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# Noun Compounds and Compressed Definitions

A NOUN COMPOUND IS A GRAMMATICAL STRUCTURE IN WHICH NOUNS ARE LINKED together to indicate a new concept. Adjectives are used in English to describe the characteristics of nouns, for example, *a long table, a broken table,* or *a painted table.* Nouns in noun compounds can also serve this function, though they usually describe categories rather than characteristics, for example, *a metal table, a picnic table,* or *a card table.* Noun compounds consisting of two nouns occur in many everyday activities, for example, *dinner plate, tooth brush, dish cloth, bookshelf, hair clip,* and *raincoat.* A few noun compounds are written as one word, though most are written separately. In American English today, noun compounds are usually not hyphenated. There are no rules that can tell you when to write a noun compound as a single word; if one is not sure, the only solution is to check a dictionary or a speller.

Noun compounds, which are also known as nominal compounds, often constitute a troublesome area of English grammar for students learning English as a second or foreign language. They are especially prevalent in professional texts in science and technology, business, medicine, law, and other areas of English for Specific Purposes (ESP). The difficulty usually lies in decoding the compounds rather than in understanding the individual words in the compound. For example, a student may know the word *dish* and the word *cloth,* but this would not necessarily tell her that a *dish cloth* is used for drying wet dishes. By teaching students how to decode noun compounds, we can help them overcome a common difficulty in reading advanced and specialized texts.

### Decoding Noun Compounds

The difficulty of understanding noun compounds can be alleviated in most cases by teaching the parallels between the categories of English definitions and the categories of noun compounds. This relationship was noted by Bartolic (1978: 258), who found that "a greater number of nominal compounds have developed from the post-positional phrases which in a deeper analysis might be logically deduced as shortened forms of definitions." Definitions may be informal or formal. Informal definitions usually occur as appositive clauses (1) or by means of *this*-cohesion (2), as shown in the following examples, in which the term being defined is in boldface and the definition is underlined (Master, In press: 114, 197):

(1) **Latex,** the "blood" of the rubber tree, has many industrial uses.

(2) Scientists have discovered **a body of magma** under much of the eastern U.S. This pocket of molten rock may one day be used as a heat source for generating electrical power.

The pattern for the formal (Aristotelian) definition is "An A is a B that C." In this formula, A stands for the species being defined, B stands for the group or class to which A belongs, and C, usually in the form of a defining (restrictive) relative clause (or sometimes a prepositional phrase), stands for the characteristics that differentiate the species (A) from other members of the group (B). Formal definitions can be classified by the kind of question that the differentiating characteristic (C) answers about the word being defined. These questions are shown in Table 1. For example, a definition of carbon could be constructed as follows:

A (species being defined) = carbon

B (the group or class to which the species belongs) = element

C (differentiating characteristic answering question #5, Where is it used/found?) = It is found in all living things.

**Formal definition:** Carbon is an element that is found in all living things.

With the exception of the first question in Table 1, which requires an adjective + noun structure, noun compounds can be classified in the same way. Table 2 represents a synthesis of the classifications of noun compounds devel-

**Questions to Generate the Defining Relative Clause in a Definition**

| | | |
|---|---|---|
| 1. | What are its characteristics? | (Properties) |
| 2. | What is it composed of? | (Material) |
| 3. | How does it work? | (Operation) |
| 4. | What does it do? | (Purpose) |
| 5. | Where is it used/found? | (Location) |
| 6. | When is it used? | (Time) |
| 7. | What does it resemble? | (Shape/form) |
| 8. | Who discovered/uses it? | (Inventor/Professional user) |

**Table 1**
Generating a defining relative clause in a definition.

**Table 2**
Classifying noun compounds

## Categories of Noun Compounds

| | |
|---|---|
| [1. Properties] | requires adjective + noun, e.g., strong wire, not a noun compound |
| 2. Material | copper wire (wire that is made of copper) |
| 3. Operation | friction brake (a brake that works by means of friction) |
| 4. Purpose | air filter (a filter for cleaning air) |
| 5. Location | field mouse (a mouse that lives in fields) |
| 6. Time | night hawk (a hawk that hunts at night) |
| 7. Shape/form | worm gear (a gear that is shaped like a worm) |
| 8. (Inventor/Professional user) | Bunsen burner (a burner that was invented by Robert Bunsen) |

oped by Jespersen (1942), Hatcher (1960), Li (1971), Levi (1973), and Bartolic (1978).

Presuming that the notion of "definition" has been practiced at length in earlier assignments, the decoding of noun compounds can be presented in four steps. The first step is to have students classify noun compounds using the seven classifications (the first does not apply to noun compounds) described above and then to define the noun compound in terms of its classification. For example, gear pump can be classified as #3 (operation), and then defined as "a pump that operates by means of gears," because a gear pump operates

## Exercise 1

Instructions

Classify the following noun compounds according to the list below. Then define the noun compound in terms of the classification.

| | |
|---|---|
| [1. Properties] | 5. Location |
| 2. Material | 6. Time |
| 3. Operation | 7. Shape/form |
| 4. Purpose | 8. Inventor/ Professional engagement |

Example: ___ gear pump
Answer: _3_ gear pump: a pump that operates by means of gears

Noun Compounds

1.___ long-wire antenna

2.___ passenger ship

3.___ computer industry

4.___ furnace gases

5.___ steam engine

## Interpreting Noun Compounds

1 2 3 3 2 1
a water purification system = a system for the purification of water

1 2 3 3 2 1
an air quality program = a program to maintain the quality of air

**Table 3**
Decoding noun compounds

by propelling liquids with elements that are shaped like gears. Misclassification of the noun compound at the outset would lead to a faulty decoding of the noun compound. For example, the misclassification of gear pump as #2 (material) would lead to the faulty definition "a pump that is made of gears"; misclassification as #4 (purpose) might lead to the faulty definition "a pump whose purpose is to move gears." An example of an exercise based on this step (Master, In press: 147) is shown in Exercise 1.

Formal definitions are often shortened if the B section (the group or class to which the A section belongs) is repetitive or obvious. For example, in the definition *A gear pump is a pump that operates by means of gears,* the B section *(a pump)* can be removed since this classification is part of the word being defined. This also requires removing the relative pronoun *that*. The resulting definition is *A gear pump operates by means of gears.* This shortened form, or some variation of it, often appears in appositive clauses.

The second step is to have students decode noun compounds by reversing the order of the words in the noun compound and inserting prepositions, adjectives and/or verbs, as shown in Table 3. Many students whose native languages allow nouns to be postmodified by adjectives (e.g., Spanish and French) need to be reminded that it is the final word in the English noun compound (system and program in Table 3) that is the head noun. Exer-

## Exercise 2

Instructions

Choose the correct definition for the noun compound on the left.

| | |
|---|---|
| Example: worm gear | **a.** a worm that lives in gears<br>**b.** a gear shaped like a worm |
| Answer: | **b.** a gear shaped like a worm |

Noun Compounds

| | |
|---|---|
| **1.** test data | **a.** data from a test<br>**b.** a test of current data |
| **2.** camera platform | **a.** a platform for a camera<br>**b.** a camera that sits on a platform |
| **3.** glass fiber | **a.** a kind of glass in the form of fibers<br>**b.** a kind of fiber made from glass |
| **4.** voltage regulation | **a.** normal voltage as prescribed by regulations<br>**b.** regulation of voltage |
| **5.** radar scan | **a.** a kind of radar that scans<br>**b.** a scan performed by radar |

**Table 4**
Reading simple noun compounds within a larger compound

## Decoding Complex Noun Compounds

1 2 2 1
acid nitrate deposition = the deposition of acid nitrates

1 2 2 1
coronary heart disease risk = the risk of coronary heart disease

1 2 3
city water chemical contamination monitoring program =

3 2 1
a monitoring program for the chemical contamination of city water

cise 2 (Master, In press: 146) provides practice with this concept.

### Complex Noun Compounds

After the decoding of simple noun compounds has been thoroughly practiced, the pedagogical presentation can be expanded to include complex noun compounds. As a third step, students can be shown that English also makes use of complex noun compounds that are made up of simple noun compounds. This requires a two-part decoding process. The first part requires the reading of the simple noun compounds within the larger compound in reverse order without reversing the elements of the simple compounds, as shown in Table 4. The second part is the reverse reading of the simple noun compounds within the larger compound. In Table 4, an acid nitrate is a nitrate attached to an acid group; coronary heart disease is a disease of the heart affecting the coronary arteries; city water is water supplied to a city, chemical contamination is contamination by chemicals, and a monitoring program is a program that monitors. The reason for the two-part process with complex noun compounds is that the reverse reading of every word in such a compound leads to a rather unwieldy description, e.g., a city water chemical contamination monitoring program

## Exercise 3

Instructions

Change the words in italics into noun compounds.

Example: The *vent for air* should be open.
Answer: The air vent should be open.

Practice

1. Neurosurgeons are developing *a map of the system of nerves in humans.*
2. *A soil fumigant made from ethylene dibromide* has been recently tested.
3. *The risk of lip and throat cancer* is higher for cigarette smokers.
4. Researchers have located *the site for the binding of RNA.*
5. *The material for insulation that is made from formaldehyde* burned rapidly, releasing toxic fumes.

## Exercise 4

Instructions

Make the phrases in italics into noun compounds.

Example: *The garage for parking at the airport* is already full.
Answer: The airport parking garage is already full.

Practice

*A reduction in noise* of approximately 6 dB could be effected by replacing the *existing assembly containing a blower fan* with *a blower, Model TL-1,* manufactured by Quietaire Corporation of Detroit, and by lining the ducts with Agrafoam, *a new product that performs soundproofing* developed by *the industry that makes automobiles* in Germany. A further reduction of 1.5 dB could be achieved by replacing *the tiles on the floor made of vinyl* with carpet, a practice that has been successful in *centers for the control of traffic in the air.*

is a program for the monitoring of the contamination caused by chemicals in the water of a city.

Finally, students must be very careful to use only those noun compounds that are acceptable in the language of the discipline in which they occur. Problems may arise if students try to create new noun compounds, especially if they contain three or more nouns. Step four concludes the pedagogical presentation by asking students to create acceptable noun compounds in context, as shown in Exercises 3 and 4 (Master, In press: 148).

### Conclusion

Making learners aware of the linkage between definitions, which they are usually familiar with, and noun compounds, which they are usually not familiar with, provides a means of demystifying a complex area of English grammar and thus potentially aiding their ESP reading comprehension skills. The idea that noun compounds are compressed definitions, a kind of shorthand for the terminology in a specific field, should also help the student to understand that many noun compounds are not intelligible even to native speakers unless they work in a field or profession in which they have been exposed to the original definition of the term. Because technical knowledge is often required in order to correctly interpret certain noun compounds, which often cannot be deciphered when they are first encountered, they are best described as "reminders of a once-learned definition" (Master, In press: 146). Consequently, students should not be embarrassed when they encounter noun compounds that are difficult to understand. It is quite possible that the teacher also does not know their meaning.

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## APPENDIX | PRACTICE WITH NOUN COMPOUNDS

Noun Compounds and Compressed Definitions • *Peter Master*

1. **What is the everyday noun compound form of the following noun phrases?**
   a. a bag that is made of plastic
   b. soap that is used for doing laundry
   c. a book containing printed telephone numbers
   d. tickets for taking a trip on an airline
   e. a bench to sit on when playing the piano
   f. an iron that provides steam for pressing clothes

2. **Classify the following everyday noun compounds according to the list below. Then define the noun compound in terms of the classification.**

   **a. Material**
   **b. Operation**
   **c. Purpose**
   **d. Location**
   **e. Time**
   **f. Shape/form**

   1. dinner plate
   2. tooth brush
   3. dish cloth
   4. bookshelf
   5. hair clip
   6. raincoat
   7. water snake
   8. ball bearing
   9. silver ring

3. **Transform the following informal definitions into formal ones.**
   a. Helium, an extremely stable noble gas, was among the atmosphere's earliest components.
   b. A ruptured aneurysm, a blood-filled bubble in a blood vessel, often leads to a stroke.
   c. Sleep apnea, a life-threatening disorder characterized by frequently blocked breathing, is much more common among males than females.
   d. During his experiment, Hertz found that light falling upon metal would drive out a negative charge. This phenomenon is called the photoelectric effect.
   e. In the Haber-Bosch process, nitrogen reacts with hydrogen in the presence of an iron catalyst to produce ammonia. This reaction is the most widely used industrial method of nitrogen fixation.

4. **Classify the following noun compounds according to the list below. Then define the noun compound in terms of the classification, reversing the order of the words.**

   **1. Material**
   **2. Operation**
   **3. Purpose**
   **4. Location**
   **5. Time**
   **6. Shape/form**
   **7. Inventor/Professional engagement**

   a. gasoline engine
   b. brass terminal
   c. belt sander
   d. air filter
   e. research engineer
   f. morning sickness
   g. paper industry
   h. dust particle

5. **Choose the correct definition for the multi-word noun compound on the left.**

   1. carbon steel rod
      a. a rod made of carbon steel
      b. a steel rod coated with carbon
   2. aluminum alloy cylinder block
      a. a block cylinder containing alloyed aluminum
      b. a cylinder block made from an aluminum alloy
   3. battery charge indicator
      a. a charge from a battery indicator
      b. an indicator that shows a battery charge
   4. steam power plant equipment
      a. equipment for a steam power plant
      b. an equipment plant powered by steam
   5. cathode ray tube display unit
      a. a unit that displays a cathode ray tube
      b. a display unit which uses a cathode ray tube

(Note: The noun compounds in Ex. 4 and 5 are from Bartolic 1978:262–275.)

# Answer Key

## Exercise 1.

a. a plastic bag
b. laundry soap
c. a telephone book
d. airline tickets
e. a piano bench
f. a steam iron

## Exercise 2.

| | | | |
|---|---|---|---|
| 1. | dinner plate | time | A dinner plate is a plate that is used at dinner time. |
| | | purpose | A dinner plate is a dish that is used for serving dinner. |
| 2. | tooth brush | purpose | A tooth brush is a device for cleaning teeth. |
| 3. | dish cloth | purpose | A dish cloth is a cloth whose purpose is to dry dishes. |
| 4. | bookshelf | purpose | A book shelf is a shelf whose purpose is to hold books. |
| 5. | hair clip | purpose | A hair clip is a clip whose purpose is to hold back (clip) hair. |
| 6. | raincoat | time | A raincoat is a coat that is worn when it is raining. |
| | | purpose | A raincoat is a coat whose purpose is to protect one from rain. |
| 7. | water snake | location | A water snake is a snake that lives in the water. |
| 8. | ball bearing | shape/form | A ball bearing is a bearing in the shape of a ball. |
| 9. | silver ring | material | A silver ring is a ring that is made of silver. |

## Exercise 3.

a. Helium is an extremely stable noble gas.
b. A ruptured aneurysm is a blood-filled bubble in a blood vessel.
c. Sleep apnea is a life-threatening disorder that is characterized by frequently blocked breathing.
d. The photoelectric effect is a phenomenon in which light falling upon metal drives out a negative charge.
e. The Haber-Bosch process is a reaction in which nitrogen reacts with hydrogen in the presence of an iron catalyst to produce ammonia.

## Exercise 4.

a. A gasoline engine is a mechanical device that operates by using gasoline as a fuel.
b. A brass terminal is a metal projection that is made of brass.
c. A belt sander is a tool that has a sanding surface in the shape of a belt.
d. An air filter is a device whose purpose is to remove dirt and other particles from incoming air.
e. A research engineer is an engineer who is professionally engaged in research.
f. Morning sickness is a discomfort experienced by women early in pregnancy.
g. The paper industry is an industry concerned with the manufacture and marketing of paper.
h. A dust particle is a small piece of matter consisting of dust.

## Exercise 5.

1. a
2. b
3. b
4. a
5. b

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*continued from page 9*

## Answer Key for Exercises 1–4

### Exercise 1.

1. 7; an antenna in the form of a long wire
2. 4; a ship whose purpose is to carry passengers
3. 8; the industry concerned with computers
4. 5; gases produced or located in a furnace
5. 3; an engine that operates by means of steam

### Exercise 2.

1. a
2. a
3. b
4. b
5. b

### Exercise 3.

1. a human nerve system map

b. an ethylene dibromide soil fumigant

c. the lip and throat cancer risk

d. the RNA binding site

e. the formaldehyde insulation material

### Exercise 4.

A noise reduction of approximately 6 dB could be effected by replacing the existing blower fan assembly with a Model TL-1 blower manufactured by Quietaire Corporation of Detroit, and by lining the ducts with Agrafoam, a new soundproofing product developed by the automobile industry in Germany. A further reduction of 1.5 dB could be achieved by replacing the vinyl floor tiles with carpet, a practice that has been successful in air traffic control centers.

(adapted from Blicq 1981:146)