CHAPTER III

METHODOLOGY

3.1 Overview of the Research Methodology

This is a descriptive form of research on the contribution of reference items towards cohesion in Agricultural articles (scientific texts), and therefore focuses solely on the heuristic purpose of discovering and identifying patterns or relationships, if any, of reference types in the factual genre. It also focuses on discovering threads of continuity, if any, interrelating to make whole messages, thereby contributing towards the formation of a coherent text. The factual genre is chosen here as very little studies have been done on it so far. Moreover, I have yet to come across any deep investigation into Agricultural texts, though other scientific texts have been delved into.

All articles are taken from The Planter, a monthly magazine of the Incorporated Society of Planters and they will be analyzed in three ways - identifying reference items and their cohesive nature by using Halliday’s notation system (1985) and Halliday-Hasan’s Coding Scheme for reference items (1976), as well as determining the reference chains in the Identification system, as suggested by Martin (1992). The overall effect of the reference items on the cohesion of the text is then determined manually by calculating the percentage of each reference type in each text-type.
3.2 Selection of Data

Two types of the factual genre are used here - REPORT and EXPLANATION. The latter, however, is in the form of letters to the Editor, while the former is in the form of Editorial Reports, including guest editorial articles. The articles are all taken from The Planter, a monthly magazine published by the Incorporated Society of Planters, which features the latest information in the agricultural field. It includes original and reproduced articles on tropical agriculture and plantation management, papers relating to the Society’s Technical Education Scheme, and others of more general interest to the planting profession.

The Planter magazine was chosen simply because it provides up-to-date articles related to the Agricultural and plantation sector, and because there is a wide choice of genre types: reports, explanations, narratives, biographies, etc. This magazine is meant for executives of the plantation industry who are members of the Incorporated Society of Planters, and therefore contains information that is of immense use to their field of work.

3.3 Collection of Data

Fourteen magazines published during the last two years (1995-1997) were scanned and three articles of each genre type were picked out for analysis. There were reports of two types: Editorial and Guest Editorial Reports, and Articles on agriculture and plantation management, involving statistics and various technical details. As the latter were of varying lengths, besides being too long, they were rejected - the purpose of this study is not just to look into the cohesion of ONE text,
but to study a few of each genre type so as to make comparisons. Thus Editorial / Guest Editorial articles were selected. They were all of approximately the same length but on different topics.

The second genre-type posed a problem as most of the articles in the magazine were reports. But after scanning through all, some of the letters to the Editor were found to have an explanatory quality, hence they were chosen for the study here.

Except for one (a letter), all articles were written by planters whose native language is not English but who have been in the plantation field for a long time, using the language for all administrative and technical purposes, thus their mastery of the language. The letter by R.K. Jones need not be used as a focal point to compare the language used by natives and non-natives of the language as this is not the objective of the study, rather to identify cohesive ties and reference chains in the factual genre.

The articles finally chosen for analysis were as follows:

REPORT:

1. *Biocontrol with Bioherbicides* [Guest Editorial: 72 (848) 591-592 (1996)]


EXPLANATION:

1. Letter to the Editor: *Mechanization or foreign labour?* by Tay Seng Pang [72 (846), 527-528 (1996)]

2. Letters to the Editor: *Prang Besar Estate* by M. Nanu (retired Research employee, now settled in India) [71 (830), 232-233 (1995)], and

3. *Rat Control by Barn Owls* by R.K. Jones in the same issue [71 (830), 233-234 (1995)].

[The numbers in brackets indicate Volume, Number, pages, and year of edition, e.g., Volume 71, No.830, p.233-234, published in 1995.]

3.4 Analytical Stage

3.4.1 Analysis of text: Halliday’s notation

Halliday (1985) uses a form of notation to mark the cohesive relationship between a reference item and its referent. His notation scheme is as follows:

- denoting anaphoric reference, which is cohesive
- denoting cataphoric (or esphoric, in Martin’s terms) item, which may or may not be cohesive
- denoting exophoric/homophoric item, which are both not cohesive

R:P reference: personal (pronominal)

R:D reference: demonstrative

R:C reference: comparative
3.4.2 Halliday-Hasan’s Analysis of Cohesion (1976): General Principles

The basic concept employed in analyzing the cohesion of a text is that of the TIE. A tie is a complex notion in that it not only includes the cohesive element itself but also the element that is presupposed by it. It is best interpreted as a RELATION between these two elements. However, a tie is also DIRECTIONAL - the relation is an asymmetric one going either way, i.e., the direction may be anaphoric, with the presupposed element preceding, or cataphoric, with the presupposed element following. The typical direction is anaphoric as it is only natural to presuppose what has already gone rather than what is to follow.

But actual instances of cohesion are more complex than this. First, a sentence may have more than one tie in it. Secondly, the form of cohesive ties may diverge from the simple, idealized type in either, or both, of the following ways:

(i) the presupposed item may not be in the preceding sentence, but in some sentence that is more distant in the past,

(ii) the presupposed item may itself be cohesive, presupposing another item that is still further back, thus there may be a whole chain of presuppositions before the original target is reached (as shown by Martin’s reference chains).

(iii) the presupposed (presumed) information may follow, as esphora in the structure of the same or adjacent group, or as cataphora or forward reference between groups.

Finally, a tie may be BOTH mediated AND remote, i.e., an item can presuppose nothing in the preceding sentence but refers back to the one before it (remote tie).
At the same time the presupposed item in the latter can be followed through several items before reaching the lexical item referred to in the first place (mediated tie).

When analyzing a text for cohesion, it is important to note the type of tie (immediate or mediated/remote/both), and the distance separating the presupposing from the presupposed. A figure indicating the number of sentences participating in the chain of cohesion (or the distance) follows the type of tie. A mediated tie is followed by a figure indicating the number of sentences with the mediated item while a remote tie is followed by a figure showing the number of sentences without the said item. When added up, the two figures show the overall distance. It should be stressed here, however, that the number of intervening sentences is counted, not the number of occurrences of a mediating cohesive element, (as in the case of a mediated tie) because we are only interested in the way cohesive relations (reference) build up a text. Thus, we indicate:

i. the number of ties in a sentence,

ii. the varying degree of delicacy under reference, and

iii. the type of tie and its distance.

It must be remembered that the analysis of a text is "a means to an end, not an end in itself" (Hasan, 1976). However, we may want to codify the text in terms of cohesive categories and / or inspect the individual types of cohesion to see the patterns of texture that emerge. As such, this study will be on REFERENCE as a form of cohesion, focusing on the following questions:

i. Does a particular form of the factual genre favour a particular reference type?

ii. Does the density of reference items remain constant or vary for each genre type?
Table A: Coding Scheme for Reference

<table>
<thead>
<tr>
<th>Coding</th>
<th>Pronominals (Personal)</th>
<th>Coding</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>he, him, his</td>
<td>11</td>
</tr>
<tr>
<td>11</td>
<td>she, her, hers</td>
<td>12</td>
</tr>
<tr>
<td>12</td>
<td>it, its</td>
<td>13</td>
</tr>
<tr>
<td>13</td>
<td>they, them, their, theirs</td>
<td>14</td>
</tr>
</tbody>
</table>

1 (1 - 4) functioning as:

| a. non-possessive, as Head | he/him, she/her, it, they/their | 6 |
| b. possessive, as Head     | his, hers, (its), theirs       | 7 |
| c. possessive, as Deictic  | his, her, its, their           | 8 |

2. Demonstratives & Definite Article

<table>
<thead>
<tr>
<th>Coding</th>
<th>Demonstrative, near</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>this/these, here</td>
<td>21</td>
</tr>
<tr>
<td>21</td>
<td>that/those, there, then</td>
<td>22</td>
</tr>
<tr>
<td>22</td>
<td>the</td>
<td>23</td>
</tr>
</tbody>
</table>

2 (1 -3) functioning as:

| a. Nominal, deictic or head | this/these, that/those, the | 6 |
| b. Place adverbial          | here/there                 | 7 |
| c. time adverbial           | then                       | 8 |
3. **Comparatives**

1. **Identity**
   - same, identical, identified as

2. **Similarity**
   - similar(ly), such

3. **Difference**
   - non-
     - different, other, else, additional
     - identity & dissimilarity

4. **Comparison, quantity**
   - more, less, as many, ordinals

5. **Comparison, quality**
   - as + adjective, comparatives, superlatives

3 (1 - 5) functioning as:

a. **Deictic**
   - (1 - 3)

b. **Numerative**
   - (4)

c. **Epithet**
   - (5)

d. **Adjunct or Submodifier**
   - (1 - 5)

NB: Not all combinations of (1 - 5) with (a - d) are possible; the usual functions are those indicated here in the last table.

**Table B: Direction and Distance of Cohesion**

Immediate

0

Not Immediate:

Mediated (number of intervening sentences)

M(n)

Remote Non-mediated (number of intervening sentences)

N(n)

Cataphoric

K

79
In the text analysis here, Halliday-Hasan’s principles will be adhered to as much as possible, except where forward reference is concerned, whereby Martin’s framework will be used (in the reference chains). Forward reference between groups (cataphora), presuming text, is cohesive (Halliday-Hasan 1979 and Martin 1992) but esphora or forward reference to information in the structure of the same nominal group or adjacent clause complex is not considered cohesive by Halliday-Hasan. However, as Martin states in his English Text, this is a common way of introducing participants to a text, otherwise participant identification will break down. Therefore, in this study, if the Qualifier uses enough information to identify a participant (Du Bois 1980:224-225), then the esphoric item will be taken as cohesive. This will be taken into account only in the reference chains but in the analysis of text in 4.2, backward reference within a sentence will be considered as cohesive.

3.4.3 Procedure

Halliday’s text analysis for reference items will be conducted first so as to facilitate the identification of cohesive and non-cohesive reference items before analyzing the text using Halliday-Hasan’s Coding Scheme [A and B above]. The cohesiveness of each reference type and its contribution to the cohesion of text will then be determined in the following manner:

i. The total number of reference items, cohesive + non-cohesive, will be counted.

ii. These will be broken down into their component types, R:P, R:D and R:C.
iii. The number of cohesive items under each reference type will be estimated from Halliday-Hasan’s Coding Scheme.

iv. The various percentages will be calculated and inferences will be made accordingly.

The percentage occurrence of each reference type will be calculated manually as follows:

i. $\frac{C}{CR} \times 100$ or the number of cohesive reference type ($R:P/R:D/R:C$) items per total number of cohesive reference items $\times 100$

ii. $\frac{C}{R} \times 100$ or the number of cohesive reference type ($R:P/R:D/R:C$) items per total number of reference items (cohesive + non-cohesive) $\times 100$

iii. $\frac{C}{TR} \times 100$ or the number of cohesive reference type ($R:P/R:D/R:C$) items per total number of the reference type in question $\times 100$

iv. $\frac{CR}{R} \times 100$ or the total number of cohesive items ($R:P+R:D+R:C$) per total number of reference items $\times 100$

v. $\frac{TR}{R} \times 100$ or the total number of reference type in question ($R:P/R:D/R:C$) per total number of reference items $\times 100$.

Inferences will be made based on these percentages and conclusions drawn accordingly.
3.5 Interaction patterns: Cohesive harmony

Cohesive harmony analysis is a technique for examining the interaction of reference chains, lexical strings and experiential grammar and was initially developed by Hasan. It is designed primarily to measure coherence in text though the measure is only a partial one, as no measure is complete without considering register (field, mode, tenor) and genre (text structure). Besides, the technique needs to be refined by bringing logical and interpersonal meaning into it too.

Hasan starts off by stating that coherence is NOT directly a function of the number of cohesive ties found in a text (and she is supported by Rochester and Martin, 1979). Rather, the way strings and chains interact systematically with each other as participant, process and circumstance is more important. Furthermore, her definition of similarity (Martin’s lexical strings) and identity chains (Martin’s reference chains, excluding relevance phoricity) suggest a stratified approach to discourse semantics, like Martin’s. Identity chains deal with co-referentiality, realized through pronominal cohesion, instantial equivalence, the definite article and demonstratives; whilst similarity chains are based on co-classification or co-extension, realized through substitution and ellipsis, lexical repetition and other lexical devices. But as the focus of my study is the contribution of reference items to overall cohesive harmony, I shall concentrate on identity or reference chains.

3.5.1 Reference chains

Hasan’s technique reveals a glaring defect - there is considerable overlap between some strings and chains, especially where pronouns are lexically rendered.
Therefore, I will use Martin’s reference chains to identify a text’s main participants. When dynamic moves began to appear in discourse semantics, the **multivariate** approach was abandoned for the **dependency** approach, thus making reference structures basically **covariate**. Phoric items in endophora depend semantically on the items they presume, but need not be **grammatically** related to them; while presuming items can themselves be presumed, resulting in covariate structures. These structures from phoric options in the **identification system** are called **reference chains** (Martin 1992:140-153). In its simplest form, a reference chain contains two items - one presuming, one presumed. Participant identification is denoted by a **dependency** arrow showing the presumed nominal group to be dependent on the presumed one, as in:

3:1  I have a cat
    and it is a fat lazy one.

    a cat
    ↑
    it

For longer texts, we have longer chains with **anaphoric** and **cataphoric** relations:

3:2  I have a cat
    and it is a fat lazy one.
    One day, it got lost.
    My son and I looked for it.
    We looked high and low,
    my son in the garden
    and I in the house.
There are two major chains here, one relating 'the cat' and another relating 'my son and I' as in:

First mentions of participants are commonly phoric (exophoric / homophoric) subsequent mentions are anaphoric. Cataphoric reference, however, normally presume text, rather than participants, and can be illustrated by \( \rightarrow \) if there is space. This will be clearly shown in my analysis using Halliday's notation system, it will be left out in the reference chain diagrams.

Sometimes there are conjoining chains, e.g., if we say: 'eventually we found a cat. It was our cat', then we have:

In all, semantic dependency is noted between items, irrespective of clause or sentence boundaries. The reference chains reflect the sequential unfolding of text and differs from Halliday and Hasan (1976:340-355), who look at cohesive tics between, not within, sentences.
Thus, to determine the reference chains, each text will be divided into ranking clauses. Phoric as well as non-phoric groups will be underlined. All participants realizing a particular first-mention item, generic or specific, will be aligned in a row with their clause number written on the left margin to identify them. Dependency arrows will be drawn to indicate that the presumed nominal group is dependent on the presuming one. Only phoric and non-phoric groups which are recoverable will be shown in the dependency structure. Phoric items which are non-retrievable will be retained as addition items but all non-phoric items which are NOT recoverable from the identification system will be excluded from the reference structure. For generic reference groups, a vertical dotted arrow will be used to link one group to another to show that the same item is being realized in different ways. All realizations of a particular generic group will be aligned below one another in a row too.