# Predictable Meaning Shift:
# Some Linguistic Properties of Lexical Implication Rules

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## Abstract
Drawing on a growing database of systematic relationships between word-senses, the authors argue that a significant class of these represent Lexical Implication Rules, a set of formal rules within the domain of lexical semantics; these they distinguish from other types of semantic relation more closely dependent on metaphor and world-knowledge. Some formal properties of Lexical Implication Rules are proposed, as evidence of their linguistic, rather than real-world, nature.

## 1. Introduction: Lexical Implication Rules

It is a truism that people, in interpreting and producing language, make use of both linguistic and real-world knowledge. We contend that part of that linguistic knowledge is a knowledge of lexical semantics. Lexical semantics is discernible from real- world knowledge, because the inferences used are in certain cases formally distinct from commonsense inferences and from metaphors based on analogies. That is the position we attempt to substantiate in this paper.

The focus of this paper is a series of arguments justifying the existence of Lexical Implication Rules (henceforth "LIRs"). Such rules in principle generate derived lexical entries from base lexical entries. We contend that they are bona fide rules in the formal grammar of languages involved; it is wrong to see them as mere reflections, quasi-systematic effects of applying the formal structures of a language in a real-world context.

As evidence of this we adduce formal properties of the incidence of some of the rules. We postulate:
* that application of the rules is sometimes blocked by the pre-existing topography of the lexicon (pre-emption);
* that formal features of the words involved, apparently unrelated to the semantic effect of the rules, may inhibit LIR application;
* that semantic features of the words input, apparently unrelated to the semantic effect of the rules themselves , may similarly inhibit LIR application;
* that some rules are specific to particular languages, and indeed to specific dialects of a given language.

All these facts seem incompatible with the hypothesis that LIRs are side-effects of the the interaction of language use with speakers' knowledge of the real world. They call for a structured theory of lexical semantics, and this paper is intended as a contribution to building such a theory.[1]

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[1]Lexical semantics is nonetheless constrained by the real world, to the extent that (a) real-world knowledge and analogy will of course be necessary in many cases to give a complete interpretation

The position outlined here arises from current work on the analysis and categorization of a database of well over 100 instances of predictable lexical and semantic alternations. These instances of systematic word-sense relationship are hard to categorize fully, but the majority appear to have properties which show them not to be mere corollaries of speakers' free play with analogy and terse assumption of real-world situations. They have something in common with the set of Lexical Rules used in Lexical Functional Grammar (cf Bresnan (1982)), but are primarily conceptual rather than syntactic. While it is already clear that there is great variety in the theoretical status of the rules in this set, we shall argue that there is clear evidence that at least some of these rules, the LIRs, must be defined as applying to word-meanings; they are not derivable as generalizations over world-knowledge, or facts about the world or the society described, but must be stated in a full grammar of the language in which they occur.

The significance of this is more than a theoretical nicety. It is important to computational linguistics to include these facts in its lexicon, rather than as a special kind of world knowledge, since the former will be in general more restricted and hence more manageable.

## 2. Some First Examples of LIRs; Contrast with some other Semantic Shifts

A few straightforward examples from English will give a first intuitive feel for the kind of lexical implications to be represented as LIRs.

**LIR Hunting Plural** (1)
NC (count noun) singular: animal -> NPL: in hunting context
e.g. I can see an elephant. / They've gone out after elephant.
also *tiger, shark, shrimp, partridge, pigeon* etc.

**LIR Vehicle Verb** (2)
NC singular : vehicle -> VTI (verb transitive/intransitive): to travel/transport
                                                        using that vehicle
e.g. He's got a new cycle. / Let's cycle into town.
also *motor, ferry, canoe, ship, jet* etc.

**LIR Animal - Meat** (3)
NC: animal -> NU (uncountable or mass): meat from that animal
e.g. Mary had a little lamb. / He won't touch lamb any more.
also *chicken, goose, monkey, dog, swordfish, shark* etc.

**LIR Power Source Attribute** (4)
NU: energy source -> NMOD (noun modifier): powered by that source
e.g. There's no gas left. / A gas oven.
also *steam, water, wind, coal, air* etc.

**LIR Dance Verb** (5)
NC: dance -> VI: do that dance
e.g. Can you do a waltz? / He's learning to waltz.
also *tango, quickstep, foxtrot, cancan* etc.

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of language as it is used; and (b) something impossible or imperceptible will not be lexicalized. (We characterize below the phenomenon of *pragmatic exclusion*.).

**LIR-*ful* Derived Noun** (6)

NC: container -> [NC+*ful* ]$_{NC}$: amount it contains/its contents

e.g. I don't use a thimble. / Add a mere thimbleful of brandy.

also all purpose-built containers (*trunk, tank, jug, hamper, bucket, basket* etc.), and some other items that can be viewed as containers (e.g. *spade, spoon, fork, hand, fist, belly,...*)


**LIR Container - Amount/Contents** (7)

NC: container (purpose-built only) -> NC: amount it contains/its contents

e.g. The glass broke. / Add a glass of wine. Don't drink the whole glass.

also all purpose-built containers (*trunk, tank, jug, hamper, bucket, basket* etc.)


**LIR Material Adjective** (8)

NU: material -> NMOD: made of that material

e.g. It's best quality linen. / A linen sheet.

also *polyester, plastic, stone, diamond, granite, lead* etc.


**LIR -*en* Derived Adjective** (defunct?) (9)

NU: material -> [NU+-en] $_{ADJ}$ : made of that material

e.g. The ring is made of a gold. / A golden ring.

also wood, leather, oak, lead, wool

**LIR Constitution - State** (10)

NU: form of government -> NC: state with that form

e.g. Democracy is at risk. / Democracies must take action.

also *oligarchy, monarchy, tyranny, dictatorship* etc.


**LIR Nationality Plural** (11)

ADJ: nationality -> [the ADJ]$_{NPL}$ : people of that nationality

e.g. The French nation. / The French have objected to this.

also *Swiss, Dutch, Chinese, Spanish* etc.


**LIR Produce Young** (12)

NC: animal young -> VI: produce young

e.g. It's a foal. / The mare will foal shortly.

also *cub, pup, whelp, lamb* etc.


**LIR Feeling - Evoking** (13)

ADJ: (of subject) feeling an emotion -> ADJ: (of cause) evoking that emotion

e.g. She's sad about it. / It was a sad day.

also *happy, angry, nostalgic, melancholy* etc.


**LIR Cutter - Cut** (14)

NC: tool for cutting/piercing -> VTI: to use that tool on

e.g. Where's the knife? / She tried to knife me.

also *saw, bayonet, spear, axe, harpoon* etc.


**LIR Food Item - Mass** (15)

NC: food item -> NU: food substance

e.g Here's an egg. / He won't eat egg.

also *potato, lettuce, banana, coconut, haggis, sausage, pie* etc.


LIRs are distinguished in various ways from some comparable phenomena discussed in the literature:

1. They are more systematic than the Lexical Network framework used by Norvig to link the remoter senses of take in Norvig & Lakoff (1987); cf also Norvig (1989).

2. Each implication instance has a single clear base form. In this they are unlike the semantic alternations arising from the metaphorical concepts such as "argument is war" or "communication is a conduit" of Lakoff & Johnson (1980) and Sweetser (1990), which are often better represented as projections from one network of semantic relations on to an isomorphic one.

3. They do not depend on special background knowledge, unlike many of the innovative denominals of Clark & Clark (1979) (e.g.*We all Wayned and Cagneyed* ).[2]

4. They are not coerced by a governing head, unlike the instances of contextual determination (*three martinis ago, before the jet engine*) pointed out by Fillmore (p.c.).

## 3. Formal Definition of LIRs

The form of an LIR may be given schematically as follows, using Cruse's terminology (cf Cruse 1986):

A lexical unit LU1, consisting of a lexical component LC1 (consisting of phonological, orthographic, morphological and syntactic information) and a semantic component SC1, implies the existence of a lexical unit LU2, with lexical component LC1 or LC2 and semantic component SC2.

More graphically:

(i) $LC_1 [...\alpha...] : SC_1 [...\sigma...] \rightarrow LC_1 [...\alpha...] : SC_2 [...\tau...]$
or
(j) $LC_1 [...\alpha...] : SC_1 [...\sigma...] \rightarrow LC_2 [...\alpha...] : SC_2 [...\tau...]$

This means that within our definition of LIRs are included all derivational rules, since these always affect the sense of their input-word.

Note that, on this theory, LIRs may alter the lexical component of an input word, but they must alter its semantic component. The formal change brought about by an LIR may be vacuous, but the semantic change can never be. LIRs, therefore, on our conception, are centrally concerned with semantics, but only incidentally with formal transformations. Hence, for example, the many lexical processes in English which involve transition from a count noun to a mass noun (e.g. **Tree - Wood; Animal - Fur; Animal - Meat; Food Item - Mass**) will be viewed as distinct LIRs.

The arrow in the LIR-schema makes it clear that LIRs are viewed as derivational processes, not as symmetrical relations. The claim is made that each implication instance has a single clear base form.[3] This is not an idle claim, but is in fact

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[2]Historically many LIRs may have begun as post-hoc generalizations over such "contextual" innovations.

[3]This accords with Aronoff's principle of Word-based Morphology (1976).

supported by the facts adduced to show the conditions under which LIRs are blocked (viz by Pre-emption, and by Formally- and Semantically-Based Exceptions, as exhibited below). Such constraints on the application of a rule block the existence of a potential output for a given input. Without clear directionality in the LIRs that are blocked, such constraints would be meaningless, or at least unspecific in their effect.

## 4. Our Database and its Usefulness in Lexicography. The Rôle of Theory.

Created (by Atkins) in an effort to systematize and accelerate the process of dictionary compiling, the database draws on the relationships discussed by Fillmore (e.g. 1969, 1978 and elsewhere) ; Apresjan's cases of *regular polysemy* (1973); Leech's *semantic transfer* rules (1981); the verb alternations noted in Levin (forthcoming); the cases of systematic polysemy discussed in Miller (1978), Clark & Clark (1979), Aronoff (1980) and Lehrer (1990); items participating in the cross-language lexicalization patterns which Talmy discusses (1985); the *nominal compounds* analysed by Levi (1982); and Pustejovsky's *generative lexicon* (1991).

The database is far from complete. It consists at present of a dBaseIII Plus file, of which each of the 130 records holds information on one particular type of systematic meaning shift, and separate lists (as complete as possible) of the sets of words which participate in each type, and those which might be expected to, but do not.

At present the lists of words which participate in the various identified meaning shifts may be used to remind a lexicographer that a particular word is expected to have certain specified usages, and to structure in advance certain aspects of the dictionary entry accordingly. In lexicography, when teams of a dozen or so people work on producing for one dictionary consistent descriptions of 100,000 or more words, such preparatory marking of items in the wordlist already makes the compiling faster and more consistent across members of the team. The computer can present them with an appropriate pro-forma entry to complete, rather than their having to compile each word from scratch.

But besides these pragmatic aims, we are also concerned to clarify the theoretical status of the various types of meaning shift. Success here will allow rules to be formulated more accurately and comprehensively. In addition, by illuminating the semantic primitives which play a rôle in the rules, it should also lead towards standardization of the semantic component of lexical entries.

We now turn to the evidence for LIRs as linguistic rules.

## 5. Formal Properties of LIRs - 1:    Pre-emption

Pre-emption is the prevention of application of a rule because the place for its output is, in some way, already taken.[4] We have noted two kinds of pre-emption blocking LIRs: *semantic pre-emption* , where the sense is already represented by a

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[4]Pre-emption is explicitly noted in this context by Clark & Clark (1979: p. 798). Cf also Gruber (1976: 295-6). These, however, only note the phenomenon of what we call semantic pre-emption.

different word; and *lexical pre-emption* , where the word has already been assigned a different sense.

*Semantic Pre-emption*

(i)
**Hunting Plural** is blocked by the pre-existence of the collective plural noun *cattle* : *they're out after ox/cow/bull/bullock.

(ii)
**Vehicle Verb** is blocked by the existence of special-purpose verbs *drive, sail, fly* (even if these are not strictly accurate statements of the power-source involved): *we carred/boated/planed home.

(iii)
**Animal Meat** is pre-empted by the Anglo-Norman terms *beef, mutton, pork, veal, venison* : *have some more gravy on your bullock/sheep/pig/calf/deer.

(iv)
**Power Source Attribute** is pre-empted by the adjective *electric* : *electricity motor/power/light.

*Lexical Pre-emption*
**Dance Verb** is blocked in the case of *reel* because the verb form that would result is already there with a different meaning, viz "to stagger, as from a shock". Hence it is not available to mean "do the (Highland) reel": *the party reeled the night away.

Although pre-emption of these kinds does appear to be a sufficient condition, and hence good evidence, for a semantic shift's being an LIR, it is not apparently a necessary one: sometimes it fails to work where LIRs do seem to be involved.

For instance, *-ful* **Derived Noun** creates Contents and Amount senses, sometimes on the basis of quite unpromising nouns: *belly* -> a bellyful of rice & beans, *cap* -> a capful of disinfectant, *fist* -> a fistful of dollars, *hand* -> a handful of dust, *needle* -> a needleful of cotton, *pocket* -> a pocketful of rye, *shovel* -> a shovelful of spaghetti, *spade* -> a spadeful of earth, *spoon* -> a spoonful of sugar etc.

However, the rule also applies to 'true' Container nouns (words whose primary sense is a hyponym of container): *bottle* ... -> *bottleful, bucketful, cupful, glassful, potful, sackful, tankful, thimbleful* . In these applications, the rule's semantic effect seems to be indistinguishable from that of **Container - Amount/Contents**. Nonetheless, this latter is not pre-empted e.g. he drank the whole bottle(ful); the pail holds eight bottle(ful)s of milk.[5]

Another case of failed pre-emption concerns the LIR **Material Adjective**. This rule which allows the names of materials to be used as adjectives to describe objects made of the material is unaffected by the application of the somewhat sporadic *-en* **Derived Adjective** rule.
E.g.,

| a gold ring | vs. | a golden ring |
|---|---|---|
| a silk shirt | vs. | a silken shirt |
| an oak chest | vs. | an oaken chest |
| a leather bottle | vs. | a leathern bottle |

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[5]There must be an LIR involved here, and not just a vagueness in the sense of "container nouns": the senses Amount and Contents are clearly distinct from the sense Container. To show this it is enough to point out that nouns like *handful* and *bottleful* have the senses Amount and Contents but not the sense Container.

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but
a silver ring      vs.      *a silvern ring
a hair shirt       vs.      *a hairen shirt
a teak chest       vs.      *a teaken chest
a rubber bottle    vs.      *a rubbern bottle[6]
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For the moment it is enough to point out that pre-emption is not always clear-cut and co-ercive. Where it is present, however, it indicates clearly the presence of an LIR.

Pre-emption proper, however, should be distinguished from what we might call *pragmatic exclusion* . These are cases where a predicted application of a rule is blocked because of external fact about the world. Compounding with place-names can imply Source as well as Destination[7]: e.g. When is the London train due in? (= "train from London") vs. When is the London train due to leave? (="train for London"). However, the Source option seems strangely to be excluded for roads. "The London road" means the road to London, not away from it. The paradox goes away when one considers the point of view of road users. Either they are in London, or they are not. If they are, then every road they might take is a road from London; talking about "the London road" in this sense is of little use to them. If they are somewhere else, then every road from London is co-extensive with a road to London: why bother to distinguish? Both sets of road-users can be kept happy if the convention is adopted that "London road" = "road to London".

## 6. Formal Properties of LIRs - 2: Formally-Based Exceptions

Certain constraints on particular LIRs are quite formal. They have to do with non-semantic aspects of the lexical items involved, principally their phonological form, but also their morphological or syntactic sub-category. Such examples provide perhaps the clearest evidence that LIRs are not an effect of pragmatic attempts to use words tersely and interpret them constructively.

*Phonological Exceptions*
(i)
**Constitution - State** provides quite generally for mass nouns designating types of government to act as count nouns designating states under such government. Hence there is democracy, tyranny, dictatorship, oligarchy, and there are democracies, tyrannies, dictatorships, oligarchies.[8] However, there is one large class of nouns, those ending in -ism, for which this LIR is blocked: there are no *fascisms, *communisms, *nazisms, *totalitarianisms, *marxisms, *leninisms,

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[6]Evidently, there is vagueness in the precise definition of the two processes concerned. Some would say the adjectives in -(e)n are moving away from their original meaning "made of" to something vaguer such as "redolent of"; others that the outputs of Material Adjective are not really adjectives, but just compound uses of the original nouns. There are tests that bear on these points but the results are variable and inconclusive.

[7]Obviously, these possibilities are not exhaustive.

[8]Some types of régime have no corresponding term for a theory of government: e.g. *republic, kingdom, dukedom, heptarchy* . This is because not all régime-terms are derived from terms for political theories (contrast *monarchy* (which is) with *kingdom* (which is not)). In other cases, the possibility of a corresponding régime is only pragmatically excluded : politics, not grammar, precludes anarchies, bureaucracies and officialdoms.

*stalinisms or *maoisms, although it is quite clear which states would have been candidates for such titles.[9]

(ii)

**Nationality Plural** allows for nationality adjectives, when preceded by the definite article, to also function as terms for a plural noun, referring to a given group of, or to all people of, that nationality. Strangely, however, the rule is subject to a phonological restriction: only terms ending in a sibilant consonant are eligible. So we may refer to the Swiss, the Spanish, the Dutch, the French, the Japanese, but not (as a collective plural) to *the Belgian, *the German, *the Coptic, *the Iraqi or *the Malay.[10]

*Morphological Exception*

**Produce Young** provides for the use of any name of a young mammal as a verb to denote the giving of birth to such an animal. Thus cows calve[11], mares foal, ewes lamb, vixens cub, dogs whelp, cats litter, sows farrow, seals pup, and does fawn. However, the rule excepts diminutives: *kitten, piglet* and *puppy* form no verbs.[12]

*Syntactic Exception*

**Feeling - Evoking** applies to adjectives, converting an attribute of a person feeling an emotion to that of any object causing the emotion. It appears to be systematically blocked from applying to any adjective which is only used predicatively. Hence we have the following contrasts:

| | | | |
|---|---|---|---|
| a happy child | : the child is happy | | |
| | | :: a happy occasion | : the occasion is happy |
| *a glad child | : the child is glad | | |
| | | :: *a glad occasion | : *the occasion is glad |
| | | | |
| a fearful child | : the child is fearful | | |
| | | :: a fearful occasion | : the occasion is fearful |
| *an afraid child | : the child is afraid | | |
| | | ::*an afraid occasion | :*the occasion is afraid |
| | | | |
| a unhealthy child | : the child is unhealthy | | |
| | | :: a unhealthy occasion | : the occasion is unhealthy |
| *an ill child | : the child is ill | | |
| | | ::*an ill occasion | :*the occasion is ill |
| | | | |
| a rapt child | : the child is rapt | | |
| | | :: a rapt occasion | : ?the occasion is rapt |
| *an agog child | : the child is agog : | | |
| | | :*an agog occasion | :*the occasion is agog |

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[9]An exception to the constraint is *despotism* , especially in the usage *oriental despotism* .

[10]Non-naturalized names are another, perhaps semantic, exception. The Hausa, the Wolof, the Konkani, the Tuareg strike this writer at least as acceptable collective plurals. Interestingly, too, the Maya seem OK, while the Inca and Chibcha are not.

[11]The verb *calve* instead of the expected *calf* is a mild case of pre-emption in Modern English. The voicing-alternation, however, was once regular, and is merely evidence that the origins of this LIR go back at least to Middle English.

[12]Though, as the examples show, these could also be excluded by pre-emption.

## 7. Formal Properties of LIRs - 3: Semantically-Based Exceptions

Beside these uncanny exceptions to LIRs based on features of the word-forms involved, LIRs are also subject to systematic exceptions which pick on features of the sense. In drawing attention to them, we notice some surprisingly intricate structure in the lexicon.

**Cutter Cut** enables nouns representing cutting instruments to be used as verbs. So people can be knifed, bayoneted, speared, harpooned, axed, tomahawked, or scythed down; various tools can scissor, drill or saw through material. Why then do *sword, dagger* and their hyponyms take no part in this verbal carnage? Why is it impossible to speak of *swording, *daggering, *poniarding, *bodkinning, *rapiering, *scimitaring, *sabring, *stilettoing, *claymoring or whatever else one might do to an adversary with a specific bladed weapon? It begins to look like more than an accident, since there are plenty of non-derived verbs to cover, in less specific ways, the stabbing, slashing, chopping, hacking, pricking and piercing actions that would be connoted.

Another strangely coherent semantic constraint is on **Food Item - Mass**. This allows a count noun for food to appear as a mass noun when the units of that food are not evident. Hence although the primary meaning of the nouns is the discrete animal, fruit or vegetable, one can nevertheless refer to some egg, some crab, some salmon, some potato, some carrot, some apple, some cabbage etc., connoting a mass of the relevant food substance typically on a plate. Only one form of food seems to resist: pulses. No matter how finely you grind or mash them, you cannot refer to "*some pea", "*some bean", "*some lentil". Refried beans are still beans, not bean. Neither of the authors is a native user of *garbanzo* (a North American name for chickpea), but we would predict that you cannot have a side-dish of garbanzo.[13]

## 8. Formal Properties of LIRs - 4: Specificity to Language, and to Dialect

Further evidence comes from cases where an LIR appears to be present in one language, but not in another.

The form of the argument is quite simple: consider two languages (for the sake of argument, called A and B) and two sets of words, apparently translation equivalents one for one between the two languages. Suppose that the members of the set in A all have an extra sense which members of the set in B lack. Such cases are clear evidence of that the assignment of senses is language-dependent; and the facts are explained by positing an LIR to be present in A and not in B. The only alternative would be to appeal to pragmatic interpretation of the context.[14] But pragmatics is a species of commonsense: it cannot explain why the interpretation of vocabulary differs systematically from one speech-community to another.

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[13]The historical situation here seems a little-muddled, since *pea* is a singularized back-formation from *pease* , originally a mass-noun meaning peas. This itself seems to have been a reanalysis of a descendant of an originally plural noun in Latin, *pisa* . In modern Indian English, *dal* is used quite happily as a mass-noun for a different sort of pulses.

[14]As, for example, Aronoff (1980: pp.755-7) attempts to explain away the need for specific details in rules of morphological semantics by appealing to features of the context in interpretation. His argument is significantly weakened by cases where languages with close morphological processes (e.g. agent nouns in English and French) apparently show quite different constraints on their interpretation: e.g. *c'est un bon conducteur* has no sense synonymous with the simple *il conduit bien* ; but cf. *he's a good driver* = *he drives well* .

An example may make the point clearer. In Ancient Greek, there is a set of adjectives (clearly marked as such morphologically) which associate their head-noun with a particular time of day. ( E.g. *eo:os* - at dawn, early; *orthrios* - in the morning; *mese:mbrinos* - at noon; *deilinos* - in the afternoon; *hesperios* - in the evening; *nukteros* - at night; *mesonuktios* - at midnight; *pannukhios* - all night long). English also has such a set of adjectives but they are few, and confined to a learned register (e.g. *matutinal, nocturnal* ); the major translation equivalents in English are attributive uses of nouns (e.g. *morning papers, noon-day sun, afternoon tea* etc.). Ancient Greek goes on to use its temporal adjectives predicatively, with the sense of adverbial qualifiers of the action predicated:
e.g.

orthrios he:ko:n     - coming in the morning  (Plato, Protagoras 313B)
egre:i mese:mbrinos  - you wake at noon (Aristophanes, Wasps 774)
eudon pannukhioi     - they slept all night long (Homer, Iliad 2.2)

Evidently, there is no such predicative use of English temporal adjectives or nouns: prepositional phrases (as used above in the glosses) are the closest that can be offered.[15]

Hence there is an adverbial sense of Greek temporal adjectives, used predicatively, which has no parallel in English. A neat formulation of the case would thus be to formulate an Ancient Greek LIR, absent in English, which goes:

LIR Time Predication                                                        (16)

ADJ : temporal, $\phi$(head-NP)  -> ADJ predicative: temporal, $\phi$(head-S)[16]

To avoid positing an LIR here would take some special pleading. In this case one would need to argue that the distinction of senses made in English is simply absent in Greek, so that temporal adjectives are available to do more promiscuous service. This would amount to saying that Ancient Greek simply made no linguistic distinction between assigning a time-reference to an action and assigning a time-reference to the agent of that action.

However, our point here is not to argue for a specific analysis of the Greek facts. It is simply to point out that sense-shifts of the type that LIRs represent are sometimes language-specific. Either we can encapsulate the differences in a single LIR, present in language A, absent in B. Or else we can posit a different assignment of semantic primitives, with B being systematically stricter in the senses allowed for a given class of words (-- in this case, English will not allow its temporal adjectives to assign a time-reference to a whole action). Either way, we shall have gained some concrete evidence on linguistic semantics. What we are not free to claim is that pragmatic considerations alone can resolve such systematic differences between languages.

A similar cross-linguistic argument for the linguistic reality of LIRs can be made from dialectal differences within the same language.

Consider for example the treatment of "day-nouns" in Standard British English as against their treatment in various other dialects, including Cockney and General American. Whereas the indexical nouns *today, tonight, yesterday, tomorrow* occur as adverbs in all dialects, the days of the week *Sunday* through *Saturday* cannot

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[15]And these in fact have precise translation equivalents, using prepositions, in Ancient Greek.

[16]$\phi$(X) here represents the syntactic unit of whose sense the adjective's sense is predicated.

occur adverbially in Standard British English: he came *(on) Tuesday. To account for this, one could posit an LIR **Day Noun - Adverb** , with a more restricted domain in Standard British English than in the other dialects.

But to posit this is already to accept that the LIR is a feature of the grammar of English. Contrastive analysis, whether applying within a language or between languages, will, we expect, continue to raise a host of problems for any approach which tries to account for the fine detail of semantics as side-effects of pragmatics. The real world, and the human condition, is not so different from one language-community to another (let alone between dialect-areas). But as languages and their grammars differ, so does their lexical semantics.

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