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Audience and Purpose: Developing a Perspective

The Instrumentation and Labor Improvement Plan (ILM) is part of the National Science Foundation's effort to strengthen undergraduate education by offering grants for the purchase of equipment. The NSF typically issues guidelines that specify the content and the format of the grant proposal. Among the many specifications was the following guideline for the summary section, that section used by the researcher to explain what would be done with equipment were the proposal funded.

> The Summary of Proposed Work should be a concise description of the project (not the proposal), limited to 22 single spaced lines of 12 point type. The summary should briefly tell the aim of the project, the major instruments which will be purchased, in what applications they will be used, and why the project is significant. Considerable care should be taken when writing the summary. The Summary is the reviewers' first impression of the project's merit. If the project is supported, the Summary will be published by the Foundation to inform the general public about its programs. Accordingly, *it should be written so that a scientifically literate lay person could understand the use of Federal funds in support of this project.*—NSF, Public Document, Program Guidelines, 1992 (my emphasis).

The content of the summary is explicitly delineated: "the aim of the project, the major instruments which will be purchased, in what applications they will be used, and why the project is significant." A list could be generated to respond to these specifications:

(1) The aim is . . .
(2) The instruments are . . .
(3) The instruments will be used for . . .
(4) The project is significant because . . .

But these guidelines specify more than content or the subject matter or the proposal; they also supply the context in which the request will be regarded. The general public will be a third party to this funding request. A specific level of language is indicated for that audience—scientifically literate lay (unspecialized) audience—but further, the purpose states that this audience should be able to *understand* the allocation of taxpayers' monies. While the *form* of the summary could be satisfied with a list, the *writing task* requires you to anticipate and address the response of the targeted audience in light of the purpose: their understanding. The targeted audience and your purpose in writing to them are interconnected in shaping the organization and presentation of your writing.

Audience

Who will read your writing?

Is your scientific paper directed to someone who possesses your level of expertise? Are you writing because someone will have to make a financial decision on the basis of your request? Who will repair instrumentation you describe? Can you assume that a college-level audience knows calculus and thus equations are appropriate? Is the reader familiar with complicated graphics or would a pie charts be more appropriate? Will the audience be your intellectual peers?

Identify the audience for everything you write. You need not visualize a complete individual—hair color, eye color, height, weight. The purpose of identifying the audience is to key into a common level of expertise in order to work from a common language. Identify a typical audience, one which represents the generalized responses of a class rather than those of an idiosyncratic individual.

The targeted audience governs your approach. As a writer, you must bridge the information gap between what your audience already knows and what they need to know to understand your point. In the absence of a common vocabulary between the writer and the reader, the obligation lies with the writer to generate that language. This common language will be slanted for the reader's comprehension.

Because you are the writer, the burden of intelligibility rests with you. Write in the language your audience understands. When in doubt about audience's expertise, explain a bit but make your explanation succinct. Fill in the information gap. Never expect the audience to bone-up on their reading to be able to understand your work. Jargon is specialized language familiar only to experts; a general audience cannot be assumed to understand jargon.

Private codes are generally inaccessible; some poets or fiction writers have written in a language that comes from the author's personal code of language. This kind of artistic writing emphasizes the medium (or the

writer's expressing emotions, feelings, personal thoughts) rather than the message; your goal is the opposite: emphasize the message. Your goal is to communicate your purpose to your specified audience.

Writing that misses the mark is writing that misjudges the audience.

Purpose: What Do You Tell?

Writers write for a purpose; science writers have information, facts, knowledge, and interpretations to share. As a writer, you should be clear about your own purpose in writing. What do you want to tell?

In telling about a subject, tell about the subject at hand rather than about yourself. You may have encountered some personalities who leave you with a stronger impression about their personality than about the topic of discussion: "I didn't understand a word, but every word was brilliant" or "I understood everything but I don't believe a word." The information relayed must pertain to the topic under consideration. The writer remains unobtrusive—unobtrusive but authoritative (not authoritarian)—and in so doing preserves the objective tone discussed in Chapter 2. As you work through the thinking process of your research, question your own views. Establish that they are reasonable in order to inspire the reader's confidence in you as the basis for trust.

As you conceptualize the expertise of the audience, imagine what the reader could do with the information or data you report. How can the reader make use of the data? Will your audience be made cognizant of information about which they were formerly ignorant? Do you wish your audience to take action, ultimately, to follow your recommendations? Do you want the reader to be able to *do* something with the information you provided?

If writing a description of an object, should the reader be able to form a clear mental picture of the object you have described? Should the reader be able to use the description as a guide to operating the object? Will the reader be able to replicate your experimental procedure and your results? Are the specific results less important to the reader than the implications of those results? Are the results more important than the implications of the results because your reader is a colleague who will, by virtue of a shared context, understand the significance of your results. There is a difference between "I understand what you are saying" and "I understand what you are saying and I agree with you." You may be relaying information because you want to change that person's mind away from preconceived notions he or she already possesses on the subject. A number of ends may intersect.

While it is possible to anticipate a normative response to a piece of writing, the writer wields no absolute control over the reception to his or her paper. Do not mislead your reader by reporting inaccurate information for the sake of securing a desired response. Not only does false reporting

violate the convention between writer and reader (your reader approaches your paper with good faith), but you risk destroying your credibility and that of your institution. The U.S. Department of Health and Human Services defines scientific misconduct as "fabrication, falsification, plagiarism, or other practices that seriously deviate from those which are commonly accepted within the scientific community. It does not include honest error."[1] Because writing invokes an implied contract between the writer and the audience, conventions and codes govern the interaction between you and your audience. The most fundamental convention between the writer and the audience is that of trust. Because scientific research is practically and intellectually collaborative, maintaining trust is no light matter.

Audience and Purpose

While working in a laboratory, you come across a new variety of virus. After repeated trials and extensive documentation of your finding, you must decide how you will go about making your results available to others.

Dr. Perez, who runs the lab where you work, is facing a staff reduction and budget cuts; you do not know how you stand in her list of priorities, and your term of research in her lab is drawing to a close. Because you want to continue your research, and therefore wish to continue using the lab, you will have to request an extension of your privileges. Your request for an extension will be accompanied by an explanation based on the significance of your research. Dr. Perez will make a decision on your request.

Meanwhile, your best friend from high school also does related research in this field. The last time you met over the holidays, you discussed your different interests and became aware of the intersection of your lines of work. You know that your finding will benefit your friend's work just as her work has enhanced your own. She is a social peer as well as a professional colleague. When you go home for the weekend, your younger brother, who is interested in science, asks you about your research. He sees you as a role model and aspires to follow in your footsteps one day.

You are, in short, faced with different communication scenarios. You need to communicate certain facts of your finding, but the audience and your purpose differ in each case. Dr. Perez stands in a position of authority with respect to your work; you are accountable to her. She must assess the priority of your request in the context of others who also see their work as important to them as yours is to you. How do you fit into her lab? and how do stand in relation to others who have the same space/equipment needs that you do? Your position in this scenario is analogous to that of a researcher writing a grant proposal for a continuance to be read and judged by a review panel of experts. Your purpose in communicating with Dr. Perez is to define (1) what you need from her and (2) why your work merits further support.

Your friend is socially and intellectually an equal; a theoretical background and interest in experimental design link your fields. You both stand to benefit from the exchange of mutually informative discussion. Your colleague will understand the implications of your results at once. In this scenario, your colleague is analogous to that of a peer-reviewer, an expert in the field who can assess the scientific merit of your work, both on its strengths and in comparison with the merits of other related work in the field; the action you wish your colleague to take is that of critique and intellectual exchange. While your younger brother shares your interest, he does not possess the same level of expertise, a specialized vocabulary, or an understanding of the scientific concepts on which your work rests. You are the authority with respect to him. While the particular details of your work will be largely inaccessible to him, he will understand a general explanation of what you are doing and what it means, and thus you do not expect him to critique your work or to award funds for the continuation of your research.

HOW you communicate relates to WHAT you communicate relates WHOM you communicate to

Note: If you do not know who your audience is, assume it to be composed of your peers: those who possess the same expertise and language skills that you do. Your peers are not necessarily the other students in the same virology class on the tenth lecture. While you share the same physical conditions, or possess other commonalities, for the purpose of the paper, peers are intellectual equals.

Kinds of Audiences

Audience Classified by Levels of Expertise

For purposes clarification, we will consider audiences in five different categories.* Five is not an absolute number tied to a fact of nature; it simply offers the convenience of classification. If you rounded up, in general, the kinds of people who might be reading scientific reports, you could, as you wished, divide them into five categories based on the use each would make of the reports and the reader's level of expertise. Further consideration might lead you to arrive at six or forty-nine categories. You might conclude

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* I have adapted this audience material from Professor Wayne Losano's course in technical writing. Professor Losano was my teacher at the University of Florida and has taught these concepts very successfully for many years.

that every person who reads makes up his or her own audience. But for the purpose of explanation, we will assume that there are five categories. It is possible that some of these categories intersect: an operator's manual can be written in both lay and expert terms.

Lay Audience

The lay person's expertise falls within the realm of common knowledge. This reader possesses no specialized knowledge about the subject. For this reader, avoid jargon (overly technical terms); offer clear and distinguishing definitions. Explain concepts or background material only as they apply to your purpose. Examples, illustrations, or analogies render more abstract ideas into familiar terms and would be appropriate for a lay person. Diagrams, photographs, and relatively straightforward graphics offer the most suitable illustrative material; avoid graphics which require specialized knowledge to interpret them. If you have ever tried to assemble a bicycle from instructions, you know what it is like to be a member of a lay audience. The general rule for this audience is simplify.

Operator

The operator works with the equipment but is not a theorist. Graphics should be geared to the operator's use. If you drive, your driver's license is an operator's license. The operator needs to know what it takes to use the device or process, just as drivers need to know the rules of the road. Some information about routine maintenance may be appropriate as it is user-oriented. Operating manuals are written for this type of audience.

Technician

The technician possesses some theoretical knowledge, more at the level of operation than at the level of design. A mechanic knows how to take apart your engine, possesses some theoretical knowledge about the functioning of the internal combustion engine, but probably would not develop a design for a new rotary engine. Graphics are geared to the working parts of the object or process at a level of greater complexity than those for the operator.

Management

The manager is concerned with the dollars-and-cents aspects of the issue; this person gives the approval to buy, sell, manufacture, or implement. The manager will also translate something esoteric into something practical for a market economy. Because management is interested primarily in practical aspects (hard data is for experts), this reader would probably turn first to the recommendations and budget section of a formal paper. Graphics are geared to this audience's interests.

Expert

The expert is well grounded in the theoretical aspects of the subject and on the ramifications of the topic. The expert knows where something might lead, what the social or applied implications might be. The expert possesses a sophisticated level of language, knows the words, has read the book from front to back. Technical language, dense writing, graphics which encode several kinds of information are appropriate. The written text may be subsumed to symbolic or mathematic expressions. The expert will probably be most interested in the results section of formal paper.

New student writers view the "expert" with trepidation. How can a student write with authority to the expert (the professor who has thought about this subject for the last twenty years)? The ability to write to experts requires that students read and understand the salient literature. A thorough and conscientious literature search puts the student on a level field with the expert. Understanding the current literature is the BIG LABOR but every one CAN do it.

Within the category of expert is the peer reviewer. When you submit a formal research paper to a professional journal or when you submit a grant proposal to a granting agency (NSF or NIH, for example), your work may be subject to review by outside readers who are expert in the field. The reviewer assesses the merit of your work and offers a critique. While the reviewer functions in an advisory capacity to the journal or agency, the review is crucial to the success of your writing. Anticipate possible criticism and prevailing views; then incorporate a response to it in your writing. In effect, you will assume a skeptical reader and write defensively. (Further discussion follows in Chapter 6.)

Diction and Structure

The audience and the subject matter govern word choice (diction). For an audience with equal or greater expertise, choose the language that you are comfortable with. Never write up to your audience if you are not familiar with the language; a reader can recognize when you faking it. Bear in mind that words convey concepts, so the selection of one word over another merits consideration of the concept each word signifies. Take the time to learn if your word/concept usage is appropriate if you are not sure. Then

Write so that you will not be misunderstood.

When you make decisions about word choice, be sensitive to the quantity of information carried by the number of words. For example, *bisect* means to cut into two equal segments. *Bisect* expresses in one word what "to cut into two equal segments" takes six words to say. The latter is wordy,

meaning that it takes more words to say what might be equally expressed in fewer. "I bisected the circle" is more economical than "I cut the circle into two equal parts."

Not only is the first choice more economical, but, because it carries the same amount of information as the phrase, it might also be said to be more dense. Density refers to a relative ratio of information/words. No absolute standard or normative rule specifies an ideal ratio of information/words; your audience and your purpose govern that decision. Writing that is less dense is writing that conveys information in a greater number of words, relative to a more concise formulation. Subsequent drafts of the same paper tend to become more dense.

> The word *boustrophedonic* means a movement alternating right to left, left to right. It refers to the way that the cattle plow a field. Some computer printers print in this fashion. Which is more compact or dense?

> - The ancient Hittites had a style of writing which moved, in alternate lines, from right to left, then left to right, right to left.
> - The ancient Hittite style of writing was boustrophedonic.

Both examples convey the same information. Which form is more economical in the number of words? Which form is more dense, compressing more information in fewer words?

Which form is intelligible to all but an educated few? One effect of increased density may be a reduced level of general intelligibility. Sometimes one loses in intelligibility what one gains in economy.

Compare *bisect* and *boustrophedonic*. Both of these words reflect a more economical expression of a descriptive phrase; are both these terms accessible to the same audience?

Levels of Diction

What general audience level would be appropriate for each of the following words? Use a scale based on relative degrees of expertise with respect to your own.

(1) *Hypsypops rubicundus*   *Garibaldi*   *big orange fish*
Hypsypops is taxonomic name given in Latin. A more specialized audience would use and understand this term. However, the common name of this fish—what most people call it—is Garibaldi. But some people have never seen a Garibaldi. If you were standing over a tide pool filled with fish and wanted to pick out the Garibaldi, you might point at it and identify the Garibaldi as that "big orange fish."

(2) serrate teeth   saw-toothed   shark's tooth
Serrate means the same thing as saw-toothed, but the latter offers more of a picture. A shark's tooth is an example of a serrate tooth. In terms of relative complexity, serrate teeth is more complicated than shark's tooth because *serrate* abstracts the idea (tooth with ragged edges) from the particular instance of a kind of tooth.

(3) nimbostratus   rain cloud   cloud that makes rain
A *cloud that makes rain* is a phrase that describes the function of the cloud. The description is compressed and assumed when the same idea is expressed as *rain cloud*. For a meteorologist, accustomed to a specialized taxonomy of clouds, the more appropriate term would be *nimbostratus*.

In general, the less experienced your audience, the more descriptive your language will be. This descriptive quality will come from abbreviated explanations in the place of single words, from examples or illustrations as they are appropriate, or from analogies that clarify a point. A less-specialized audience requires you to interpret data for them; this audience will not know what the data mean, so you must explain the meaning. For instance, the implications or significance of experimental results, while clear to a colleague in your field, may require elaboration for someone outside it. The less expertise your audience possesses, the more interpretation and explanation are needed.

The converse also obtains but in a different fashion. Writing usually becomes more dense as you make the transition from a first draft to a final draft. It is common for first drafts to string out the significant meaning. As you revise, go through a sentence at a time in order to isolate the most significant points. Look for a word or words that can most succinctly convey the information. Oftentimes such revision requires you to think out the meaning of your writing and to reconceptualize the phrasing. Consider the following sentences:

- I used only animals with a back bone in my study.
- The study was limited to vertebrates.

In this case, *limit* conveys the same idea as *used only* and *vertebrates* supplants *animals with a back bone*. Manipulating words does not produce this alteration; the whole meaning of the sentence has to be processed and then completely recast.

Sentence Structure and Audience

Diction or word choice is not the only writing element geared to the audience; sentence structure is also a factor in raising or lowering the

density of writing. When you combine, embed, or subordinate sentences, you increase the level of information contained at the sentence level. Compare the following two accounts of the same process. Which account is more dense? Describe the differences between them.

- The unknown substance was dissolved in chloroform. Then it was subjected to Thin Layer Chromatography (TLC). The separated residue was then analyzed under UV light. Then the residue was analyzed under normal light.

- After the unknown substance was dissolved in chloroform and subjected to Thin Layer Chromatography (TLC), the separated residue was examined under two kinds of light: UV light and normal light.

In the first passage, each step in time is represented by a sentence. The events in the sentence are linked together by *then . . . [and] then . . . [and] then*. The process is narratively strung out through four sentences. This pattern echoes that of a laboratory procedure, which would be written giving step-by-step directions.

But in reporting *what was done* (rather than *how to do it*) as in a Materials and Methods section, the writer need not represent the chronology in a step-by-step pattern. It is possible for the writer to respect the chronology of events, but, at the same time, to condense the writing to edit out the step-by-step sequence, as is the case with the second passage. One step in the process was grammatically subordinated in a dependent clause beginning with *After*. Two steps were conjoined by deleting the common (and redundant) elements. The order of elements (UV light and natural light) reflects the order of the steps.

Diction and Structure

Compare the next two sets of sentences. Identify the audience appropriate for each set.

(1) A fish is an animal with a back bone.
(2) It is "cold-blooded."
(3) Cold-blooded means that its blood is the same temperature as it surroundings.
(4) Fish have gills. Gills are special breathing organs that let the fish take oxygen from the water.

(5) A fish is a cold-blooded vertebrate that lives in water and breathes through gills.

The first set (sentences 1–4) conveys a certain amount of information in several sentences. The second example (sentence 5) conveys the same

information but that information is packaged differently; it is made more compact. That information is compacted in two ways:

1. One word does the work of several. *Vertebrate* substitutes for *animal with a back bone.*
2. Knowledge assumed to be known can be deleted. An audience who knows what a vertebrate is would also know what gills are. Sentences (1–4) assumes no such knowledge. Both *vertebrate, cold-blooded,* and *gills* are explained. Sentence (5) does not include those explanations because it is assumed that a person who understood *vertebrate* would also know the meaning of *cold-blooded* and *gills.*
3. Sentences are condensed to omit redundant elements.

Example: Two Audience Levels

The following two passages treat the same material, but the first selection is directed to an expert audience and the second to a lay audience. In your own words, analyze the difference between them.

Toxic Elements in Pulp Mill Effluent
Audience: Expert (environmental engineering)

In recent years, more than thirty organic compounds have been identified as contributors to the toxicity of pulp mill process effluents to fish. Chemical analysis procedures using gas chromatography (gc) have been developed for toxicants in the various waste streams, and the toxicity of effluents to fish has been estimated by summing toxic unit equivalents of the measured toxicant concentrations. For many of the streams studied, good correlation has been obtained between the toxicity calculated from results of gc analysis and values obtained from acute lethal bioassays using rainbow trout.

Audience: General

A pulp mill uses wood to manufacture paper and its by-products. The useless materials in the papermaking process are carried away by a large flow of water, where it eventually reaches a lake, river, or ocean. The waste flow is referred to as *effluent.*

In recent years, more than 30 organic compounds which are harmful to fish have been found in papermill effluents. These toxic (poisonous) compounds have been identified with the aid of a gas chromatograph. A gas chromatograph is an instrument that will separate, identify, and record several compounds combined in a liquid. This gives researchers the ability to tell how toxic the stream really is.

Once the chemicals in the effluent are known, they can be tested on fish

to determine their effect. This sort of test is known as a *bioassay*. It has been found experimentally that bioassays using those compounds found in papermill effluents (using gas chromatography) were deadly to rainbow trout.

What Is Important?

In a comparison between the two passages, the first question to be asked is, "What does the expert-level passage take for granted?" It assumes the audience possesses a particular vocabulary. *Vocabulary* is not to be taken lightly: Word use in scientific writing relies on strictly demarcated meanings. Further, word use implies familiarity with the *concepts* signified by the words. (Before reading further, try to identify the words the expert-level passage takes for granted.)

The general audience selection defines those terms: It explains the process of papermaking, defines *effluent, toxic, gas chromatography*, and *bioassay*. Because the weight of this passage is given to a definition of terms, the fine points of statistical method implied by the results statement, *good correlation*, are lost.

In both cases, the writer had to determine which concepts were the most important and which concepts could be subordinated. The expert-level version defines a problem (toxicity of pulp mill effluents), describes a method used to measure/model the severity of the problem, and provides the correlation between the model and the problem.

In contrast, the lay passage starts with an explanation of the pulp mill manufacture of paper—the beginning of the paper-making process, and the passage is elaborated through an explanation of the terms. But this passage could equally have started with a description of gas chromatography and how it measures toxicity. It could have started with an explanation of statistical methods used to determine good correlation. It could have started with a history and description of bioassays. A number of starting points existed; the writer had to make a decision about the best starting point in order to accommodate the relevant points. An incorporation of *all* these points would have resulted in an unwieldy piece of writing. The writer made a decision about key ideas to organize and cut accordingly. If every point in the expert passage were to be geared to the lay audience, a number of introductory regressions would have to be made.

In both cases, the packaging of the information was geared to the audience level.

Extension of the Example

At a surface level, this exercise shows how expert writing translates to lay writing; you've been given two passages with a specified relationship

between them and been asked to analyze the relationship. Now, let us take what you have just learned and abstract from it. In the first passage, you were given a very dense piece of writing with much information contained in it; that body of information was repackaged into a writing geared to a different audience. This example shows how writing can be transformed and ideas repackaged.

This exercise is paradigmatic of the broader writing process. In the beginning stages of writing, it is typical and desirable to overwrite, i.e., to collect a body of information which must be reshaped by specific requirements. The body of notes taken from references and your own thoughts constitutes a corpus of information greater and more wordy than the final paper. In making the transition from notes to paper, you are in the position of determining the starting point for your writing, determining the relevant details and information, the concepts which require further elucidation, or the concepts which can be sufficiently rendered in one or two words. What governs this selection is the identified audience and your purpose in writing.

The *treatment* of the subject governs the subject matter; the treatment of the contents is dictated by the writer's purpose and the audience. Shifting levels of writing or revising require more than the mere manipulation of words and structures, each calls for an *identification* of the important points including the patterns and linkages the author wishes to develop, a *selection* of those points based on their relevance, a *reconception* of the meaning of words and ideas, and a *recasting* of the ideas in the appropriate manner.

Significance of Subordination

Subordination is a word that invokes relationship within a hierarchy and denotes the auxiliary, secondary, or less prominent element. Subordination gives information about the structure of priorities. In writing it may refer to the hierarchy of ideas within a paragraph, the hierarchy of ideas within a whole paper, the hierarchy of ideas within a sentence. In its restricted use in grammar, it refers to sentence structure.

Subordination at the structural level governs the weight given to the point in question; changes in subordination at the organizational level produce changes in meaning because the priority of information has been modified.

At the sentence level, the structure of a sentence likewise defines priorities. Main clauses indicate higher priority than subordinate clauses. Subject/verb/object positions carry the weight of the meaning; prepositional phrases, adjectives, adverbs are grammatical places that signify the information is subsidiary to the main grammatical elements. Put the most important information in the most important sentence position.

In the examples given above, the determination of key ideas relevant

to the audience governed different points of emphasis. The expert audience, with a greater conceptual background than the lay audience, could accommodate more information, and as such the subordination in that passage was *of a different order* than the subordination in the lay passage.

Keep in mind that altering the density of writing requires more than manipulating diction or sentence structure. Ultimately, there is a *qualitative* level based on the purpose of your writing. Rather than focus on the manipulation of words and structure as an end in themselves, keep foremost in mind that these are means to an end; a person exists at the other end of your communication.

To Make Your Writing Less Dense
(for a less specialized audience)

1. Prior to writing, identify the purpose for your writing and its targeted audience. Define the information gap. Determine your priorities: what to include, what to exclude.
2. Use more (relatively) descriptive words—*to cut into two equal parts* or *that orange fish called a Garibaldi*—rather than specialized words: *Hypsypops rubicundus*. (Remember that the difference between descriptive words and specialized words is a relative one; no absolute scale governs this distinction.)
3. Break down difficult concepts and explain them in more simple terms, as they are relevant.
4. Alter your sentence structure, using more simple and more complex sentences than compound/complex ones.
5. Provide the necessary transitions to make the sentences hang together.

To Make Your Writing More Dense
(for an audience equal to your level of expertise)

1. Prior to writing, identify the purpose for your writing and its targeted audience. Define the information gap. Determine your priorities: what to include, what to exclude.
2. Per your priorities, compress information in a more economical form. Make one word carry more information than several words. Words like *nimbostratus, Hypsypops, serrate,* or *bisect* contain a great deal of information in a short form.
3. Condense the amount of information contained in sentences by
   a. deleting irrelevant words
   b. deleting or substituting words which carry no informational content: "It is everywhere apparent"

c. combining sentences using subordination or modification as you delete redundant words.

See the Appendix for further explanation of these grammatical processes if you wish further clarification.

Exercises

1. Audience Identification

Read the following passage on the Ebola virus.[2] Because the writers assumed that the intended audience would not understand concatemerization, the definition, *coiling*, is provided in parenthesis. Using this definition as a standard to define a level of difficulty, identify other words of similar complexity that might likewise merit definition. Discuss.

> The Ebola virus can have different lengths due to concatemerization (coiling). However, its average length is 920 nm and its diameter is 80 nm. The Ebola virus is basically composed of long filaments essentially of bacilli form and nucleocapsid surrounded by a lipoprotein which is most of the time Hydrophilic. Other chemicals also make up the biochemical structure of the Ebola virus: the nucleotides that make the RNA structure of the virus, phosphates that help the virus go through membranes, and glycoproteins.

2. Changing Audience Levels

a. Read the following passage and identify the targeted audience. Explain your reasoning.

b. Choose another category of audience and rewrite this description to accommodate the needs of that reader. Explain your reasoning.

Fuel Knock and Engine Rating

Knocking is a little understood phenomenon that dissipates considerable energy. It increases with pressure, and since an engine will develop more power and use less fuel with an increase in the compression ratio to the maximum point, development of an efficient high-compression engines is dependent upon the knocking tendencies of available gasoline. The use of *n*-heptane and isooctane (2, 2, 4-trimethylpentane) as standards for rating fuels was introduced in 1927. *n*-Heptane, which is particularly prone to knocking, is given an arbitrary octane number of 0, and isooctane, which detonates at only a high compression, by definition has a value of 100. The octane number of a given fuel is defined as the percent of isooctane which is added to *n*-heptane to produce the same knocking characteristics as the fuel under examination in a standard single-cylinder engine operated under specific conditions. In the alkane series the octane number decreases as the carbon chain is lengthened, and increases with branches in the chain. Alkanes have a higher rating than corresponding alkanes. Cyclic paraffins are less prone to knock than the corresponding straight-chain compounds, and aliphatic side chains lower the rating. Aromatic hydrocarbons have exceptionally high octane numbers.[3]

3. Liver flukes: Explanation

Suppose you are traveling through what used to called the country of Burma, and you happen upon a farming village of rice farmers. The townspeople are

successful farmers, bringing in a good crop. They have a varied diet, including chicken and pigs raised around the village. Nevertheless, the majority of people suffer from a disease causing constant diarrhea and nausea. A number of children have died from diarrhea. Because much of the work in the flooded rice paddies is done bare-legged and bare foot, you correctly suspect the people are suffering from blood flukes.*

Explain to the people what is happening to them, how they are getting the disease, and what they might do to combat the disease. Remember that these people are intelligent but have no more education in science that a second grade child in this country.

4. Analysis of Audience

Chapter 3 opened with NIH grant specifications for an equipment-purchase proposal. Was there any implication about accountability to the public for the use of federal funds in the way the specifications were written?

How would the summary be different if this proposal were written for an expert audience and the award made solely on the merit of the project?

That selection is reproduced below.

If the project is supported, the Summary will be published by the Foundation to inform the general public about its programs. Accordingly, it should be written so that a scientifically literate lay person could understand the use of Federal funds in support of this project.—NSF, Public Document, Program Guidelines, 1992 (my emphasis).

5. Audience Analysis of Journals

a. Go to your library and identify five technical journals in your field. Select three of the five and survey back issues of all three journals for at least one year. What kind of papers or articles does each journal accept or solicit? What do the journals have in common by way of subject matter and writing style? Write a short summary of the content of each journal over a year; the summary should consist of supported generalizations derived from your survey.

b. On the basis of your analysis of the content, infer the audience for the journal and write a description of the audience. (Do not identify the audience simply as "expert" or "general.")

c. The Proceedings of the National Academy of Science, USA, writes in "Information to Contributors" (1993) that "Papers should be written to be understandable to scientists in many disciplines." What would be the common points between papers written for any scientist and papers written for a select scientific audience? You may use the project described in a. (above) as a basis for this answer.

6. Shifting Audience Levels

Find an article in a professional or technical journal intended for an expert

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* The blood fluke (*trematoda*) spends part of its life cycle in snails, the intermediate host where larvae develop before infecting the final host, a human being. The larvae enter the human body by penetrating skin and blood vessels. The flukes mature in the blood vessels of the intestine, after which the eggs pass out of the human host through the feces.

audience. Take the introduction, or a part of it, and rewrite it for an audience with less expertise. Comment on the change in style or levels. Note: This assignment requires more than the manipulation of words and sentence structure. Reshift the conceptual foundation if necessary.

References

Fieser, Louis F. & Fieser, Mary. *Textbook of Organic Chemistry*. D. C. Heath Co., 1950.
Lannon, J. *Technical Writing*. Little, Brown, and Company, 1979.

Notes

1. Instructions for PHS 398, OMB No. 0925-0001, 6/30/94, p. 30.
2. "The Ebola Virus," Chan Mainor, Tatiana Segura, Danny Cardenas. Produced for Community College Summer Institute, CAMP, 1995.
3. Fieser, Louis F., and Mary Fieser, *Textbook of Organic Chemistry* (Boston: D.C. Heath Co., 1950), p. 93.