

Technical Writing and Speaking in English

Class 2: Ambiguity and Balance precision and clarity.¹

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¹This course is based on the book The Craft of Scientific Writing, Michael Alley.

Balance precision and clarity in illustrations

The precision of the figures should follow the precision of its caption, and the text.

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What kind of figure do you expect that is attached to the following excerpt?

The thermal storage system stores heat in a huge, steel-walled insulated tank. Steam from the solar receiver passes through heat exchangers to heat a thermal oil, which is pumped into the tank. The tank then provides energy to run a steam generator that produces electricity. Figure 2-1 shows a schematic of this system.

Balance precision and clarity in illustrations

The precision of the figures should follow the precision of its caption, and the text.

What kind of figure do you expect that is attached to the following excerpt?

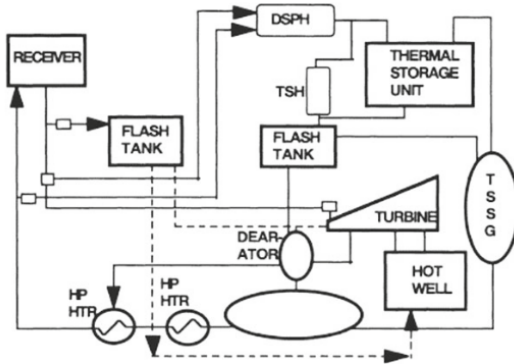


Figure 2-1. Thermal storage system.

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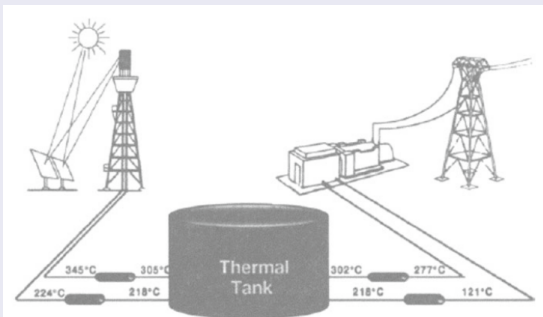


Figure 2-2. Thermal storage system. This storage system takes excess energy from the solar receiver and stores it for later use when the sun is no longer providing solar radiation to the mirrors.

Captioning an illustration

The caption should identify what the illustration is. Then, we should:

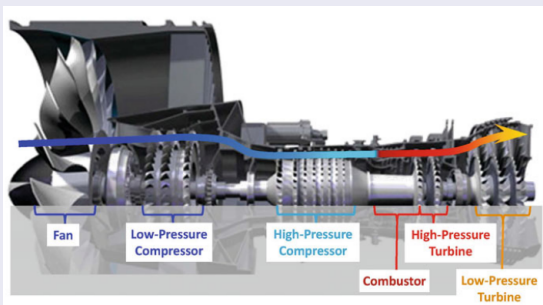
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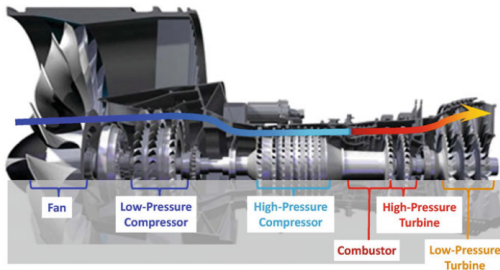


Figure 2-4. Cutaway drawing of a jet engine produced by Pratt & Whitney. The colored line shows the flow of fluid through the main parts of the engine: compressor, combustor, and turbine. In addition, the color reflects the temperature of that fluid is (with blue representing cooler temperatures and red representing hotter temperatures).

Ambiguity



Figure 3-1. Ambiguity in a building's façade, which follows a design by Escher. Are the lizards gold or white?

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Radiometer System. The radiometer system for the solar receiver has to meet three requirements. First, the system's electrical components have to survive in solar radiation as intense as 300 kilowatts per square meter. Second, the system has to measure to within 5 percent the solar radiation on the receiver. Third, the system's output has to verify computer codes.

Avoid words with multiple interpretations

Many words in English have multiple meanings. For instance, *right* has a meaning referring to "correctness" or "direction".



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The technician wanted to reduce the vibration of the fan at the exhaust **because** the exhaust ducting was cracking.

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The ordering of words and phrases may cause ambiguities.



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- Does the schedule extend for 4 years?
- Will the discussion of the schedule take the reader 4 years to read?



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The technician tested how well the microorganisms survived in low water temperatures and high toxicity levels of oil.

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Each sentence has a different meaning. In particular, the word *only* can be:

- an adjective (first and fourth sentences)
- an adverb (second, third, and fifth sentences)

Be selective with *it* and avoid the standalone *this*

Let's consider the following excerpt:

Because the receiver presented the radiometer with a high-flux environment, it was mounted in a silver-plated stainless steel container.

What is mounted in the container? The receiver? The radiometer? The environment?

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Exercise: What can be a solution?

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No peaks occur in the olefinic region. Therefore, no significant concentration of olefinic hydrocarbons exists in fresh oil. This places an upper limit on the concentration of olefins no more than 0.01 percent.

What does the chemist want the word *this* to refer to?

- To the last noun of the previous sentence: oil?
- To the subject of the last sentence: concentration?
- To the idea of the previous sentence: that no significant concentration of olefinic hydrocarbons exists?

Answer: The chemist intended the word *this* to refer to the lack of peaks in the olefinic region.

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Unfortunately, many scientists use the *standalone this* much more often. Worse yet, many of those uses refer to different things:

- the last noun used;
- the subject of the previous sentence;
- the idea of the previous sentence.

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Instead of using *this* as a pronoun, clarify your writing by letting this do what it does best: to point.

The chromatogram has no peaks in the olefinic region. Therefore, no significant concentration of olefinic hydrocarbons exists in fresh oil. **This** chromatogram finding places an upper limit on the olefin concentration no more than 0.01 percent.

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Insert commas after introductory phrases and clauses

Another common source of ambiguities arises from missing punctuation. Commas act as yield signs that tell readers when to slow down so that they will see the sentence in a certain way.



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After cooling, the exhaust gases continue to expand until the density reaches that of free stream.

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A source of ambiguity involves missing commas in a series of three or more items. For example: *The three elements were hydrogen, oxygen, and nitrogen..*



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In our study, we examined four fuels: neat methanol, neat ethanol, methanol with 10 percent water, and ethanol with 10 percent water.

Section 1

Practical

Ambiguity

For each sentence, write the possible meanings, and how to make the sentence non-ambiguous.

- There is a man on a hill, and I am watching him with my telescope.
- Look at the dog with one eye.
- The duck is ready to eat.
- Are you free tomorrow?
- Visiting friends can be annoying.
- Flying planes can be dangerous.
- You should bring wine or beer and dessert.
- She saw a bat.
- He carries the light box.

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The large exposure of Fog creates security issues. These security issues make it easier for hackers to retrieve crucial information.

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For instance, if an end device generates data that must be handled but the end device's capacity makes processing the data impossible or impractical, the end device connects to a neighboring fog node, send the information to the fog node and offload the data processing to the fog node.

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The end device generated data that must be handled. BERK:In cases where the device's capacity makes processing impossible, the data processing is offloaded to a neighboring fog node.

The low latency in-network transmission between the endpoint and the fog node, combined with the fog node's relatively high processing capacity, speeds up the entire process, allowing for real-time interactions.

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The low latency of in-network transmission between the endpoint and the fog node, coupled with the high processing capacity of the fog node leads to real-time interactions.

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A parallel merge sort can be implemented by creating 2 parallel tasks sorting sequentially the two halves of the input array. Once both halves are sorted, they are merged.

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The proposed solution reaches a limit for large problems sizes. In this case, the algorithm would overload the system by creating more tasks than the number of available cores or threads.

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In the previous approach, we create a single task per recursive call. To improve the performances, we decided to create a task if the size is greater than a threshold.

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The sequential Bubble sort

Exercise

Write a small text (a few lines) about a topic and evaluate the precision, clarity, ambiguity of the other texts.

Write your text here: <https://tinyurl.com/TWE15Sept>.

Select one text from your colleagues to evaluate :

<https://tinyurl.com/TWE15SeptPair>.

Submit your modified version here:

<https://tinyurl.com/TWEWriteReviews>

Check the reviews here: <https://tinyurl.com/TWESeeReviews>