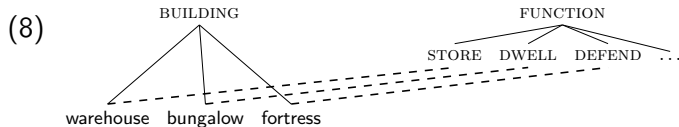


- (7)
- a. WAREHOUSE \sqsubseteq BUILDING
 - b. BUNGALOW \sqsubseteq BUILDING
 - c. FORTRESS \sqsubseteq BUILDING

Semantic subtyping with Qualia



- (9) a. *warehouse* = BUILDING \sqcap STORE
b. *bungalow* = BUILDING \sqcap DWELL
c. *fortress* = BUILDING \sqcap DEFEND

Lexical Architecture in Generative Lexicon

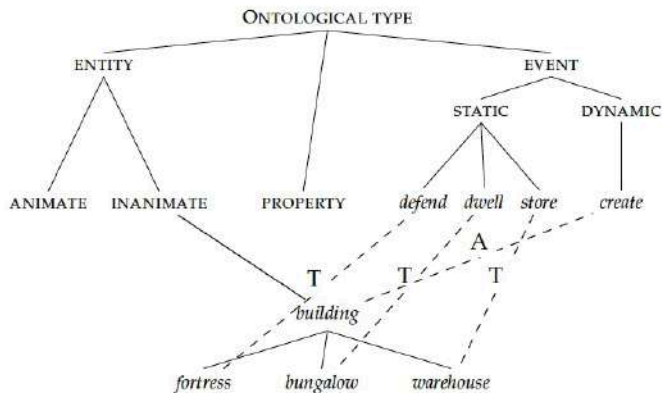


Figure 10.2 *Semantic type hierarchy (fragment)*

Lexical Architecture in Generative Lexicon

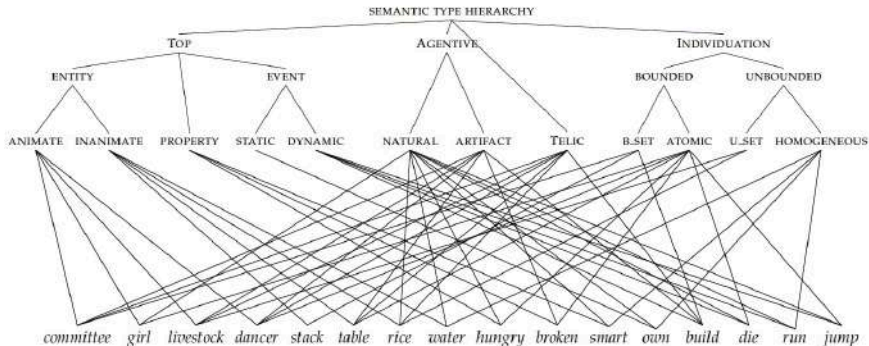


Figure 10.5 *Ontological types with qualia specification and individuation*

Navigating the Type System

- *girl* = ANIMATE \sqcap NATURAL;
 - *water* = INANIMATE \sqcap NATURAL;
 - *committee* = ANIMATE \sqcap FUNCTIONAL;
 - *table* = INANIMATE \sqcap FUNCTIONAL.
-
- *committee* = ANIMATE \sqcap B_SET;
 - *table* = INANIMATE \sqcap ATOMIC.
 - *rice* = INANIMATE \sqcap U_SET;
 - *water* = INANIMATE \sqcap HOMOGENEOUS.

(10) a. **Natural properties:**

hungry, smart = PROPERTY \sqcap NATURAL;

b. **Functional properties:**

broken = PROPERTY \sqcap FUNCTIONAL.

(11) a. **Stage-level properties:**

hungry, broken = PROPERTY \sqcap ATOMIC;

b. **Individual-level properties:**

smart = PROPERTY \sqcap HOMOGENEOUS.

(12) a. **Natural events:**

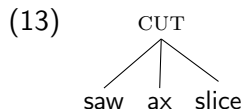
own, die, run, jump = EVENT \sqcap NATURAL;

b. **Functional events:**

build = EVENT \sqcap FUNCTIONAL.

Lexical Semantic Relations

Verbal Subtypes: Means



- (14) a. Mary **cut** the {wood/ tree/ bread}.
- b. Mary **sawed** the wood (=‘cut with a saw’).
- c. Mary **axed** the tree (=‘cut with an ax’).
- d. Mary **sliced** the bread (=‘cut with a knife’).

Lexical Semantic Relations

Verbal Subtypes: Means

- A category B is a “means subtype” of a category A , $B \sqsubseteq_m A$, if and only if B has a more specific subtype for the INSTRUMENT semantic role for category A .

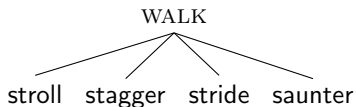
- (15) a. $\text{SAW} \sqsubseteq \text{INSTRUMENT} \implies \text{SAW} \sqsubseteq_m \text{CUT}$
b. $\text{AX} \sqsubseteq \text{INSTRUMENT} \implies \text{AX} \sqsubseteq_m \text{CUT}$
c. $\text{KNIFE} \sqsubseteq \text{INSTRUMENT} \implies \text{SLICE} \sqsubseteq_m \text{CUT}$

Manner Subtyping for Verbs

Verbal Subtypes: Manner

- A category B is a “manner subtype” (troponym) of a category A , $B \sqsubseteq_t A$, if and only if B specifies a particular manner in which to perform A .
- The motion verbs *stroll*, *stagger*, *stride*, and *saunter* are troponyms of *walk*, because they each denote a certain manner of walking.

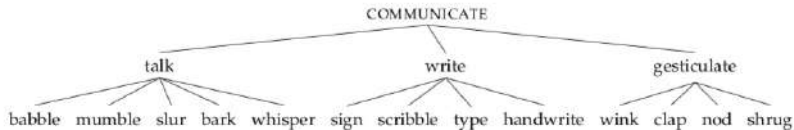
(16)



Manner Subtyping for Verbs

Mixing Means and Manner

(30)



Scale Theory: Stevens (1946), Krantz et al (1971)

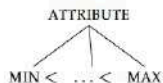
- **Nominal scales:** composed of sets of categories in which objects are classified;
- **Ordinal scales:** indicate the order of the data according to some criterion (a partial ordering over a defined domain). They tell nothing about the distance between units of the scale.
- **Interval scales:** have equal distances between scale units and permit statements to be made about those units as compared to other units; there is no zero. Interval scales permit a statement of “more than” or “less than” but not of “how many times more.”
- **Ratio scales:** have equal distances between scale units as well as a zero value. Most measures encountered in daily discourse are based on a ratio scale.

Modeling Scalar Classes as Types

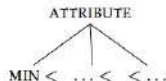
(33) a. OPEN SCALE: *short / tall*



b. CLOSED SCALE: *empty / full*



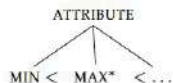
c. LOWER-CLOSED SCALE: *stained (MIN)*



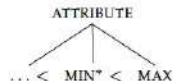
d. UPPER-CLOSED SCALE: *flat (MAX)*



e. LOWER-CLOSED / UPPER-AJAR: *wet / dry*



f. LOWER-AJAR / UPPER-CLOSED: *open / closed*



Deriving Vendler's Event Classes

- **STATE**: John loves his mother.

Deriving Vendler's Event Classes

- **STATE**: John loves his mother.
- **ACTIVITY**: Mary played in the park for an hour.

Deriving Vendler's Event Classes

- **STATE**: John loves his mother.
- **ACTIVITY**: Mary played in the park for an hour.
- **ACCOMPLISHMENT**: Mary wrote a novel.

Deriving Vendler's Event Classes

- **STATE**: John loves his mother.
- **ACTIVITY**: Mary played in the park for an hour.
- **ACCOMPLISHMENT**: Mary wrote a novel.
- **ACHIEVEMENT**: John found a Euro on the floor.

Deriving Vendler's Event Classes

- **STATE**: John loves his mother.
- **ACTIVITY**: Mary played in the park for an hour.
- **ACCOMPLISHMENT**: Mary wrote a novel.
- **ACHIEVEMENT**: John found a Euro on the floor.
- **POINT**: John knocked on the door (for 2 minutes).

Bach Eventuality Typology (Bach, 1986)

