Chapter III

LEXICAL SEMANTIC COMPONENT FOR SHARE-MARKET DOMAIN

3.1 Conceptual Structure and Verb

3.1.1 Centrality of verb in conceptual representation

Modern linguistics has seen a theoretical shift towards a 'semantically based' grammar. This shift has been motivated by an increasing recognition of the fact that a sentence is 'understood' not in terms of its surface structure alone, and crucial to this understanding are the relations that hold between nouns and verbs in the deep structure of language.

The verb has traditionally been seen as a vortex of meaning. One of the ancient Indian theories claims that every thing emanates from 'action' and this theory is very significant in the realm of language. The importance of verbs in the

1. Chomsky (1957)
linguistic structures can be understood from the following remark of Jesperson:

"there is certainly much truth in the name given to a verb by Chinese grammarians, ‘living word’, as opposed to a noun which is lifeless" (1924:115)

Jesperson quoting with approval Sweet’s description of the verb as ‘phenomenon words’ says that no communication is complete without a verb - "... if we combine a verb with a pronoun or with a noun, we discover that the verb imparts to the combination a special character or finish and makes it a more or less complete piece of communication - a character which is wanting if we combine a noun or pronoun with an adjective or adverb."!

For a semantically based grammar, the verb is central because the verb uniquely determines the number of co-occurring nouns and also the nature of their relationship to itself. In other words, the verbal concepts have the nominal concepts implicit in them: for example, the activity represented by the verb GO requires for its accomplishment one nominal that performs or manifests this activity; HIT on the other

1. Jesperson (1924)
hand, requires a doer, an experiencer and an instrument nominal. The nominal on the other hand does not similarly determine the number or nature of co-occurring verbals. We can not, for example, say, that the noun X has co-occurring verbs a and b and none other. In this sense, the verb is linguistically primary.

In the Indian tradition, terms ‘akhyata’ and ‘dhatu’ have been used to mean the verb. In course of time, the term ‘dhatu’ got restricted to ‘root’ while ‘akhyata’ came to signify the verbal form. ‘Akhyata’ originally meant "that which has been described fully" and then it came to mean "that which describes fully". Yaska defines akhyata as ‘bhava-pradhanam’ that is ‘having becoming or action as its fundamental meaning’. On the question of primacy of noun or verb, different Indian schools have different opinions. The Nyaya school maintains that noun in the nominative is the primary in the sentence, while the grammarians and philosophers hold the view that verb is the primary in a sentence. Mimamsakas hold ‘Bhavana’ or activity as primary. Thus the karaka divisions depend on the verb. The verb part of a sentence is the binding link between different nominals.

1. Kapoor (1985)
2. Kapoor (1985)
3.1.2 Analyzing share-market verbs

The bilingual glossary of share-market verbs (around 300) represent the language of day to day transaction of business in the market as one finds in the print media. Though the verbs are at the centre of sentence semantics, and are used in varied meaning contexts, the verbs in the present context are guided by the context of the domain.

Not overplaying the role of domain restriction in meaning determination of share-market verbs, one can split their meaning vortex into

/ operation of event
i) conceptual core
   \ effect of operation

ii) spatio-temporal setting

The conceptual core becomes material through the substrata of its two

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1. Kapoor (1985)
parts, and when it becomes material, the whole acquires a spatio-temporal setting. And when that happens, ‘the nominal entities, the substrata are also uniquely identified ie. invested with reference through nominal inflections and other means

A verb can be maximally expanded by classifying the elements that can possibly appear in such an expansion, and or hierarchy or relationship if any that exists among such elements. Kapoor(1985) has an optimum 12-place expansion of a verb (eg. ‘write’) in propositional structure -

1. ADDRESSEE
2. DOER
3. PURPOSE
4. MOTIVE
5. GOAL
6. ATTITUDE
7. INSTRUMENT
8. MEDIUM
9. TIME
10. PLACE

1. Quine(1973)
2. Semantic Structure and Verb
According to Kappor, these dimensions represent not only the structure of the verb semantics, but also the structure of thought. Our thoughts about events resolve themselves into such and similar dimensions i.e. we make sense of events in terms of these and other similar action-functions and, it is not possible to introduce many more co-ordinates besides these, to the ‘structure of thought’, which in other words is constrained by these possible dimensions.¹

This seems to be one of the places where perception, linguistic expression, and concepts meet fairly. What we have here are ‘filters in the transformation of thoughts into language’.² The fact that we cannot have many more dimensions in addition to the ones already listed is quite unnerving. For, in that case, do these parameters show the limits of the human mind, of at least the conceptual framework? But, first of all, is this the optimum expansion, the maximum ‘conceptual composition plan’ to use Stefan Fink’s more descriptive expression?³

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1. Kapoor (1985)
2. Stefan Fink (1978:80)
3. Stefan Fink (1978:181)
One can consider two kinds of possible further expansions:

/ basic, and

1. conceptual extension

\ derivational

2. non-conceptual extension

Any proposed addition to the above enumeration of action-functions would constitute a basic conceptual extension. It is to be noted that, across languages, there is not only a striking similarity of such relational constants but that there is an outer limit on the number of such constants proposed.

The other kind of conceptual extension - derivational - involves processes such as causativisation, which when applied to a candidate verb, would

- yield one additional action-function that of the actual performer, and

- change the function of the agent-nominal to that of the 'inspir-
Applying the above 12 parameters to share-market verbs for example ‘buy’ we come across the following expansion -

X buy - - - (DOER)
X buy Y - - (AFFECTED)
X buy Y for M (EXCHANGE, INSTRUMENT, MEDIUM)
X buy Y for Z (BENEFIT)
X buy Y for G (GOAL-PURPOSE)
X buy Y at P (PLACE-LOC)
X buy Y at T (TIME)
X buy Y - - (MANNER)

Since there is not much choice of endless stretching of a verb in the technical domain of share-market, these options may well account for all possible conceptual structures for it.

Jackendoff in his book1 "Semantic Structures" outlines the basic function-argument structures (chapter 2) which include a repertoire of con-

1. Ray Jackendoff (1990)
ceptual categories, the "semantic parts of speech". These categories include such entities as Thing (or object), Event, State, Action, Place, Path, Property, and Amount. Each of these can be elaborated into a function-argument organisation of the general form.

These conceptual functions, according to Jackendoff\(^1\) account for a substantial fraction of the verbs of spatial motion and location in English and can be extended to a wide range of other semantic fields. However, many other conceptual domains, even within the spatial field, do not appear to reduce easily to any combination of these functions and must therefore be posited as additional elaborations of the conceptual system. In this context, the author in part II of the same book (chapters 5, 6 and 7) tries to nalyze such complicated semantic domains of verbs -

Manner of motion
and configuration: 'jump'(sensex jumps 42 points)

Inchoative: 'cool' (shares cool down)

Touching : 'touch' (share-prices touch a new high)

\(^1\) Ray Jackendoff (1990:87)
Attachment: ‘hit’ (the market is hit by recession)

Material composition: ‘produce’ (X produces beverages from the vegetable pulp)

Helping and letting: ‘drop’ (share-prices dropped to record low)

Possession: ‘belong’ (Company X belongs to Y)

Reaction: ‘resist’ (the market resisted inflationary pressure)

3.1.3 Linguistic and LCS classifications

Lexical entries are organised using LCS classes which are distinguished from the linguistic classes. Each LCS class is based on well-formedness constraints and may include verbs from more than one linguistic class. Conversely, each linguistic class may include verbs from more than one LCS class.

A list of linguistic classes has been adapted from Levin¹ (in press) as

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¹ Levin (1985)
reproduced in Dorr(1993)\(^1\) to accommodate the share-market verbs.

**LINGUISTIC CLASS**  
**DOMAIN VERBS**

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**position:**

be, remain, stay, delay, dominate, hold, insist, ...

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**change of position:**

fall, drop, move, bounce, rise, lower, abate, crash, decline, increase, decrease, flare-up, hike, hot-up, jump, plummet, plunge, raise, reduce, recover, shore-up, slash, soar, spurt, tumble, exceed, ...

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**directed motion:**

raise, ascend, descend, lower, hike, project, enter, introduce, ...

---

**motion with manner:**

jump, run, float, ...

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physical state:

be, remain, keep, persist, ...

change of physical state:

open, close, soften, harden, break, grow, change, crop-up, emerge, expand, merge, intensify, ...

exchange:

buy, sell, trade, exchange, invest, ...

orientation:

aim, face, ...

existence:

build, grow, shape, make, carve, create, persist, manufacture, produce, form, ...

circumstance:
start, continue, ...

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range:

last, range, extend, expand ...

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cost:

cost, charge, tax, ...

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ownership:

belong, keep, own, hold, ...

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change of ownership:

give, take receive, obtain, acquire, donate, dispose, borrow, lend, loan, auction, deliver, confiscate, disburse, gain, grab, grant, lose, profit, remunerate, refund, secure, squander, square-up, transfer, yield, clinch, tap, trickle, waive, ...

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load/spray:

burden, load, pile, stuff ...
Some new linguistic classes had to be formed to account for many of the domain verbs which otherwise could not be accommodated according to Levin’s classes. The explanation for this is the fact that in the domain of share-market, we encounter a lot of metaphorical and indirect usages some of which are difficult to categorize according to Levin’s classes. For example, the verb ‘hit’ is used in the market with most common expressions like ‘market was hit (affected) by budget speculations’. Now this abstract meaning of ‘hit’ may not have the
meaning of 'contact/effect' as it is intended to be in Dorr(1993). There are many other share-market verbs for which appropriate linguistic classification could not be found in Levin as it appears in Dorr(1993). Some new linguistic classes to accommodate share-market verbs in their domain specific meaning can be added as follows:

**New Linguistic classes according to the domain requirement:**

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**change of value:**

fall, drop, rise, lower, crash, decline, increase, decrease, flare-up, hike, hot-up, jump, plummet, plunge, reduce, recover, shore-up, slash, soar, spurt, tumble, exceed, cross, ...

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**display:**

list, show, ...

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**administration:**

manage, oversee, plan, regulate, run, ...
agreement:

agree, sign, renege, accept, propose, reject, ...

money inflow:

advance, invest, fund, aid, bank, budget, donate, finance, refund, remunerate, ...

money outflow:

borrow, demand, cost, charge, claim, ...

transaction:

exchange, export, import, trade, transact, ...

competition:

lock-horns, fight, fare, grab, ...

market tricks:

offload, speculate, optimise, unload, shell-out, ...
gain:
profit, avail, boost, gain, hike, improve, secure, obtain, remunerate, yield, ...

loss:
lose, incur, trail, ...

status/value:
weaken, strengthen, worsen, harden, tighten, succeed, fail, slacken, shine, sustain, relax, revive, mount, dilute, flare, float, dominate, abate, confirm, complete, hot-up, ...

Impact (negative):
hit

LCS classes:
The LCS classes are represented by primitives such as GO, FOR, TOWARD, GOposs, AWAY-FROM. The inter-relationship between a linguistic class and an LCS class can be understood through follow-
ing examples:

'buy'[exchange]--------- \ GO-poss[LCS]
'hit'[contact/effect]--------- /

'raise' [GO-loc] ---------
\ directed motion
/ 'receive'[GO-poss]---------

All lexical entries belonging to an LCS class are grouped together. For example, the verbs for GO-poss would be arranged according to their path types:

TOWARD-poss (receive, obtain, accept, repasses)
GO-poss /
\
AWAY-FROM-poss (eg. lose, relinquish, surrender)
List of examples showing verbs commonly used in share-market & business domain:

<table>
<thead>
<tr>
<th>DOMAIN VERBS</th>
<th>LINGUISTIC CLASS</th>
<th>LCS CLASS (PRIMITIVES)</th>
</tr>
</thead>
<tbody>
<tr>
<td>sell</td>
<td>exchange</td>
<td>CAUSE-EXCHANGE</td>
</tr>
<tr>
<td>buy</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>spend</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>trade</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>grow</td>
<td>change of</td>
<td>GO-EXT</td>
</tr>
<tr>
<td></td>
<td>physical state</td>
<td></td>
</tr>
<tr>
<td>range</td>
<td>range</td>
<td>-do-</td>
</tr>
<tr>
<td>continue</td>
<td>circumstance</td>
<td>STAY-circ</td>
</tr>
<tr>
<td>raise</td>
<td>directed motion</td>
<td>GO-loc</td>
</tr>
<tr>
<td>unload</td>
<td>load/spray</td>
<td>-do-</td>
</tr>
<tr>
<td>recover</td>
<td>change of</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>position</td>
<td></td>
</tr>
<tr>
<td>fall</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>drop</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>decline</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>bounce</td>
<td>-do-</td>
<td>-do-</td>
</tr>
<tr>
<td>jump</td>
<td>motion with</td>
<td>-do-</td>
</tr>
<tr>
<td></td>
<td>manner</td>
<td></td>
</tr>
<tr>
<td>run</td>
<td>-do-</td>
<td>-do-</td>
</tr>
</tbody>
</table>
The list of primitives that we have received from Jackendoff (1983) onwards till Dorr (1993) is nor sufficient to handle the technical domain of language use in share-market as will appear from the list of new linguistic classes that has been added to the list given by Levin (1985). The following primitives, for example, we feel should be incorporated to make the LCS formalism effectively applicable in the share-market domain:

**TYPE NEW PRIMITIVES**

<table>
<thead>
<tr>
<th>Event</th>
<th>HIT-Imp, GET-Plus, GET-Minus, COMPETE-Plus, COMPETE-Minus, VALUE-Plus, VALUE-Minus</th>
</tr>
</thead>
<tbody>
<tr>
<td>State</td>
<td>STATE, AGREE-Plus, AGREE-Minus</td>
</tr>
</tbody>
</table>
NEW PRIMITIVES   IMPLICATION

GET-Plus:
obtain, receive, profit, remunerate, boom, ...

GET-Minus:
lose, squander, go-bankrupt, close-down, crash, ...

HIT-NEG:
negative impact on share-market

STATE:
propose, declare, list, display, ...

AGREE-plus:
accept, agree, sign, ...

AGREE-Minus:
reject, cancel, disagree, ...

COMPETE-Plus:
compete, rival, ...

COMPETE-Minus:
fight, lock-horns, quarrel, ...
VALUE-Plus:
rise, increase, shoot, shore-up, soar, recover, hike, ...

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VALUE-Minus:
fall, decrease, crash, plunge, plummet, tumble, ...

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3.2 LCSs of verbs in the Lexical Semantic Component

3.2.1 Format of the LSC

The LCS representations of words, phrases in application domain share-market will be designed as interface component to a general LCS representation of the semantic types and primitives. The LSC contains RLCS representations for the share-market lexical entries (primarily verbs) plus a derivational mechanism to derive CLCS from the RLCS representations. The LSC gets support from a simple bilingual dictionary for target language lexical selection. (diagram on next page)
LEXICAL SEMANTIC COMPONENT

DOMAIN
BILINGUAL
DICTIONARY

RLCSs

DERIVATIONAL MECHANISM FOR DERIVING CLCSs
3.2.2 Lexical entries using LCS

It should be made clear at the very beginning that the use of LCS as an interlingua is distinguished from the use of LCS for lexical entries. The term CLCS (Composed Lexical Conceptual Structure) is used for the former, while the term RLCS (Root Lexical Conceptual Structure) is used for the latter.

Each language processed by the system requires a dictionary of RLCS (Root LCS) entries. An RLCS has two levels of description—language independent LCS representation of the lexical word, and language specific parametric specification for syntactic realisation of the word and its arguments. This second level of description is imposed in the RLCS by '*' notation which corresponds between LCS arguments and syntactic structure.

Lexical entries are organised into LCS classes which are not identical to the linguistic classes that are typically studied by the researchers of the lexicon (Ref. section 3.1.3). Each LCS class is based not on syntactic distribution and alternation constraints, but on a template that confirms to the well-formedness constraints imposed by the principle of linguistic generalisation as shown below:¹

¹Bonnie J. Dorr (1993)
### i. Spatial Dimension

<table>
<thead>
<tr>
<th>Type</th>
<th>Primitive</th>
<th>Argument1</th>
<th>Argument2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Event</td>
<td>GO</td>
<td>Thing</td>
<td>Path</td>
</tr>
<tr>
<td></td>
<td>STAY</td>
<td>Thing</td>
<td>Position</td>
</tr>
<tr>
<td>State</td>
<td>BE</td>
<td>Thing</td>
<td>Position</td>
</tr>
<tr>
<td></td>
<td>ORIENT</td>
<td>Thing</td>
<td>Path</td>
</tr>
<tr>
<td></td>
<td>GO-EXT</td>
<td>Thing</td>
<td>Path</td>
</tr>
</tbody>
</table>

### ii. Causal Dimension

<table>
<thead>
<tr>
<th>Primitive</th>
<th>Argument1</th>
<th>Argument2</th>
</tr>
</thead>
<tbody>
<tr>
<td>CAUSE</td>
<td>Thing</td>
<td>Event</td>
</tr>
<tr>
<td></td>
<td>Event</td>
<td>State</td>
</tr>
<tr>
<td>LET</td>
<td>Thing</td>
<td>Event</td>
</tr>
<tr>
<td></td>
<td>Event</td>
<td>State</td>
</tr>
</tbody>
</table>
### iii. Field Dimension

<table>
<thead>
<tr>
<th>Field</th>
<th>Argument1</th>
<th>Argument2</th>
</tr>
</thead>
<tbody>
<tr>
<td>Locational</td>
<td>Thing</td>
<td>Location</td>
</tr>
<tr>
<td></td>
<td>Event</td>
<td></td>
</tr>
<tr>
<td>Possessional</td>
<td>Thing</td>
<td>Thing</td>
</tr>
<tr>
<td>Identificational</td>
<td>Thing</td>
<td>Thing</td>
</tr>
<tr>
<td></td>
<td>Property</td>
<td></td>
</tr>
<tr>
<td>Temporal</td>
<td>Event</td>
<td>Time</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td></td>
</tr>
<tr>
<td>Circumstantial</td>
<td>Thing</td>
<td>Event</td>
</tr>
<tr>
<td></td>
<td>State</td>
<td></td>
</tr>
<tr>
<td>Existential</td>
<td>Thing</td>
<td>Exist</td>
</tr>
</tbody>
</table>
3.2.3 LCS Representation of selected verbs

This section gives Lexical Conceptual Structure (LCS) representations for the verbs from the share-market domain. The verbs for which the LCSs have been given have been chosen carefully to represent most day-to-day dealings in the market. The LCSs for other verbs from the domain (refer Apndx) will be included in the program-implementation of the Lexical Semantic Component.
X buy Y from Z [in exchange for money]
X khariid Y se Z [paise ke badle]

linguistic type = exchange
lcs type = event
lcs class = EXCHANGE

\[ \text{buy:khariid-naa} \]
\[ \forall \text{ NP}_{y} \text{ <from NP}_{z}> \text{<ko><NP}_{z} \text{ se}> \]
\[ \text{FROM [Thing } z \text{]} \]
\[ \text{[Event GO-Poss [[Thing } y \text{], [Path } b \text{ ]]} \]
\[ \text{TO [Thing } x \text{]} \]
\[ \text{FROM [Thing a]} \]
\[ \text{[EXCH [GO-Poss [[ Thing } \text{ MONEY}], [Path } b \text{ ]]} \]
\[ \text{TO [Thing } b \text{]} \]
lcsii.vt.e.SELL.h.bech-naa

x sell y to z [in exchange for money]
x bech y ko z [paise ke badle]

linguistic type= exchange
lcs type = event
lcs class = EXCHANGE

sell:bech-naa
V
——NPy <to NPz>:<NPz ko>

[GO-Poss [[Thing Y], [Path b]]
FROM [Thing X]
TO [Thing Z]

[EXCH [GO-Poss [[[Thing MONEY], [Path ]]]]
FROM [Thing b]
TO [Thing a]
lcsiii.vtvi.e.ENTER.h.ghus-naa

× enter y:
× ghus y men

linguistic type = directed motion
lcs type = event
lcs class = GO-LOC

[enter:ghus-naa
V
NPy:<men>]

[Event GO-LOC [[Thing X]. [Path TO [[Place IN [[Thing Y]]]]]]]
\textbf{lcsiv vt e HIT h choT-kar-naa}

$x$ hit $y$:
$x$ choT-kar $y$-ko

\textbf{linguistic type= impact-neg}
\textbf{lcs type = Event}
\textbf{lcs class = HIT-NEG}

\begin{equation}
\text{hit:choT-kar-naa}
\quad \text{NPy: <ko>}
\end{equation}

\begin{equation}
\text{[Event HIT-NEG [State Be [X, [Place AT [Y]]]]]}
\end{equation}
trade: vyaapaar-kar-naa

x trade with y:
  x y (ke saath) vyaapaar-kar

Linguistic class = exchange
lcs type = Event
lcs class = EXCHANGE

GO-Poss([Thing X], [Path a]) FROM [Thing Y]
GO-Poss([Thing T1], [Path b]) TO [Thing X]
EXCH [GO-Poss ([Thing MONEY], [Path b])] FROM [Thing b]
EXCH [GO-Poss ([Thing T2], [Path b]) TO [Thing X]
GO-Poss ([Thing X], [Path a]) FROM [Thing a]
EXCH [GO-Poss ([Thing MONEY], [Path a])] TO [Thing b]
grow (from state/position S1 to state/position S2)
bahr (avasthaa/sthiti S1 se avasthaa/sthiti S2 tak)

linguistic class = change of physical state
lcs type = State
lcs class = GO-EXT

\[
\begin{array}{c}
grow: bahr-naa \\
\sqrt{PP \langle from \, S1 \, to \, S2 \rangle \langle S1 \, se \, S2 \, tak \rangle}
\end{array}
\]

\[
\begin{array}{c}
[State \, GO-EXT \, [\{Thing \, X\}, \, \{Path \, FROM \, [State/Position \, S1] \, TO \, [State/Position \, S2] \, \}]]
\end{array}
\]
lcs.vii.vt.e.RAISE.H.uThaa-naa

\( \times \) rasie y (from state/position/value/mark P1 to P2)
\( \times \) uThaa y -ko (avastha/sthiti/maan/cinha P1 se P2 tak)

linguistic class = directed motion
lcs type = Event
lcs class = GO-EXT-LOC

raise: uThaa-naa
\( \text{V} \)
\( \text{NPy (from P1 to P2) } \langle \text{P1 se P2 tak}\rangle \)

Event CAUSE \( ([\text{Thing } X]^a) \)
\( \text{State [GO-EXT-LOC ([Thing a], [Path FROM [P1] \[TO [P2]]])]} \)
icsvii.i.e.RISE.h.uTha-naa

x rise [from state/position/mark/value P1 to P2]
x uTha [avasthaa/sthiti/cinha/maan P1 se P2 tak]

linguistic class = directed motion
lcs type = State
lcs class = GO-EXT-LOC
Icsix.vi.e.FALL.h.gir-naa

× fall [from state/position/value/mark P1 to P2]:
× gir [avastha/sthiti/maan/cinha P1 se P2 tak]

linguistic class = directed motion
Ics type = State
Ics class = GO-EXT-LOC

\[
\text{fall: gir-naa} \\
V \\
\quad \langle \text{from P1 to P2}\rangle: \langle \text{P1 se P2 tak} \rangle \\
\text{FROM [P1]} \\
\text{TO [P2]} \\
\text{[State GO-EXT-LOC [Thing X], Path [Loc DOWN]}}
\]
lcsx.vt.vi.e.RECOVER,h.vaapas-paa-naa

recover (from state/position/mark/value P1):
vaapas-paa (avasthaa/sthiti/cinha/maan P1 se)

linguistic class = directed motion
lcs type = Event
lcs class = GO-EXT-LOC

recover: vaapas-paa-naa
V — <from P1 >: <P1 se>

[Event GO-EXT-LOC [[Thing X], [Path [Loc DOWN c] TO [P2] FROM [P1]]]]
[Event GO-EXT-LOC [[Thing a], [Path [Loc UP TO [b] FROM [c]]]]]
\textit{lcsxivi.vit.e.JUMP.h.cchhal-naa}

\begin{align*}
&\times \text{jump \{prep P1 \{prep P2\}} \\
&\times \text{uchhal \{P1 se \{P2 tak\}}
\end{align*}

\textit{linguistic class = motion with manner} \\
\textit{lcs type = Event} \\
\textit{lcs class = GO-EXT-LOC}

\begin{center}
\begin{tikzpicture}
\node (jump) {\textit{jump: uchhal-naa}};
\node (v) at (jump.east) {\textit{\{from P1 to P2\\:\{P1 se P2 tak\}}}};
\node (event) at (v.south) {\textit{[Event GO-EXT-LOC \{[\text{Thing X}], [Path [Loc UP FROM [P1]} \text{ TO [P2]}]]}]};
\end{tikzpicture}
\end{center}
\(x \text{ pay } y \text{ M [in exchange for services]}\)
\(x \ y \text{ ko M bhugtaan-kar [seva ke badle]}\)

\[
\begin{align*}
\text{pay: bhugtaan-kar-naa} \\
\forall \\
\quad <\text{NP}y><\text{M}>:<\text{NP}Y \text{ ko}><\text{M}>
\end{align*}
\]

\[
\begin{align*}
\text{[Event GO-Poss ([Thing M], [Path FROM [Thing X] \(^a\) \ TO [Thing Y] \(^b\)]\])}
\end{align*}
\]

\[
\begin{align*}
\text{[EXCH [GO-Poss ([ Thing S], [Path FROM [Thing b] \(^b\) \ TO [Thing a] \(^a\)]\])]
\end{align*}
\]
lcsxiii.vt.RUN.h.chala-naa

x run [y] (MNR):
  x cha [MNR]| x chala y (MNR)

linguistic class = motion with manner
lcst class = Event
lcst class = GO-Mnr

run: chala[a]-naa
  V
    [Mnr z]
    <NPy>[Mnr z]:<NPy ko> [Mnr z]
  [Event GO-Mnr ([Thing X])]
  [Event GO-Mnr ([Thing X] [Mnr z])]
  [Event GO-Mnr ([Thing X] [Thing y])]
\text{icxiv. vt. e. OWN.h.svaamii-honaa}

\text{x own y :}
\text{x svaamii y ka}

linguistic class = ownership
lcs type = State
lcs class = STAY-Poss

\[
\text{own: svaamii-honaa}
\]
\[
\text{y} \quad <\text{NPy}>::<\text{NPy ko}>
\]
\[
[\text{State STAY-Poss} \{ [\text{Thing X}], [\text{Thing Y}] \}]
\]
3.3 LCSs for the share-market nominals

3.3.1 Share-market nominals

The glossaries for the nominals (nouns and adjectives from the share-market and business domain of language use) were prepared by methods as referred in section 2.2.1. The lexical equivalences in Hindi were searched and placed in the glossary following a peculiar notation for the later computerisation to become easier. The cases of lexical synonyms were listed as options. In case of lexical ambiguities, the user-selection will disambiguate the final translation output sentences which will be equal to the number of synonym options.

Nominals have a very important role to play in the argument structure of a language which is woven around verbs. They are slot-fillers and satisfy the verb's expectancy according to its valency. The problems that they pose in natural language processing, particularly in translation, is primarily because of their polysemous, synonymous, and metaphorical usages. In the domain of share-markets, they show two fundamental types:

1) words with technical and domain specific meaning (for example,
The following bilingual listing gives the technical nominals from the domain in question -

**technical nouns**

(* pl) (+ der) (pl - plural)
(adj - adjective) (h. - Hindi equivalent)

acid-test-ratio. h. saakh-nirdhaaraN-anupaat
blue-chip-share.* pl -s h. blu-chip-sheyar
bonus-share.* pl -s h. bonus-sheyar
bourse.* pl -s h. buurs
cash-share.* pl -s h. nakad-sheyar
convertible-debenture.* pl -s parivartaniya-RN-patra
convertible-whole-life-assurance-policy.* pl -ies
cyclic-share.* pl -s h. chakriiya-sheyar
debenture.* pl -s h. RN-patra
equity.* pl -ies h. ikwiti
exim. h. ekzim
exim-policy.* pl -s h. ekzim-polici
foreign-institutional-investor.* pl -s

h. videshii-sansthaanik-nivesh-kartaa
fully-convertible-debenture.* pl -s
  h. puurNa-parivartaniya-RN-patra
group-share.* pl -s h. samuuha-sheyar
joint-stock-company.* pl -ies h. samyukt-puunjii-kampani
kisan-vikas-patra.* pl -s h. kisaan-vikaas-patra
liquidity.* -ies h. dravtaa
preference-share.* pl -s h. preferens-sheyar
sensex. h. senseks
turnover.* pl -s h. paNyaavart
type-A-index.* pl -ices h. a-koTi-suuchak
type-B-index.* pl -ices h. ba-koTi-suuchak

vocabularies with unique domain dependent meanings

bear+ adj -ish h. biyar
bond.* pl -s h. bandh-patra
bonus-candidate.* pl -s h. bonus-pratyaashii
capital.* pl-s h. puunjii
company.* pl -ies h. kampani
conversion-price.* pl -s h. parivartan-bhaav
hawala. h. hawaalaa
loss.* pl -es h. ghaaTaa
portfolio.* pl -s h. porTfolio
security.* pl -ies h. pratibhuuti
share.* pl -s h. sheyar
speculation.* pl -s h. saTTaa
term-loan.* pl -s h. aavdhik-karz
territory.* pl -ies h. kshetra

2) words used as metaphors (for example, ‘bull’, ‘bear’, ‘bear-raid’,
‘blue-chip-share’ etc.)

In many cases, the use of nominals and other lexical items is done in
an indirect sense. Such usages have been long accepted as part of
daily business parlance with no consequent mis-interpretations. The
domain specific words shown in the following lists are loaded and are
generally used in indirect and metaphorical senses:

nouns

bear+ adj -ish h. biyar/mandaRiyaa
blue-chip-share* pl -s h. blu-chip-sheyar
bull+ adj -ish h. bul/tejaRia
constant-mix-policy* pl -ies
    h. lagaataar-mishraN-niiti
conversion-price* pl -s h. parivartan-bhaav
double-bottom-formation* pl -s

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While in the first case, we have selected that meaning of the word which the domain in question determines. This solves the problem of lexical selection to a great extent. In the second case, however, though we had the option of listing only the metaphorical meaning which is
commonly understood in the domain parlance, yet a semantic comparison became inevitable. To solve this problem we have taken two semantic paths - the general usage path (path1) denoted by ‘gen’ and the share-market path (path2) denoted by ‘sm’. The path1 ‘gen’ will give the most common meaning of the word in question as it is used in the language in general, whereas the path2 ‘sm’ will give the metaphorical sense in which the word is used in the share-market domain of language use.

3.3.2 Handling metaphorical nominals

In this section, as an example, we have shown how we have differentiated the meaning variation of a heavily loaded nominal in two different domains of language use: (Path1 represents language in general whereas path2 represents language use in share-market domain)

**nouns**

*bear:*

*path1:*

  *gen: animal*

  *wild*
male/female
adult
carnivorus

path2:
sm: human
male
adult
operator
-effect

bull:

path1:
gen: animal
domestic
male
herbivorous

path2:
sm: human
male
adult
adjectives

bearish:

path1:

gen: to be like bear

[animal
wild
male/female
adult
carnivorous]

path2:

sm: to be affected by bear

[human
male
bullish:

path1:

gen: to be like bull

[ animal
domestic
male
herbivorous
]

path2:

sm: to be affected by bull

[ human
male
adult
operator
+effect
]