INTRODUCTION TO GENERATIVE LEXICON

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Generative Lexicon is a theory of linguistic semantics which focuses on the distributed nature of compositionality in natural language. Unlike purely verb-based approaches to compositionality, Generative Lexicon (henceforth, GL) attempts to spread the semantic load across all constituents of the utterance. Central to the philosophical perspective of GL are two major lines of inquiry: (1) How is it that we are able to deploy a finite number of words in our language in an unbounded number of contexts? (2) Is lexical information and the representations used in composing meanings separable from our commonsense knowledge?

Introduction

Generative Lexicon introduces a knowledge representation framework which offers a rich and expressive vocabulary for lexical information. The motivations for this are twofold. Overall, GL is concerned with explaining the creative use of language; we consider the lexicon to be the key repository holding much of the information underlying this phenomenon. More specifically, however, it is the notion of a constantly evolving lexicon that GL attempts to emulate; this is in contrast to currently prevalent views of static lexicon design, where the set of contexts licensing the use of words is determined in advance, and there are no formal mechanisms offered for expanding this set.

One of the most difficult problems facing theoretical and computational semantics is defining the representational interface between linguistic and non-linguistic knowledge. GL was initially developed as a theoretical framework for encoding selectional knowledge in natural language. This in turn required making some changes in the formal rules of representation and composition. Perhaps the most controversial aspect of GL has been the manner in which lexically encoded knowledge is exploited in the construction of interpretations for linguistic utterances. Following standard assumptions in GL, the computational resources available to a lexical item consist of the following four levels:

(1) a. LEXICAL TYPING STRUCTURE: giving an explicit type for a word positioned within a type system for the language;
b. ARGUMENT STRUCTURE: specifying the number and nature of the arguments to a predicate;
c. EVENT STRUCTURE: defining the event type of the expression and any subeventual structure it may have; with subevents;
d. QUALIA STRUCTURE: a structural differentiation of the predicative force for a lexical item.

The qualia structure, inspired by Moravcsik's (1975) interpretation of the *aitia* of Aristotle, are defined as the modes of explanation associated with a word or phrase in the language, and are defined as follows (Pustejovsky, 1991):

(2) a. FORMAL: the basic category of which distinguishes the meaning of a word within a larger domain;
b. CONSTITUTIVE: the relation between an object and its constituent parts;
c. TELIC: the purpose or function of the object, if there is one;
d. AGENTIVE: the factors involved in the object's origins or "coming into being".

Conventional interpretations of the GL semantic representation have been as feature structures (cf. Bouillon, 1993, Pustejovsky, 1995). The feature representation shown below gives the basic template of argument and event variables, and the specification of the qualia structure.

$$\begin{bmatrix} \alpha & \\ \text{ARGSTR} = & \begin{bmatrix} \text{ARG1} = x \\ \ldots \end{bmatrix} \\ \text{EVENTSTR} = & \begin{bmatrix} \text{E1} = e_1 \\ \ldots \end{bmatrix} \\ \text{QUALIA} = & \begin{bmatrix} \text{CONST} = \textbf{what } x \textbf{ is made of} \\ \text{FORMAL} = \textbf{what } x \textbf{ is} \\ \text{TELIC} = \textbf{function of } x \\ \text{AGENTIVE} = \textbf{how } x \textbf{ came into being} \end{bmatrix} \end{bmatrix}$$

Traditional Lexical Representations

The traditional organization of lexicons in both theoretical linguistics and natural language processing systems assumes that word meaning can be exhaustively defined by an enumerable set of senses per word. Lexicons, to date, generally tend to follow this organization. As a result, whenever natural language interpretation tasks face the problem of lexical ambiguity, a particular approach to disambiguation is warranted. The system attempts to select the most appropriate 'definition' available under the lexical entry for any given word; the selection process is driven by matching sense characterizations against contextual factors. One disadvantage of such a design follows from the need to specify, ahead of time, the contexts in which a word might appear; failure to do so results in incomplete coverage. Furthermore, dictionaries and lexicons currently are of a distinctly static nature: the division into separate word senses not only precludes permeability; it also fails to account for the creative use of words in novel contexts.

GL attempts to overcome these problems, both in terms of the expressiveness of notation and the kinds of interpretive operations the theory is capable of supporting. Rather than taking a 'snapshot' of language at any moment of time and freezing it into lists of word sense specifications, the model of the lexicon proposed here does not preclude extensibility: it is open-ended in nature and accounts for the novel, creative, uses of words in a variety of contexts by positing procedures for generating semantic expressions for words on the basis of particular contexts.

Adopting such a model presents a number of benefits. From the point of view of a language user, a rich and expressive lexicon can explain aspects of learnability. From the point of view of linguistic theory, it can offer improvements in robustness of coverage. Such benefits stem from the fact that the model offers a scheme for explicitly encoding lexical knowledge at several levels of generalization. In particular, by making lexical ambiguity resolution an integral part of a uniform semantic analysis procedure, the problem is rephrased in terms of dynamic interpretation of a word in context; this is in contrast to current frameworks which select among a static, pre-determined set of word senses, and do so separately from constructing semantic representations for larger text units.

There are several methodological motivations for importing tools developed for the computational representation and manipulation of knowledge into the study of word meaning, or *lexical semantics*. Generic knowledge representation (KR) mechanisms, such as inheritance structures or rule bases, can—and have been—used for encoding of linguistic information. However, not much attention has been paid to the notion of what exactly constitutes such linguistic information. Traditionally, the application area of knowledge representation formalisms has been the domain of general world knowledge. By shifting the focus to a level below that of words (or lexical concepts) one is able to abstract the notion of lexical meaning away from world knowledge, as well as from other semantic influences such as discourse and pragmatic factors. Such a process of abstraction is an essential prerequisite for the principled creation of lexical entries.

Although GL makes judicious use of knowledge representation (KR) tools to enrich the semantics of lexical expressions, it preserves a felicitous partitioning of the information space. Keeping lexical meaning separate from other linguistic factors, as well as from general world knowledge is a methodologically sound principle; nonetheless, GL maintains that all of these should be referenced by a lexical entry. In essence, such capabilities are the base components of a generative language whose domain is that of lexical knowledge. The interpretive aspect of this language embodies a set of principles for richer composition of components of word meaning. As illustrated later in this entry, semantic expressions for word meaning in context are constructed by a fixed number of generative devices (cf. Pustejovsky, 1991). Such devices operate on a core set of senses (with greater internal structure than hitherto assumed); through composition, an extended set of word senses is obtained when individual lexical items are considered jointly with others in larger phrases. The language presented below thus becomes an expressive tool for capturing lexical knowledge, without presupposing finite sense enumeration.

The Nature of Polysemy

One of the most pervasive phenomena in natural language is that of systematic ambiguity, or polysemy. This problem confronts language learners and natural language processing systems alike. The notion of context enforcing a certain reading of a word, traditionally viewed as selecting for a particular word sense, is central both to global lexical design (the issue of breaking a word into word senses) and local composition of individual sense definitions. However, current lexicons reflect a particular 'static' approach to dealing with this problem: the numbers of and distinctions between senses within an entry are 'frozen' into a fixed grammar's lexicon. Furthermore, definitions hardly make *any* provisions for the notion that boundaries between word senses may shift with context—not to mention that no lexicon really accounts for any of a range of *lexical transfer* phenomena.

There are serious problems with positing a fixed number of 'bounded' word senses for lexical items. In a framework which assumes a partitioning of the space of possible uses of a word into word senses, the problem becomes that of selecting, on the basis of various contextual factors (typically subsumed by, but not necessarily limited to, the notion of selectional restrictions), the word sense closest to the use of the word in the given text. As far as a language user is concerned, the question is that of 'fuzzy matching' of contexts; as far as a text analysis system is concerned, this reduces to a search within a finite space of possibilities.

This approach fails on several accounts, both in terms of what information is made available in a lexicon for driving the disambiguation process, and how a sense selection procedure makes use of this information. Typically, external contextual factors alone are not sufficient for precise selection of a word sense; additionally, often the lexical entry does not provide enough reliable pointers to critically discriminate between word senses. In the case of automated sense selection, the search process becomes computationally undesirable, particularly when it has to account for longer phrases made up of individually ambiguous words. Finally, and most importantly, the assumption that an exhaustive listing can be assigned to the different uses of a word lacks the explanatory power necessary for making generalizations and/or predictions about how words used in a novel way can be reconciled with their currently existing lexical definitions.

To illustrate this last point, consider the ambiguity and context-dependence of adjectives such as *fast* and *slow*, where the meaning of the predicate varies depending on the noun being modified. Sentences (3a)-(3e) show the range of meanings associated with the adjective *fast*. Typically, a lexicon requires an enumeration of different senses for such words, to account for this ambiguity:

(3) a. *The island authorities sent out a fast little government boat to welcome us*:
Ambiguous between a boat driven quickly / one that is inherently fast.

b. *a fast typist*:

a person who performs the act of typing quickly.

c. *Rackets is a fast game*:
the motions involved in the game are rapid and swift.

d. *a fast book*:
one that can be read in a short time.

e. *My friend is a fast driver and a constant worry to her cautious husband*:
one who drives quickly.

These examples involve at least four distinct word senses for the word *fast*:[1]

`fast(1)`: moving quickly;
`fast(2)`: performing some act quickly;
`fast(3)`: doing something requiring a short space of time;
`fast(4)`: involving rapid motion.

In an operational lexicon, word senses would be further annotated with selectional restrictions: for instance, `fast(1)` may be predicated by the object belonging to a class of movable entities, and `fast(3)` may relate the action "that takes a little time"— e.g. reading, in the case of (4) above—to the object being modified. Upon closer analysis, each occurrence of *fast* above predicates in a slightly different way. In fact, any finite enumeration of word senses will not account for creative applications of this adjective in the language. For example, consider the two phrases *fast motorway* and *fast garage*. The adjective *fast* in the phrase *a fast motorway* refers to the ability of vehicles on the motorway to sustain high speed, while in *fast garage* it refers to the length of time needed for a repair. As novel uses of *fast*, we are clearly looking at new senses which are not covered by the enumeration given above.

Part of GL's argument for a different organization of the lexicon is based on a claim that the boundaries between the word senses in the analysis of *fast* above are too rigid. Still, even if we assume that enumeration is adequate as a descriptive mechanism, it is not always obvious how to select the correct word sense in any given context: consider the systematic ambiguity of verbs like *bake* (discussed by Atkins *et al.*, 1988), which require discrimination with respect to *change-of-state* versus *create* readings, depending on the context (see sentences (4a) and (4b) respectively).

(4) a. *John baked the potatoes.*

b. *Mary baked a cake.*

[1]WordNet 2.0 has ten senses for the adjectival reading of *fast*.

The problem here is that there is too much overlap in the 'core' semantic components of the different readings[2]; hence, it is not possible to guarantee correct word sense selection on the basis of selectional restrictions alone. Another problem with this approach is that is lacks any appropriate or natural level of abstraction.

As these examples clearly demonstrate, partial overlaps of core and peripheral components of different word meanings make the traditional notion of word sense, as implemented in current dictionaries, inadequate. Within this approach, the only feasible solution would be to employ a richer set of semantic distinctions for the selection of complements than is conventionally provided by the mechanism of selectional restrictions.

It is equally arbitrary to create separate word senses for a lexical item just because it can participate in several subcategorization forms; yet this has been the only approach open to computational lexicons that are based on a fixed number of features and senses. A striking example of this is provided by verbs such as *believe* and *forget*. The sentences in (9–13) show that the syntactic realization of the verb's object complement determines how the phrase is interpreted semantically. The *that-complement*, for example, in (9) exhibits a property called "factivity" (Kiparsky and Kiparsky, 1971), where the object proposition is assumed to be a fact regardless of what modality the whole sentence carries. Sentence (12) contains a "concealed question" complement (Grimshaw, 1979), so called because the phrase can be paraphrased as a question. These different interpretations are usually encoded as separate senses of the verb, with distinct lexical entries.

(5) a. *Mary forgot that she left the light on at home.*
(a factive reading)

b. *Mary forgot to leave the light on for the delivery man.*
(a non-factive reading)

c. *I almost forgot where we're going.*
(an embedded question)

d. *She always forgets the password to her account.*
(a concealed question)

e. *He leaves, forgets his umbrella, comes back to get it ...*
(ellipsed non-factive)

These distinctions could be easily accounted for by simply positing separate word senses for each syntactic type, but this misses the obvious relatedness between the different syntactic contexts of *forget*. Moreover, the general 'core' sense of the verb *forget*, which deontically relates a mental attitude with a proposition or event, is lost between the separate

[2]Jackendoff (1985) correctly points out, however, that deriving *one* core meaning for all homographs of a word form may not be possible, a view not inconsistent with that proposed here.

senses of the verb. GL, on the other hand, posits one definition for *forget* which can, by suitable composition with the different complement types, generate all the allowable readings (cf. Pustejovsky, 1995).

Levels of Lexical Meaning

The richer structure for the lexical entry proposed in GL takes to an extreme the established notions of *predicate-argument structure*, *primitive decomposition* and *conceptual organization*; these can be seen as determining the space of possible interpretations that a word may have. That is, rather than committing to an enumeration of a pre-determined number of different word senses, a lexical entry for a word now encodes a range of representative aspects of lexical meaning . For an isolated word, these meaning components simply define the semantic boundaries appropriate to its use. When embedded in the context of other words, however, mutually compatible roles in the lexical decompositions of each word become more prominent, thus forcing a specific interpretation of individual words within a specific phrase. It is important to realize that this is a generative process, which goes well beyond the simple matching of features. In fact, this approach requires, in addition to a flexible notation for expressing semantic generalizations at the lexical level, a mechanism for composing these individual entries on the phrasal level.

The emphasis of our analysis of the distinctions in lexical meaning is on studying and defining the role that *all* lexical types play in contributing to the overall meaning of a phrase. Crucial to the processes of semantic interpretation which the lexicon is targeted for is the notion of *compositionality*, necessarily different from the more conventional pairing of verbs as functions and nouns as arguments. If the semantic load in the lexicon is entirely spread among the verb entries, as many existing lexicons assume, differences like those exemplified above can only be accounted for by treating *bake*, *forget*, and so forth as polysemous verbs. If, on the other hand, elaborate lexical meanings of verbs and adjectives could be made sensitive to components of equally elaborate decompositions of nouns, the notion of spreading the semantic load evenly across the lexicon becomes the key organizing principle in expressing the knowledge necessary for disambiguation.

To be able to express the lexical distinctions required for analyzing the examples in the last section, it is necessary to go beyond viewing lexical decomposition as based only on a pre-determined set of primitives; rather, what is needed is to be able to specify, by means of sets of predicates, different levels or perspectives of lexical representation, and to be able to compose these predicates via a fixed number of generative devices. The 'static' definition of a word provides its literal meaning; it is only through the suitable composition of appropriately highlighted projections of words that we generate new meanings in context.

In order to address these phenomena and inadequacies mentioned above, Generative Lexicon argues that a theory of computational lexical semantics must make reference to the four levels of representations mentioned above:

Lexical Typing Structure This determines the ways in which a word is related to other words in a structured type system (i.e., *inheritance*. In addition to providing information about the organization of a lexical knowledge base, this level of word meaning provides an explicit link to general world (commonsense) knowledge;

Argument Structure This encodes the conventional mapping from a word to a function, and relates the syntactic realization of a word to the number and type of arguments that are identified at the level of syntax and made use of at the level of semantics (Grimshaw, 1991);

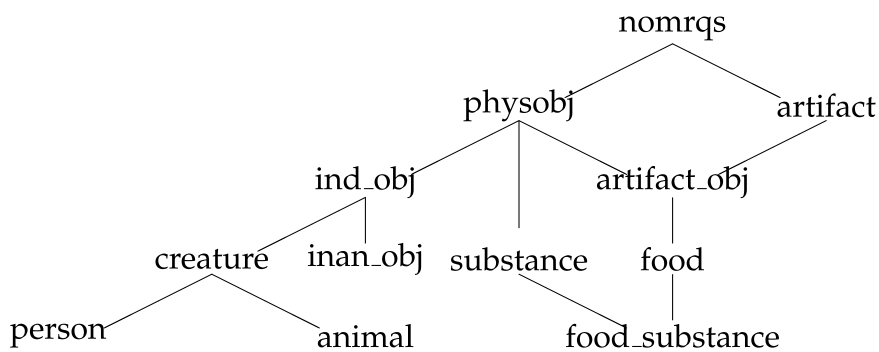
Event Structure This identifies the particular event type for a verb or a phrase. There are essentially three components to this structure: the primitive event type—state (**S**), process (**P**) or transition (**T**); the focus of the event; and the rules for event composition (cf. Moens and Steedman, 1988, Pustejovsky, 1991b).

Qualia Structure This defines the essential attributes of objects, events, and relations, associated with a lexical item. By positing separate components (see below) in what is, in essence, an argument structure for nominals, nouns are elevated from the status of being passive arguments to active functions (cf. Moravcsik, 1975, Pustejovsky, 1991a). We can view the fillers in qualia structure as prototypical predicates and relations associated with this word.

A set of generative devices connects the four levels, providing for the compositional interpretation of words in context. These devices include: *subselection*, *type coercion*, and *co-composition*. In this entry, we will focus on the qualia structure and *type coercion*, an operation which captures the semantic relatedness between syntactically distinct expressions. As an operation on types within a λ-calculus, type coercion can be seen as transforming a fixed semantic language into one with changeable (polymorphic) types. Argument, event, and qualia types must conform to the well-formedness conditions defined by the type system and the lexical inheritance structure when undergoing operations of semantic composition. Lexical items are strongly typed yet are provided with mechanisms for fitting to novel typed environments by means of type coercion over a richer notion of types.

Qualia Structure

Qualia structure is a system of relations that characterizes the semantics of a lexical item, very much like the argument structure of a verb (Pustejovsky [**?**]). To illustrate the descriptive power of qualia structure, the semantics of nominals will be the focus here. In effect, the qualia structure of a noun determines its meaning in much the same way as the typing of arguments to a verb determines its meaning. The elements that make up a qualia structure include familiar notions such as container, space, surface, figure, or artifact. One way to model the qualia structure is as a set of constraints on types (cf. Copestake and Briscoe, 1992, Pustejovsky and Boguraev, 1993). The operations in the compositional semantics make reference to the types within this system. The qualia structure along with the other representational devices (event structure and argument structure) can be seen as providing the building blocks for possible object types. Figure 1 illustrates a type hierarchy fragment for knowledge about objects, encoding qualia structure information.[3]



The tangled type hierarchy above shows how qualia can be unified to create more complex concepts out of simple ones. Following Pustejovsky (2001, 2005), we can distinguish the domain of individuals into three *ranks* or levels of type:

(6) a. NATURAL TYPES: Natural kind concepts consisting of reference only to Formal and Const qualia roles;
b. FUNCTIONAL TYPES: Concepts integrating reference to purpose or function.
c. COMPLEX TYPES: Concepts integrating reference to a relation between types.

For example, a simple natural physical object (7), can be given a function (i.e, a Telic role), and transformed into a functional type, as in (8).

(7) $$\begin{bmatrix} \textbf{physobj(x)} \\ \text{FORMAL} = \textbf{physform(x)} \end{bmatrix}$$

[3] In Figure 1, the term `nomrqs` refers to a "relativized qualia structure", a type of generic information structure for entities (cf. Calzolari, 1992 for discussion). Further, `ind_obj` represents "individuated object".

(8) $$\begin{bmatrix} \textbf{artifact\_obj(x)} \\ \text{FORMAL} = \textbf{physform(x)} \\ \text{TELIC} = \textbf{Pred(E,y,x)} \end{bmatrix}$$

Functional types in language behave differently from naturals, as they carry more information with them regarding their use and purpose. For example, the noun *sandwich* contains information of the "eating activity" as a constraint on its *Telic* value, due to its position in the type structure; that is, **eat(P,w,x)** denotes a process, **P**, between an individual **w** and the physical object **x**.

(9) $$\begin{bmatrix} \textbf{sandwich(x)} \\ \text{CONST} = \{\textbf{bread,...}\} \\ \text{FORMAL} = \textbf{physobj(x)} \\ \text{TELIC} = \textbf{eat(P,w,x)} \\ \text{AGENTIVE} = \textbf{artifact(x)} \end{bmatrix}$$

From qualia structures such as these, it now becomes clear how a sentence such as *Mary finished her sandwich* receives the default interpretation it does; namely, that of Mary eating the sandwich. This is an example of *type coercion*, and the semantic compositional rules in the grammar must make reference to values such as qualia structure, if such interpretations are to be constructed on-line and dynamically.

Coercion and Compositionality

Type coercion is an operation in the grammar ensuring that the selectional requirements on an argument to a predicate are in fact satisfied by the argument in the compositional process. The rules of coercion presuppose a typed ontology such as that outlined above. By allowing lexical items to coerce their arguments, we obviate the enumeration of multiple entries for different senses of a word. We define coercion as follows (Pustejovsky, 1995):

(10) **Type Coercion:** A semantic operation that converts an argument to the type which is expected by a function, where it would otherwise result in a type error.

The notion that a predicate can specify a particular target type for its argument is a very useful one, and intuitively explains the different syntactic argument forms for the verbs below. In sentences (11) and (12), noun phrases and verb phrases appear in the same argument position, somehow satisfying the type required by the verbs *enjoy* and *begin*. In sentences (13) and (14), noun phrases of very different semantic classes appear as subject of the verbs *kill* and *wake*.

(11) a. *Mary enjoyed the movie.*
b. *Mary enjoyed watching the movie.*

(12) a. *Mary began a book.*
b. *Mary began reading a book.*
c. *Mary began to read a book.*

(13) a. *John killed Mary.*
b. *The gun killed Mary.*
c. *The bullet killed Mary.*

(14) a. *The cup of coffee woke John up.*
b. *Mary woke John up.*
c. *John's drinking the cup of coffee woke him up.*

If we analyze the different syntactic occurrences of the above verbs as separate lexical entries, following the sense enumeration theory outlined in previous sections, we are unable to capture the underlying relatedness between these entries; namely, that no matter what the syntactic form of their arguments, the verbs seem to be interpreting all the phrases as events of some sort. It is exactly this type of complement selection which type coercion allows in the compositional process.

Complex Types in Language

One of the more unique aspects of the representational mechanisms of GL is the data structure known as a *complex type* (or dot object), introduced to explain several phenomena involving the selection of conflicting types in syntax. There are well-known cases of *container-containee* and *figure-ground* ambiguities, where a single word may refer to two aspects of an object's meaning (cf. Apresjan, 1973, Wilks, 1975, Lakoff, 1987, and Pustejovsky and Anick, 1988). The words *window*, *door*, *fireplace*, and *room* can be used to refer to the physical object itself or the space associated with it:

(15) a. They walked through the door.

b. She will paint the door red.

(16) a. Black smoke filled the fireplace.

b. The fireplace is covered with soot.

In addition to figure-ground and container-containee alternations, there are many other cases in natural language where two or more aspects of a concept are denoted by a single lexicalization. As with nouns such as *door*, the nouns *book* and *exam* denote two contradictory types; books are both physical form and informational in nature; exams are both events and informational.

(17) a. Mary doesn't believe the book.

b. John bought his book from Mary.

c. The police burnt a controversial book.

(18) a. John thought the exam was confusing.

b. The exam lasted more than two hours this morning.

What is interesting about the above pairs is that the two senses of these nouns are related to one another in a specific way. The apparently contradictory nature of the two senses for each pair actually reveals a deeper structure relating these senses, something that is called a *dot object*. For each pair, there is a relation which connects the senses, represented as a Cartesian product of the two semantic types. There must exist a relation R which relates the elements of the pairing, and this relation must be part of the definition of the semantics for the dot object to be well-formed. For nouns such as *book*, *disk*, and *record*, the relation R is a species of "containment," and shares grammatical behavior with other container-like concepts. For example, we speak of information *in* a book, articles *in* the newspaper, as well as songs *on* a disc. This containment relation is encoded directly into the semantics of a concept such as *book* —i.e., $hold(x, y)$— as the FORMAL quale value. For other dot object nominals such as *prize*, *sonata*, and *lunch*, different relations will structure the types in the Cartesian product, as we see below. The lexical structure for *book* as a dot object can be represented as in (19).

(19)

$$\left[\begin{array}{l}\textbf{book}\\ \text{ARGSTR} = \left[\begin{array}{l}\text{ARG1} = \texttt{y:information}\\ \text{ARG2} = \texttt{x:phys\_obj}\end{array}\right]\\ \text{QUALIA} = \left[\begin{array}{l}\text{FORM} = \texttt{hold(x,y)}\\ \text{TELIC} = \texttt{read(e,w,x.y)}\\ \text{AGENT} = \texttt{write(e',v,x.y)}\end{array}\right]\end{array}\right]$$

Nouns such as *sonata*, *lunch*, and *appointment*, on the other hand, are structured by entirely different relations.

Recent Developments in Generative Lexicon

As the theory has matured, many of the analytic devices and the linguistic methodology of Generative Lexicon have been extended and applied to languages and phenomena well beyond the original scope of the theory. Co-composition has been applied to a number of phenomena, particularly light verb constructions, with a fair amount of success, in Korean and Japanese (Lee et al., 2003). Qualia structure has proved to be an expressive representational device and has been adopted by adherents of many other grammatical frameworks. For example, Jensen and Vikner (1994) and Borschev and Partee (2001) both appeal to qualia structure in the interpretation of the genitive relation in NPs, while many working on the interpretation of noun compounds have developed qualia-based strategies for interpretation of noun-noun relations (Johnston and Busa, 1996, 1997, Lehner, 2003, Jackendoff, 2003). Van Valin (2005) has adopted qualia roles within several aspects of RRG analyses where nominal semantics have required finer grained representations.

Perhaps one of the biggest developments within the theory in recent years has been the integration of type coercion into a general theory of the mechanisms of selection in grammar (Pustejovsky, 2002, 2005). On this view, there are three mechanisms that account for all local syntagmatic and paradigmatic behavior in the grammar: pure selection, type exploitation, and type coercion.

The challenges posed by Generative Lexicon to linguistic theory are quite direct and simple: semantic interpretation is as creative and generative as syntax if not more so. But the process operates under serious constraints and inherently restrictive mechanisms. It is GL's goal to uncover these mechanisms in order to model the expressive semantic power of language.

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