This article discusses the system of reference as one of the linguistic systems operating in English texts. It introduces reference systems as systems that code cohesive dependency relationships between entities in texts. References in texts are treated as ways of introducing and keeping track of text participants. The cohesive operation of referential systems and their realizations are exemplified in academic texts. Native writers rarely have difficulties in realizing referential choices, but non-native learners of English often do not fully comprehend the functions of reference items in texts; their use of such reference items as articles is not systematic and may lead to misunderstandings and obscure the intended meanings. The article offers some explanations of the problems experienced by non-native writers. (Author)
Text and reference

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Abstract

The article discusses the system of reference as one of the linguistic systems operating in English texts. It introduces reference systems as systems which code cohesive dependency relationships between entities in texts. References in texts are treated as ways of introducing and keeping track of text participants. The cohesive operation of referential systems and their realizations are exemplified in academic texts. Native writers rarely have difficulties in realizing referential choices, but it is argued that non-native learners of English often do not fully comprehend the functions of reference items in texts; their use of such reference items as articles is not systematic and may lead to misunderstandings and obscure the intended meanings. The article offers some explanations of the problems experienced by non-native writers.

1. Introduction

An essential characteristic of a cohesive English text is that references to text participants are clear and that no confusion can arise as to which particular entity the writer means. This article first introduces a network of English REFERENCE systems and illustrates some of the possible lexicogrammatical realization choices. It then discusses the functions of reference in terms of text participant identification in written English academic texts, and looks at how such participants are introduced into texts (by articles, pronouns, etc.) and then kept track of by writers for the benefit of readers. Such participant tracking, or reference chaining, increases the cohesiveness and consequently the understanding of English texts. If writers have not internalized cohesive reference functions and realize them inappropriately, as is often the case with young writers or foreign language writers, there will be difficulties of reference interpretation. Finally, the article discusses some of the referential problems which occur in academic texts produced by second language learners of English and offers some explanations of these problems.

2. Methods and Data

The theoretical framework used for the text analyses in this article is that of systemic-functional linguistics. The issues concerned with reference and its role in creating cohesion in texts have been discussed extensively, e.g. in Halliday and Hasan (1976), Martin (1983), Halliday (1985), and Ventola (1987). The analyzed data are academic scientific texts in the field of public health sciences, written in English by native English writers and Finnish writers. The research on which the observations reported
in this article are based is part of a large-scale contrastive study, presently in progress, on how native English professionals and their Finnish colleagues write various kinds of academic texts in English (see Ventola and Mauranen, 1990, forthcoming).

3. Reference: Systems and Structures

It has been suggested that participant identification is a strong candidate for a functional universal: i.e., all languages have this function and have means to realize it, although the linguistic means may be different (Martin, 1983: 48). What exactly is meant by participant identification? It can be defined as a way in which various entities such as people, places, things, and events are introduced into a text, and once they are there, the way by which one refers to them (Martin, 1983: 48).

If a text includes frequent references to particular text participants and the reference chains are extensive, we can speak of central text participants, whereas those participants to whom reference is made only sporadically must be considered to play only a minor role in a text and are therefore called peripheral text participants. In English, referential continuity involving one and the same participant is coded by the discourse system of REFERENCE and is realized on the lexicogrammatical level by nominal groups at the group rank. Every time that a writer generates a nominal group in a text, he is providing the reader with a considerable amount of referential information. Figure 1 shows the choices in the REFERENCE system network, and Table 1 includes realizational examples (for details, see Martin, 1983; Ventola, 1987).

This article will examine how central participants are introduced into texts by presenting reference items and how, once they are in the text, they are tracked by the writer by presuming reference items.

Figure 1. A network of major reference choices in English.
Table 1. Realizational examples of system choices.

System 1 [generalized / specified]: they / the
They say mice spread diseases / The biologists say mice spread diseases.

System 2 [generic / specific]: a / it
I just killed a rat. / It was ugly.

System 3 [presenting / presuming]: a / this
A cockroach is an insect. / This cockroach is my pet.

System 4 [comparison / - ]: the -er / -
I managed to kill the big rat, but the smaller one got away. / -

System 5 [variable / unique]: she / Mary
She hates rats. / Mary hates rats.

System 6 [fully specified / reduced]: this / she
This woman hates rats. / She hates rats.

System 7 [undirected / directed]: the/ that
The rat was ugly. / That rat was ugly.

System 8 [superset / - ]: the -est / -
The biggest rat ate all the cheese. / -.

When the writer marks the reference as presenting (e.g. with such items as an indefinite article, an indefinite pronoun), he signals to the reader that the identity of the text participant in question is previously unknown. When the writer marks the reference as presuming (e.g. with such items as a definite article, a demonstrative, or a personal pronoun), the reader will know that he is able to retrieve the identity of the participant. Once the link between the identified participant and the source of interpretation is established and sustained by subsequent references, a cohesive reference chain has been created. Since the texts that will be examined in detail are written texts, all presuming references will be endophoric references, i.e. the presumed identity of the text participant will be retrieved from the verbal context and not from the extralinguistic context (see Halliday and Hasan, 1976).

4. Participant Identification and Tracking of Central Participants in Academic Texts

The system of REFERENCE in English has been developed for the benefit of the decoder of texts. It helps the decoder to get to know and keep track of the central text participants. The encoder of the text is responsible for marking the participant relations so that they can easily and effectively be interpreted throughout the text. Participant identification and reference functions are prominent in academic texts, for
example, when research subjects, groups, etc. are introduced as participants into the text.

In academic research a good writer has to be able to introduce the different experimental groups and their members efficiently and with minimal effort to the reader. This is usually done by encoding the relevant nominal groups with a presenting reference itrm. Below, the reference system and its realization in the functions of introducing and keeping track of the various groups of subjects studied will first be illustrated in Text 1a, produced by native English writers, and then contrasted to Text 2a, produced by Finnish writers in English. Both texts belong to the field of public health science (all introduced and tracked central participants are italicised and the type of reference is given in the brackets; owing to limitations of space, all examples have been shortened; thus, '...' signals an elision from the text; italics are added in all textual examples).

Text 1a (the English writers):

... we were able to obtain pharmacy record data for 862 (95%) persons who consented to the record search [presenting ref.]. This report pertains to the 862 persons for whom we have personal interview data and a complete set of medical and pharmacy record data [presuming ref.]. ... The 862 respondents [presuming ref.] ranged in age from 18 to 89 years, with an average of 44 years and 54% were women. ... Thus, we divided the sample [presuming ref.] into three groups: all males [presenting ref.], females with one or more sex-specific diagnosis [presenting ref.] (Female Group 1), and females with no sex-specific diagnosis (Female Group 2) [presenting ref.] ... (Svarstad et al., 1987).

The first italicized nominal group, 862 persons [zero article], introduces a participant into the text, and this participant soon becomes the central participant in the text, as indicated by the numerous presuming references to the same experimental group: the 862 persons, the 862 respondents, the sample. Each time, the article the indicates that the writer is referring to the same group as before. Somewhat later in the text this specific group of subjects is subdivided into three study groups: 1) all males, 2) females with one or more sex-specific diagnosis, and 3) females with no sex-specific diagnosis. As text participants these subgroups are new, and therefore the writers introduce the subgroups to the reader with a presenting reference.

When looking at a similar public health text example written by Finnish writers, Text 2a, initially at least it seems that the writers have successfully learnt the English system of introducing and keeping track of text participants.
The purpose of this study was to describe drug use among middle-aged women, using the Massachusetts Study on Health and Menopause in 1981, a questionnaire was sent to a random sample of 45-55-year-old women in Massachusetts, and 8050 women responded. In both the first and fifth follow-ups, the women were grouped, ignoring vitamins and herbs, in the following way: non-users - no use of drugs or only sporadic use (only one nonprescribed drug was used less than once a week); nonprescribed drug users - use of only nonprescribed drugs; prescribed drug users - use of only prescribed drugs; mixed users - use of both prescribed and nonprescribed drugs (Hemminki et al., ms.).

Like the English writers, the Finnish writers first introduce the general interest group with a presenting reference: middle-aged women. This text participant does not, however, become a central text participant, but rather the group being researched is further specified by two other presenting references: 45-55-year-old women and 8050 women. It is the latter text participant that will actually be followed in the study, as indicated by the presuming reference of the women. This nominal group refers to the group studied, although, as will be discovered later in the text, this group is also further subdivided into subgroups. Like the English writers, the Finnish writers also subdivide the group into four subgroups: 1) non-users, 2) nonprescribed drug-users, 3) prescribed drug-users, and 4) mixed users. All the subgroups are introduced as text participants with a presenting reference. So far the Finnish writers seem to control the introduction and tracking of text participants in a very native-like manner; however, as we shall see below, they do not systematically follow the outlined principles of reference as the text continues.

5. Problems in Reference Marking

It can be expected that in a well-written text the central text participant relations are chained throughout the text. Once a central participant is introduced into a text (presenting reference), the writer has to keep track of the participant (presuming reference). If several central participants are introduced into the text, the writer has to be even more careful in keeping the references to the participants clear. Unclear references lead to wrong retrieval processes and ambiguous interpretations of text participant relations.

Usually competent native writers of academic English have no difficulties in encoding and decoding participant relations in texts. But, as will be shown below, owing to differences in the coding systems of different languages and the way in
which reference functions are taught, foreign writers of English may be in a different position, and continuous participant identification problems may occur in their texts.

When Text 1a continues as Text 1b, the native English writers have no difficulties in marking and keeping track of the participants for the reader:

**Text 1b (the native English writers):**

Sixty-three percent of the sample obtained at least one prescription drug in the 2-year period as measured by the pharmacy records. Seventy-one percent of the women received at least one prescription drug compared to 53% of the men (Table 1). In contrast, there were significant differences between the men and the women who had female specific diagnosis and significant differences between the women who did and did not have female-specific conditions during the study period ... (Svarstad et al. 1987).

In the first part of Text 1b, subgroups of the original group, the 862 respondents, are introduced according to various criteria. The presuming references to this original group are italicized (the sample, the women, the men). But as can be seen, the writers are not always talking about the whole group, but rather certain percentages of the participants are singled out by presenting references: 63% of the sample, 71% of the women, 53% of the men. Thus the nominal groups as a whole are presenting, but the known text participant, the group as a whole, is also kept track of in the postmodification part (the Qualifier).

In the latter part of Text 1b, the references mark the text participants as participants whose identities are already known to the reader, the subgroups originally introduced by the writers. (Note that the group the women who did and did not have female-specific conditions is a complex nominal group and that the reference item the refers to both research groups, i.e. the women who had female-specific conditions and the women who did not have female-specific conditions. Such complex nominal groups and ellipses are a normal and economical way of tracking participants in English, see Halliday 1985).

At several points, but specifically in the results and discussion parts of the article, the native English writers have selected the [generic] reference instead of the [specific] for the nominal groups, as shown in Text 1c.

**Text 1c (the native English writers):**

As expected, men obtain more drugs as they age, presumably as they develop the chronic diseases for which drugs are prescribed. However, the proportion of women obtaining medication and the number of different types of drugs obtained remain fairly high across the life span. Only the number of prescription items increases as women grow older. (Svarstad et al. 1987).
In Text 1c, when the writers refer to men and women they are no longer referring to the specific men and women that were studied. Consequently, in men-they-they we have an example of participant tracking involving generic reference ([generic: presenting/presuming] instead of [specific: presenting/presuming]). The group men is first introduced into the text and then kept track of by presuming references, they-they.

When one observes the reference chains in Text 1 as a whole, it is easy to see how in an uncomplicated manner the native writers have used reference items to create cohesive links to keep track of the whole group of subjects studied, its various subgroups, and sub-subgroups. Keeping track of the participants facilitates the reader's task of processing the text and enables him/her to pay attention to decoding what is said about the text participants. Learning ways to refer to text participants by indefinite articles, pronouns, etc., and keeping track of them by definite articles, personal and demonstrative pronouns, etc. is part of the mother-tongue-acquisition process for native speakers of English. Only young writers are expected to have such problems as the discrepancy of reference in Snails have a shell on their back to protect them selves from enemy. they like to go behind a rock and it leaves a silvery track behind him., where the reader is puzzled by the changes of references of snails-they-it-him (for a discussion, see Martin, 1985: 11).

When one further examines Text 2a written by the Finnish writers, it soon becomes obvious that, in spite of being able to introduce the participants and the relevant subgroups into the text appropriately, the writers have not fully internalized the functioning of the English reference systems. In contrast to the native writers, the Finnish writers are not consistent when tracking down participants in their text, as seen in Text 2b.

Text 2b (the Finnish writers; capitals mark erroneous reference):

Nonprescribed drugs were used by 92% of the women. Nonprescribed pain relievers were used by 85% of the women, and 8% of WOMEN had used them daily. Drugs against depression were used by 2.4% of the women and diet pills or 'prescribed drugs to pep one up' by 1.1%. A notable proportion of WOMEN were using drugs for allergy (Heinminki et al., ms.).

As in Text 1b, the writers discuss certain percentages which concern the original group researched. The subgroups indicated by percentages are appropriately introduced with presenting references [zero article or an indefinite article]. But the references to the original group of subjects are troublesome. Sometimes the Finnish writers have used the women and sometimes women. The latter references, capitalized...
in Text 2b, cause problems of interpretation for the reader. When reading 85% of the women and immediately after it 8% of women, or a notable proportion of women, the reader has to pause to query whether the writers are still referring to the same women, or whether these women belong to some new group of women introduced into the text, or whether, in fact, the writer refers to women in general.

Similar inconsistencies of reference are found later in the same text, in Text 2c. There the Finnish writers further discuss the original four subgroups, introduced to the reader in Text 2a.

Text 2c (the Finnish writers):

Also the prescribed drug users were similar to the non-users in regard to most background characteristics and some health habits. Among PRESCRIBED DRUG USERS there were more overweight women and more women who had little exercise and who tried to restrict fat and salt intake. The health of the drug users was poorer, and as expected, use of health services was more common among them, measured both by physician contact and use of PAP-test.

USERS OF NON-PRESCRIBED and PRESCRIBED DRUGS were similar to each other in regard to sociodemographic variables and most health habits, but PRESCRIBED DRUG USERS were more often overweight and abstainers from alcohol. PRESCRIBED DRUG USERS had more chronic disease but not sickdays or symptoms than NON-PRESCRIBED DRUG USERS. (Hemminki et al., ms.).

In these two consecutive paragraphs all references to the subgroups are italicized, and the capitalized nominal groups indicate the problematic reference groups. In the first paragraph, we find variation in article use: the prescribed drug users, the non-users, prescribed drug users, and the drug users. It would appear that all these nominal groups are intended to refer to [specific] rather than to [generalized] participants (ie. the studied subjects), and therefore a native English reader would expect the writers to mark all of the text participants with presumed reference stems (the, these, etc.). In the second paragraph the references seem to resemble those in Text 1c, where general reference is applied instead of specific reference. But among other things, each other seems to indicate that the Finnish writers are, in fact, describing the features of the particular subjects in the subgroups studied rather than describing the general features of people who can generally be characterized as non-prescribed/prescribed drug users. The change from specific reference to generic seems unmotivated in these two paragraphs and consequently the article usage appears haphazard to a native English reader.

The examples and the discussion above have illustrated typical problems Finnish writers have with the reference systems and their realizations in English. Specifically,
the use of articles as markers of reference is often inconsistent and not motivated textually. When seeking to explain why Finnish writers experience difficulties in marking references to text participants appropriately, we could say that we are simply dealing with careless academics who should pay more attention to their writing. This may be part of the explanation, but the reasons for inconsistencies can more likely be attributed to linguistic differences between the English and Finnish language systems, and to foreign language teaching materials and methods.

6. Linguistic differences in realizing references to text participants

Previous research has shown that the use of articles as reference markers is particularly problematic for Finnish writers of English academic texts, and that article usage accounts for the most frequent corrections made by native speakers who revise Finnish writers' academic texts (see Ventola and Mauranen, 1990, and forthcoming). Some of the reference difficulties can be explained by differences in the language systems and their realizations.

All languages need to encode participants in texts, but languages use different means to realize participant codings. Previously it was stated that nominal groups in English are those linguistic units which code text participant information. In English every participant has to be coded as recoverable or not recoverable from the text or context (Martin 1983: 51). For example, indefinite articles and numeratives code text participants as non-identifiable/new, and definite articles, various kinds of pronouns, proper names and demonstratives code them as identifiable/given. However, not all languages code recoverability of the participant's identity necessarily within the nominal group structure by articles and similar items.

In Tagalog (a Philippine language), for example, the means of coding are only partially similar to those of English. Tagalog codes text participants as unidentifiable with indefinite numeratives and as identifiable with pronouns, proper names, and demonstratives. But, in contrast to English, it does not code participant identification with articles, since no article system exists. Instead, participant identification in Tagalog is further realized by a combination of systems at nominal group rank and clause rank through "the cross classification of the case system, which along with the verbal affixes realizes the focus system" (Martin, 1983: 63; for a detailed discussion of the Tagalog system of reference, see op. cit.).

In many ways the Finnish language seems to be similar to Tagalog in its realization of participants in texts. There is no article system in Finnish to mark the participants as indefinite or definite. Rather, for participant identification, Finnish, like Tagalog, seems to rely on interaction between the ranks of a nominal group and a clause. In other words, at the nominal group rank there are markers (e.g. indefinite numeratives)
which mark participants as unidentifiable/unrecoverable and there are markers (e.g. pronouns, demonstratives) which mark participants as identifiable/recoverable. At the clause rank recovering participant identities is conducted through the textual systems of Theme/Rheme and Given/New. Thus, in Finnish, a non-oblique nominal group which appears in the rhematic position usually introduces a text participant into the text rather than refers to a known participant (e.g. the existential sentence Kadulla on *auto* [street+is+car] is translated into English as *There is a car in the street* with a presenting reference for *auto*, whereas *Auto on kadulla* [car+is+street+adessive-case] is translated into English as *The car is in the street* with a presuming reference for *auto*). Many reference difficulties experienced by Finnish writers, particularly difficulties in the use of articles, can be explained by linguistic differences in the grammatical realizations of participant identification in texts. But so far no systematic textual study of Finnish reference systems and participant coding has been done, although studies on indefiniteness/definiteness and on thematic questions at clause level have appeared (see e.g. Hakulinen and Karlsson, 1979: 296-311; Itkonen, 1979; Vilkuna, 1989; Chesterman, 1991).

7. The role of language teaching materials and methods

Linguistic differences do not explain all learner difficulties. We must also examine how linguistic differences are made clear and taught to foreign learners. Does language teaching facilitate learners' abilities to choose appropriate realizations for participant identification systematically?

Language teaching naturally uses the work of linguists to a large extent when making realizational differences clear to learners. Thus linguists must be encouraged to carry on the work, specifically contrastive textual studies on the differences and the similarities between various linguistic realizations of participant identification in texts. From the learning point of view such linguistic work is of most value when it takes as its basic starting point the semantic functions and their linguistic realizations rather than just the grammatical categories. This has not, however, typically been the case.

Theoretical linguists have long focused on grammatical categories rather than on semantic functions and their realizations. Consequently, in applied linguistics and language teaching and learning the emphasis has also been on grammatical categories. The learner has been learning individual grammatical categories, rather than learning how various grammatical categories can realize the same semantic function. Also, to complicate the matter for the learner, language learning materials written for non-native speakers, e.g. grammars and textbooks of English, usually deal separately with the grammatical categories in a somewhat sporadic way without building up semantic
functional connections between the categories. For example, in an English textbook produced in Finland for Finnish high schools, *Wings - World of Difference* (Hughes et al. 1983), articles are explained on pages 51-3 and pronouns on pages 206-214. No indication is given of their similar function as realizers of reference system choices.

Most examples used in grammars and grammar sections of textbooks are clausal examples, and no textual orientation is adopted; nor do examples of different text types usually appear in textbooks and grammars. As a result, it is hardly surprising that the learner adopts a working method in writing English texts whereby he works clause by clause - more or less translating each clause that comes into his mind from Finnish to English, never looking back and seeing how the textual connections to one and the same participant are signalled. Similarly, inexperienced foreign readers tend to read word for word and often find it difficult to interpret referential information when it is coded in a somewhat different manner in various text types. It has, for instance, been reported that many non-native readers cannot decode referential information effortlessly in a technical instruction list, where writers frequently shift their references from generic reference to specific reference (for details, see Trimble and Trimble, 1985). The grammar books and textbooks simply do not explain specialized textual uses of reference items.

But it is not only the non-native learners who have to cope with textbook inadequacies. Similar remarks can also be made of many textbooks which teach native speakers how to write good academic texts. Most instruction books and manuals for writing English treat articles and pronouns as separate entities - never pointing out that both can be used to realize the same textual function, although they belong to different categories grammatically. To take an example, Harrison (1985) treats articles on pages 41-43, then jumps on to particles on pages 43-44, and then from page 45 onwards discusses pronouns, without ever making a link to the previously discussed articles. In fact, her whole characterization of the functions that articles and pronouns realize in texts is extremely superficial and even dangerous to native and non-native writers, since instead of revealing the important function of articles as text participant identity markers, she considers articles as 'little words of some account'.

You may well wonder what anyone could find to say about articles, those inconsiderable words. *The, a and an ...* are words that can round out the meaning of a sentence when used with deliberation. The function of the definite and indefinite articles is to enable the reader to distinguish between one of a general group or collection of objects and one object in particular (Harrison 1985: 41).

About the function of pronouns Harrison writes:
To avoid repeating nouns over and over again when the reference is obvious, some words act as substitutes standing in for the nouns. We also need to refer to things without naming them or to ask about something unknown (Harrison 1985: 44).

To summarize, the kinds of explanations which have been illustrated above, and which appear in many grammars and in many instructional textbooks and manuals produced by applied linguists, are neither useful to native writers nor to non-native writers of English. Language teaching materials need a more functional and textual orientation on reference and participant identification.

8. Conclusion

This article has discussed how the choices from the reference systems realize participant relations in an English text, and how these systems keep track of participants. Thus readers are always able to interpret participant identities as non-recoverable or recoverable, either from the context or from the preceding text. The reference chains created by choices of presuming reference items enable readers to keep track of the central participants in texts.

In contrast to English writers, Finnish writers of academic English texts were shown to treat participant identification marking inconsistently. These inconsistencies can be explained as difficulties caused by the levels and the ways different participant identification is coded in English and Finnish. In English the reference choices are all made at group rank, so that all nominal groups realizing text participants will be marked for the recoverability of their identity. In Finnish the participant identification marking is partly done at the nominal group rank by pronouns, etc., but choices at the clause level must also be taken into account.

Finally, it was pointed out that linguists and applied linguists would greatly help learners if, when producing grammars and applied language teaching and learning materials, they took a different approach to the presentation of articles and their function in English. It is felt that learners would benefit from a textual orientation, where the semantic function of participant identification would be taken as a starting point; different realizations of this function could then be looked at in texts, and realizations could be contrasted between different languages. It is the task of linguists to work out the realization differences of participant identification in various languages. Both linguists and applied linguists carry the responsibility for writing grammars and writing manuals which would present a textual, not just a clausal, approach to reference and also to such items as articles, etc. which realize the reference choices.
Notes

1. The analyzed articles are:


References


Dr. Ventola has completed degrees in foreign language teaching and linguistics in Finland and Australia. She has published extensively on discourse analysis, textlinguistics, and the linguistics of language teaching. Her major work has been published under the title of The Structure of Social Interaction (1987, Pinter); this is a study of service encounters as a particular type of genre, and it extends further the Hallidayan functional theory of language as social interaction. Her present interests also include the study of written discourse and literary discourse. She presently teaches at the University of Helsinki.