Comparison/Contrast

Comparison refers to likeness; contrast refers to differences. Comparison/contrast refers to a method of describing the differences and similarities between things, events, phenomena.

There is no contrast without comparison.
There is no comparison without contrast.

While comparison and contrast are theoretically implicated in each other, it is not unusual to find that an essay or paper will be slanted more toward one aspect than the other. A paper which proposes to show a correlation between two items will emphasize the similarity which exists despite differences. A paper which attempts to demonstrate the novelty or variation will present the differences which exist despite the similarities. The proportion of comparison to contrast is determined by your purpose in writing. It directs the organization of your points by imposing a hierarchy of priorities.

To Write a Comparison/Contrast

To write a comparison/contrast, you must preserve an orderly arrangement and you must direct the course of your comparison with a purpose.

1. Parallelism

What you say for A, you must say for B. Your comparison/contrast will be unbalanced if you discuss three points for one term and one point for another.

2. Order

Use the same sequence of points for discussing every topic.
Comparison/Contrast

Note: Your thesis or statement of purpose should identify both the points you will present and the order of their presentation.

3. Audience and Purpose

Be aware of your purpose and your audience. Do not discuss details randomly. Choose a pattern of organization—Divided or Alternating (see below)—that best supports your point.

Purpose: Comparison/contrast is a means to an end not an end in itself. To illustrate the importance of having a purpose, we will consider the obverse by imagining a circumstance for comparison/contrast which is purposeless. For the sake of argument, we will compare/contrast apples and oranges:

- Apples are round; oranges are round.
- Apples are fruit; oranges are fruit.
- But apples are red, whereas oranges are orange.
- Both have seeds.

This is a meaningless exercise because the c/c neither leads to nor supports any point that is greater than the obvious one that apples differ from oranges. Because c/c is a strategy rather than a purpose in itself, you should use comparison/contrast as a means to an end. You should, therefore, avoid a statement of purpose or a thesis which states Even though they are alike, they are different or Even though they are different, they are alike. Your statement of the issue should address the significance of the likeness or difference.

Two Patterns of Comparison/Contrast: Divided and Alternating

Below you will find a passage that compares and contrasts bone and shell. This passage, both in its adapted form and in the original, argues for a linkage between vertebrate and invertebrate lines of evolution. Before you read the passage in its entirety, we will outline the writing task and demonstrate the two ways that this comparison/contrast could be articulated through the Alternating and the Divided patterns of organization.

While both bone and shell are types of hard tissue, bone forms the internal system of support for vertebrates whereas shell forms an external support system for invertebrates. Yet despite these differences, bone and shell are generated in similar ways: bone, like shell, is produced by the mineralization of a matrix laid down by specialized cells.

Bone and shell are the two terms to be contrasted and compared. What parallel points may be discussed for each of them? Because both bone and shell may be discussed in terms of their similar substance, their chemical
A discussion organized in the Divided Pattern would divide the body of the discussion into two sections, one on bone (substance, process of formation, function) and one on shell (substance, process of formation, function), in addition to the introductory and concluding paragraphs. In other words, the discussion is divided to treat one topic fully before it goes on to discuss the second fully, in the same order.

The Alternating Pattern would generate three sections: on substance (bone and shell), on the process of formation (bone and shell), and on the function (bone and shell).

Divided Pattern

I. Introduction

II. Bone
   A. Substance
   B. Process of Formation
   C. Function

III. Shell
   A. Substance
   B. Process of Formation
   C. Function

IV. Conclusion

Alternating Pattern

I. Introduction

II. Substance
   A. Bone
   B. Shell

III. Process of Formation
   A. Bone
   B. Shell

IV. Function
   A. Bone
   B. Shell

V. Conclusion

Pattern A, the Divided Pattern, is so-called because it divides the discussion into two parts. It is also called the block form because the two separate sections make up two large blocks of writing. All the criteria for each block—substance, process of formation—are grouped together, not juxtaposed. Because the divided pattern treats one topic at a time, it softens the contrast between the elements under discussion.

Possible Limitation: One limitation of the divided pattern is that it sometimes directs the writer into writing two separate illustration paragraphs—or two illustration papers. This problem is the most frequent error in using the divided pattern.

What's wrong with writing two separate illustration essays?

Writing two illustration essays undercuts the purpose of writing a
comparison/contrast because the connection between the compared elements becomes lost. Writing two illustration essays also places the writer in the position of doing more work for less content.

To prevent yourself from writing two separate illustration essays, discuss the two elements—bone and shell—with reference to each other. Even though you do not directly juxtapose discussions of the two elements in one paragraph, maintain reciprocal reference between the two items by the following: (1) Refer to details of paragraph 2 when you write paragraph 3, and use words which show comparison/contrast relationships: "like," "unlike," "similarly," "in contrast." (2) Juxtapose the two items in your conclusion; you would be using the alternating style here.

The Alternating Pattern juxtaposes the topics. When you place two topics or points side by side, you make it easier for the reader to assess them with respect to each other. The Alternating Pattern enhances the contrast between the compared elements. But don't take for granted that placing two elements side by side will automatically explain your point. Help the reader to understand your point by explaining what you mean to prove through the comparison/contrast. The key rule here is Explain the obvious. Do not take for granted that the comparison is self-evident.

Divided/Block Pattern: Examples

The following selection, organized in the block form, compares and contrasts bone and shell. The first paragraph discusses bone; the second paragraph discusses shell by its likeness to bone.

(1) Bone is a distinctive hard tissue peculiar to vertebrates. (2) It is produced by the mineralization of a matrix elaborated by specialized cells. (3) The cells active in the formation of hard tissue are drawn from the ectodermal and mesodermal layers of the embryo. (4) These matrices secrete fibers of polysaccharide or polymerized protein. (5) Bone is unique in its microscopic structure and in the particular characteristics of its cell, matrix, and mineral content.

(6) Though laid down by invertebrates, shell is likewise a form of hard tissue. (7) Mollusk shells and the hard parts of lowly metazoa are produced by mineralization of a matrix produced by mesodermal or ectodermal cells. (8) The matrices they secrete contain fibers of polysaccharide or polymerized protein. (9) For instance, brachiopods, or "lamp shells," have been laying down calcium as hydroxyapatite, the phosphate rich salt found in bone, since early Ordovician times

Alternating Pattern: Example

In the following selection, the comparison/contrast between bone and shell is given in the alternating pattern.
(1) Bone has much in common with the hard tissues produced by other living things. (2) Bone is like arthropod exoskeletons, mollusk shells, and the hard parts of even more lowly metazoa because they are produced by the mineralization of a matrix or ground substance elaborated by specialized cells. (3) Both vertebrate and invertebrate cells active in the formation of hard tissues are drawn from both the ectodermal and the mesodermal layers of the embryo. (4) Their matrices are alike in that they almost always contain fibers of polysaccharide or polymerized protein. (5) The minerals deposited in the ground substance of the hard tissues of most animals generally consist of calcium carbonate or phosphate in an amorphous form or as crystals of various sizes. (6) Even though bone is unique in its microscopic structure and in the particular combination of characteristics of its cell, matrix, and mineral content, its constituents exist in other animals. (7) For instance, certain brachiopods, or "lamp shells," lay down calcium as hydroxyapatite, and this salt is found in bone. (8) Many sponges have produced collagenous fibers like those in vertebrate osteoblast matrices. (9) Therefore, bone resembles shell in the process of its formation.

Using Comparison/Contrast to an Effective Purpose

In the following passage, Barbara Stahl responds to a common view about evolution which argues the following: Some taxonomists believed that emergence of bone signaled an innovation in evolution. The consequences of this innovation are significant because bone offered an evolutionary advantage which led to the development of vertebrates when bony fishes superseded cartilaginous fishes. In other words, some taxonomists believe that bone, an "innovation," led to the evolution of a "new" kind of animal, vertebrates.

But Barbara J. Stahl takes a different view from this traditional understanding of the place of bone in vertebrate evolution. In arguing that, while the substance of bone was an innovation that led to evolution of vertebrates, the process by which bone is made is not new. In fact, she maintains, vertebrates make bone through a process akin to the way that mollusks make shells or crabs make exoskeletons. This difference implies that a stronger connection exists between invertebrates and vertebrates than had hitherto been thought.

Stahl's central point is the assertion of a kinship between vertebrate and invertebrate evolutionary lines; that assertion is carried through a c/c between bone and shell. In the following passage, look for the way that the writer keeps in focus the likeness between bone and shell.

(1) Although bone is a distinctive tissue peculiar to vertebrates and has not yet been traced to a particular precursor tissue at the invertebrate level, research has shown that it has much in common with hard tissues produced by living things other than vertebrates.
(2) Bone, like arthropod exoskeletons, mollusk shells, and the hard parts of even more lowly metazoa is produced by the mineralization of a matrix or ground substance elaborated by specialized cells.

(3) Among vertebrates and invertebrates, cells active in the formation of hard tissues are drawn from both the ectodermal and the mesodermal layers of the embryo. (4) The matrices they secrete are alike in that they almost always contain fibers of polysaccharide or polymerized protein. (5) The minerals deposited in the ground substance of the hard tissues of most animals consist generally of calcium carbonate or phosphate in an amorphous form or as crystals of various sizes. (6) Bone is unique in its microscopic structure and in the particular combination of characteristics of its cell, matrix, and mineral content, but the constituents of the vertebrate tissue existed in other animals before backboned forms appeared. (7) For instance, certain brachiopods, or “lamp shells,” have been laying down calcium as hydroxyapatite, the phosphate-rich salt found in bone, since early Ordovician times, and many sponges of great antiquity have produced collagenous fibers like those which appear in the matrix formed by vertebrate osteoblasts. (8) Bone, it seems, did not originate in early vertebrates as a tissue completely new in every sense but simply represented a new combination of materials assembled in an already old and well-established way.2

Further Discussion of the Example

The Stahl excerpt may be described, from a writing a point of view, in the following way:

<table>
<thead>
<tr>
<th>Audience</th>
<th>An educated but unspecialized lay audience</th>
</tr>
</thead>
<tbody>
<tr>
<td>General Organizational Mode</td>
<td>(1) a comparison/contrast between bone and hard tissue</td>
</tr>
<tr>
<td>Refinement</td>
<td>(2) focusing on the similarities</td>
</tr>
<tr>
<td>Purpose</td>
<td>(3) to show a stronger connection between vertebrate and invertebrate lines</td>
</tr>
<tr>
<td>How Contrast fits in</td>
<td>(4) the general view already assumes that vertebrates and invertebrates are more different than alike.</td>
</tr>
</tbody>
</table>

Stahl’s paragraph argues for similarities because the differences are already taken for granted. The common view holds that the bone in your body is different from the pearly substance you see lining a sea shell. Bone
is what humans or dogs and cats have; shells are what snails have. So Stahl need not elaborate the contrast because the general view already holds that vertebrates and invertebrates are more different than alike. The contrast is built into the context, and it is subordinated to her argument which is based on similarities.

If you look again, you will see that all the comparisons are directed to dealing with that difference. The contrasts are subordinated grammatically, organizationally, and conceptually to resemblances.

Exercises

Analysis of the Comparison/Contrast Form

1. Audience Analysis
   Explain how the targeted audience governs the writer’s organization. How would Stahl’s selection be different if the audience were a general audience?

2. The Archaeopteryx
   The Archaeopteryx was a prehistoric bird that displayed both reptilian and bird traits. In order to classify the Archaeopteryx, the author compares/contrasts the pattern of bone growth in birds and reptiles with that of the Archaeopteryx. Analyze the use of comparison/contrast in this passage.

   Part of the problem with classifying Archaeopteryx stems from ignorance of whether their growth pattern, as recorded in their bones, was more reptilian than birdlike. Reptiles grow throughout their lives . . .; conversely, birds quickly attain a characteristic adult size. In reptiles, the center of growth are the shafts in their hollow bones, whereas growth in young birds take place at the bones thick cartilaginous ends, called epiphyses. During the final stage of a bird’s growth, its epiphyses turn from cartilage into bone, leaving a scar that disappears when the bird matures.

   None of the Archaeopteryx specimens shows any such scars on its hollow bones. If the growth of these animals were birdlike, then the various specimens might indeed represent different species. On the other hand, if they had reptilian growth patterns—an assumption supported by the predominantly reptilian traits of the skeletons—then the specimens could clearly be members of the same species, different in size and age. Recent studies . . . support the view that the six specimens of Archaeopteryx represent different stages of growth of a single species. 3

3. Models of Disease
   a. Turn to the Reading Selections, and after reading Hippocrates, “Epidemics,” and Thucydides, “Plague of Athens,” compare and contrast the models of disease which underlay their views.
   b. Introduce Fracastoro’s “Germ Theory of Disease” into the discussion to position his work with respect to the other two writers.

4. AIDS and Syphilis
   In each of the following, analyze the writer’s use of the comparison/contrast
mode in discussing AIDS and syphilis. Answer the questions that follow the readings.

Example 1

AIDS, obviously, is a disease considerably different from syphilis. Caused by a human retrovirus, human immunodeficiency virus (HIV), it attacks the immune system, leaving affected individuals vulnerable to a host of other infectious agents. In addition to being transmitted sexually, HIV can be transmitted through blood transfusions as well, thus making intravenous drug users who share needles a principal risk group for infection. Unlike the statistics for syphilis, in AIDS, principal morbidity and mortality occur among young people; the most serious consequences of syphilis usually come in the late stage of the disease, among older individuals. Finally and most significantly, at this moment there are no curative treatments for AIDS and no means of rendering infected individuals noninfectious. Despite these important differences, however, the history of syphilis presents a series of striking parallels to the many problems raised by AIDS.

AIDS, like syphilis in the past, engenders powerful social conflicts about the meaning, nature, and risks of sexuality; the nature and role of the state in protecting and promoting public health; the significance of individual rights in regard to communal good; and the nature of the doctor-patient relationship and social responsibility. The analogs that AIDS poses to this brief history of syphilis are striking: the pervasive fear of contagion, concerns about casual transmission, the stigmatization of victims, and the conflicts between public health and civil liberties. The response to AIDS will be a function of our own time, our own culture, and our own science. The importance of the history of syphilis is that it reminds us of that range of forces that influence disease, health, and social policy.

Example 2

One epidemic that is hauntingly similar to AIDS is syphilis. The parallels are striking. At the time of the syphilis epidemic, scientific investigation of this insidious disease was at the leading edge of medicine and microbiology, as is the current situation with AIDS. The issues raised included public health policy and civil liberties, as in the AIDS epidemic. And finally, because it is a sexually transmitted disease, syphilis patients were highly stigmatized.

Why did it take so long to control this epidemic? Like AIDS, syphilis can be a long-term and variable disease, with phases in which no symptoms are apparent. Unfortunately, untreated syphilis eventually leads to death. More important—at time syphilis was perceived as a social problem—hence the reference to it as a social disease. Many blamed the disease on a breakdown of social values, and promoted the view that the sexual ethic in which all sex was marital and monogamous would make it impossible to acquire the disease. The initial public health policies to control this epidemic were based on these views. Abstinence from marital sexual conduct was encouraged and prostitution was repressed since prostitutes were blamed as the major source of infection of otherwise monogamous males. Immigrants were also blamed for bringing the disease from abroad, even though epidemiological data did not support this view. As many as 20,000 prostitutes were quarantined or jailed during World War I. In addition, the Army discouraged the availability of condoms for fear that they might encourage soldiers to engage in extramarital sex. There were also campaigns to stigmatize soldiers who became infected with syphilis by giving them dishonorable discharges. These policies were not based on epidemiological evidence, and they failed to control the epidemic, which actually grew during this period.

It was not until the 1930s that the surgeon general of the United States, Thomas Parren proposed major changes in the public health approaches to control the
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syphilis epidemic. These policy changes were ultimately successful but required substantial funding from Congress.

(1) Do the passages emphasize the likeness or the difference between AIDS and syphilis?
(2) Are both passages directed to the same kind of audience? To different audiences?
(3) Explain the different emphasis each passage gives to the topic.

Using Comparison/Contrast

Essay Examination

Comparison/contrast can be used most effectively by combining it with other modes of writing like definition, classification, and illustration. For instance, if you were asked to answer an essay question like "Was Einstein a genius?" your approach would be to give a definition of genius and then c/c Einstein with the definition. (See the section on Definition for instructions on how to write a sentence definition.) You could use this pattern to answer any of the following questions.

(1) Is Plutonium a heavy metal?
   Define heavy metal; then c/c the attributes of Plutonium with those of heavy metals.
(2) Was Hamlet a tragic hero?
   Define tragic hero; c/c Hamlet with the traits of a tragic hero.
(3) Assess the success of the Marshall Plan.
   Define the Marshall plan; c/c the Plan’s stated aims with its actual results.
(4) Is light a particle or a wave?
   C/c the behavior of light wave/particle behavior.
(5) Is a virus a living creature?
   Define living/non-living; c/c the attributes of a virus with those of living/ non-living creatures.

These questions do not require an absolute resolution, nor must you suppress the points which contradict your point of view. Sometimes your teachers want you to discuss the points of conflicting evidence in order for you to demonstrate that you know the complexities of the issue. You can use c/c either to come up with a decision or to open up an explanation as to why an answer is difficult to come by. Sometimes your answer to a question like (4) or (5) could be "both" or "neither," but to arrive at that conclusion, you must demonstrate your logical process.
Statement of Purpose

In a statement of purpose, such as an application to graduate school, you explain your intentions. A statement of purpose is usually given in a particular communication context: you write one because you want the person who reads it to act upon your writing in a certain way. You may be writing a statement of purpose because you want to be accepted to graduate school, to medical school, or to a particular academic program. You may also be requesting funds, equipment, faculty assistance or direction, computer or library support. Your goal is to have your request granted. (Note: The writing strategy which follows may also be adapted to a job application.)

A request for a statement of purpose may contain two different questions:

(1) Why do you want to do what you propose in general? In other words, why do you want to go to medical school, to graduate school, etc.? If you perceive the question to be one that elicits an explanation of your general motivation, one appropriate response may be personal narrative: Ever since my mother’s life was saved by open-heart surgery, I wanted to go to medical school.

(2) The statement of purpose may be construed in another way. Why do you want to do what you propose HERE? Why are you asking us?

If you are applying to a school or a program, you need to demonstrate that you have needs or desires which that program can satisfy. To strengthen your argument, you might add that that program can satisfy your goals in a way no other place can. Perhaps a faculty person in that program or field does research in your preferred field. Mention your interest in that person’s work. Suppose that Stanford had the only super-collider which would enable you to test your theories about the behavior of certain particles: bring up that point.

To organize your writing strategy, (1) define clearly to yourself what you want; (2) understand yourself enough to know why you want this; (3) research the institution for information about its program, its resources, and its faculty. Such research enables you to explain how you suit the school and how the school suits you.

Understanding your own motivation is important because you need to show that you possess mature judgment. It would probably show immature judgment if you explained that you were interested in a school because it had a cute campus, was close to the beach, offered a rich stipend, or ensured that all of its graduates got high-paying jobs. Keep in mind that you want them to want you. After all, comparing and matching connote reciprocity.

What would make any school, program, job want you? You need to demonstrate (1) interest, (2) ability, and (3) logical necessity.
Interest

You can show professional interest or personal interest or both. By researching the school, you show serious professional interest. As it is appropriate, explain how a particular event or the influence of a particular person moved you to choose this career. Or, perhaps, this field was something that you were always interested in, and indeed, everything you have done in your life up to this day reflects that interest. There are many ways to show this: past interest, current interest, particular influences. Above all be specific.

Ability

To a reader or a reviewer, past performance implies future performance. To show ability, explain what relevant work you have already done. Mention courses you have taken. State your strengths as they have been demonstrated by various tests. Explain particular accomplishments achieved by way of personal projects.

Logical Necessity

To argue from logical necessity, present the argument that this school best serves your interest. Your writing should convey that your goals could be best served by no other alternative. If Stanford had the only super-collider that would permit you to conduct your research, indicate that your work imposes access to this instrument as a necessity. Note that logical necessity differs from emotional or financial necessity. Keep in mind that no institution owes you a place simply because you need it.

By using an organized format to show how you match the school, job, program of interest, you show that (1) you are an organized person who has focus and initiative such that you have done your homework on the institution, and (2) you know how to organize your writing effectively. Because public institutions most frequently make first contact with you through your writing, who you are and how/what you write will be intertwined. A person having to make a decision on your statement of purpose should come to the conclusion that you, as a person, are as organized, clear, and focused as your writing, and therefore, both (1) and (2) add up to (3): You create a credible image of yourself through writing.

Proposals/Recommendations: C/C Real/Ideal

Comparison/contrast is a most effective tool when you use it to make recommendations. A recommendation can be framed as the resolution between what should happen (ideal) and what did happen (real). What should happen can be predicted on the basis of a theoretical or mathematical model; this happening can be rephrased as a hypothesis or as a predicted
or usual result arrived at under specified circumstances. What did happen can be understood to be experimental results, data, the actual outcome of an experiment.

To make a recommendation or to propose a course of action, explain how a certain course of action brings the ideal case in line with the real. This arrangement can be geared to proposals by explaining that, since the experimental outcome differed from the theoretical predictions, further research is needed to supply the explanation which accounts for the discrepancy.

The Scientific Paper

Most specialized technical scenarios can be found in science writing. Often a formal report about a scientific matter will compare and contrast

- real and ideal
- predicted results to actual results
- theory with experimental evidence
- your findings with other people's findings
- your methods with other people's methods
- your interests, ability and need to what a job, school, program offers

Discussion Section: Why did mine turn green?

When you conduct experiments in a lab with other people around you, you know how common it is for you to look and see if other persons in the lab got the same results as you did. If you are in a lab and you notice that the liquid in your flask turned green while everyone else's turned blue, you have a sign that you did something differently. The discussion section of you write-up offers the opportunity to explain the discrepancy. Maybe you discovered a new species of bacteria. Maybe your reagent was contaminated. Whatever the reason, explain it. You don't have to know all the answers.

There are several levels from which to draw for the explanation as to why yours turned green.

1. Procedural Level

You decide on the way to conduct your experiment, or you have conducted it in a certain way. You might find in the literature search or by talking with people in your lab that someone conducted this experiment in the same way or that someone conducted a similar study in a different way. Their experiment was the same or similar to yours but it differed only in terms of
• special equipment or conditions
• qualitatively different new technology
• different but related substances
• other animal or plant species

Their study could be different from yours in more than one of these aspects, but keep in mind that if their work differed from your work in too many of these aspects, you would have a completely different experiment.

2. Theoretical Level

How does your work fit into the field in term of its theoretical model? Does an alternative explanation account for different results under similar conditions? Is there a better explanation that could explain similar results under similar conditions?

Presumably, you started with a theory or a hypothesis about what will happen or what the results your study will eventually show. Did other people in your field have the same idea, use the same model? Did other people in related fields have the same idea? Is there a theoretical explanation for why you arrived at one set of results and someone else arrived at a different set of results?

In other words, compare and contrast different theories to account for a discrepancy in result.

3. Conceptual Level

Between the theoretical explanation you use to frame your experiment and the actual practice of that experiment is an intermediate level which might be called the conceptual level. The conceptual level does not necessarily have recourse to a theoretical model, although a theoretical model could be used to help explain things. We use the conceptual level as a mode of thinking to direct our investigation. For instance, when you take a subject and compare what you know about it to what you do not know, you are taking a conceptual approach. By comparing the known to the unknown, certain conclusions can be derived; one conclusion might be that further study is needed, or that you need to repeat your experiment to figure out why yours turned green.

Wording: How do you say it?

Certain expressions are useful for discussing similarities and differences in science writing. The following offers a few of the most common expressions. These are not the only ways to say things; they are just some of the ways.
The strongest statement of concord (similarity, agreement) or of discrepancy (difference, disagreement) comes through the use of verbs.

predicted
experimental
mathematical
empirical results confirmed our/their predictions
matched supported hypothesis
verified agreed with theory
show good agreement with
concur with
coincide with

In addition to the "not" forms of the agreement verbs (X does not support Y), you can also use single verbs to show discrepancy: refute, disagree with, contradict, vary from, diverge from. Like, unlike, similarly, on the other hand, in a contrary manner, conversely, resembling also signal the relationship.

References

Notes
2. Ibid.