating resources for simulation modeling, this need for calibration must not be discounted.
     vs.
     When allocating resources for simulation modeling, one must not discount the need for calibration.

2. Modifier Practice
   a. To send the original article to a biomedical journal, the manuscript should present some adequate formal characteristics, in addition to contain scientifically valid information.
   b. These types of models consider factors including: water depth, water velocity, operational considerations, types of dredge, sediment physical characteristics, and sediment chemistry to predict suspended sediment and contaminant plume sizes and concentrations.
   c. Evidence exists that human activity (i.e., recreation, beach cleaning), is responsible for some of the coastal decline, as well as predation by pet dogs, crows, foxes, skunks, and other animals.
   d. To test this hypothesis, metasin (54 aa peptide, Phoenix Pharmaceuticals, Belmont CA) was given to 8 week old male mice via ICV injection while under isoflurane anesthesia.
GRAMMAR AND USAGE ISSUES, cont.

Parallelism
1. Principle
   • Ideas in a sentence that stand in parallel relation to each other should be expressed in parallel grammatical form.

   *The report was brief, clear, and contained valuable information.* (faulty parallelism)

   vs.

   *The report was brief, clear, and informative.*

2. Parallelism Practice
   a. BSS provided the sampling platform, the coring device (vibracorer), assisted in collecting the sediment cores, and operated the on-board differential global positioning system.

   b. Land uses include primary port uses (34 percent of land); oil and gas production (24 percent of land); federal land (17 percent); and port-related industries (10 percent) are considered major uses.

   c. Therefore, we determined the transplacental passage of maternal leptin to the fetus in the rat, and whether this transport increases near term in association with a rise in placental expression of Ob-Rs protein.

   d. Suppression of endogenous glucocorticoid synthesis (by metyrapone) increased fetal and placental weight (*P*<0.05) and the transfer of maternal leptin to the fetus by 55% (*P*<0.05).

   e. Combining the women analyzed here and the results in our previous studies, 69 of 115 (60%) women had a heterogeneous virus population while 48 of 115 (40%) had viral homogeneity at or near the time of their infection.

   f. We can conclude that: (1) GP is involved in both acupuncture- and exciting Cd-induced analgesia, (2) GPI is involved in the inhibition of nociceptive responses of Pf neurons induced by exciting GPe, (3) acupuncture- and exciting Cd-induced analgesia may be mediated through the inhibition of GPe neurons and excitation of GPI neurons, (4) acupuncture analgesia may be achieved through exciting Cd neurons, regulating the activities of GP neurons, and, in turn, inhibiting nociceptive responses of Pf neurons, in which both GABA and substance P in GPI may be associated with it.
**Subject-Verb Relationships**

1. **Principle**
   - Subjects and verbs:
     - should be fairly close together
     - come near the beginning of a clause
     - logically relate to each other
     - agree in number
   - With either/or in a compound subject, the verb should agree with the last subject.

2. **Subject-Verb Practice**
   a. These data were used to construct potentiometric surface maps for the NIA and hydrographs for selected wells. Groundwater elevation data was also compared to data collected prior to 1997.
   b. The numbering scheme for sediment cores and composite samples were modified as sampling locations were added or omitted from the program.
   c. Either the doctor or the technicians is liable.
   d. Monitoring and modeling of this process for many projects has shown that sediments quickly fall to the bottom.
   e. These data show that transplacental passage of maternal leptin is a significant source of fetal leptin and increases markedly during late pregnancy.
   f. Of interest, Funes *et al.* demonstrated that in the wild type mouse there was no differences in KiSS-1 gene expression throughout development.
PUNCTUATION PRINCIPLES

Effective punctuation function as road signs. Punctuation or the lack of it should connect or separate ideas, reveal appropriate emphasis, and signal places for the reader to speed up or slow down.

- **Periods**: Periods tell readers to come to a complete stop before starting up again. They separate two independent clauses.

- **Semicolons**: Semicolons tell readers to come to a rolling stop; a connected idea is coming. They are generally used to join independent clauses. If you can't use a period, then you can't use a semicolon!
  
  *Exception: Use semicolons to separate elements in a series that contains commas or other punctuation within them.*

  Semicolons should precede conjunctive adverbs that appear between independent clauses; follow the conjunctive adverbs with a comma.

  Some conjunctive adverbs are however, furthermore, nevertheless, moreover, consequently, etc.

  *Example: The client thought the portrait was ugly; nevertheless, the artist thought it was a masterpiece.*

- **Commas**: Commas tell readers to slow down and then speed up again. A comma alone cannot join two independent clauses without creating a comma splice—to avoid a comma splice, use a coordinating conjunction, a semicolon, a colon, and em-dash, or parentheses.

  Don't let one comma chop a subject from its verb or verbs. If you use a nonrestrictive modifier between a subject and verb, set it off with commas on both sides.

  *Example: The new scanner, bought from RPS Inc., will be placed in the laboratory.*

  On the other hand, do not set off a restrictive modifier with commas (remember the which/that controversy.)

  Use commas after introductory elements.

  Place a comma before the last item in a series.

  Correct comma use with dates:

  - He decided that the January 5, 1996, memo . . . .
  - He decided that the January 1996 memo . . . .

- **Colons**: Colons tell readers to stop briefly and get ready to hear more (for example, a definition, a list, an example, etc.). The ideas that precede colons are usually placed in independent clauses whereas the ideas that follow colons may consist of any type of grammatical construction.

- **Em-dash**: Em-dashes tell readers to hit the brakes and get ready for something dramatic or different. They are much more powerful than many forms of punctuation. If writers sprinkle too many em-dashes, they can sound panic stricken. Type em-dashes with a long em-dash (—) or with two hyphens with no spaces around them.
Given the punctuation principles on the preceding page, can you identify punctuation problems in the following sentences?

a. A summary of the bioassay results from the three toxicity tests, including an overall determination for the suitability of the DMMU for unconfined open-water disposal based on biological data is presented in Table 2.

b. On the day of sampling one rat was randomly chosen from each litter and weighed.

c. Reference samples were collected on January 11 and 13, 2000 from three different locations in Daret Inlet, located in Puget Sound, WA.

d. One 5-gallon soil sample will be collected and shipped to Metro's Seattle, WA treatment laboratory.

e. A closed clamshell bucket is similar to a conventional open bucket, however a closed bucket generally has features that include some combination of covers, exterior pulleys and sealed joints.

f. Special concern species, (also known as Candidate 2 species), are vertebrates.

g. As President Bush might have been expected to ignore the demands of a faction that has been sniping at him for years.

h. The western snowy plover is federally listed as threatened and is a "state species of special concern".

j. These pilot studies would evaluate aquatic capping, and cement stabilization.

k. There are two classes of investment funds; open- and close-ended.

l. Within 12 h of birth, offspring sex was determined and males and females weighed, offspring from treated pregnancies were cross-fostered to untreated mothers and weaning occurred after pup independence was visually established (at approximately 4 weeks).

m. In sub-groups of day 22 pregnant rats fetal-placental glucocorticoid exposure was increased by either dexamethasone or carbenoxolone treatment or reduced by metyrapone treatment (from day 13 onwards).

n. Of interest, Funes et al., demonstrated that in the wild type mouse there were no differences in KiSS-1 gene expression throughout development.

o. The mean SBR for grain counts over KiSS-1/GPR54 neurons will be calculated for each animal, and a sign test will be applied to those means to test the hypothesis that the SBR equals 1 (i.e. there is no signal).
PUNCTUATION WORKSHOP, CONT.

p. In the previous studies we have found that the sensorimotor area I (SmI) of the cerebral cortex---caudate nucleus (Cd)---parafascicular nucleus (Pf) pathway may play an important role in acupuncture analgesia.

q. In the 1970’s, Wildt et al., provided unequivocal evidence that neither the pituitary nor the ovary was a limiting component to the onset of primate puberty {Wildt, 1980 #45}, this was further demonstrated in the male {Plant, 1989 #46} and has been further substantiated by studies of patients with central precocious puberty {Grumbach, 1992 #47}.

r. Maternal weight at day 13 of pregnancy, the day treatment commenced, was similar among experimental groups (see Table 6.1), however, by day 22 maternal weight was lower ($P<0.05$) in dexamethasone treated mothers. Thus, when maternal weight gain was calculated this was also lower ($P<0.05$) in mothers from this group (see Table 6.1).

s. Although in all these studies high fat diets involved increases of between 4-6-fold in total fat intake it still remains possible that a postnatal diet of altered fat composition, especially a shift to increased saturated fats, is capable in mediating similar effects.

t. During normal development, the normal functioning gonadal axis is essentially shut down in early life, and then reinstated at the time of puberty.

u. In particular, several amino acid residues that are present in galanin receptors and confer their high affinity binding of galanin (His-262, His-265, Glu-269, and Phe-280) [8, 9], are not conserved in GPR54 [4].
TONE

Definition—The tone of voice readers hear when they read a document, an emotional quality present in any piece of writing (for example: angry, business-like, impatient, cheerful, formal, inflammatory, excited, distant, positive, abrasive).

Tone is the result of the author’s attitude toward:

• The reader
• The message (the content or subject matter)
• Self

Tone is transmitted by:

• Style (the words chosen and the way they’re put together)
• Layout and method of reproduction (typed, printed, handwritten)
• Form of presentation (phone call, memo, formal report)

To find and use an appropriate tone:

• Form a mental picture of your audience—as well as the image you want people to have of your organization.
• Bear this image in mind as you write.
• With time, you will intuitively adopt a suitable tone for every occasion, and for every type of document and audience.

Adopting the right tone requires sensitivity to the communication situation. If you don’t bother to think about it, the tone of your document is likely to be inappropriate. Listen to yourself.
NEGATIVE—NEUTRAL—POSITIVE TONE

Negative. By the power of suggestion, writers create an undesirable impression about their attitude toward the reader or how a situation should be interpreted by the reader:

"I was surprised to discover in your letter of June 26 that you claim I have made an excessive charge for analyzing your financial investments." (from a financial analyst and planner)

Neutral. Adopting a neutral tone is useful when you have no particular point of view or do not want to reveal it to the reader.

• Manual writers usually adopt a neutral tone because they know that the attitude of the writer is not very relevant.

• Writers of preliminary research reports may adopt a neutral tone because they are not yet ready to commit themselves to a particular point of view or make any final judgment.

"I have received your letter of June 26 concerning my charge for analyzing your financial investments."

Positive. Writers can use the power of suggestion to create a positive impression:

"I am very willing to do as you requested in your letter and look into the question of whether I have made the correct charge for my services."

Ask yourself: Am I looking at the bright side or the dark side?

Caution: When we talk about positive or negative tone, we are always referring to the writer's attitude, not the nature of the message to be conveyed.
PERSONAL VERSUS IMPERSONAL TONE

Personal Tone
• Is often appropriate when you want to establish a friendly connection with the reader.
• Is characterized by personal pronouns such as "I" and "you."
• Commonly occurs in correspondence and short memos.

Impersonal Tone
• Is useful when you want to stay detached from the content or the reader.
• May be characterized by few second person pronouns ("you"), passive voice, and wordiness.
• Commonly occurs in scientific and professional writing.
• Often occurs with passive voice—a syntactic structure that transfers emphasis from the agent or manipulator to the object being manipulated.

    "Our analyst made a careful study of the investments."

    vs.

    "A careful study of the investments was made by our analyst."

Make this transfer only when necessary.

• Some writers falsely assume that if they use the passive voice in some passages, they must use it throughout the document. Not so! Switching to active voice can breathe new life into moribund prose.

Caution: While useful at times, impersonal tone is sometimes used excessively in the name of "objectivity."
INFLATED VERSUS Plain English

A writer can achieve various degrees of formality in a document.

• Effective writers vary their tone several degrees, depending on their purpose, message, and position in relation to their reader.

• Let the situation determine the appropriate tone. Since no situation is exactly the same, writers should consciously decide what tone is appropriate for each writing task.

Some extreme examples

"Such preparation shall be made as will completely obscure all Federal buildings occupied by the Federal government during an air raid for any period of time from visibility by reason of internal or external illuminations. Such obscuration may be obtained either by blackout construction or by termination of the illumination."

vs.

"Tell them that in buildings where they have to keep the work going, to put something across the windows. In buildings where they can afford to let the work stop for a while, turn out the lights."

vs.

"For God's sake, shut off the lights when the sirens go off!"

<table>
<thead>
<tr>
<th>Inflated Language</th>
<th>Plain Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>This will acknowledge receipt of . . .</td>
<td>Thank you very much for . . .</td>
</tr>
<tr>
<td>Attached herewith is . . .</td>
<td>Here is . .</td>
</tr>
<tr>
<td>As stated above . .</td>
<td>As I mentioned . .</td>
</tr>
<tr>
<td>At an early date . .</td>
<td>As soon as convenient . .</td>
</tr>
<tr>
<td>This matter has been referred to the undersigned.</td>
<td>This question has been sent to me.</td>
</tr>
</tbody>
</table>

Caution: A wide range of tones is possible but be careful of either extreme—the highly inflated pompous tone to the overly casual, chummy tone. Neither of these is appropriate in a professional setting.
RESPONSIBILITIES OF REVIEWERS OF WRITING

Good reviewers and supervisors of writing:

- Motivate writers to produce professional quality work
- Assign and direct work—monitor progress (plan reasonable work schedules and provide adequate staff support)
- Establish standards for document quality
- Play surrogate reader but remain part of the writing team
- Know what to change; what to leave alone (avoid making the document their own)
- Provide positive as well as negative feedback
- Remember what it feels like to have their writing critiqued
1. Where is the balance between time and quality?

2. Must all writing be top quality?

3. How much improvement will more revising provide?

Writing Improvement Curve


At what point on the curve does a piece of writing belong?

- Ph.D. dissertation
- Research proposal to a funding source
- Lab notes
- Emails to your colleagues
- Research articles for journals
- Abstracts in research articles
- Job application letters
When reviewing or revising a document, you are actually looking for areas that could be problems. When something catches your eye, you must decide whether the potential problem is real or not, how easy it is to fix, how serious it is, and what you want to do about it. You need to ask yourself a few simple questions that can make the reviewing process more successful for both you and your colleagues.

Is there a problem? no The passage is simply an alternative way of presenting information.

yes

What is the problem?
- Ambiguous
- Disorganized
- Ungrammatical
- Other

Is the problem serious? no

Is it easy to fix? no

Fix it.

yes

Is the problem serious? yes

Consult the writer.

no

Ignore it.
SUMMARY OF STYLE REQUIREMENTS IN JOURNALS IN YOUR FIELD

As a writer, you need to be aware of standards in your field. Different fields, and indeed journals within a field, often prescribe quite different conventions based on different purposes and readers.

• Be flexible and able to practice a variety of styles.
• Become educated about conventions in your field.
• Examine relevant style guides.
• Before submitting an article to a journal, acquaint yourself with the journal’s manuscript policies.
  - These are almost always available online: e.g., the International Committee of Biomedical Journal Editors has a Web site entitled “Uniform Requirements for Manuscripts Submitted to Biomedical Journals: Writing and Editing for Biomedical Publication.”
http://www.icmje.org/