The
Simple Relational
Dictionary

The Simple Relational Dictionary™ uses a **uniform, hierarchical classification system** to **label, define** and **relate** 100,000 of the most frequently used word senses in English. The result is an **inheritance based ontology** of the English language which serves as the foundation of a language understanding and generation system called **Associative Semantics™.**

Words in the Simple system function as the equivalent of chemical elements in the **Periodic Table of Elements** and combine with one another to form the equivalent of molecules - word senses - depending on their valences. And like the chemical elements, each word has a uniform set of properties (both semantic and grammatical) that determine the ways in which it can combine with other words.

Certain members of the restricted set **defining vocabulary** function as genus words and *parent* of large numbers of other words in the system. These genus words function as the **roots** of the **word trees** that comprise the system and that users see. This creates an implicit taxonomy of the English language wherein, for example, a genus word like feel serves as the parent of **angry, sad, happy** and **scared,** each of which is in turn defined by the word feel and which also serves as a *parent* and **keyword** to number of related *childern* as shown below:

FEEL
↓
o **Angry → irritated, frustrated, mad, furious**
o **Sad → unhappy, depressed, miserable, down**
o **Happy → delighted, joyful, pleased, jubilant**
o **Scared → frightened, terrified, startled, worried**

Definitions

angry *adjective* how you feel when you **want** to **yell** at someone: *He is angry at her because she lied to him. | Students are angry about plans to close their school.*

annoyed *adjective* a little **angry** about something that is **not** very **important**: Someone interrupted her, and she looked annoyed.| *I sometimes get annoyed with her when she criticizes me.*

irritated *adjective* a little **angry**, because something **keeps happening**: I was starting to feel irritated by her constant complaining. | *I was starting to feel irritated by her constant complaining.*

frustrated adjective **angry** because you **cannot do** something, even though you have **tried** to **do** it many times | *Sam got frustrated because he couldn't hit the baseball.*
But there is much more to the system than meets the eye.

In each of the definitions above, the **keywords**, including **genus** are highlighted to give the user an instant understanding of the **key word combination**s or semantic units that give each word its meaning.

Word Properties

The Simple system contains the following information available to the user at the click of a button. This includes corpus-derived:

- **Grammatical Colocations (Grammatical Valences),** as in the case of:

  - *angry <u>at</u>* **someone** vs.
  - *angry <u>about</u>* **something**

- **Activity based, Contextual Colocations (Semantic Valences),** as in the case of a:

  - **Medical** context: wherein a doctor (person) <u>treats</u> patient (person), <u>prescribes</u> medicine (substance), <u>works</u> in hospital (place), <u>carries</u> a stethoscope (object), <u>wears</u> a lab coat (object), and a

  - **Legal** context**:** wherein an attorney (person) <u>defends</u> client (person), questions witness (person) and plaintiff (person), <u>cites</u> laws (abstract objects), <u>addresses</u> jury (group of people), <u>wears</u> suit (object), <u>works</u> in court (place).

Here we see that the Simple system uses **verb** colocations to relate *people, objects, substances* and *other semantic* or *word groups* to one another; while using **preposition and adverb** based colocations to relate words by *grammatical* class (see *angry* example above), and **adjective, adverb and abstract noun** colocations to describe properties of, and relations between a large number of words and word classes in English (see examples in **Qualities** section below).

Context Dependent Morphology

As discussed above, certain members of the restricted set **defining vocabulary** function as **genus** words or the **parents** of large numbers of other words in the system.

These **genus** words have another unique property – in addition to being used to define and implicitly parent many words in the dictionary, they take on different **forms** depending on context.

For example, the **genus** verb **combine** becomes *add* in the context of math, *assemble* in the context of construction, *connect* in the context of mechanics and *wed* in the context of marriage. It is used to define, and therefore serves as the parent of many other verbs including c*ombine, join, group, mix, bind, bond,* and *pool*, a number of which are themselves context derived forms,

depending on which sense of the verb is being defined (ie: *bind* and *bond* in the context of chemistry).

The same holds true for the **genus** verb take which becomes *subtract* in the context of math, *divorce* in the context of marriage, *steal* in the context of crime and which serves as the parent of the verbs *separate, remove, withdraw* and *extract* for example.

Genus Word Classes

All words in the Simple Dictionary™ belong to a **semantic** class or type. Examples include: **Actions, Animals, Behaviors, Colors, Feelings, Objects (abstract and concrete), Organizations, Numbers, People, Places, Positions, Senses, Substances,** and **Thoughts**, among others.

Objects and **substances** are classified by type and subtype:

Furniture: chair (lawn, desk, dining room), table (picnic, drafting, dining room, folding)

Substances: beverages (alcohol, soda, juice, milk), chemical (oxygen, hydrogen, air, water), plant (seeds, grass, vegetables), etc.

Each object and substance can serve as the parent (individually or in combination with other objects and substances) of any number of children, grandchildren and great-grandchildren.

Words can also combine with other words to form more complex terms and concepts. Combining **alcohol** + **beverage** for example, becomes **alcoholic beverage**, a class whose children include **beer, wine,** and **whiskey** for example and whose grandchildren (under *whiskey* for example) become *single malt* and *blended.*

Combining **drafting** + **table** for example, creates *drafting table*, a word that belongs to the **architectural product** class.

Words can also belong to more than one class. Vegetables for example are a *plant* and *food* while salt is a *molecule,* a *food,* a *seasoning,* and a *powder*.

Additional **classifications** or **Word Groups** include:

Behaviors such as: *confident, shy, flirtatious, friendly, demanding, persistent* and *curious*

Thoughts (mental constructs) such as: *questions, assumptions, beliefs,* and *concerns.*

Qualities are words that describe properties, measures and relations of and between words. They are classified by type, with the two largest classes being those used to describe people, behaviors and feelings, and those used to describe things. They include words such as *fast, heavy, near* and *far,* which refer to *speed, weight, distance,* and *proximity* respectively, as well as *soon, small, young, good, next, few,* and *above* which refer to *time, size, age, desirability, sequence, quantity* and *position,* respectively.