Sutra 4: The *Whole* Is More than the Sum of Its Parts

4.1 'The whole is more than the sum of its parts' (Aristotle: *Metaphysics* 1045a10).

$$H_2 + O \rightarrow H_2O$$

Two atoms of hydrogen + one atom of oxygen make up one molecule of water. The 'whole' of water is more than the mixture of the two gases; its properties are different from theirs: hydrogen burns, oxygen feeds fire, while water is a liquid which extinguishes fire!

Language is more than the sum of set word-meanings and rules for putting them together.

Language is a social *means* of thought – a TOOL societies use for generating complex meanings.

How does it work? What is the Mechanism of Language?

4.2 Society gives us the TOOL for creating infinite meanings – LANGUAGE. This tool consists of a set of conventional word-meanings and rules of how to put them together into sentences (thoughts). Artists can create any kind of mosaic images by arranging colored tiles in a particular way:

We are like artists, in that sense – we create any kind of complex meaning by arranging words into sentences. Words are like tiles of different colors – a brown tile may be part of a flower, a sucker on a frog's toe, or anything else – **its true meaning is its *use* in the mosaic**. Likewise, words acquire their true meaning only in the context of the composite whole of the sentence mosaic; i.e., what is the meaning of '*jerk*' or '*finger*' in 'The jerk gave me the finger'?

30

Made up of colorful word-meanings, sentences transmit their meaning 'in a flash', just like mosaics do. The only difference between sentences and mosaics is that we see the meaning of images through our sense of sight, while we 'see' the meaning of sentences (the 'word mosaics') through our sense of hearing. Because our physical senses perceive all things first as a whole, we 'sense' word mosaics (sentences) just as we see visual images, as a whole (Re: Sutras 2.4 – 2.5).

4.3 Meaning as Use

Conventional word-meanings are the social 'currency of thought exchange.' They are the colored tiles we put together to create our mosaics (composite meanings). Each tile in a mosaic acquires its 'meaning' only in the context of the other tiles that make up the whole image. For example, what is the 'meaning' of each yellow/ black tile in this ancient Roman mosaic?


A fragment of a Roman mosaic, circa 300AD, unveiled in Lod, Israel
http://news.bbc.co.uk/2/hi/in_pictures/8128564.stm

In the same way, each word acquires its true meaning only in the nexus of the sentence whose meaning, in turn, is more than the sum of its words – it depends on *how* they have been put together ('The chicken comes before the egg' is not the same as 'The egg comes before the chicken'), as well as on how the mosaic is 'seen' by each mind:

'Meaning as Use' reflects the fluid psychological and social nature of word-meanings – so fluid that, indeed, words and their meanings are relatively independent of each other in the word 'mosaics' we make (the same pattern can be perceived differently by different people/ minds).
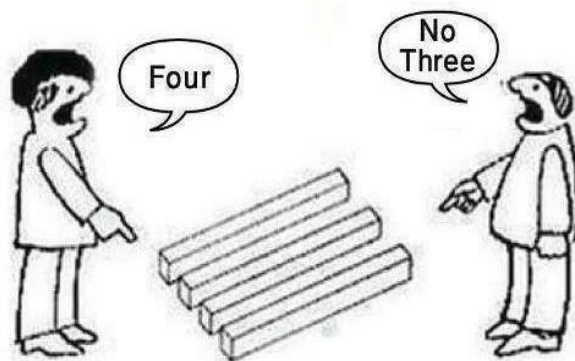
It is practically impossible to 'freeze' meanings in use, because ideas exist only in our minds. We all perceive the world's mosaics with our own eyes and ears, and we 'make sense' of them only in our own heads. Each mind's eye views the world from its own perspective; its clarity of vision depends on many factors, such as the level of our cognitive development, experience, emotional /physical state, the cultural context and place /time of the communication, etc.

Perspective is everything..

The 'image' (sentence meaning) different people see with their mind's eye, therefore, may not be the same; it depends as much on the 'color' and patterns of the word-meanings making up the whole 'image' (proposition), as on the all the other variables (the level of cognitive development/ individual experiences and memories of the people who are trying to make sense of them; social and physical circumstances of exchange, etc.). This is why ambiguity is so inherent in all human languages.

4.4 Generalization Is the Mechanism of Our 'Thinking Tool' – Language

We 'think' by connecting ideas into complex mosaics of meaning. Just as the process of breathing involves both inhalation and exhalation, so also the process of thinking involves both synthesis and analysis of ideas. We use the 'thinking tool' (language) to spin our 'webs of significance' through synthesis and analysis of ideas. In order to form a concept (i.e., *understand* something), we must be able not only to connect, but also to *abstract*, to *single out* its characteristic elements, and to view them separately from the "totality of the concrete experience in which they are embedded" (Vygotsky: 1986, p. 135).

To make a mosaic, we must not only put our tiles together into a meaningful pattern, but also add enough detail, to make the image clearer. Similarly, when making a sentence, we must not only put words together into a basic meaningful structure (S/V/C), but make our meaning clearer, by adding detail (description) to the major sentence constituents (Subject, Verb, and Compliment).

We spin our verbal 'webs of significance' by putting word-meanings together into the **nexus** of the proposition (**synthesis**) and describing *parts* of the nexus by associating them with other ideas, based on some Resemblance, Contiguity, or Cause/ Effect relationship (**analysis**)

Generalization is thus the matrix of universal grammar of verbal thought; it is embodied in countless forms and structures of the world's languages, all shaped by it:

[Logic] shares something with grammar in that it provides rules for expressions, yet it differs in that grammar only provides rules specific to the expressions of a given community, whereas the science of logic provides common rules that are general for the expressions of every community (al Farabi: 1931; 17.5-7, 18.4-7).

4.5 'Practice Makes Perfect.' We acquire all skills through practice (even though inborn talent may also play a role). This is why our language (and, therefore, thinking) skills are conditioned by the quantity and quality of our social interaction; there is a direct **correlation between our social and cognitive development**, i.e., between our **social interaction** and our **thinking ability**. As individuals, we often underestimate the role of society in our lives; we need to be reminded that, by giving us language, our society made us human.

4.6 Dialectic vs. Traditional /Descriptive Study of Meaning (Semantics)

Dialectical linguistics views word-meanings as monolithic **wholes** of psycho-physical and socio-historical characteristics all-in-one, inseparable. It examines **word-meanings** in **use**, 'alive' only in the context of the verbal mosaic of the sentence, viewing them in their interconnectedness, movement and evolution.

In contrast to dialectical linguistic analysis, traditional semantic theories break the word mosaic of the sentence into parts and focus on the meaning of the so-called '*lexical items*' (isolated words, phrases, etc.) in isolation from any concrete context. They split word-meanings into **signifiers** (physical linguistic structures) and the '**signifieds**' (the conventional meanings of words as listed in dictionaries).

They further break isolated words into their **semantic components** (also called **semantic properties** or **semantic primes**); these are the components of meaning of a word; for example, the component *male* is a semantic property of *boy, man, grandfather, youth, bull, stallion*, *cock*, etc. They also devised a rather complicated system of **semantic features** – a notational device for expressing the presence or

absence of semantic properties by pluses and minuses. Semantic features are supposed to cover the 'core properties' of isolated words; for example:

"woman"	is	[+human], [- male], [+adult]
'man'	is	[+human], [+male], [+adult]
'boy'	is	[+human], [+male], [- adult]
'girl'	is	[+human], [- male], [- adult]

It is not always easy to identify semantic properties – many abstract concepts are difficult to break into 'components' of meaning (take, for example, *advice*, *threat*, *hope,* or *implication, etc.*). That is why this type of semantics focuses primarily on *content words* expressing concrete ideas, such as *mango, run, blue*, etc., rather than on abstract concepts or *function words* (i.e., *of*, *in*, *which*, *that*, etc.) whose meanings are generally more abstract /grammatical.

Traditional semantic analysis also looks at how concepts relate to each other in the language. These relations between words, or '**lexical relations**', have been classified (not surprisingly!) into those based on resemblance, and those based on contiguity[1]:

(a) Relationships based on Resemblance (or lack of it)

Concepts may be very similar (or opposite) in meaning; these relationships between them are called **synonymy** and **antonymy**:

Synonymy

Synonyms are words with similar meanings, i.e. *liberty* : *freedom*, *broad* : *wide*, *near* : *close*, *kind* : *good-hearted*, etc. There are no perfect synonyms - no two words ever have exactly the same meaning in all contexts: to '*break*' is synonymous with '*snap*' in the phrase 'break/snap a stick into two', but not in 'snap/ *break one's fingers' or 'break/*snap a world record.' This, semanticists claim, is because meanings can 'overlap' in some contexts and diverge in others (the dialectical approach, meaning-as-use, views the meanings of parts of the word-mosaic in the context of the whole).

Antonymy

*Antonyms* are words with opposite meanings, and the contrast between them may be of several types:

⇒ **Complementary** (the negative of one automatically implies the other); for example: *single* (= not married) **:** *married* (= not single), or *easy* (= not hard) : *hard* (= not easy)*, alive* (= not dead) *: dead* (= not alive)

⇒ **Gradable contrast**, i.e., big : small, hot : cold, fast : slow, happy : sad, etc. With gradable pairs, the negative of one is not synonymous with the other; i.e., *not happy* is not necessarily *sad*, *not cold* is not the same as *hot*, etc.

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[1] Associations by Resemblance, Contiguity in space or time, and Cause/Effect underlie all human understanding (Re: Sutra 1)

⇒ **Relational opposites** (contrast depends on perspective): husband : wife, give : take, buy : sell, teacher : pupil, parent : child, provider : user, etc.

(b) Relationships based on Contiguity

A relationship between words in which one word-meaning is included in another is called **hyponymy**. To classify things as belonging to a category, we use the *inclusion* principle to build a hierarchy of related concepts, for example:
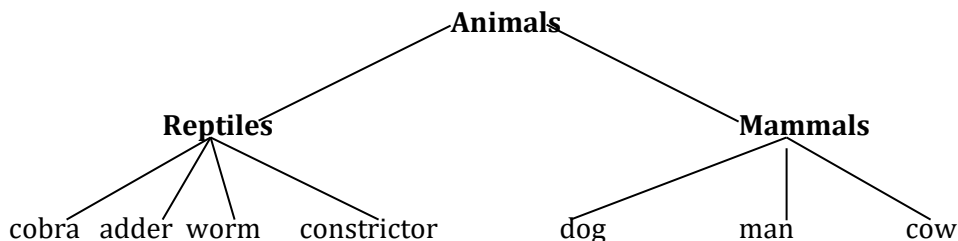
In hyponymy, one word may be replaced by a second word, but not the other way around, without a significant change in meaning. The concept "animal" entails "reptile" which in turn may entail "Papuan Black" or any other type of snake, but the entailment does not go the other way around (*reptile* is not the same as *rattle snake*, it has a more general meaning). Examples of hyponymy:

⇒ To **go**:   to *walk*, *stroll*, *strut*, *pace, march, hobble*, etc;
⇒ To **sleep**:   to *nap, snooze, snore*, etc.
⇒ To **laugh**:   to smile, to snigger, to guffaw, to giggle, etc.

Homonymy & Polysemy

There are several other terms semanticists use to describe relationships between words in a language.

Homonymy

Homonyms are words which have **the same form** (orthographic or phonetic), but **unrelated meanings**. If they only differ in one way, they are called homophones or homographs, respectively:

⇒ *Homonym* = 'has the same name': *bat* (tennis) : *bat* (flying rodent), *grave* (serious) : *grave* (burial site), *can* do : *can* of fish, etc.
⇒ *Homophone* = 'has the same sound': two : too, break : brake, flower : flour, etc.
⇒ *Homograph* = 'has the same spelling, written the same way': lead (the metal) vs. lead (not follow), moped (motorized bicycle) vs. moped (wallowed in self-pity), etc.

For example, there is a fish called a *fluke*, a part of a whale called *fluke*, and a stroke of luck called a *fluke*, but these are three different words with separate histories (etymologies) – they just happen to share the same form. Similarly, a river *bank* and a savings *bank* share the same spelling and sound, but have unrelated meanings and etymology (they are *homonyms*).

Homonymy usually results from an *accidental phonological similarity* between two unrelated words; for example, the words *bark* (of a dog) and *bark* (of a tree) come from two completely different historical sources. The first is from Anglo Saxon *beorcan*, and the second is from Old Norse *börkr.*

Homonymy may also result when two related meanings drift apart over time. The word *sole* (a kind of fish) was originally related to the word *sole* (of the foot), because the sole of the foot is flat, like the fish. Speakers of modern-day English do not find any such similarity of meaning.

Polysemy

Polysemy (*poly-* = many; *-sem-* = meanings) refers to words with multiple *historically related* meanings. Polysemy almost always arises historically when a meaning of a word is extended to include a new meaning (i.e., when a word begins to be commonly used in a new sense, while also retaining its original meaning). For example, the word *fork* can refer either to a branch in the road, an instrument used for digging, or to a utensil used for eating. The three senses of *fork* are all related in terms of shape (metaphoric extension by resemblance).

Polysemy results from the **conventionalization** of a semantic extension and the **retention** of the original meaning.

Polysemy is different from **homonymy**, where two lexical items happen to have the same form purely by chance (e.g. *bat* 'stick used for hitting a baseball' vs. *bat* 'flying mammal'). Polysemous senses of a lexical item always have related meanings. Homonyms, on the other hand, do not normally have related meanings.

You can usually tell if words are polysemous or homonymous by the way they are listed in the dictionary – if a word has multiple meanings (polysemic), then its meanings will be listed as part of a single entry. If, on the other hand, word-meanings are unrelated (homonyms), then they will appear as different entries.

As we have seen, the basis for all these categories/ lexical relations is our ability to *create* and *connect* ideas based on resemblance, contiguity, and cause/effect. Association by resemblance and contiguity are part of generalisation (= the mechanism of human thought). We have already seen how the principles of human understanding shape language structures (through *synthesis* and *analysis*, in terms of description/ modification/ specification of the main sentence constituents).

It is time now to consider how the same principles of human understanding drive semantic change (change in word meanings).

(c) Metaphor & Metonymy – the 'drivers' of Linguistic Change

In semantics, association by resemblance is called *metaphor* and association by contiguity in space/time is called *metonymy*.

Metaphor

Metaphors express one concept in terms of another, based on some similarity between the two. Often, metaphor involves expressing a relatively abstract concept in terms of a relatively concrete one. Metaphors often apply to entire domains of experience, and affect entire discourses, not just isolated words, i.e.:

⇒ **Happy / good = up; sad / bad = down:** i.e., I was feeling down, but now I'm feeling up again. My spirits rose, but then they sank. What can I do to lift your fallen spirits?

⇒ **time = money / value:** You're wasting my time. How do you spend your time? Is it really worth your time? You need to budget your time better. I'm living on borrowed time. This will save you a lot of time.

⇒ **mind = machine:** My math skills are a little rusty. He's trying to grind out a solution to the problem. My mind just isn't working properly.

⇒ **love = madness/ sickness:** I'm crazy about him. He drives me out of my mind. He raves about her all the time because he's mad about her. Our relationship is very healthy, but theirs is sick. We thought their marriage was dead, but now it's on the mend.

⇒ **seeing = touching:** His eyes are glued to the television. He can't take his eyes off of her. Their eyes made contact.

This type of metaphoric extension is a powerful tool for creating 'high-density' meaning. That is why both metaphor and metonymy are taught in writing classes as *figures of speech*/ literary devices for effective expression. Calling somebody 'honey,' 'tiger' or 'pig' automatically means that the speaker sees some similarity between the two. People have been aware of the power of metaphor (and metonymy) for thousands of years – the Sophists of Ancient Greece stressed the value of 'figures of speech' in rhetoric, and used it effectively in their writing.

Why is *Gorgias'* description of language so memorable?

The power of speech has the same relation to the order of the soul as drugs have to the nature of bodies. For as different drugs expel different humors from the body, and some put an end to sickness, and others – to life, so some words cause grief, others joy, some fear, others render their hearers bold, and still others drug and bewitch the soul through an evil persuasion …

Gorgias (~ 485-380 BC): *Praise of Helen*

Metonymy

Metonymy always involves an association between two things that **is based on something other than resemblance**. Any type of relationship 'based simply on a close connection in everyday experience'[2] is metonymic. For example, we often say things like, 'He drank a whole bottle of wine.' Of course, what we really mean is that he drank *the wine*, not the bottle. But the bottle and the wine were *close together in space and time*. This close association leads to a natural metonymic shift from one concept to the other. Compare also: *bottle shop*, to *go/be on the bottle*, to *drown one's sorrows in the bottle*, etc.

'Close connections in everyday experience' may include associations between

- **Organization and its management**: *Datec* employed new people recently. Or: *The University* will not agree to that.
- **Controller and controlled**: I accidentally hit a tree when driving home yesterday – lucky it was not a pedestrian! Or: A truck hit John in the right front fender.
- **Producer and product**: *Chomsky*[3] is on the top shelf. Or: We have an old *Ford* (*Mitsubishi*, etc.).
- **Part-Whole relationships**: We need more *boots* on the ground in Afghanistan (= troops). She's just another pretty *face* (= person). We need a *hand* here (= person who can help)

Metaphor and metonymy drive the process of ***grammaticalization*** (Re: Sutra 3) which traditional approaches describe as "semantic 'bleaching' and acquisition of more abstract grammatical meaning, accompanied by phonological reduction."

Metaphoric /metonymic extension also drive purely semantic change, which does not involve grammaticalization (polysemy, in particular).

(d) Semantic Change

In historical/ diachronic linguistics, ***semantic change*** refers to a change in word meaning. Again, word-meanings are viewed in isolation from the 'nexus' of the sentence.

Semantic shift is the general way of referring to any unspecified semantic change. Major categories of semantic change include

- **Widening** – a shift to a more general meaning: i.e., in Middle English, *bridde* meant a 'small bird'; later, *bird* came to be used in a general sense and the word *fowl*, formerly the more general word, was restricted to the sense of 'farm birds bred especially for consumption';

- **Narrowing** – a shift towards a more specific concept: the opposite of widening, or expansion. i.e., *fowl* → chicken, *meat* which derives from
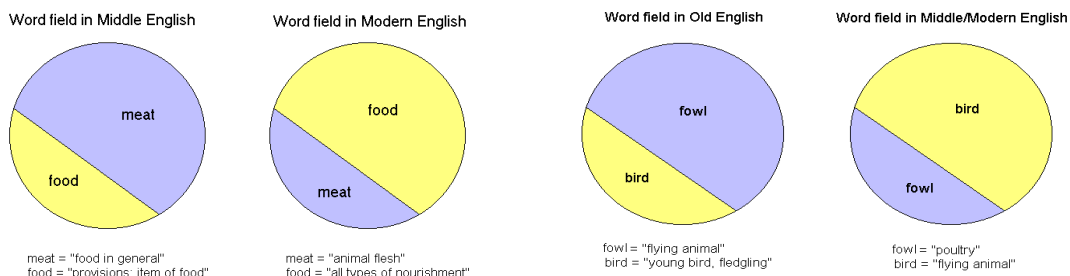
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[2] Yule, G. The Study of Language (1996), p.122

[3] Chomsky is a famous American linguist

Middle English *mete* with the general meaning of 'food' and now restricted to processed animal flesh. In turn the word *flesh* was narrowed in its range to 'human flesh'.

- **Amelioration**[4] - a shift towards a more positive quality; an improvement in the meaning of a word: The term *nice* derives from Latin *nescius* 'ignorant' and came at the time of its borrowing from Old French to mean 'silly, simple' then 'foolish, stupid', later developing a more positive meaning as 'pleasing, agreeable'.

- **Pejoration** – a shift towards a more negative quality: i.e., Old English *cnafa* (boy: compare German *Knabe*) became Modern English *knave* someone dishonest; Latin *villanus* (a farm servant) became Middle English *vilain/ vilein* (a serf with some rights of independence), then Modern English *villain* (a scoundrel, criminal). Another example of pejoration:

  Lewd (Old English *læwede*) originally meant 'non-ecclesiastical, lay', then came to mean 'uneducated, unlearned' from which it developed into 'vulgar, lower-class' and then through 'bad-mannered, ignorant', to 'sexually insinuating'.

In morphology, there are inflectional paradigms; in semantics, a similar concept is represented by the ***word field*** where words and their meanings form a network of relationships (lexical relations). The graphs below show two cases of semantic shift (changes in the word fields) in which the increase in the scope of one word is paralleled by the reduction in scope of a related word:

Word field in Middle English
meat
food
meat = "food in general"
food = "provisions; item of food"

Word field in Modern English
food
meat
meat = "animal flesh"
food = "all types of nourishment"

Word field in Old English
fowl
bird
fowl = "flying animal"
bird = "young bird, fledgling"

Word field in Middle/Modern English
bird
fowl
fowl = "poultry"
bird = "flying animal"

4.7 Traditional semantics views the bond between word and meaning as an association between a fixed signifier and an object of thought.

Signs call to mind their meaning, as any item, belonging to a friend, reminds us of that friend. Semantics concedes that the "association between word and meaning may grow stronger or weaker, be enriched by linkage with other objects of a similar kind, spread over a wider field, or become more limited, i.e., it may undergo quantitative and external changes, but it cannot change its psychological nature. To do that, it would have to cease being an association" (Vygotsky: 1934).

[4] Synonyms of *amelioration/ melioration*: improvement; betterment; mending, amendment, emendation

From this point of view, any development in word meanings, any change in the way reality is **generalized** in the word, is inconceivable: "having committed itself to the association theory, semantics persisted in treating word meaning as an association between a word's sound and its content. All words, from the most concrete to the most abstract, appeared to be formed in the same manner in regard to meaning, and to contain nothing peculiar to speech as such; a word made us think of its meaning just as any object might remind us of another. It is hardly surprising that semantics did not even pose the larger question of the *development* of word meanings. Development was reduced to changes in the associative connections between single words and single objects: A word might denote at first one object and then become associated with another, just as an overcoat, having changed owners, might remind us first of one person and later of another" (Ibid.).

The webs of significance which we spin are not the product of the tool we use to spin them – they are the product of the living minds that *use* the tool to create meaning.

Sutra 5 will 'zoom in' on how we use language to create the complex mosaics of our ideas.