8 Nouns and countability

Key words: COUNT, MASS, NON-COUNT NOUN, BOUNDED, INTERNAL STRUCTURE, INDIVIDUAL, AGGREGATE, GROUP, SUBSTANCE, LINGUISTIC RELATIVITY, CULTURAL RELATIVITY

8.1 Overview

If you tell people that you study lexical semantics or "the meaning of words," they are likely to assume that you spend your time thinking about things like "What does *love* mean?" or "What is a table, really?" While some lexical semanticists do think about questions like this, much lexical semantic work on nouns is instead focused on larger categories of nouns with particular morphosyntactic properties and patterns of polysemy. After discussing the types of issues that such nouns raise in the next section, this chapter looks at why it is that some nouns are **countable** and others are not. That is, some nouns, like *cucumber* or *bungalow*, can be preceded by numerals and made plural (*104 cucumbers, three bungalows*), and others are mass nouns and not usually made plural – for example *fog* (*#three fogs*) and *wheat* (*#twenty-seven wheats*). After discussing the issue of countability in general, we look at the Conceptual Semantics componential treatment of some countability categories and the polysemy of nouns in relation to those categories, then Chierchia's proposal that mass nouns are inherently plural. Lastly, we look at how languages may differ in their treatment of nouns for particular THINGS and ask whether these differences are arbitrary or culturally predictable, with particular attention to the Natural Semantic Metalanguage approach.

8.2 Thinking about nouns and things

In discussing theories of meaning and semantic phenomena in earlier chapters, most of the examples we used were nouns. This is not a coincidence. In many ways, nouns are the least complicated word class to use in illustrating semantic discussions, and they often feature in philosophical discussions of

language and reference, since most noun senses are fairly self-contained and often refer to concrete things. Compare a noun like *apple* to a verb like *wear*. It is easy to imagine an apple in and of itself, but in order to imagine an instance of *wearing* we need to imagine other things too: something that is being worn and something that is doing the wearing. So, when illustrating lexical semantic theories or phenomena like polysemy and lexical relations, it is often easiest to use nouns as examples. At the same time, this self-contained property of nouns makes them less a priority to many linguistic semanticists because their effects on the meaning of the sentence as a whole are more limited than those of verbs.

Another reason why nouns are sometimes studied in less semantic detail than verbs is that it can be very difficult to distinguish where the discussion of a noun's sense stops and where discussion of its extension (the set of things it refers to; §2.3) begins. Recall from chapter 4 that most modern theories of linguistic semantics assume that meaning involves an interface between the linguistic and conceptual realms in the mind. A lexeme's formal properties – for instance, its pronunciation and inflection – belong to the linguistic realm. This form is mapped to some (set of) concept(s) in the conceptual realm. For example, the word form *pigeon* maps to a concept (we'll call it PIGEON) of a certain type of bird. We all have similar PIGEON concepts because we've all heard the word *pigeon* used to label the same kind of bird. To a certain degree, then, we linguists could say that *pigeon* means PIGEON, and then not investigate PIGEON any further, since the contents of the concept PIGEON are conceptual, rather than linguistic, in nature. In other words, the lines are fine between the linguistic question "What does *pigeon* mean?", the psychological question "How is our knowledge of pigeons organized?", and the philosophical/biological question "What is a pigeon?" For this reason, many theoretical linguists forgo deep discussions of the senses of specific nouns, like *pigeon* or *love* or *opinion*. A clear exception to this generalization – particularly for abstract nouns – is Wierzbicka and her Natural Semantic Metalanguage theory; see §4.4. The QUALIA in Pustejovsky's Generative Lexicon approach (see §4.3) give some information about the concepts associated with nouns, but these are typically used only to differentiate types of information that interact in building up compositional phrases (recall §1.2.2). Generative Lexicon practitioners, when faced with representing the meaning of *pigeon*, would represent that it denotes a type of bird, but probably would not get into the details that differentiate pigeons from other birds – because those details are unlikely to affect which verbs *pigeon* goes with or how adjectives that modify *pigeon* are to be interpreted.

What is of interest to most linguists is any aspect of noun (or verb or adjective) meaning that has an impact on how that word can be used in phrases and sentences – that is, what other words it can combine with, how its interpretation is affected by the larger phrase, what prefixes/suffixes it can take, and so forth. In the last chapter, we noted that the semantic category THING has a special relationship with the grammatically defined NOUN class. Now we want to look more deeply at this relationship and ask: are there subcategories within the THING

category, and do they correspond with particular types of nouns? Or, to take the question from the other direction: can we find semantic motivations for the existence of different types of nouns?

8.2.1 Concrete and abstract

In this chapter, we concentrate on nouns for concrete entities and the relation between the types of entities that the nouns denote and their grammatical number (for instance, whether you can use the noun with *much* or make it plural). Some other semantic distinctions in nouns are worth mentioning briefly. One distinction is between **concrete** and **abstract** nouns – that is, ones that refer to tangible entities and those that refer to intangible things like emotions or mental states. We've already seen in chapter 7 that such nouns differ in the types of ontological categories their denotata belong to, and we also saw that non-concrete nouns do not always display all the grammatical properties that are usually associated with nouns, such as occurring in the plural or the possessive (table 7.2).

8.2.2 Common and proper

Another distinction within the noun category is between **proper names**, which designate particular TOKENS of a TYPE (recall §4.2.3), and **common nouns**, which name a TYPE. Generally, languages treat such nouns as grammatically distinct subclasses. If we want to use a common noun to refer to a particular TOKEN of its TYPE, we have to make it part of a noun phrase that includes a determiner (or other means of making a common noun particular) that points out an individual – for example, *the man* rather than just *man*. In English, proper names do not need the help of a determiner since they already point out individuals; thus we do not say things like *the Melanie* or *a London*. If we do combine proper names with determiners in English, it is because we are using the name to designate a TYPE instead of a TOKEN. In other words, proper names can be polysemous between a TOKEN-designating sense – *Melanie* as the name for my friend Melanie in (1) – or a TYPE-designating sense, as in (2), where it means 'the TYPE of person who is named *Melanie*.'

(1) Melanie came to dinner.

(2) She doesn't look like a Melanie.

8.2.3 Other noun subcategories

Other kinds of noun distinctions can be important in determining which adjectives or verbs the noun can combine with (recall our discussion of selectional restrictions in §3.3.2) and the patterns of polysemy that result from combining different types of nouns with different types of verbs or adjectives

(recall our discussion of *finish lunch* versus *finish a novel* in §4.3 and §5.4.1). We'll see more of this when we discuss how we interpret adjectives – which depends upon the meaning of the noun that the adjective modifies – in chapter 11. At this point, we turn our attention to the issue of countability, an area of noun meaning that has received a fair amount of detailed attention.

8.3 Nouns and number: grammar and semantics

8.3.1 Count versus non-count

In English and many other languages, we can see a clear distinction between words that denote individual things that can be counted and words that denote stuff that is not individuated and counted. *Teapot* falls into the first category, called **count nouns**, and *mud* into the second, traditionally called **mass nouns**. While count nouns can be pluralized and preceded by numerals, as in (3a) and (3b), mass nouns are not pluralized and occur with non-counting **quantifiers** (determiners that indicate 'how much'), such as *much* instead of *many*, as in (4).

(3) a. How many teapots does Shel own?
b. Shel owns fifty teapots.
c. #How much teapot does Shel own?

(4) a. #How many muds are on the carpet?
b. #Danni tracked fifty muds onto the carpet.
c. How much mud is on the carpet?

In order to count the stuff denoted by mass nouns, we instead count units into which the stuff can be divided, such as containers or measurements, as in (5).

(5) Danni tracked fifty kinds/clumps/ounces of mud into the house.

While this serves as a useful starting description of count versus mass nouns, the facts are a lot messier. First, as you may have already noticed, we can sometimes say things like *fifty muds*, as in (6):

(6) Fifty muds were displayed at the science fair.

In this case *fifty muds* is interpreted as shorthand for *fifty kinds of mud*. Similarly, *teapot* acts as a mass noun in (7).

(7) Shel got a lot of teapot for his money.

(8) Shel got a lot of teapots for his money.

In (7), the singular, non-count use of *teapot* indicates that the teapot should be interpreted as if it is a substance rather than an individual thing, whereas in (8) the plural count noun *teapots* indicates many individual teapots. In (7), Shel got

a single, particularly large teapot – that is, a lot of 'teapot substance,' rather than a lot of individual teapots.

The traditional count/mass dichotomy ignores a range of other types of (non-)countability. Wierzbicka (1985) lists fourteen types and Goddard (2009) lists a total of eighteen types just among concrete nouns. We won't go through all these types here, but the following three give a flavor of the range of types that exist:

- Singular words for classes of unlike things: *furniture*, *cutlery*
  Their hyponyms are countable (e.g. *tables*, *chairs*), but the group name is not (*a piece of furniture*/#*furnitures*). Some authors count these as mass nouns because they do not pluralize, but these intuitively seem to be a different kind of thing than mass nouns that refer to substances like *mud* or collections of tiny things of the same type, like *rice*.
- Plural names of 'dual' objects: *scissors*, *goggles*, *underpants*
  These are always plural – *a scissor* does not refer to half of a pair of scissors. In order to count these, we preface the noun with pair of, as in *a pair of goggles* or *three pairs of underpants*.
- Plural names for expanses of homogeneous matter, fixed to a certain place: *guts*, *woods*
  These are sometimes called *plural mass nouns*. But despite their plural marking, they cannot be counted, as shown by the oddness of: *I hate his guts – #all five of them* (McCawley 1975:320).

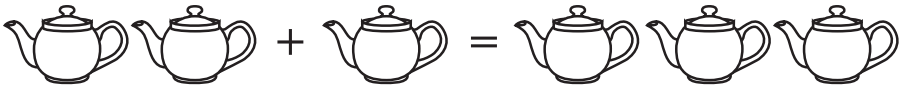
From this we can see that a simple count/mass distinction is just *too* simple; there are many types of nouns that are not countable. I'll use **non-count noun** to refer to any type of noun that is not countable (including *furniture* and *guts*) and reserve **mass noun** for those, like *rice* and *mud*, that are not plural and that refer to a SUBSTANCE – i.e. a mass of homogeneous matter.

8.3.2 The semantics of countability

So far we've seen that count, mass, and other types of non-count nouns are different subclasses of the grammatical word class NOUN. Our next question is whether these different subclasses of noun reflect different semantic (sub)types. We've already noted that the denotata of count nouns are perceived as individuals in a way that the denotata of mass nouns are not. In semantic terms, countable noun senses are **bounded**, while mass noun senses are **unbounded**. (Un)boundedness can be treated as a binary semantic feature, abbreviated as [±b].

An entity is **bounded** if and only if:

- it is **indivisible** – that is, it cannot be divided while retaining its identity, and
- it is **not additive** – that is, it cannot have more of the same type of entity added to it, while retaining its identity.



teapots	*teapot*	*teapots*
[–b]	[+b]	[–b]

Figure 8.1 *The unboundedness of plural* teapots

So, a teapot is indivisible because if you divide a teapot in half, it is no longer a teapot. It is non-additive because if you have a teapot, you cannot add more teapot to it while still having just one teapot. If we add another teapot, we end up with two individual teapots, rather than one massive teapot. Thus, *teapot* is [+b].

Mud, on the other hand, is not bounded: [–b]. If you have a handful of mud and drop half of it, the remaining stuff in your hand is still mud. Similarly, if someone adds more mud on top of your mud, you still have mud. Of course, if we get down to the molecular level, at some point dividing the stuff will not result in smaller portions of mud, but rather the component parts of mud (water, silicates, decomposed organic material). This level of divisibility is generally outside the realm of normal human ability or experience, since it would require special equipment and skills to divide mud in this way. Thus it does not affect how we conceptualize the countability of *mud* in our language.

While singular count nouns like *teapot* are bounded, their plural versions are not. If you have a collection of teapots and add one or more teapots to it, you would call both the original and the expanded collections *teapots*, as in figure 8.1. This raises two issues. First, we must account for the relation between [+b] count nouns and their [–b] plurals. We deal with that in the next section. Secondly, since both mass nouns and plural count nouns are [–b], we need a way to distinguish these two classes, since plural count nouns are still countable (*three teapots*) and mass nouns are not.

The semantic difference between plurals and mass nouns can be expressed in terms of another binary feature, ±**internal structure**, or ±**i**. This refers to whether the entity is made up of separate individuals or not. So, *teapots* is [+i], since we could pick an individual, bounded teapot out of a collection of teapots, but *mud* is [–i] because there are no bounded individuals within a collection of mud.

Four combinations of [±b] and [±i] feature specifications are possible, resulting in four possible types of MATERIAL ENTITY, as shown in (9):

(9) [+b, –i] = individuals (a teapot, a mountain, a person)
[+b, +i] = groups (a committee, a team, a set [of something])
[–b, –i] = substances (mud, rice, water)
[–b, +i] = aggregates (teapots, cattle, committees)

(Jackendoff 1991)

This summarizes the facts that we have already seen concerning INDIVIDUALS and SUBSTANCES, which are the prototypical semantic types for singular count and mass nouns, and the plurals of count nouns, included here in the broader category AGGREGATES. The AGGREGATE category also includes some inherently [+i] non-count nouns, like *cattle*, that do not have a singular counterpart in the INDIVIDUAL category.

The new category here is GROUP (you may also come across the term **collective noun**), which includes entities that are bounded and have internal structure. A good example of this is *band* (the musical type). The fact that we can discern individuals that make up a band indicates that *band* is [+i], like an AGGREGATE. But unlike an AGGREGATE, a GROUP functions as a bounded whole. If you see one member of a band on the street, you cannot truthfully say *I saw a band*. Even though there are individuals in the band, they are not of themselves 'band.'

Because GROUPS, like AGGREGATES, have internal structure [+i], it is not altogether surprising that they agree with plural verbs in many dialects, as in (10a). In these dialects, including Standard British English, the agreement on the verb can be more influenced by the [+i] feature than by the lack of morphological plural marking, which influences agreement in Standard American English, as in (10b).

(10) a. The band were interviewed on the radio. [British English]
b. The band was interviewed on the radio. [American English]

We can conclude here that subject–verb agreement in American English depends more on the presence or absence of plural markers on the subject, while in British English it can be more influenced by the semantic properties of the subject – at least when the word refers to a group of people.

GROUP terms are countable, but because they are [+b], they involve a different kind of counting than [–b] AGGREGATES. When we put a numeral before the AGGREGATE term *teapots*, we understand the numeral as counting the individuals within the teapot collection, as in (11a). Example (11b) shows that this is true of aggregates even if they're not the plural forms of a singular INDIVIDUAL noun. Whether or not you consider *two cattle* to be grammatical, it has to be interpreted as counting individual animals, not groups. This is because one cannot count an unbounded entity, so we look inside that entity for something that can be counted.

(11) a. two teapots = 'two individual teapots' ≠ 'two groups of teapots'
b. two cattle = 'two heads of cattle' ≠ 'two groups of cattle'

But when a GROUP term like *team* is made into an AGGREGATE through pluralization, its boundedness forces counting of the teams as wholes, rather than counting the members of the team, as in (12).

(12) two teams = 'two collections of people' ≠ 'two people'

In order to count the internal structure of a GROUP in English, we name and count the parts of that group in a **partitive construction**, which expresses 'an amount of a part of a whole,' as in (13).

(13) two members of our team

Puzzle 8–1

Determine whether or not the following are bounded and whether or not they have internal structure, in order to see which (if any) of the categories in (9) they belong to.

a. lemonade
b. forest
c. furniture
d. scissors

Are there any problems in determining the status of these? Do you think that these words' meanings fit properly into the categories in (9)? If not, why not?

8.4 Variation in countability: the Conceptual Semantics approach

The binary features [±b] and [±i] are components in Jackendoff's Conceptual Semantics (§4.2). Jackendoff (1991) also introduces means for creating new interpretations of nouns with different countability status than they usually have. This involves functional components, or **operators**, which are predicative components – that is, they take an argument made up of another semantic representation. So, for instance, there is an operator that operates on INDIVIDUAL meanings and makes them AGGREGATE plurals, and other operators can show the relations between the count and mass senses of a single lexeme.

8.4.1 Plurals: PL

Let's start with plurals. In order to show the regularity of the relation between singular INDIVIDUALS and plural AGGREGATES of those INDIVIDUALS, Jackendoff introduces the operator PL. PL takes as its argument a semantic description that has the specification [+b] – like the sense of *teapot* or *team* – in order to create a sense with the specifications [–b, +i] for *teapots* or *teams*. Thus the PL operator represents the function of the plural suffix *-s* and other markers of plurality. Figure 8.2 shows this in the abstract.

Another way of putting this would be "if you apply the PL plural function to bounded noun A, the resulting plural has the feature specifications [–b, +i]." The parentheses marked with subscript $_A$ in figure 8.2 contain the semantic

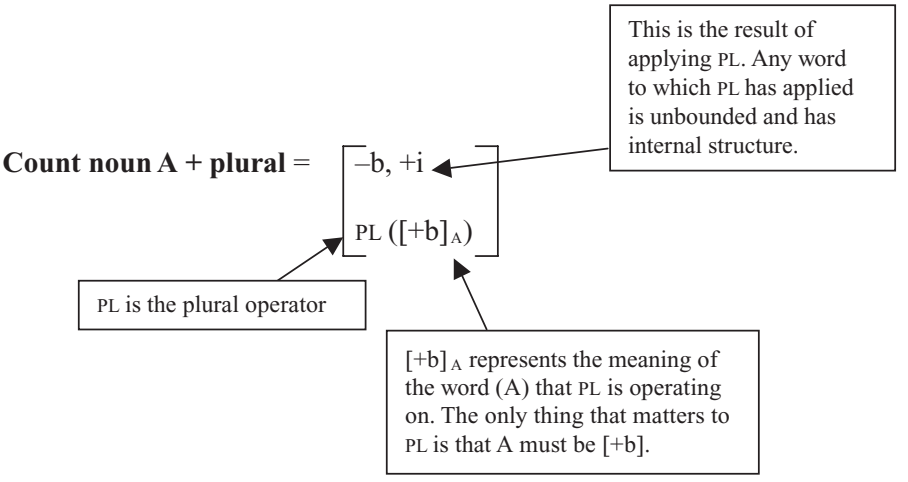


Figure 8.2 *The PL operation*

representation associated with the name for the individual items that make up that plural aggregate. (Most the details of the noun are left out in the examples here, since we're only concerned with [±b] and [±i] right now.) The sense of the plural noun (delimited by the outermost brackets) includes all that is found in the parentheses, except for the [–b, +i] specification in the outer brackets, which overrides the boundedness and internal structure properties of the singular noun. Examples (14) and (15) show how this works for *teapot* and *teapots*. In these examples, TEAPOT stands for our conceptual representation of 'teapothood.' The subscripted MAT label indicates that the meaning described within the brackets is of the ontological type MATERIAL ENTITY.

(14) *teapot* = $\left[\begin{array}{l} \text{+b, –i} \\ \text{TEAPOT} \\ \textit{MAT} \end{array}\right]$

(15) *teapots* = $\left[\begin{array}{l} \text{–b, +i} \\ \\ \\ \textit{MAT} \end{array}\right.$ $\left.\begin{array}{l} \\ \text{PL}\left[\left[\begin{array}{l} \text{+b, –i} \\ \text{TEAPOT} \\ \textit{MAT} \end{array}\right]\right] \\ \\ \end{array}\right]$

The representation of *teapots* in (15) shows the application of the PL operation in figure 8.2, to the semantic representation of *teapot* in (14). *Teapots* is, semantically speaking, *teapot* with the PL operator changing its boundedness.

Since PL requires only that the singular noun must be [+b], both [+b, –i] INDIVIDUAL terms and [+b, +i] GROUP terms can be made plural. But

because the semantic representation of the singular word is available in the plural representation, we know that the plural *teams* refers to an AGGREGATE whose individual members are GROUPS, while *teapots* refers to an AGGREGATE of INDIVIDUALS. AGGREGATES and SUBSTANCES cannot be made plural, since they are not [+b]. This accounts for the usual oddness of mass noun plurals like *muds*.

8.4.2 The Universal Packager: COMP

In order to make sense of SUBSTANCE terms like *mud* when they occur with count-noun morphology (e.g. *two muds*), we must unusually interpret them as representing [+b] INDIVIDUALS. One way to do this is by invoking another operator, known as the **Universal Packager**, in which SUBSTANCE nouns are understood as being "packaged" into bounded portions. We can see this in (17), where we would typically interpret *tea* as meaning 'cup of tea,' as opposed to its unbounded use in (16).

(16) Carol drank tea. *SUBSTANCE*: [−b, –i]

(17) Carol drank a tea. *INDIVIDUAL*: [+b, –i]

The component representing the Universal Packager function is called COMP, for 'composed-of,' since *a tea* is an INDIVIDUAL that is composed of *tea*. This is shown in (18), which says that the COMP operator operates on a [–b] sense, resulting in a [+b, –i] sense.

(18) **'packaged' reading** = $\left[\begin{array}{l} \text{+b, –i} \\ \text{COMP } ([\text{–b}]_{A}) \end{array}\right]$

The representation in (20) shows the 'packaged' sense of *tea*. Note how it incorporates the SUBSTANCE sense of *tea* in (19) and the COMP structure shown in (18).

(19) *tea* = $\left[\begin{array}{c} \text{–b, –i} \\ \text{TEA} \\ \textit{MAT} \end{array}\right]$

(20) *a tea* = $\left[\begin{array}{l} \text{+b, –i} \\ \text{COMP} \left[\left[\begin{array}{c} \text{–b, –i} \\ \text{TEA} \\ \textit{MAT} \end{array}\right]\right] \\ \textit{MAT} \end{array}\right]$

This Universal Packager use of COMP thus gives a means for a regular polysemy (§5.2.2) between SUBSTANCE and INDIVIDUAL senses. Note that since the

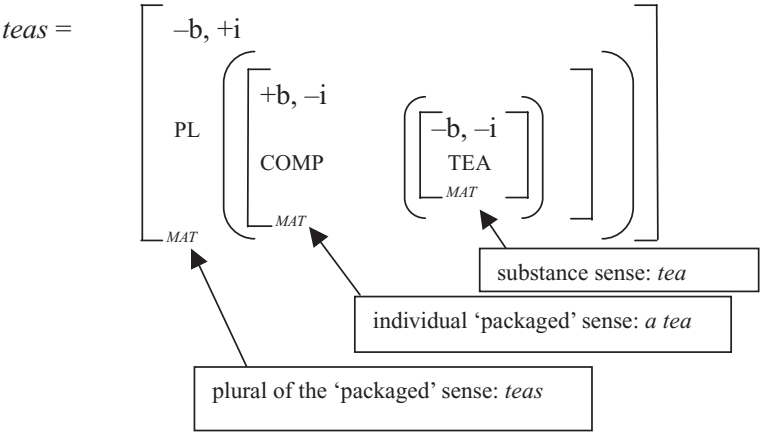


Figure 8.3 *Multiple operations on* tea

'packaged' SUBSTANCE noun results in an INDIVIDUAL sense, it can also be pluralized. So *teas* in (21) is represented as in figure 8.3, with three layers of [±b, ±i] specifications.

(21) Carol drank 17 teas today.

8.4.3 Evaluating the CS approach

In this section, we've shown how two operators can be used to generate new meanings for nouns, demonstrating both how plural marking creates a new meaning based on an old one and how countable UNIT-OF-SUBSTANCE meanings can be derived for SUBSTANCE nouns. The CS approach can also be applied to other kinds of polysemy based on countability variations – for instance, 'type-of' meanings as in *The shop stocks 17 teas* and SUBSTANCE meanings derived from INDIVIDUAL meanings, as in *She has mango all over her face*. (These have been left for you to explore in the exercises at the end of the chapter.)

One of the most attractive things about Jackendoff's approach is that most of the components used here to account for count/mass differences and polysemy are also useful for representing other kinds of senses. We'll see ways to apply the [±b] feature to verb and adjective meanings in chapters 10 and 11. Goddard (2009), however, has criticized this approach as being far too broad and ignoring differences between different instances of these polysemy relations. We'll see aspects of his NSM approach in §8.6.

The operators PL and COMP are also useful for other kinds of expressions than those discussed here. For instance, COMP is used in the lexical semantic representation of words like *pile* or *stack*, since piles and stacks are necessarily composed of something, as in (22) and (23).

(22) *pile* = $\begin{bmatrix} +b, -i \\ \text{PILE} \\ \text{COMP } ([-b]) \end{bmatrix}_{MAT}$

(23) *stack* = $\begin{bmatrix} +b, -i \\ \text{PILE} \\ \text{COMP } ([-b, +i]) \end{bmatrix}_{MAT}$

Here we can see that while both stacks and piles are composed of other things, the types of things that they can be composed of differ in their boundedness and internal structure. That COMP has a [–b] argument for *pile* in (22) accounts for the facts in (24):

(24)

Yes:	No:
a pile of teapots [–b, +i]	#a pile of teapot [+b, –i]
a pile of rice [–b, –i]	#a pile of committee [+b, +i]

But because a *stack* can only be composed of a [–b, +i] AGGREGATE, it is more limited in the types of things that a stack can include:

(25)

Yes:	No:
a stack of teapots [–b, +i]	#a stack of rice [–b, –i]
	#a stack of teapot [+b, –i]
	#a stack of committee [+b, +i]

Jackendoff (1991) only discusses a small range of countability types, so some questions remain unanswered. For example, *furniture* and other names for heterogeneous categories act like mass nouns in that they cannot be counted (*#three furnitures*) and they agree with singular verbs (*furniture is expensive*) – yet they seem to have clearer individuals within them than masses like *water* or *rice*. The test of divisibility works only so far for *furniture*: a sofa + a chair = *furniture*; subtract the sofa and the chair is still *furniture*, but break the chair in half, and one no longer has furniture. So, the level of internal structure seems to be different for *furniture* than for other non-count nouns like *water*. The approach in the next section addresses such differences.

Puzzle 8–2

Using the semantic type terminology in (9), how can you describe the difference between the two senses of *people* below?

a. *People are strange.*
b. *A people united can never be defeated.*

Is the relationship between these two senses a case of regular polysemy, like the polysemy created through COMP? To answer this, demonstrate whether other words have similar meaning patterns, concentrating on their [±b] and/or [±i] features.

8.5 Mass nouns as plurals

8.5.1 Chierchia's approach

Up to this point, we have treated mass nouns as words for SUBSTANCES and set aside other non-count nouns that describe things other than SUBSTANCES. Like much of the literature on count-versus-mass nouns, we have implicitly accepted that count nouns, which denote INDIVIDUALS, and mass nouns, which denote SUBSTANCES, are the two extremes of noun countability and thus have tried to account for those before accounting for the "in-between" or "difficult" cases. What would happen if instead we started with the difficult cases? This is the approach that Gennaro Chierchia (1998; following Gillon 1992) has taken. He argues that we can learn more about the semantics of "mass" nouns by starting with nouns like *furniture*, *clothing*, and *footwear* than by starting with "prototypical" mass nouns like *water* and *wheat*.

Nouns like *furniture* and *clothing* are singular and non-count, in that they agree with singular determiners and verbs, as shown in (26), and cannot be made plural, as in (27):

(26) a. This furniture/clothing wears well.
b. *These furniture/clothing wear well.

(27) *These furnitures/clothings wear well.

But they differ quite markedly from the SUBSTANCE mass nouns we've discussed already, in that they are general terms for heterogeneous categories of discrete things. For instance *furniture* can refer to chairs, tables, beds, and so forth, and *clothing* to shirts, skirts, trousers, and dresses. The SUBSTANCE mass nouns like *mud* and *wheat*, by contrast, seem not to be composed of individuals – mud is made up of mud, not of separate types of things with different individual category names.

Chierchia looks at mass-noun semantics from the starting perspective of the *furniture*-type nouns. One of the first things to notice is that many such nouns have plural counterparts that mean pretty much the same thing:

(28)

furniture	furnishings
clothing	clothes
change	coins
footwear	shoes
luggage	bags

The existence of plural semantic equivalents could be interpreted as a hint that mass nouns like *footwear* are semantically not too different from plural nouns like *shoes*. Furthermore, different languages make different decisions about which nouns are countable and which not. For instance, *hair* is a mass noun in English, but its equivalent in Italian, *capelli*, is a plural count noun. Chierchia takes this as a starting point for arguing that non-count nouns, whether *furniture* or *water*

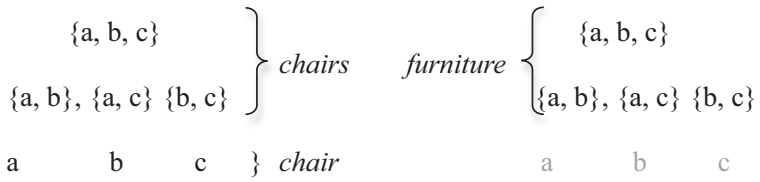


Figure 8.4 *Pluralities and individuals*

or *rice*, do not refer to fundamentally different types of things than plural count nouns do. On this view, we do not say things like *furnitures* or *rices* simply because *furniture* and *rices* already refer to pluralities. To add an *-s* to a normal interpretation of *furniture* is thus redundant, just as it would be redundant to add a plural marker to other already-plural nouns (**cattles*, **childrens*).

However if words like *furniture* and *rice* are inherently plural words, then why aren't they countable? That is, we can count *two chairs*, so why not **two furniture*? The only way to count these is to use partitive constructions, like *a piece of furniture* or *a stick of furniture*, which define units into which *furniture* can be individuated. Chierchia's answer to the counting problem is that *chair* is associated with individual chairs and it undergoes the PL operation (as seen in §8.4.1) in order to make it plural, but *furniture*, not having undergone an INDIVIDUAL-to-AGGREGATE operation, applies equally well to INDIVIDUALS or sets of INDIVIDUALS. That is to say, the distinction between singular and plural is **neutralized** for *furniture*. But while the INDIVIDUAL-level structure is part of the semantic representation of a mass noun, it is not foregrounded in the way that INDIVIDUALS are foregrounded in cases in which a singular term has undergone pluralization, as illustrated in figure 8.4.

So, if we want to count *furniture*, no individual-level items have been already identified for it so the identity of the individuals to be counted is **vague**, whereas for *chairs*, we know exactly which individuals we're counting, as it says so right there in the word. You might think that in a case like *rice* it would be very clear what should be counted, and so Chierchia's approach would say that *two rices* should mean *two rice grains*. But Chierchia points out that it's not the case that the individuals in *rice* are necessarily the grains. A half-grain of *rice* could still be called *rice*, but we probably wouldn't say *the floor is covered with rice* if the rice had been ground down into powder. This tells us that while the individuals in *rice* could be smaller than whole grains of rice, they have to be bigger than the specks in rice powder. Since the border between being rice and being something else (powder) is indeterminate, we can't count *rice* unless we use a partitive construction in order to make the unit of counting clear.

8.5.2 Evaluating Chierchia's approach

We have not had the space here to look at all of the types of argument that Chierchia brings in favor of his proposal. Still, we've seen enough to

appreciate that Chierchia proposes a solution that relies on the same countability features for two types of noun, countable plurals and non-count nouns. Instead of relying on an INTERNAL STRUCTURE feature in order to differentiate plurals like *chairs* and non-count nouns like *rice* and *furniture*, he says that the only difference between them is that *chairs* highlights the existence of individual chairs, while *rice* and *furniture* have plurality at their forefront, and it is hard to work backwards from that plurality to the countable individuals because their identity remains vague. That Chierchia can reduce the number of truly distinct countability categories while still accounting for a lot of the behaviors of these nouns is a positive thing, since it helps to explain how it is that we acquire these categories so easily.

Barner and Snedeker (2005) provide some experimental support that we understand non-count nouns as plurals, but they are less convinced when it comes to words that are flexible in whether they are understood as mass or count nouns. Take, for example, *string*. We can treat this as a count noun (*a string*, *two strings*) or a mass noun (*some string*). Chierchia treats all such instances as cases in which the Universal Packager plays a role. But note that the Universal Packager does not work equally well for all non-count nouns: we can have *a rice* (i.e. 'an order of rice') but not *a furniture*. Other approaches avoid this problem by assuming that the Packager only applies to substance nouns and that words for collections of objects, like *furniture*, have different semantic properties. Since Chierchia does not treat substances as a distinct category from other types of non-count nouns, it is less clear why *string* and *rice* can have mass and 'packaged' count interpretations, whereas *furniture* and *clothing* cannot.

In the next section, we move on to aspects of the NSM account, which addresses more types of countability while making claims about the relation between countability and conceptualization.

8.6 Cultural habits and countability: the NSM approach

In the last two sections, we have looked at ways to account for differences between count nouns and certain non-count nouns that refer to types of MATERIAL ENTITY. But there are still a number of mysteries relating to the countability/plurality status of various words. For instance, why are some heterogeneous [–b, +i] collections referred to by plural nouns (*vegetables*) and others by singular nouns (*fruit*)? Why can we hold a handful of *oats* but not **wheats*? Why are we appropriately dressed in *a pair of trousers*, but doubly dressed in *a pair of bras*?

Comparing translational equivalents from different languages confuses the picture more. Strawberries and peas have the same general physical properties no matter where you are, but the English words for them are count nouns, and in Russian they're mass nouns. And why do the French speak of plural *informations*,

while the English do not? Such facts have led some (e.g. Bloomfield 1933, Palmer 1971) to conclude that countability is to some extent arbitrary – one must learn which nouns are count nouns and which are not and store this information in the mental lexicon.

8.6.1 Wierzbicka: countability is semantically motivated

Wierzbicka (1985) departs from this view, arguing that if words differ in their countability, then it must be because we conceptualize their denotata differently. Take, for example, the differences between *oats* and *wheat*. Bloomfield (1933:266) claimed that because these are both words for 'particles of grain,' if the motivation for countability were semantic, then they should both have the same countability properties. But one is in the plural form and the other in the singular, so, he concludes, the distinction between count and non-count must be arbitrary – that is, there is no semantic reason for the difference. But Wierzbicka responds that there must be a semantic reason, since other variations in countability, for example between mass noun *tea* and countable noun *teas* as in (16) and (17), are meaningful. She holds that the difference between *oats* and *wheat* arises from differences in how we conceptualize the two grains.

In general, Wierzbicka says that we treat as countable anything whose individual units are big enough to be perceived as countable and interesting enough as individuals for us to want to count them. So, *oats* in this example comes under the category of things that could be counted, and *wheat* doesn't, since wheat grains are just that much smaller. However, English speakers do not really care about counting individual *oats*, either. After all, we rarely interact with a single oat, or even three or ten oats. This is consistent with the fact that *oats* does not act quite like a true plural count noun, such as *teapots*, in that we rarely use it in the singular and rarely use it with counting quantifiers. So, you probably would not say *many oats* or *four hundred oats* as in (29), but you also wouldn't use the mass quantifier *much*, which conflicts with the plural marking on *oats* in (30). Quantifiers that do not imply actual counting, like those in (31), sound best with *oats*.

(29) ? The horse ate many/four hundred oats.

(30) # The horse ate much oats.

(31) The horse ate some/a lot of/plenty of oats.

Wierzbicka's study investigates the types of countability and pluralization behaviors seen in various types of nouns, and she concludes that at least fourteen different types of noun exist with respect to countability. The more individuable objects are, the more likely that their names will have all of the semantic and morphological properties of count nouns. The less individuable they are, the more likely that they will have the properties of mass nouns – but there are many other states in addition to these extremes.

8.6.2 NSM treatment

Wierzbicka (1985) used her Natural Semantic Metalanguage (NSM – see §4.4) to provide componential accounts of the different countability classes she identified, and Goddard (2009) develops a subset of these further. Take, for example, Goddard's NSM treatment for the class that includes *cheese* in (32), the one that includes *oats* (33), and the one that includes *teapot* (34):

(32) singular names for homogeneous substances (*cheese*, *glass*, *paper*):

- something of one kind
- people can say what kind with the word *cheese* (*glass*, *paper*, etc.)
- people can't think about something of this kind like this:
  "this thing has many parts, someone can know how many"

(33) aggregates of small, unnamed things (*oats*, *coffee grounds*):

- something of one kind
- people can say what kind with the word *oats* (*coffee grounds*, etc.)
- people can think about something of this kind like this:
  "this something is many small things
  there can be many of these small things in one small place
  people can do some things to one of these things with one finger"

(34) countables (*cat*, *teapot*, *chair*, *dog*):

- something of one kind
- people can say what kind with the word *cat* (*teapot*, etc.)
- people can think about something of this kind in one of these ways:
  "this something is one thing of this kind"
  "this something is not one thing of this kind, it is more things of this kind"

Wierzbicka and Goddard hold that these explications represent subclasses of noun, each of which has its own behavior in terms of countability, pluralization (or singularization), the types of partitive expressions (e.g. *a flake of*, *a scoop of*) they can occur with, and so forth. Which of these subclasses a noun belongs to depends on how its denotata are conceptualized in the language community. Things that are thought of as individual are countable, things that are thought of as masses or groups are not, but these differ in whether they are pluralized or not (e.g. *wheat* versus *oats*), depending on whether they are conceptualized as something that cannot be counted or as things that are not worth counting, and so forth.

In an appendix to his 2009 article, Goddard sketches an approach to the regular polysemy patterns between mass and count nouns. He argues that more specific rules are needed than the general types of rule, like the Universal Packager, that Jackendoff uses. Goddard's examples focus on the converse of packaging, which is known in the literature as **grinding** – that is, using count nouns with mass interpretations, as in (35).

(35) There's a lot of egg in this soup. (*vs*. There are a lot of eggs . . .)

In this case, we interpret *egg* as a kind of substance – an undistinguishable number of eggs outside their shells. This sense of *egg* (egg_2) is in a regular polysemy relation (§5.2.2) with the count sense, egg_1. For the derived egg_2 sense and similar food word senses, Goddard gives the following schema:

(36) egg_2 ($apple_2$, $tomato_2$, etc.):

- something of one kind that people can eat
- people can't think about something of this kind like this: "this thing has many parts, someone can know how many"
- before, it wasn't like this
- it is like this now because someone did some things to it before at this time it was part of something else of one kind
- people can say what kind with the word *egg* (*apple*, *tomato*, etc.)

Such words would usually have a count-noun interpretation as explicated in (34). The schema in (36) represents the differences between the count and mass interpretations of these words, but it applies to only a subset of count nouns – those to do with certain countable kinds of food.

Goddard gives a different schema (37) for deriving the sense of *cedar* that refers to wood (non-count) rather than trees (count). In other words, Goddard sees the 'grinding' process for trees as resulting in a different relation between the two senses of *cedar* from the relation that holds between the two senses of *egg*.

(37) $cedar_2$ ($pine_2$, oak_2, etc.):

- wood of one kind
- when people want there to be wood this kind somewhere, they do some things to trees of one kind
- people can say what kind with the word *cedar* (*pine*, *oak*)

Similarly, different schemas would be needed to show the relation between the count sense of *frog* and the non-count sense used in *there's frog all over the pavement* and so forth.

8.6.3 Cross-linguistic differences

Wierzbicka (1985) offers two types of explanation why nouns for the same things (like *pea* and *onion*) have different countability status in different languages. First, different languages/cultures set the boundaries for countability in different ways. For example, the size at which foods become "interesting enough" to be counted as INDIVIDUALS is larger in Russian than in English – so English counts peas and strawberries, while Russian *gorox* ('pea') and *klubnika* ('strawberry') are mass nouns in their base form.

Second, cultures may differ in how they interact with, and thus conceptualize, the denotata. For example, although people rarely bother to count it, in Italian *spaghetti* is a plural count noun (*1 spaghetto*, *2 spaghetti*). In English *spaghetti* is

treated as a mass noun. This is not just because English speakers do not know that *spaghetti* is a plural; we could very easily add our own plural marking to it to make it a count noun (*two spaghettis*), but we don't. It also is not because *spaghetti* is too small to be counted in English, since *noodle*, which denotes practically the same thing as spaghetti, is a count noun. Wierzbicka (in a lecture given in the early 1990s) pointed out that English speakers have a very different relationship to spaghetti than Italians. First, Italians are more connected to how spaghetti is made – historically it was made at home, where the individual strands would have to be handled. On the other hand, spaghetti generally entered English speakers' consciousness as something that gets poured out of a box into boiling water – with no need to handle individual pieces. Second, pasta is eaten differently in Italy and English-speaking countries. *Spaghetti* in English often refers to a whole dish, which is presented as a mass of pasta beneath an opaque tomato sauce. In Italy, pasta is traditionally a first course or side dish, where it may be eaten with just a bit of oil and garlic. In this case, the strands are more perceptible as individuals. Furthermore, some English speakers cut their spaghetti, destroying the integrity of the individual strings, whereas Italians instead wrap the strings around a fork or slurp them up without cutting them.

Puzzle 8–3

Compare the countability of *onion* and *garlic* in English. Can the differences between them be explained in terms of how we interact with these foods?

Wierzbicka's (1985) position is that the conceptualization of a thing determines whether the word for it is a count or non-count noun, and that conceptualization depends on how we perceive and interact with the thing – which may be influenced by our culture. On this thinking, *spaghetti* is a mass noun in English because when English speakers think about spaghetti, they think about a mass, rather than about individual strings, but it is a usually plural count noun in Italian because Italian speakers think of it as a bunch of individual strings. We can call this position **cultural relativity**. The contrary position would be that the countability of nouns is somewhat arbitrary, but that our conceptualization of objects is affected by our experience of whether the noun for it can be made plural or counted. In this case, *spaghetti* is a mass noun in English by accident (the people who borrowed it may not have realized it was a plural), and thus English speakers treat spaghetti strands as a mass. This position is known as **linguistic relativity**, the idea that language affects how we think and behave.

Judging the directionality of the connection between language and conceptualization is difficult. Let's take Wierzbicka's (1996) example of English *mouth* and Polish *usta*. Both words refer to the mouth, but the Polish word is always in the plural form, and Wierzbicka links this to the prominence of the lips in the Polish conceptualization of the mouth. Although there is another Polish word for 'lips,'

(a) (b)

Figure 8.5 *Bipartite (a) and modern (b) scales*

one can also describe one's *usta* as being chapped or cracked or red with lipstick. In English, however, the singular count noun status of *mouth* focuses more on the cavity than on the lips – so we would not say we had *a chapped mouth* if our lips were chapped. The cultural-relativity way to think of this is that the Polish have a plural word because they think of the lips when they think of the mouth. But the linguistic relativity view, would instead suggest that the Polish think of the lips when they think of the mouth because *usta* is plural, and this draws attention to a visibly "plural" part of the mouth, the lips.

8.6.4 Evaluating the NSM approach

The NSM approach is very thorough in its taxonomy of different types of countable and non-countable noun, approaching each variation in noun behavior as marking out a completely separate subcategory of nouns. Such work calls our attention to a great number of fine points of noun use that need to be accounted for in a lexical semantic theory. However, this has raised the criticism that the "big picture" may be overlooked. For instance, we can raise the question of whether generalizations about count-to-mass regular polysemy relations have been missed in giving separate treatment of words for different types of substance (e.g. FOOD versus WOOD as discussed in §8.5.2). (See Jackendoff 2007 for related criticism.)

A criticism of the cultural relativity aspects of this account is that if countability is entirely based on how we interact with and conceptualize things, then changes in that interaction should as a matter of course bring about changes in the language – and it is not always clear that they do, or on what time scale they should be expected to change. The name for the weighing tool *scales* is a case in point. Historically, *scales* was plural because scales had two clear parts in which one thing was weighed against another, as in figure 8.5(a). Modern scales (figure 8.5(b)) do not involve balancing things in two plates.

American English has changed along with the scales, so that item (b) in figure 8.5 is usually called *a bathroom scale*. In Australian English, however,

it is still called (*a set of*) *scales* (Wierzbicka 1996). When Wierzbicka asked Australians why the word is plural, they answered it was because there are lots of little numbers on the contraption. This seems to be a case of the plural word influencing the thinking about the singular thing. However, Wierzbicka notes that Australian English has shifted from speaking of *a pair of scales* (for item (a)), to *a set of scales* (for (b)), which indicates a way in which the language has followed the cultural change to some degree. There is a level of bidirectionality in the relation between language, culture, and conceptualization (as Wierzbicka acknowledges), since language is a major tool in learning about things and in passing on cultural practices from generation to generation.

8.7 Summary and conclusions

We have seen that the basic properties of countability and plurality can be accounted for by the features of boundedness and internal structure. But whether a noun is [+bounded] or [+internal structure] is a result of the ways in which we conceptualize the denotatum, rather than what properties the denotatum has in some absolute sense. This means that:

(a) Thinking of the denotatum in a different way, for example thinking of *onion* as an ingredient or as a plant bulb, can change its countability status.

(b) If different cultures interact with the denotatum in different ways, the two languages' nouns for that denotatum may have different grammatical countability status.

Jackendoff's approach, which relies on binary features of boundedness and internal structure (§8.3.2–8.4), provides an efficient way of addressing issue (a), though further development is needed to account for the full range of countability types. Chierchia tries to reduce the singular/plural/mass/non-count distinctions to the relationships between INDIVIDUALS and pluralities. Wierzbicka and Goddard more explicitly address issue (b). However, language and conceptualization inform each other – thus the linguistic relativity and cultural relativity positions discussed in §8.6.3 probably both have more than a grain of truth about them.

8.8 Further reading

For more on the approaches discussed in §8.3 through §8.6, see the original sources cited in the chapter. John Lucy (1992) looks at the linguistic relativity implications of the count/non-count distinction in English versus Yucatec, in which all nouns are basically non-count, and classifiers (a different word class)

are used in the counting of nouns. His 1996 overview of linguistic relativity gives a good introduction to the relevant concepts (Lucy 1996). Papafragou 2005 offers an overview of more recent studies of countability and linguistic relativity, with particular reference to language acquisition.

8.9 Answers to puzzles

8–1

(a) *Lemonade* = [–b, –i] = SUBSTANCE. Note that, like other substances, it can only be *a lemonade* if we interpret it as denoting 'a glass of' or 'a kind of' lemonade.

(b) *Forest* = [+b] because a forest has a boundary and thus is countable: *three forests*. You might think it's [+i] because a forest is made up of individual trees; however, forests are more than just collections of trees. They are particular areas of land with trees and other plants. This fits with the fact that we do not make partitive constructions using *tree* as the 'part' of the *forest*. So, #*three trees of a forest* sounds odd, while *three members of a team* sounds fine. Thus, *forest* is [–i], in the same way that *person* and *teapot* are [–i] – making *forest* an INDIVIDUAL.

(c) *Furniture* is [–b], in that it is divisible and additive. So, if you have a chair and a bed in your room, you have *furniture*; if you destroy the bed, you still have *furniture*; and if you add a table, it's all still *furniture*. Its internal-structure status is more difficult to decide. *Furniture* denotes some number of individual [+b] pieces – in our example, a chair, a bed, and a table. This makes it seem like an AGGREGATE term, like *teapots* and *cattle*. However, it is different from the [+i] categories we've seen so far, since it typically denotes a heterogeneous collection, rather than a collection of like things. That is, while you could refer to three chairs as *some furniture*, you're more likely to use *three chairs* in that case, and to reserve *some furniture* for situations involving some chairs and some tables or beds, etc. *Furniture* does not act like a plural, like the [–b, +i] AGGREGATES do. For example, we say *The furniture is beautiful*, not **The furniture are beautiful*. This is not just because *furniture* has no plural suffix, as we can tell from the fact that *cattle* is a plural without a plural suffix, but still acts like an AGGREGATE: *The cattle are grumpy*, not #*The cattle is grumpy*. Thus, we must conclude that another semantic component is needed to mark items that have a heterogeneous internal structure, while reserving [+i] for meanings that involve homogeneous internal structure.

(d) *Scissors* is an even more difficult case. It seems to be [+b], since pairs of scissors are neither divisible nor additive. However, we would expect for a [+b] item to be countable in a normal way, like *three teapots* and *five committees*, but as we've mentioned, *#three scissors* and #*a scissor(s)* are odd in most dialects. Does *scissors* have internal structure? Again, it's

hard to tell. A pair of scissors is presumably *a pair* because we think of the two blades as being separate constituents of the pair. However, neither of these is *a scissor*. Neither can we use a partitive, as in *#a blade of scissors*. Again, it looks like more specific semantic components are needed in order to treat the words for 'pairwise' objects, like *scissors*, *underpants*, and *goggles*.

See Wierzbicka (1985) and Goddard (2009) for a Natural Semantic Metalanguage account of these and other types of countability.

8–2

In *People are strange*, *people* is an AGGREGATE term, which acts as the plural of *person*. In *A people united* . . . it is a GROUP term, which refers to some group of people – for example, an ethnic group or a citizenry – as a whole. They thus differ in that the AGGREGATE *people* is [–b], while *a people* is [+b]. This is not a case of regular polysemy, since when AGGREGATE terms are preceded by *a*, they are either ungrammatical (**a teapots*) or interpreted as INDIVIDUALS [+b, –i]. Thus *a cattle*, while not to everyone's grammatical liking, must be interpreted as an individual bovine animal.

8–3

Onion is generally a count noun, and *garlic* generally a mass noun – one says *an onion* but not *#a garlic*, and *a head of garlic* but not *a head of onion* or *a bulb of onion. Onion* can be treated as a mass noun, however, in contexts like *This soup has too much onion*. (*Too many onions* is also possible, though it is interpreted slightly differently.)

While heads of garlic are usually smaller than onions, this is not the only reason for their difference – after all, there are small onions, like pearl onions and shallots, whose names are countable. Wierzbicka notes that both garlic and onions are used chopped up as an ingredient or flavoring for other foods. Since they're usually experienced chopped, their integrity as individuals is compromised. This is why both can be used as mass nouns (like other food words, when they're used as ingredients in other foods). But, Wierzbicka notes, whole onions are sometimes prepared and eaten too – for example, cocktail onions or some onions in stews. Heads of garlic are not eaten in this way because of the paper between the cloves.

8.10 Exercises

Adopt-a-word

If your word is a noun, explore its countability by (a) examining whether it can be made plural and counted (e.g. *three Xs*) or whether it can occur with non-count quantifiers (*how much X*), (b) analyzing it semantically – which of these uses is bounded and/or has internal structure? If it can be interpreted in more than one way (with respect to countability), describe the different meanings, how they relate to one

another (can they be related by an operation like COMP?), and in what contexts you would use the various meanings.

General

1. In this chapter, we concentrated on nouns that refer to MATERIAL ENTITIES – THINGS and SUBSTANCES. The following nouns do not refer to physical things. Should they be classified as [+b] or [–b]? Or do they have both [+b] and [–b] senses? In what ways can non-physical things be bounded? Use linguistic evidence to support your claims.
   a. race (i.e. 'a contest of speed')
   b. race (i.e. 'a category of humans')
   c. admiration
   d. advice
   e. threat

2. The COMP treatment in §8.4.2 only accounts for the '17 cups of tea' interpretation of *17 teas*. Another possible interpretation is '17 different types of tea,' as in *That shop stocks 17 teas*. Develop a treatment of this type of polysemy ('x' versus 'type of x') by inventing an operator component called KIND-OF. Make sure to do all of the following:
   a. Determine what range of meanings this function can apply to (just substances or also other kinds of things?), describing them in componential (±b/±i) terms.
   b. Give the generic structure of such a 'type of' operation, in the style of the examples of other operations in figure 8.2 and (22).
   c. Give example(s) of how this structure applies to the type(s) of noun that the KIND-OF operation can apply to.

3. If one uses *watermelon* with mass-noun morphology – without a counting determiner and in singular form, it forces an interpretation in which *watermelon* is a SUBSTANCE, as in the following:

   There was a watermelon on Mel's car. (= one melon INDIVIDUAL)
   There was watermelon on Mel's car. (= melon-based SUBSTANCE)

   A function, sometimes called the **Universal Grinder** or GR, allows the interpretation of INDIVIDUALS as SUBSTANCES. Treating GR as the name for such an operator, develop a treatment of INDIVIDUAL-to-SUBSTANCE polysemy, using the instructions (a)–(c) in the previous question to guide your process.