CONCLUSION

The Lexical Semantic Component (LSC) for the domain of share-market designed as part of the present research has three components - the component for Root Lexical Conceptual Structures (RLCSs), the Component of Bilingual dictionary, and the algorithmic component for deriving Composed Lexical Conceptual Structures (CLCSs). The system will work when combined with a suitable parser and generator according to the kind of application desired - whether the LSC has to be used for granting domain competence to any general purpose LCS based interlingual MTS or it is to be used to as a small translating system for the domain. The implementation formalization has been presented with choice of Object Oriented Approach and C++. The actual implementation of the system including the algorithm for the derivation of CLCSs will follow subsequently.

The problems that were faced and the solutions thereof presented have been described as follows:

**Problems & solutions**

Problems were encountered at several stages right from data collection and sampling. The first problem was to delimit the domain of ‘share-market’. Whether it included the domains of trade & industry,
business & finance, commerce, finance or economics in general, and if yes then how much of it was included was a difficult decision to make. Since most literatures relating to share-market are found to use terms from these domain freely, it was decided to include all of them and develop a representative database from these participant domains labeled ‘share-market’. However, while selecting the data there was an emphasis on the language more typical of the day to day dealings in the share-markets as evidenced by newspapers and magazines.

Fixing lexical equivalences in the target language Hindi was another major problem. For this we used a number of standard sources like CSTT Commerce Glossary (English-Hindi), English-Hindi Dictionaries by Camil Bulcke and Bhola Nath Roy, and a range of Hindi newspapers and magazines like Jansatta, Navbharat Times, Hindustan, Dalal Street, and India Today.

As is the case with most technical domains of Hindi usage, this domain too has a lot of English words being used optionally. Their Hindi counterparts though available, are more difficult and cumbersome. Hence they are less preferred compared to English words. While most Hindi terms were picked up from the primary sources from the Hindi business media, some had to be taken from official Govt of India terminology bank ("A Glossary of Commerce", CSTT, HRD, GOI publication). While these glossaries are mostly prepared by a team of qualified experts and researchers, there is a tendency to
coin difficult and cumbersome terms in some cases in stead of accept-
ing more popular and simpler English terms. For this research, we
have opted for more popular English terms which are being used in
daily business language. For example, the terms for ‘bear’ is ‘manda-
Riaa’ which is rarely found used even in the most ordinary variety of
share-market language. Other examples are ‘bull’ (tejaRiaa), ‘launch’
((jalaavtaraN) which is incorrect in this domain).

There are many terms in the official CSTT glossary of commerce
which needed simplification. For example, the Hindi for the com-
pound ‘fixed asset turnover ratio’ is given as ‘sthir parisampatti aavart
anupaat’. Now in this and similar cases, the use of ‘pari-’ as prefix to
‘sampatti’ is not required as the word ‘sampatti’ also gives the same
meaning as a constituent in the compound. Other examples are
‘quantum’ (pra-maatraa), ‘bulk’ (pra-punj/baRii maatraa).

Another problem was handling the metaphors. The Hindi writings in
this domain do not appear to be restricted by the paucity of technical
terms. While on the one hand it liberally accepts English terms
wherever necessary for simplicity and clarity of communication, it
also uses many native terms some of which are highly metaphorical in
nature. Since this research is a part of English to Hindi Machine
Translation, such loaded verbs have been incorporated as equivalents
of suitable English counterparts. Since the domain of language use
is very specified and limited in nature, we hope that this
will take care of most of the technical language used in business and market literatures for translation into a Hindi which is currently being used in business sections of newspapers and magazines.

There are some obvious problems with the LCS framework. Most intriguing is to handle a vast set of primitives on which it relies to represent the information/knowledge to be translated. Designing the LCSs for words of technical nature was more difficult. Efforts were made to restrict the general nature of primitives to a point of meaning in the technical domain. One may question the rationale of using LCS for a restricted domain of language use. But LCS was preferred to other techniques in this case because we were to design a central component for a specified domain of language use which can be used to translate not only from English to Hindi but also to translate between other languages if augmented and extended accordingly.

For designing the semantic structures of metaphorical nominals, we had a very precise exercise to do in carefully selecting the different paths of meaning. While path1 led to the general usage, the optional path2 led to the domain meaning.

As regards syntactic mapping from the LCSs to the syntax of the target language, we have to make a point very clear. In the UNITRAN system developed at MIT, each lexical root word has two levels of description. First is a lexical semantic representation and the second is
a mapping from the LCS representation to the syntactic structure\textsuperscript{1}. In our case, we have designed only the LCS for mainly the verbs from the domain as our model of translation also includes the role of a target language generating component which will do the syntactic reordering etc in the resultant CLCS (Composed Lexical Conceptual Structures) with Hindi lexical selections that appears from our domain LSC.

**Additions to the existing LCS framework**

- Some new linguistic classes have been added to handle the verbs of this technical domain many of which are metaphorical.
- New primitives have also been added so that the exact domain specific meaning of many of the verbs could be captured.

**Limitations of the present research**

The present LSC is intended to be domain dependent. Hence it will translate effectively only for the specified domain, and therefore any attempt to apply it to translate the language in general domain will yield incorrect results. As clearly stated in the chapter I, this system can be used in two ways:

\textsuperscript{1} Bonnie J. Dorr (1991 c)
-to translate from English to Hindi in the domain of share-market if interfaced with an English parser and a Hindi generator, and

-to grant domain-competence to any general purpose LCS based interlingual MTS with a principle based parser and generator

The LSC when part of a share-market MTS is likely to generate wrong translations in the following cases

-when a word/sentence is used in two meanings in the domain because we have selected only that meaning which is generally used in the domain of share-market. Though in case of nominals we have two paths of meaning - general and specific, but the corresponding bilingual dictionary of source and target language words will not return the meaning used in language in general

-when the LSC is not interfaced with a compatible parser and generator

-when the LSC is used for domain-independent translation.