# Beispiele für CL Lexika II: WordNet

**Morphologieanalyse und Lexikonaufbau (14. Vorlesung)**

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## Übersicht

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# WordNet-Überblick

## Was ist WordNet?

WordNet ist eine semantische Wortdatenbank, die an der University of Princeton erstellt wurde (siehe http://www.cogsci.princeton.edu/~wn/). WordNet ist eine hierarchische Datenbank, die erfassten Konzepte werden in Baumform konzeptualisiert. WordNet ist allgemeinorientiert und hat einen erstaunlich grossen Wortschatz. Es kann online ausprobiert werden -- die beste Methode, das WordNet -Konzeot zu verstehen:

http://www.cogsci.princeton.edu/~wn/online/

An derselben Stelle wird WordNet (zurzeit Version 1.6) gratis zum Download angeboten. Sämtliche gängigen Plattformen werden unterstützt. Für Tüftler, Bastler und Programmierer gibt es auch Perl- oder Prologversionen (letztere auch da erhältlich).

Eine gute Einführung bietet das ebenfalls dort herunterladbare Dokument "Five Papers on Wordnet", vor allem das Einführungskapitel.

# Was steht in WordNet?

WordNet bietet umfangreiche semantische, hierarchisch gegliederte Informationen.

## Synonyme

Worte mit (fast) gleicher Bedeutung sind zu Synonymen zusammengefasst, in sog. *synsets*. Ein einzelnes Wort wiederum kann mehrere Bedeutungen haben. Das Wort *Dog* beispielsweise gehört 6 synsets an.

**Sense 1** dog, domestic dog, Canis familiaris -- (a member of the genus Canis (probably descended from the common wolf) that has been domesticated by man since prehistoric times; occurs in many breeds; "the dog barked all night")
=> canine, canid -- (any of various fissiped mammals with nonretractile claws and typically long muzzles)
-------------
**Sense 2** frump, dog -- (a dull unattractive unpleasant girl or woman; "she got a reputation as a frump"; "she's a real dog")
=> unpleasant woman, disagreeable woman -- (a woman who is an unpleasant person)
-------------
**Sense 3** dog -- (informal term for a man: "you lucky dog")
=> chap, fellow, lad, gent, fella, blighter, cuss -- (a boy or man; "that chap is your host"; "there's a fellow at the door"; "he's a likable cuss")
-------------
**Sense 4** cad, bounder, blackguard, dog, hound, heel -- (someone who is morally reprehensible; "you dirty dog")
=> villain, scoundrel -- (a wicked or evil person)
-------------
**Sense 5** pawl, detent, click, dog -- (a hinged device that fits into a notch of a ratchet to move a wheel forward or prevent it from moving backward)
=> catch, stop -- (a restraint that checks the motion of something; "he used a book as a stop to hold the door open")
-------------
**Sense 6** andiron, firedog, dog, dogiron -- (metal supports for logs in a fireplace; "the andirons were too hot to touch")
=> support -- (any device that bears the weight of another thing; "there was no place to attach supports for a shelf")

**Antonyme**

Für Adjektive werden Antomyme angezeigt, z.B. für *enemy* (hat 1 Lesart als Adjektiv):

**Sense 1** enemy(prenominal) -- (of or belonging to an enemy; "enemy planes")
INDIRECT (VIA hostile) -> friendly -- (of or belonging to your own country's forces or those of an ally; "in friendly territory"; "he was accidentally killed by friendly fire")

## Hyponyme und Hyperonyme (hierarchische Konzeptrelation, Unter- und Überbegriffe)

## Hyponyme sind Unterbegriffe, z.B. für sense 1 of *Dog*

**Sense 1** dog, domestic dog, Canis familiaris -- (a member of the genus Canis (probably descended from the common wolf) that has been domesticated by man since prehistoric times; occurs in many breeds; "the dog barked all night")
=> pooch, doggie, doggy, bow-wow -- (informal terms)
=> cur, mongrel, mutt -- (an inferior dog or one of mixed breed)
=> lapdog -- (a dog small and tame enough to be held in the lap)
=> toy dog, toy -- (any of several breeds of very small dogs kept purely as pets)
=> hunting dog -- (a dog used in hunting game)
=> working dog -- (any of several breeds of usually large powerful dogs bred to work as draft animals and guard and guide dogs)
=> dalmatian, coach dog, carriage dog -- (a large breed having a smooth white coat with black or brown spots; originated in Dalmatia)
=> basenji -- (small smooth-haired breed of African origin having a tightly curled tail and the inability to bark)
=> pug, pug-dog -- (small compact smooth-coated breed of Asiatic origin having a tightly curled tail and broad flat wrinkled muzzle)
=> Newfoundland -- (breed of very large heavy usually black dogs developed in Newfoundland; highly intelligent and vigorous swimmers)
=> Great Pyrenees -- (bred of large heavy-coated white dogs resembling the Newfoundland)
=> spitz -- (any of various stocky heavy-coated breeds of dogs native to northern regions having pointed muzzles and erect ears with a curled furry tail)
=> griffon, Brussels griffon, Belgian griffon -- (breed of various very small compact wiry-coated dogs of Belgian origin having a short bearded muzzle)
=> corgi, Welsh corgi -- (either of two Welsh breeds of long-bodied short-legged dogs with erect ears and a fox-like head)
=> poodle, poodle dog -- (an intelligent dog with a heavy curly solid-colored coat that is usually clipped; an old breed sometimes trained as sporting dogs or

## Hyperonyme sind Oberbegriffe, z.B. für *Dog*

Sense 1
dog, domestic dog, Canis familiaris -- (a member of the genus Canis (probably descended from the common wolf) that has been domesticated by man since prehistoric times; occurs in many breeds; "the dog barked all night")
=> canine, canid -- (any of various fissiped mammals with nonretractile claws and typically long muzzles)
=> carnivore -- (terrestrial or aquatic flesh-eating mammal; terrestrial carnivores have four or five clawed digits on each limb)
=> placental, placental mammal, eutherian, eutherian mammal -- (mammals having a placenta; all mammals except monotremes and marsupials)
=> mammal -- (any warm-blooded vertebrate having the skin more or less covered with hair; young are born alive except for the small subclass of monotremes and nourished with milk)
=> vertebrate, craniate -- (animals having a bony or cartilaginous skeleton with a segmented spinal column and a large brain enclosed in a skull or cranium)
=> chordate -- (any animal of the phylum Chordata having a notochord or spinal column)
=> animal, animate being, beast, brute, creature, fauna -- (a living organism characterized by voluntary movement)
=> life form, organism, being, living thing -- (any living entity)
=> entity, something -- (anything having existence (living or nonliving))
Sense 2
frump, dog -- (a dull unattractive unpleasant girl or woman; "she got a reputation as a frump"; "she's a real dog")
=> unpleasant woman, disagreeable woman -- (a woman who is an unpleasant person)
=> unpleasant person, disagreeable person -- (a person who is not pleasant or agreeable)
=> unwelcome person, persona non grata -- (a person who for some reason is not wanted or welcome)
=> person, individual, someone, somebody, mortal, human, soul -- (a human being; "there was too much for one person to do")
=> life form, organism, being, living thing -- (any living entity)
=> entity, something -- (anything having existence (living or nonliving))
=> causal agent, cause, causal agency -- (any entity that causes events to happen)
=> entity, something -- (anything having existence (living or nonliving))
Sense 3
dog -- (informal term for a man: "you lucky dog")
=> chap, fellow, lad, gent, fella, blighter, cuss -- (a boy or man; "that chap is your host"; "there's a fellow at the door"; "he's a likable cuss")
=> male, male person -- (a person who belongs to the sex that cannot have babies)
=> person, individual, someone, somebody, mortal, human, soul -- (a human being; "there was too much for one person to do")

=> life form, organism, being, living thing -- (any living entity)

=> entity, something -- (anything having existence (living or nonliving))

=> causal agent, cause, causal agency -- (any entity that causes events to happen)

=> entity, something -- (anything having existence (living or nonliving))

Sense 4

cad, bounder, blackguard, dog, hound, heel -- (someone who is morally reprehensible; "you dirty dog")

=> villain, scoundrel -- (a wicked or evil person)

=> unwelcome person, persona non grata -- (a person who for some reason is not wanted or welcome)

=> person, individual, someone, somebody, mortal, human, soul -- (a human being; "there was too much for one person to do")

=> life form, organism, being, living thing -- (any living entity)

=> entity, something -- (anything having existence (living or nonliving))

=> causal agent, cause, causal agency -- (any entity that causes events to happen)

=> entity, something -- (anything having existence (living or nonliving))

Sense 5

pawl, detent, click, dog -- (a hinged device that fits into a notch of a ratchet to move a wheel forward or prevent it from moving backward)

=> catch, stop -- (a restraint that checks the motion of something; "he used a book as a stop to hold the door open")

=> restraint, constraint -- (a device that holds someone or something back from action)

=> device -- (an instrumentality invented for a particular purpose; "the device is small enough to wear on your wrist"; "a device intended to conserve water")

=> instrumentality, instrumentation -- (an artifact (or system of artifacts) that is instrumental in accomplishing some end)

=> artifact, artefact -- (a man-made object)

=> object, physical object -- (a physical (tangible and visible) entity; "it was full of rackets, balls and other objects")

=> entity, something -- (anything having existence (living or nonliving))

Sense 6

andiron, firedog, dog, dogiron -- (metal supports for logs in a fireplace; "the andirons were too hot to touch")

=> support -- (any device that bears the weight of another thing; "there was no place to attach supports for a shelf")

=> device -- (an instrumentality invented for a particular purpose; "the device is small enough to wear on your wrist"; "a device intended to conserve water")

=> instrumentality, instrumentation -- (an artifact (or system of artifacts) that is instrumental in accomplishing some end)

=> artifact, artefact -- (a man-made object)

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=> entity, something -- (anything having existence (living or nonliving))

## Holonyme und Meronyme (hierarchische Teil-Ganzes Relation)

## Holonyme von *Dog*

Sense 1
dog, domestic dog, Canis familiaris -- (a member of the genus Canis (probably descended from the common wolf) that has been domesticated by man since prehistoric times; occurs in many breeds; "the dog barked all night")
MEMBER OF: Canis, genus Canis -- (type genus of the Canidae: domestic and wild dogs; wolves; jackals)
MEMBER OF: Canidae, family Canidae -- (dogs; wolves; jackals; foxes)
MEMBER OF: Carnivora, order Carnivora -- (cats; lions; tigers; panthers; dogs; wolves; jackals; bears; raccoons; skunks; and members of the suborder Pinnipedia)
MEMBER OF: Eutheria, subclass Eutheria -- (all mammals except monotremes and marsupials)
MEMBER OF: Mammalia, class Mammalia -- (warm-blooded vertebrates characterized by mammary glands in the female)
MEMBER OF: Vertebrata, subphylum Vertebrata, Craniata, subphylum Craniata -- (fishes; amphibians; reptiles; birds; mammals)
MEMBER OF: Chordata, phylum Chordata -- (comprises true vertebrates and animals having a notochord)
MEMBER OF: Animalia, kingdom Animalia, animal kingdom -- (taxonomic kingdom comprising all living or extinct animals)
MEMBER OF: pack -- (a group of hunting animals)
Sense 5
pawl, detent, click, dog -- (a hinged device that fits into a notch of a ratchet to move a wheel forward or prevent it from moving backward)
PART OF: ratchet, rachet, ratch -- (a toothed wheel or rack engaged with a pawl that permits it to move in only one direction)

## Meronyme von *Dog*

Sense 1
dog, domestic dog, Canis familiaris -- (a member of the genus Canis (probably descended from the common wolf) that has been domesticated by man since prehistoric times; occurs in many breeds; "the dog barked all night")
HAS PART: flag -- (a conspicuously marked or shaped tail)

# Unterschiede zwischen den Wortarten

Nicht alle semantischen Relationen sind bei den in WordNet erfasten WOrtarten Nomen, Verben und Adjektive sinnvoll. Antonyme gibt es nur bei (vielen) Adjektiven. Verben enthalten zusätzlich (syntaktische) Valenzangaben und Troponyme ("particular ways of doing something"), z.B. für das Verb *to dog*

Sense 1
chase, chase after, trail, tail, tag, dog, go after, track -- (go after with the intent to catch)
=> quest -- (search the trail of, as of game: "The dog went of and quested")
=> hound, hunt, trace -- (pursue or chase relentlessly)
=> run down -- (pursue until captured: "They ran down the fugitive")

# WordNet in Prolog

Das gesamte WordNet ist auch als (riesige) Prologdatenbank verfügbar, um selber zu programmieren, experimentieren und WordNet in eigenen Applikationen zu verwenden.

prologdb.htm gibt eine Anleitung zur Verwendung der Prologversion.

Ein kleines Beispielprogramm, das einem alle Glossen für ein Wort ausgibt:

```
:- use_module('../wn_s.pl'). % lade synset-Datenbank
:- use_module('../wn_g.pl'). % lade gloss-Datenbank
%% see_gloss/1. Gibt Glosses f"ur ein Wort aus.
see_gloss(Word) :-
s(Synset,_,Word,_,_,_),
g(Synset,Gloss),
print(Word),print(": "),print(Gloss),nl,fail.
```

WordNet wird in CL z.B. für Word Sense Disambiguation verwendet.

## WordNet fürs Deutsche: GermaNet

Fürs Deutsche und eine Reihe anderer europäischen Sprachen gibt es inzwischen je eigene Versionen, wobei deren Aufbau im Projekt EuroWordNet miteinander abgeglichen wird. (wovon u.a. maschinelle Übersetzung profitieren soll). Das deutsche WordNet heisst GermaNet, nehr Info unter

http://www.sfs.uni-tuebingen.de/lsd/Intro.html

*Gerold Schneider*
*Date of last modification:*
*Source: http://www.ifi.unizh.ch*