



VAASAN YLIOPISTO

PÄIVÖ LAINE

Language of Interaction in Online  
Shopping

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Reviewers Professor Mirjaliisa Charles  
Helsinki School of Economics  
P.O. Box 1210  
FIN-00101 Helsinki  
Finland

Dr J. Piet Verckens  
Lessius Hogeschool  
Department of Business Studies  
Korte Nieuwstraat 33  
B-2000 Antwerp  
Belgium

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**CONTENTS**

**ACKNOWLEDGEMENTS** .....3

**List of Tables**.....9

**List of Figures** .....11

**ABSTRACT** .....12

**1 INTRODUCTION** .....13

    1.1 Background of the study ..... 14

    1.2 Objectives of the study .....16

    1.3 Data of the study .....18

    1.4 Background disciplines.....20

    1.5 Introductory notes on methodology .....23

    1.6 Outline of the study.....27

**2 USER–WEBSITE COMMUNICATION** .....29

    2.1 Interaction and interactivity .....29

    2.2 User interface.....34

    2.3 Composition of the World Wide Web .....38

        2.3.1 Page .....38

        2.3.2 Website .....39

        2.3.3 Frames .....40

    2.4 User actions .....40

        2.4.1 Pointing.....41

        2.4.2 Clicking .....41

        2.4.3 Dragging and dropping .....42

        2.4.4 Keying in .....43

## ACTA WASAENSIA

2.5 Interactive elements on WWW pages.....	44
2.5.1 Hyperlinks.....	44
2.5.2 Buttons.....	47
2.5.3 Menus and other active elements.....	50
2.6 Targets of interactive elements.....	51
2.6.1 Windowing.....	51
2.6.2 Interaction on the target page.....	53
2.7 Interactive operations.....	53
<b>3 ELECTRONIC COMMERCE.....</b>	<b>60</b>
3.1 E-commerce compared with traditional shopping methods.....	61
3.2 Types of e-stores.....	65
3.3 Structure of e-stores.....	69
3.4 Interaction and electronic shopping process.....	73
<b>4 ELEMENTS OF LANGUAGE OF INTERACTION.....</b>	<b>77</b>
4.1 <i>I-text</i> .....	78
4.2 Co-text of <i>i-texts</i> .....	81
4.2.1 Language elements created by the user.....	81
4.2.2 Language elements produced by pointing and/or clicking.....	82
4.2.3 Language elements provided by the website.....	84
4.2.4 Language elements selected by the user.....	86
4.3 <i>I-texts</i> in hypertext.....	86
4.3.1 Text and hypertext.....	87
4.3.2 Text, discourse and utterances.....	90
4.4 Formation of the grammar of interactivity.....	91
<b>5 LINGUISTIC-PRAGMATIC APPROACHES TO LANGUAGE OF INTERACTION.....</b>	<b>95</b>
5.1 <i>I-texts</i> and explicit communication.....	99
5.1.1 Ostension and relevance.....	99
5.1.2 Explicature and implicature.....	103
5.1.3 Code and inferencing.....	106
5.1.4 Frames and scripts.....	107

5.2 <i>I</i> -texts as directive utterances .....	111
5.2.1 Speech act theory .....	111
5.2.2 Speech acts in other theoretical frameworks .....	115
5.3 <i>I</i> -texts as linguistic expressions .....	117
5.3.1 Linguistic units, schema and elaboration.....	119
5.3.2 Linguistic structure: profiling and scanning .....	122
5.3.3 Roles and interaction .....	125
5.4 Contrastive study .....	130
5.5 Synopsis of the linguistic/pragmatic approaches.....	132
<b>6 METHOD AND DATA.....</b>	<b>141</b>
6.1 Methodological choices .....	141
6.2 Data.....	144
6.3 Flow of the analysis .....	148
6.4. On the validity and reliability of the study .....	151
<b>7 I-TEXTS AS A REFLECTION OF INTERACTION .....</b>	<b>154</b>
7.1 Illocutionary force of a request in contextual elements and in <i>i</i> -texts .....	154
7.1.1 Ostension and illocutionary force in the non-linguistic context.....	155
7.1.2 Link titles.....	159
7.1.3 Embedding sentences.....	162
7.1.4 Instruction texts .....	165
7.1.5 <i>I</i> -texts and illocution .....	167
7.2 Explicitness of <i>i</i> -text functions .....	169
7.2.1 Clicking explicitly indicated in the <i>i</i> -text.....	173
7.2.2 Interactive operation explicitly indicated in the <i>i</i> -text .....	177
7.2.3 Interactive operation and target explicitly indicated in the <i>i</i> -text .....	183
7.2.4 Target explicitly indicated in the <i>i</i> -text .....	185
7.2.5 Explicitness and the co-text of <i>i</i> -texts.....	187
7.2.6 Evaluation of the explicitness of <i>i</i> -texts.....	189
7.3 <i>I</i> -text profile and user role.....	191
7.3.1 <i>I</i> -texts with a processual profile.....	194
7.3.2 <i>I</i> -texts profiling an atemporal relation .....	197

7.3.3 <i>I-texts</i> with a nominal profile.....	201
7.3.3.1 Nominalisations.....	203
7.3.3.2 Other nominal <i>i-texts</i> .....	205
7.3.4 <i>I-text</i> profile and multiple operations .....	210
7.3.5 User role in the <i>i-text</i> in relation to interactive operation.....	213
7.3.6 <i>I-text</i> anticipating interaction on the target page .....	218
7.3.6.1 User role in the <i>i-text</i> and interactivity on the target page.....	219
7.3.6.2 <i>I-texts</i> and navigation on the target page .....	222
7.4 <i>I-texts</i> in the electronic shopping script .....	225
7.4.1 <i>I-text</i> representation at the different stages of the shopping procedure .....	226
7.4.2 Development of <i>i-texts</i> along with the shopping procedure .....	230
7.5 Characteristics of language of interaction.....	233
<b>8 CONTRASTING ENGLISH AND FINNISH <i>I-TEXTS</i>.....</b>	<b>238</b>
8.1 Data of the study.....	238
8.2 Explicitness of <i>i-texts</i> .....	240
8.3 User role and interactivity.....	242
8.4 <i>I-texts</i> in the electronic shopping discourse.....	244
<b>9 CONCLUSIONS.....</b>	<b>249</b>
9.1 Towards more functional and interactive <i>i-texts</i> .....	250
9.2 Role of linguistic code in the interactivity of electronic stores in the future.....	253
9.3 Final assessment and suggestions for further research .....	254
<b>REFERENCES .....</b>	<b>258</b>
<b>APPENDICES.....</b>	<b>269</b>
Appendix 1: Electronic commerce websites used in the corpus of the study.....	269
Appendix 2: Variables of the analysis .....	271



**List of Tables**

Table 1. Windowing systems.....	52
Table 2. Characteristics of interactive operations.....	58
Table 3. Comparisons between retail stores, paper catalogs and online stores. ....	62
Table 4. Frequency of steps represented by separate clicks/pages in the shopping procedure. ....	72
Table 5. Categorisation of interactive operations. ....	92
Table 6. Request strategies. ....	113
Table 7. Role archetypes.....	127
Table 8. <i>I-text</i> profiles and user roles. ....	129
Table 9. Page content according to customer decision. ....	145
Table 10. Variables of the analysis. ....	150
Table 11. Frequency of non-textual features according to interactive operation.....	157
Table 12. Frequency of different types of icons in connection with <i>i-texts</i> .....	158
Table 13. Occurrence of link titles according to interactive operation.....	160
Table 14. Direct requests in <i>i-texts</i> and link titles. ....	160
Table 15. Distribution of embedded <i>i-texts</i> according to their grammatical function and sentence type.....	163
Table 16. Occurrence of instruction texts in different interactive operations, with the exclusion of embedding sentences.....	165
Table 17. Direct requests in <i>i-texts</i> and instruction texts.....	166
Table 18. Explicit <i>i-text</i> content according to interactive operation. ....	172
Table 19. Explicit <i>i-text</i> content according to interactive operation in Corpus B .....	173
Table 20. Occurrence of <i>Click (here)</i> in the corpus.....	174
Table 21. Explicitly coded interactive operations. ....	178
Table 22. Explicitness of the indication of interactive operation. ....	179
Table 23. Target of the interactive operations SELECT and SUBMIT. ....	181
Table 24. Elaborated <i>i-texts</i> encoding interactive operations. ....	183
Table 25. Explicitly coded interactive operations and targets. ....	184
Table 26. Explicitly coded target page information according to interactive operation..	186
Table 27. Examples of SUBMIT <i>i-texts</i> indicating target. ....	187
Table 28. Grammatical profile of the <i>i-texts</i> in the corpus. ....	192
Table 29. Occurrence of processual profile in <i>i-texts</i> according to interactive operation.	194
Table 30. Grammatical structures of processual <i>i-texts</i> according to user role. ....	196
Table 31. Occurrence of atemporal profile in <i>i-texts</i> according to interactive operation.	198
Table 32. Occurrence of nominal profile in <i>i-texts</i> according to interactive operation. ..	202
Table 33. Nominal structures in the corpus. ....	202
Table 34. Occurrence of nominalisations in relation to all <i>i-texts</i> with a nominal profile according to interactive operation.....	205
Table 35. <i>I-texts</i> used for categorisation.....	209
Table 36. Target page window according to interactive operation.....	210
Table 37. User role and target page in the SELECT operation.....	211
Table 38. Proportions of user roles in the GO TO operation according to target. ....	212
Table 39. Grammatical profile of the <i>i-texts</i> according to interactive operation. ....	214
Table 40. User roles and interactive operations (Corpus A).....	216

## ACTA WASAENSIA

Table 41. User roles and interactive operations (Corpus B).....	217
Table 42. User role in GO TO <i>i-texts</i> and target page interactivity.....	221
Table 43. <i>I-text</i> profile and navigation on the target page. ....	223
Table 44. Frequencies of noun types according to the navigational content of the target page.....	225
Table 45. Occurrence of some central features at the different stages of the shopping procedure (included in Corpus B).....	228
Table 46. Orientation of scalarisation and dependency. ....	232
Table 47. Mode values of central variables in hyperlink and button functions.....	234
Table 48. Prototypicality of <i>i-texts</i> in connection with the GO TO operation. ....	235
Table 49. Prototypicality of <i>i-texts</i> in connection with the SUBMIT operation. ....	235
Table 50. Mode values of central variables according to button function.....	236
Table 51. Explicit <i>i-text</i> content according to interactive operation in Finnish <i>i-texts</i> ....	240
Table 52. Explicitness of the indication of interactive operation. ....	241
Table 53. Frequencies of grammatical profiles in Corpora B and C. ....	242
Table 54. User roles and interactive operations (Corpus C).....	243
Table 55. Occurrence of central features in Finnish <i>i-texts</i> . ....	247

**List of Figures**

Figure 1. Elements of the analysis. ....	21
Figure 2. Linguistic-pragmatic approaches to interaction in online shopping.....	26
Figure 3. Characteristics of interactivity.....	33
Figure 4. Primary elements of the user–website interface. ....	37
Figure 5. Examples of hyperlinks. ....	44
Figure 6. Examples of buttons. ....	48
Figure 7. A menu for credit card selection. ....	50
Figure 8. Classification of electronic stores according to product selection .....	66
Figure 9. Stages of online shopping.....	70
Figure 10. Stages of online shopping represented by separate clicks/pages.....	71
Figure 11. Types of interaction according to the level of human involvement and mode of interaction. ....	74
Figure 12. <i>I-text</i> in relation to <i>inoun</i> . ....	79
Figure 13. Link title guidance in connection with a search facility.....	83
Figure 14. Co-textual elements of <i>i-texts</i> .....	85
Figure 15. Interactivity in relation to the type of information keyed in by the user. ....	93
Figure 16. Language and interaction. ....	94
Figure 17. The communication triangle.....	96
Figure 18. The user–website communication triangle.....	97
Figure 19. Construction of speaker meaning. ....	103
Figure 20. Linguistic units in cognitive grammar.....	119
Figure 21. Hierarchy of predications and profiles. ....	120
Figure 22. Categorisation by schema and prototype.....	121
Figure 23. <i>I-text</i> profiles. ....	123
Figure 24. Web interaction paralleled with mathematical operations. ....	133
Figure 25. Elements of the framework of the study.....	139
Figure 26. Stages of Internet research.....	142
Figure 27. The corpora of the study.....	147

## ABSTRACT

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This study aims at examining language as a medium of interaction between the WWW pages of electronic stores and their users. The focus is on user instructions in the linguistic labels embedded in active elements, such as hyperlinks and buttons. The language of interactive labels is investigated in the context of the hypertextual discourse structure of electronic commerce.

Language of interaction is approached from the perspectives of user, website and text. First, I attempt to find out what linguistic information the user receives to form the intended interpretation of interactive labels. Second, the linguistic means for giving directions to the users are studied. Third, the user role assigned by the syntactic-semantic structure of interactive labels is analysed. The linguistic-pragmatic foundation for the study is drawn from the approaches of relevance theory, speech act analysis and cognitive grammar, respectively.

The study is based on empirical data gathered from American and British electronic commerce websites and a small-scale comparative corpus collected from Finnish electronic stores. The variables of the analysis represent the characteristics of interactive labels, their immediate co-text and wider context as well as background information on the electronic stores. Interactivity is categorised on the basis of the significance of the consequences of active element operation.

As was hypothesised, the language of interactive labels was found to markedly manifest the degree of interactivity represented by corresponding interactive operations. The activeness of the user role shown in interactive labels correlates with the consequences of interaction. The content of explicit information seems to follow the dichotomy of target and operation depending on its relevance from the viewpoint of the interactive operation. Target is emphasised in connection with operations representing virtual movement from page to page. This is manifested in nominal interactive labels. When the operation is more empowering and allows the user to search, select or submit information, the coded communication tends to focus on characterising the interactive operation. In most cases the imperative form incorporates an active user role, directive illocutionary force and relevant information in a cost-effective way. The linguistic code of interactive labels was also found to be affected by the formation of the shopping script in the user's cognition. The key concern of the language of interaction is to provide information and to indicate interactivity in an optimal balance.

*Päivö Laine, Seinäjoki Polytechnic, Business School. Koulukatu 41, FIN-60100 Seinäjoki, Finland. Email paivo.laine@seamk.fi.*

**Keywords:** cognitive grammar, electronic commerce, hypertext, interactivity, relevance

## 1 INTRODUCTION

The dramatic impact that the modern information and communication technology has on today's world can be seen in communication and the use of language in the new media. Great changes have taken place during a relatively short time, particularly in the last decade of the 20th century. Global information networks, specifically the Internet, have brought the whole world onto our desktop. Services provided by the Internet facilitate our access to information and give opportunities for fast and convenient communication in business and personal contacts. The World Wide Web, popularly known as the web, allows multiple linking of information and resources on the Internet. The hyperlink together with a number of other interactive elements constitute an arsenal that designers have at their disposal to create impressive and functional websites for a wide variety of purposes including electronic shopping.

This study has grown from the interest in the characteristics of web-based resources that offer opportunities for connecting chunks of information in different ways, interacting with the computer system or other individuals and performing virtual functions in a commercial context. For a time the main emphasis was on the technical development of the tools for creating web pages and data transmission services. In the last few years more and more attention has been paid to content production, which has contributed to a more effective utilisation of the new features from the viewpoint of communication and interaction. Guidebooks have been published on writing for the World Wide Web and other new media, but not much research has been conducted on how a web page "talks to" web users. The website design of electronic commerce, which has already developed into a noteworthy form of business, will undoubtedly benefit from the discussion of the linguistic aspects of interaction between website and user.

### 1.1 Background of the study

Apparent points of contact between language and communication studies on the one hand and modern information technology on the other can be seen in the areas of hypertext and human-computer interface research as well as WWW design. Research has been done, for example, into the functions of the hyperlink in the construction of new hypertextual patterns and into the use of the hyperlink as an effective tool of interaction. Scholarly interest has also been taken in hypertext from the literary point of view. Current research can be followed, for example, in the proceedings of the yearly conferences arranged by associations such as ACM<sup>1</sup> (Association for Computing Machinery) and WWW Consortium<sup>2</sup>. It is to be expected that there will be an increasing number of researchers who apply a linguistic-pragmatic approach to their study of communication in the new media in general and on the World Wide Web in particular.

A point that is often made, when the linguistic aspects of the new media are discussed, is the prominent position of English. In 1996 the proportion of English-language material on the Internet was estimated to be about 80 % (Crystal 1997b: 109). As content produced in other languages is increasing rapidly, the relative significance of English is diminishing (see Crystal 2001: 216–220). Nevertheless, English can still be regarded as the *lingua franca* of the World Wide Web. The position of English results from the central role of the USA in the development of information technology and the emergence of English as the primary language in global politics, business, culture and communication. Speakers of small national languages such as Finnish need to learn to navigate and find information on websites drawn up in English in order to be able to gain access to the immense amount of web material available. Despite its small size, Finland is among the leading countries in information technological development and the Finnish language is also well represented

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<sup>1</sup> <http://www.acm.org>

<sup>2</sup> <http://www.w3.org/>

on the Internet.<sup>3</sup> To be able to meet the challenges of the global accessibility of the Internet, the websites of Finnish organisations and businesses must also have versions in English and in languages spoken in the target countries. At the same time, the domestic users should be served in their own language. When web pages are created in two languages such as Finnish and English, which are not genealogically or typologically related, direct translations from one language to another do not always seem to work out in the best possible way. For example, the most obvious translation of Finnish local case expressions of the type *Ostoskoriin* would be a prepositional phrase 'to/into the basket'. Yet, this does not seem to function well as a customer instruction in English, but a verb must be added: *Add to basket*. Situations like this raise the question about the extent of language-specific aspects to be taken into consideration in web communication.

One of the areas that the conquest of the Internet has dramatically changed is business both in domestic and international contexts. Electronic business is expected to grow rapidly and attract new customers every day. The number of potential e-shoppers grows globally along with the increase in Internet penetration. In business-to-consumer trade, the proportion of electronic commerce of total sales is still modest but the growth figures are solid. In 2000 e-commerce sales in the United States were about 1 % of total retail sales, while in 2003 the percentage amounted to 1.5 % (U.S. Census Bureau 2003). In Europe, business-to-consumer e-commerce is predicted to be between 5 and 10 times higher by 2005 compared to the figures in 2001 (UNCTAD 2002). According to a global e-commerce report, 32 % of Internet users in the USA, 23 % in Great Britain and 14 % in Finland had shopped online in 2002, but there are forecasts that as many as 50 % of all Internet users will shop online in the future (Taylor Nelson Sofres Interactive 2002; Turban & King 2003: 10). The overall increase has been the fastest in business-to-business trade, but electronic shopping for consumer goods also offers new opportunities to stores and shoppers worldwide. In the globalised environment of the Internet, companies have to face international competition, which sets requirements for a good architecture and clear linking system of websites.

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<sup>3</sup> According to a study of language distribution on the Internet based on a random sample and conducted by Babel in 1997, the percentage of home pages in Finnish was 0.3 although the population of Finland represents less than 0.1 per cent of the world population. (Crystal 2001: 216, 217)

Recent surveys<sup>4</sup> have shown that web users who are making online purchases are faced with a number of questions connected with web usability and credibility. Appropriate use of language in user–website interaction contributes to the solution of these problems. In electronic business conducted over the Internet, the interaction process follows a pattern determined by the shopping procedure that is more rigorous than navigation sequences on websites in general. Nevertheless, somewhat similar patterns can be found on other types of utilitarian websites, for example universities or cities using the WWW to inform their interest group, public utilities offering their services or libraries and scientific organisations providing access to sources of information (cf. Shneiderman 1998: 562).

## 1.2 Objectives of the study

This study aims to examine how language is used in the interaction of the WWW pages of electronic stores with their users. More specifically, the study focuses on the form and functions of textual *interactive labels* that are contained in *active elements*, which constitute the basis for user–website interaction in the hypertextual structure of WWW pages. The purpose of these interactive labels is to instruct the user in the interaction process. The user or customer follows the instructions by keying in the information requested and/or clicking on the active elements

Active elements that may be equipped with textual labels include *hyperlinks*, *buttons* and *menus*. Hyperlinks are used for virtual movement on the web: they take the user from one WWW page to another or to another location on the current page. For example, by clicking hyperlinks labelled with *Furniture*<sup>5</sup>, *Chairs* or *Customer service* the user can access pages providing information on these products and services. Buttons are active elements that activate a program implementing a particular function, such as searching and selecting. A third group of active elements consists of menus, which act as auxiliary

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<sup>4</sup> see, for example, Jakob Nielsen's website at <http://www.useit.com> and the website of Stanford Web Credibility Research at <http://www.webcredibility.org>.

<sup>5</sup> Interactive labels, defined as *i-texts* in section 4.1., are underlined and italicised in this study.



implements for user selection. Different types of operations may also be combined in a single active element. For example, the operation of a search button provides the user with search results and simultaneously takes him/her to a new page where the search results can be found.

The shopping procedure can be seen as a conversation that consists of utterances represented by interactive labels contained in active elements and corresponding user reactions. This user–website interaction is enabled by the hypertextual structure of electronic stores. The labels of active elements usually consist of linguistic information, either single words or longer strings of text, but textual labels may also be accompanied and, in some cases, replaced by icons or pictures. When a user enters the home page of an electronic store, he/she can see a number of interactive labels: hyperlinks leading to product categories or product information, a search facility, a button for the submission of his/her customer number, etc. His/her response to these utterances consists of pointing, clicking and keying in the required piece of information. This conversation between electronic store and user leads the user through the different phases of the shopping procedure if he/she is motivated enough not to quit.

Interactive labels that are formulated appropriately are likely to encourage the user to continue. I am confident that a linguistic perspective on user–website interaction contributes to the development of more user-friendly and unambiguous website structures. By examining the interactive labels from the user’s perspective, this type of study benefits electronic stores in the form of added effectiveness and fewer instances of customer frustration. It can be hypothesised that the result of the interactive operations in the form of a completed action and/or new screen content can be predicted to a certain degree on the basis, not only of the nature of the interactive elements, but also of the content of the interactive labels.

The objective of the study can be formed into the following research question: “How is the linguistic information manifested in interactive labels indicative of user–website interaction and the consequences of the operation of an active element, such as accessing,

searching, selecting or submitting information?" In the analysis, the research question will be broken down into the following three sub-questions:

1. What linguistic information do interactive labels provide for the user to form an intended interpretation of the labels?
2. What linguistic means are used in interactive labels for giving directions to the users?
3. In what way does the linguistic structure of interactive labels show whether the user is an active participant in the interaction process?

These questions will be discussed against the contextual background of electronic commerce, more specifically in the context of websites of online stores selling consumer goods. Parallelism in the goals of the originators of websites must be considered when conclusions are drawn about the generalisability of the results to other types of websites.

The language of the interactive labels that constitute the empirical data of the study is primarily English. Besides my personal interest in the English language, the prevalence of English on the World Wide Web and its central position in international trade can be mentioned as grounds for the focus on English in this study. I have also included a case-type exploration into Finnish as a medium of e-store interaction in order to see whether the tendencies detected in English are applicable to other languages. This analysis is also expected to display aspects to be taken into consideration when Finnish companies are designing e-stores and introductory web pages in English. Consequently, one more research question can be added to the above list:

4. Do English and Finnish indicate interaction in a similar way in interactive labels?

### **1.3 Data of the study**

To be able to answer the research questions concerning the language of link, button and menu labels as indicators of the interactive operations that these active hypertext elements represent, I found it essential to examine the content and structure of existing electronic

stores. The scope of electronic business activity is very wide, and, therefore, it was necessary to specify the type of the target websites of the study. I decided to concentrate on consumer business, and exclude business-to-business trade, because buyers in the latter type of trade can generally be assumed to be relatively experienced web users and their actions may have become highly automatised. For ordinary consumers, whose computing and navigation skills may vary considerably, the guiding role of language is essential. I chose to focus on consumer goods to the exclusion of daily goods, because daily goods are usually outside the scope of international trade. The product lines that I included in the material were gift items and articles for the home. As far as the product range available on the Internet is concerned, these constitute typical instances of e-commerce products, which can be expected to give justification to the generalisability of the results to other lines of products too.

The interactive labels were collected from the pages of 22 English-language electronic stores, half of them American, half British. This collection of websites was selected according to the principles of convenience corpus; e-stores offering a range described above and meeting the requirements of a full-scale electronic store were included. Most of the target companies are department stores that carry a wide range of products while the rest represent specialty stores. A definite distinction between a department store and specialty store (for further categorisation, see section 3.2) is sometimes hard to draw, and whether it has a great influence on the interpretation of the labels is not obvious. The main difference can be seen in the depth of the product categorisation hierarchy.

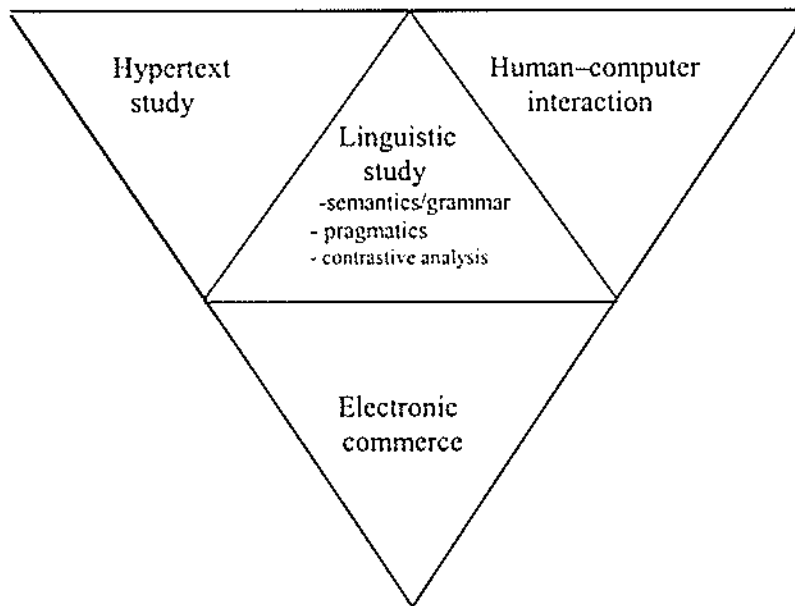
The website of a full-fledged electronic store contains a large number of hyperlinks and buttons, many of which occur on several, if not all, pages of the site. To be able to handle this large amount of data, I decided to look at the material from the point of view of the purchase process. Starting on the home page and following a typical product line to the product selection phase and through all the stages of the checkout, I included the textual labels of interactive elements on these pages in the corpus. The whole corpus of 1442 interactive labels was used for the analysis of the role of the coded communication as an indicator of interactive operations and targets. A more limited collection of labels

consisting of the minimum route of clickable items that a customer must take to complete a purchase procedure was picked out for the examination of interactive labels at the different stages of the procedure. This smaller collection of labels representing the necessary steps on the 22 websites consists of 239 items, which are also included in the larger corpus. This smaller corpus was also used for the analysis of the structure of electronic stores, which is presented in section 3.3.

For the purposes of contrasting English and Finnish, a collection of interactive labels that corresponds to the smaller corpus was gathered from the websites of 22 Finnish electronic stores. This Finnish corpus comprises 165 instances, which originate in online stores selling consumer goods similar to their British and American counterparts. Because the number of Finnish electronic stores is more limited, the range of products sold on the stores in the Finnish corpus also includes clothing and electronics. This is not likely to materially affect the comparability of interactive labels in the two languages. A more detailed description of the compilation of the corpus is given in section 6.2.

#### **1.4 Background disciplines**

The topic of my research, the study of language, represented primarily by English, as a medium of interaction in electronic commerce, can be seen as the intersection of a number of fields of study. Therefore, achieving the aim of the study means finding new connections between linguistic analysis, on the one hand, and communication on the World Wide Web, hypertextual structure and new forms of business, on the other. The linguistic aspects are at the core of the study but they are applied to the context of computerised and hypertextual electronic stores, as is shown in Figure 1.



**Figure 1.** Elements of the analysis.

The outer triangle represents the setting within which the linguistic/pragmatic analysis in the inner triangle is conducted. *Contrastive study* in the inner triangle has been printed in a smaller font, which reflects the fact that the main aim of the part of the study in which I examine language used for guiding interaction on Finnish-language websites is not primarily to contrast English and Finnish but rather to test, by means of a small empirical sample, the findings of the study in another language. The method, data and categories are described in detail in chapter 6.

The linguistic-pragmatic research that forms the frame of reference of the linguistic analysis will be introduced in the following section. The purpose of this section is to have an overview of research that has been conducted in the non-linguistic setting of the present study. Information and communication technology and its hardware and software implementations create the framework within which network communication solutions are implemented. An analysis of the user interface is needed for the discovery of the prerequisites of interactivity. Comprehensive overviews of the various aspects that must be taken into account in user interface design are offered, for example by Preece et al. (1994) and Shneiderman (1998). Human-computer interaction from the viewpoint of information

seeking has been investigated, for example, by Marchionini (1995). A great deal of literature that consists of practical guidance to website design and writing for the WWW has been published. General guidebooks on WWW architecture and design, such as Rosenfeld and Morville (1998), Nielsen (2000) and Wodtke (2002) deal with questions concerning language only briefly. More relevant sources of ideas for my research topic are guides that specialise on online or interactive writing, e.g. Anderson, Benjamin and Paredes Holt (1998), Bonime and Pohlmann (1998), Samsel and Wimberley (1998) and Price and Price (2002), the writers of which work either in multimedia business or in teaching. Most of this type of literature is not research oriented but has been written for practical purposes. A discussion of different approaches to interactivity, a key concept in this study, is presented in section 2.1.

As far as hypertext research is concerned, the book by Landow (1997), the first version of which was published in 1992, is fundamental. The proceedings of ACM Hypertext Conferences that have been arranged since 1987 provide a wealth of valuable information. Some of the most interesting conference papers include Jim Rosenberg's (1996) research into the structure of hypertext activity, Susana Pajares Tosca's (2000) discussion of the pragmatics of links and Mark Bernstein's (2000) presentation concerning hyperlink content. Martin Engebretsen (2000, 2001) is also a researcher who has crossed the border between hypertext research and traditional linguistics and pragmatics in the area of the examination of coherent hypertextual structure.

Knowledge of electronic business and marketing as well as business communication in general comes into play in the examination of e-store websites. Ravi Kalakota's works, including Kalakota & Whinston (1996), Kalakota & Whinston (1997) and Kalakota & Robinson (2001), which deal with the framework and prerequisites of electronic business, have given me a basic overview of this rapidly evolving industry. Aspects of electronic business that have been especially helpful in the outlining of the communicative context of the research topic include Spiller & Lohse's (1998) article on classification of Internet stores, Helander & Khalid's (2000) model of the decision making of the customer in electronic commerce and Eroglu, Machleit & Davis's (2001) study of atmospheric

qualities of e-stores. Reynolds (2000) provides a detailed description of the information technological implementation of an electronic store, while the textbook by Turban and King (2003) is an up-to-date account of the various aspects of electronic commerce. Recent Finnish dissertations (Puhakainen 2001; Anckar 2002) have also been valuable sources of research information on interaction in the electronic business process.

### 1.5 Introductory notes on methodology

As hyperlinks and other interactive elements that contain linguistic labels can be paralleled with utterances in the discourse between user and website, methods that have been used to analyse text and discourse provide natural methodological resources for this study. In the discourse analytical approach, emphasis is put on language use beyond the boundaries of an utterance. In addition, discourse analysis is concerned with language in social contexts and focuses especially on the interactive properties in communication. (Stubbs 1983: 1) One of the key concepts from the viewpoint of the current topic is *frame* (see section 5.1.4), which refers to the participants' subjective conceptualisation of the structure within which they are interacting (Goffman 1974: 10, 11). Individual interactive labels constitute the starting-point of my analysis, but they are examined in the context of the electronic shopping process.

Content analysis, in which text and discourse (see discussion of the terms *text* and *discourse* in section 4.3.2) are approached by means of categories, constitutes the methodological basis of this study (cf. Titscher, Meyer, Wodak & Wetter 2000: 55). The content analytical method makes it possible to analyse interactive labels with respect to a number of categories and utilise these categorisations to help us understand their role in user-website communication. Each interactive label is allocated to categories that represent 25 variables in a coding process. The variables and corresponding categories are derived, on the one hand, from the communicative environment of electronic commerce on the World Wide Web, and from the linguistic-pragmatic framework on the other. The former group of categories of the analysis pertains to background information about the

electronic store and the characteristics of the user interface. The latter set of categories is drawn from the syntactic, semantic and pragmatic description of the interactive labels and their co-text. The interdependencies of the categories are examined in search of a description of the interactive operations represented by interactive labels. However, it must be remembered that linguistic categorisations are always fuzzy; some instances are more prototypical members of a category than others. The question of prototypicality and schematicity will be encountered at several points in the study.

A few more words need to be said about the language-oriented aspects of the study to provide a preliminary introduction to the models that constitute the linguistic framework. My approach is based on the sequence of actions followed by a web user intending to do electronic shopping. When a user accesses a web page, his/her attention is usually caught by the active elements on the page. The non-linguistic features of the active elements, sometimes reinforced by linguistic code, communicate to the user that they have something important to tell him. When interactive labels are approached from the user's or customer's angle, the communicative content of the text and its ability to guide the user in the correct direction is essential. A useful framework for the appraisal of interactive labels as the starting-point of user interpretation and inferential process in their interactive operation can be found in the study of conversational inferencing initiated by H. P. Grice (1975) and, in particular, in its development in the pragmatic approach known as relevance theory (Sperber & Wilson 1986/1995; Blakemore 1992 and Carston 2002). Consequently, my study of explicit communication and inferencing is built on relevance-theoretic thinking.

From the website designer's or storekeeper's point of view interactive labels are directions which should be equipped with a sufficient amount of illocutionary force, which refers to the speaker's intention in producing that utterance. Parallels of web communication are sought in the analysis of utterances as speech acts, as they are understood in speech act theory (Austin 1962; Searle 1969, 1979; van Eemeren & Grootendorst 1983; Leech 1983).

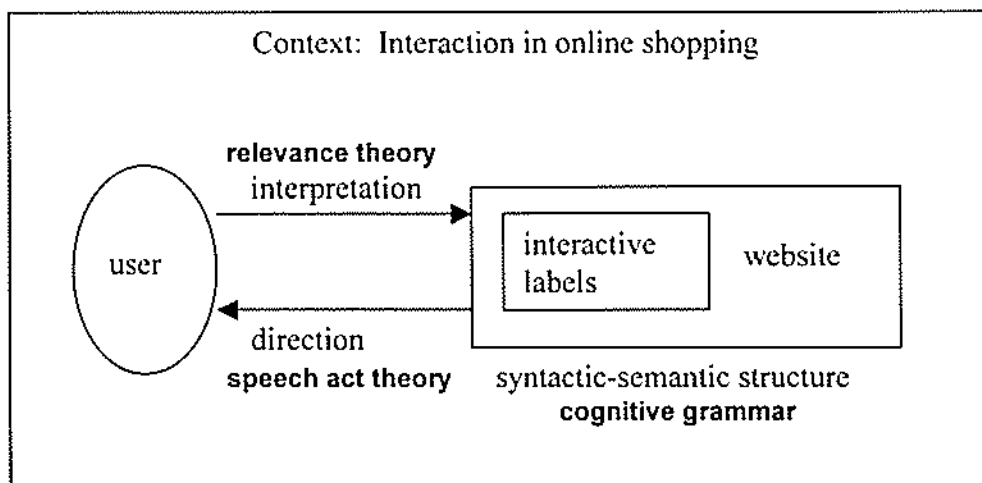


Finally, the internal composition of interactive labels with a view to their grammatical structure or profile is discussed in the terms of cognitive grammar, the attraction of which lies in its iconicity of grammatical structure and its propensity to regard syntactic, semantic and pragmatic aspects as a continuum. The syntactic-semantic analysis of the language of interaction is based on the tradition of cognitive linguistics (Lakoff 1987; Langacker 1987, 1991a, 1991b, 1995, 1999). The brief comparative analysis between English and Finnish interactive labels builds on the framework of contrastive linguistic research and methodology, a cognitive application of which is presented by Krzeszowski (1990).

In addition to the major linguists and pragmatists, on whose ideas I have constructed my theoretical approaches, thought provoking views on the semantic-pragmatic interface and relations between different theories have been presented, for example by Grundy & Jiang (2001) on the relation between figure/ground gestalt and relevant interpretation, Nemo (1999) on scalarisation and speaker/hearer dependence, Verschueren (1999) on discourse structure as well as linguists who have participated in the discussion about relevance theory versus other theories on the Relevance mailing list.

Several linguistic-pragmatic theories were chosen as the framework of the study because the starting-point was a linguistic phenomenon, that is, the linguistic code contained in interactive labels, which I wanted to examine from different perspectives in its function to guide web users to find the information they are looking for or to perform the action that produces the desired results. Figure 2 illustrates the main contributions of the different theories to the facets of interaction in online shopping.

At the outset, the variables used in the analysis were derived from the linguistic, hypertextual and e-commerce framework, but they were adjusted and specified on the basis of the collected data. Whenever categorisation was adjusted during the research process, the whole material was recoded using the modified categories. Consequently, the empirical material had its influence on the categories of the analysis and the method used cannot be categorised strictly according to the dichotomy of a method based on predefined categories versus one based on categories drawn from the material.



**Figure 2.** Linguistic-pragmatic approaches to interaction in online shopping.

Although content analysis was originally a quantitative method, it is today understood as a research strategy that includes various types of qualitative methods of text analysis based on categories. In the present study the emphasis is on the qualitative examination of the construction and contents of the data and their co-textual and contextual relations. The qualitative analysis is supported quantitatively to the extent allowed by the sampling method (see section 6.2). The quantitative approach also contributes to the formation of the conceptual basis of the analysis by showing the frequencies of specific cases. Naturally, the analysis is closely connected with the concepts and practices of the syntactic-semantic and pragmatic frameworks from the viewpoints of which interactive labels are examined. The interplay and mutual complementarity of quantitative and qualitative methods will be reverted to in chapter 6 (see also Miles & Huberman 1994: 40–43; Guba & Lincoln 1998: 196–197; Sudweeks & Simoff 1999: 33–41; Flick 2002: 262–270).

The type of web communication that is examined in this study represents the written medium. However, the WWW environment with its instantaneous feedback and multimedial character fades out the clear-cut distinction between spoken and written language. Interactive labels that users can read on web pages can be regarded as utterances

instructing users to proceed in their interaction. Communication on utilitarian websites is characteristically explicit, but instances of the divergence between the linguistic expressions represented by utterances and the meaning that websites aim to communicate by using them are of particular interest (cf. Carston 2002: 15).

### **1.6 Outline of the study**

The study of language that guides users in their shopping procedure calls for research into the contextual background consisting of human–computer interaction, hypertext structure and electronic commerce. The second chapter begins with a discussion of the central concepts of interaction and interactivity. Furthermore, the components of web language, user actions as well as interactive elements and operations are dealt with. The focus is on hyperlinks, the primary interactive tool, and buttons, which co-occur with and complement hyperlinks on web pages. Chapter 3 provides a short introduction to electronic commerce, which constitutes the domain of the study and the source of data for the empirical analysis. The unit of analysis is defined in the fourth chapter, which also includes exploration into the points of contact between the information technological environment and use of language. Next, the approaches of the linguistic analysis are discussed in chapter 5. These include the examination of the coded communication as a starting-point for inferencing in the relevance-theoretic sense, the examination of illocutionary force in the labels as directive speech acts and the analysis of the syntactic-semantic structure of interactive labels in the framework of cognitive grammar. The question of comparing two languages in a particular function is examined briefly in the framework of contrastive research.

A detailed description of the data and methods used in the empirical analysis is presented in chapter 6. The analysis of the data in the seventh chapter begins with an examination of interactive labels as ostensive signals in web page context. Next, expressions of illocutionary force occurring in the labels and their context are studied. The investigation into the degree of the explicitness of the linguistic code indicating the interactive operation and target is followed by an analysis of the syntactic-semantic structure of interactive

labels. In chapter 8, the results of the analysis of the use of Finnish for interaction are presented and contrasted with the corresponding investigation of English-language websites. The final chapter contains comments on and recommendations for efficient use of language in user–website interaction, anticipation concerning the effects of technical development on the role of linguistic code in electronic commerce in the future and suggestions for further research.

## 2 USER–WEBSITE COMMUNICATION

The discipline that is concerned with the design and use of interactive computing systems is known as human–computer interaction (abbreviated HCI) (cf. Preece et al. 1994: 7). In the framework of the current study the scope is narrowed down to interaction between website and user in the context of electronic commerce. Human–computer interaction has two main facets: the user and the computer with all its hardware and software resources. Similarly, the discipline that examines this interaction consists of two subdisciplines. Firstly, software engineering and computer science in general deals with the prerequisites that the computer offers for interaction. The other subdiscipline concentrates on the human side of the interaction. According to Preece et al. (1994: 16) this includes such things as human information processing, language, communication, interaction and ergonomics. The term *computer ergonomics* can be used to cover the mental aspects of the interaction and the specifications of the knowledge required by the human to interact with the computer (Long 1989: 5). Long lists linguistics as one of the disciplines that contributes to the effective implementation of cognitive ergonomics. Before focusing on the linguistic aspects of interaction, the concepts of interaction and interactivity are discussed and the components of the interactive system are introduced.

### 2.1 Interaction and interactivity

Interactivity is one of the essential characteristics of communication in the new media. However, it must be emphasised that it is not only and primarily a quality of modern digital media, but it is around us everywhere. *Interaction* and *interactivity* are terms that are often used interchangeably in web design to refer to the interplay between user and computer. However, we can draw a distinction between the two terms by regarding interactivity as a characteristic of the technological system that allows for person-to-person

or person-to-computer interaction. In the context of computer-mediated instruction, this kind of distinction has been presented, for example, by E.D. Wagner (1997). In her study on distance learning environments, she defines *interaction* as an interplay and exchange in which individuals and groups influence each other, whereas *interactivity* is related with the technological capability for establishing connections within a system. Similarly, Rothkegel (1999: 127), who has studied interaction and interactivity in different communicative situations, defines interactivity as the characteristic of the medium or software with regard to its functionality, while she uses the term interaction to describe the user's dealings with the hypermedia for his/her own purposes. Rothkegel (1999: 128) discusses the linguistic consequences of the distinction between the two levels of the phenomenon: interactivity and interaction. According to her, interactivity is organised primarily according to content-based criteria, for example, how coherence is constructed in different types of linking systems. Interaction, on the other hand, is organised on the basis of the sequence pattern of communication, in which a particular action determines a particular array of reply options, of which each presents again a new action with further options (Rothkegel 1999: 128).

In his concept explication of interactivity, Kiouisis (2002: 372) aims to formulate a definition of interactivity that includes three major dimensions: (1) the technological structure of a medium; (2) the context of communication settings; and (3) the perception of users. In the definitions of interactivity in computer-mediated communication the technological aspect is often strongly present. Bonime and Pohlmann (1998:11), who give guidance to those writing for interactive media, especially for the WWW, define interactivity as the property of any medium that responds dynamically to user control. According to this rather technical view, electronic shopping would be an interactive process whose initiator is the user. The electronic environment gives response on which the user's subsequent decisions are based. This response can be synchronous or asynchronous (see section 3.4). Synchronous or real-time responses are often emphasised in the characterisation of interactivity. Whether synchronous or asynchronous, interactive communication technology must give an opportunity for feedback.

The second element in Kiouisis' concept explication, communication settings, refers to the interconnected relationships among exchanged messages, which is also known as third-order dependency (Kiouisis 2002: 359). According to Rafaeli and Sudweeks (1998: 175), there are three modes of interaction in network communication: one-way, two-way (reactive) and interactive. One-way communication is declarative like most radio and television broadcasting. In two-way or reactive communication, one side responds to the other side, whereas interactive communication requires that later messages take into account all earlier messages and the manner in which previous messages were reactive. Rafaeli and Sudweeks state that interactivity "is the extent to which messages in a sequence relate to each other, and especially the extent to which later messages recount the relatedness of earlier messages". This approach is readily applicable to online shopping, in which the process accumulates from product search through selection to checkout, and each stage is built on the results of the previous stages involving the customer more and more in the process. Rafaeli and Sudweeks' idea of interactivity is reminiscent of the concepts of frame and script, which will be discussed in section 5.1.4.

User perception, the third element in Kiouisis' analysis, emphasises the experience of the human user in the process of interaction. When the aspect of user perception is in the foreground, face-to-face communication is often regarded as a standard for interactivity (Kiouisis 2002: 363). From a linguistic and pragmatic viewpoint, this view on interactivity is central, because it is what the use of language is all about. In communicative interaction both a speaker and a hearer have their own roles, which are reflected not only in their behaviour but also in linguistic expressions. Halliday (1994: 36, 68) uses a related term *interpersonal* to describe the function of the clause as an interactive event involving speaker and listener. The perceived interactivity is dependent on technology, but at the same time it is determined by the human sensory system and conceptualisation. According to Marchionini (1995: 111), in the context of information seeking in electronic environments, the faster and the more numerous the turn-taking actions are, the higher the degree of interactivity is. This characteristic is referred to as the interval of interaction by Brenda Laurel (1993: 20), a designer, researcher and writer, who has published on topics including virtual reality, interface design and interactive fiction. The other variables in

Laurel's original model of interactivity are range (how many choices are available) and significance (how much of the choices really affect matters). The more often and more powerfully the user can affect the course of events, the more interactive the interface or website is. However, Laurel points out that the successful operation of these three variables is not enough to give the user a feeling of interaction. To be able to act within a representation is the crucial thing, and this may be achieved by means of sensory immersion, kinaesthetic input and visual response (Laurel 1993: 21). Since this study focuses on the use of language in interaction, the multimedial quality of websites is regarded as a background factor, to which the role of the linguistic code is related.

In his introduction to digital media, Tony Feldman (1997: 13) defines interactivity as the user's capability to influence his/her access to information and control the outcomes of using the system. Interactivity is implemented as a number of choices between which the user can decide and move on along the pathway determined by his/her choices. On websites of the type that electronic stores represent, the pathways have mainly been defined by the designer, and the user can influence the interaction procedure in ways that have been predetermined (Feldman 1997: 13).

To pull the strings together, I quote the tentative definition of interactivity formulated by Kiouisis on the basis of his concept explication. In this definition the facets of interactivity that are central to this study are stated clearly.

Interactivity can be defined as the degree to which a communication technology can create a mediated environment in which participants can communicate (one-to-one, one-to-many, and many-to-many), both synchronously and asynchronously, and participate in reciprocal message exchanges (third-order dependency). With regard to human users, it additionally refers to their ability to perceive the experience as a simulation of interpersonal communication and increase their awareness of telepresence<sup>6</sup>. (Kiouisis 2002: 372)

An effective electronic store makes the customer forget the technological environment and become absorbed in the shopping process. There may be several persons, such as a shopkeeper, e-marketing specialist, website designer/information architect and content

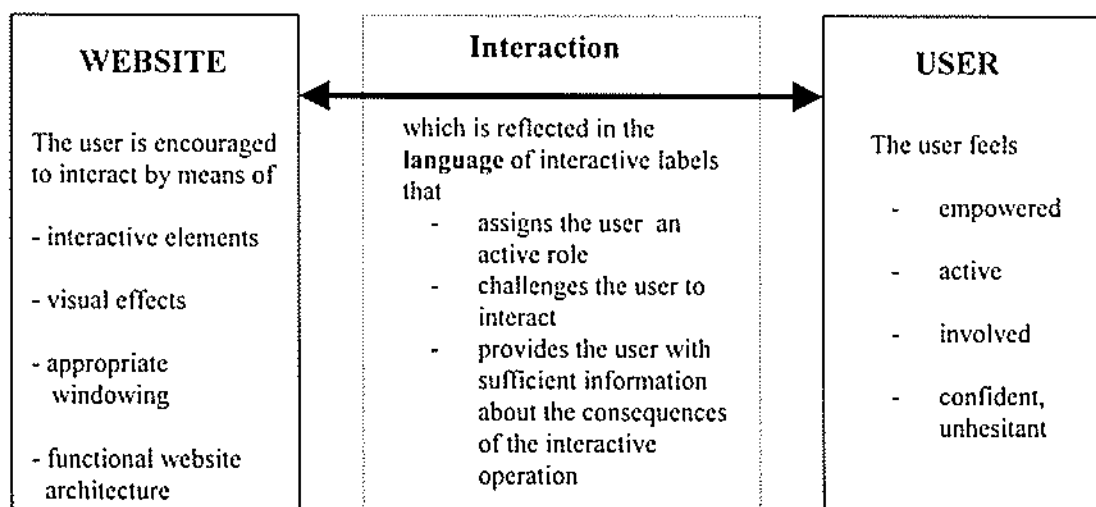
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<sup>6</sup> Telepresence is connected with the atmospheric qualities of e-stores (see section 3.1).



developer, involved in the development and implementation of website. However, I do not regard interaction between e-store and customer as simulation of face-to-face communication. In accordance with most research into human-computer interaction, I view the interaction in the context of electronic shopping primarily as communication between website and user.<sup>7</sup> To some extent, an e-store website can also function as communication channel between two humans: a customer and a representative of the online store, because e-stores often provide opportunities to send emails to customer service staff or chat with them. Yet, basically I do not think that a web user personalises the e-store website as a living salesperson. At the present stage of its development, an electronic store is rather considered to be an equivalent of a sales catalogue. In a sense, one of the communication parties is identified with the communication medium. As one of the parties in electronic shopping communication is a website, the discussion of interactivity will be mainly delimited to interactivity in information systems in the current context.

I operationalise the concept of interactivity for my linguistic-pragmatic analysis on the basis of the key characteristics that are summarised in Figure 3.



**Figure 3.** Characteristics of interactivity.

<sup>7</sup> This differs from Engebretsen's (2001: 22) use of the term, which in his research into hypertextual news is an attribute of communication between two humans that use computers as a medium.

The system should provide the user with a sufficient amount of information about the function he/she is going to perform or the target he/she is aiming to access. Clear link and button labels, which do not mislead the user, are likely to add to credibility of the website and to create a trusting relationship with the user, who does not need to hesitate to interact by clicking (cf. Kostelnick & Rogers 1998: 20, 21) The user's feeling of empowerment, which is comparable to Laurel's *significance*, is related to the degree to which the technological environment allows the user to affect the consequences of his/her interaction. The user is an active partner in interaction. One more feature that influences the successfulness and effectiveness of interactivity is the ability of the system to inform the user unambiguously about the consequences of interaction. In other words, when interacting the user should have assurance of the anticipated result of his/her action..

To sum up, in this study interactivity is a characteristic of user–website communication, the extent of which can be assessed by means of user control, involvement and clarity of interactive messages. Interactivity can be regarded as an enabler of interaction between user and website, and the two obviously go hand in hand. In the current research, *language of interaction* refers to the linguistic code of interactive labels and their co-text on web pages instructing the user to interact. The term *interactive language* describes the quality of language exhibiting features that contribute to interactivity.

## 2.2 User interface

The intermediary between human and computer, or website and user, is called the *user interface*, which refers to all the functions and devices by means of which the user interacts with the computing system (Paananen 2001: 82). A distinction, which is useful in the web context, can be made between content and interface. Content consists of what people are looking for on web pages, while interface is what people use to find the content and act on it (Price & Price 2002: 70). The role of web text as an interface element will be

reverted to in chapter 4. In the following, the software and hardware aspects of a web application are briefly discussed.

Computer interface includes hardware (input and output devices) and software solutions. On the hardware side of the user interface, the peripheral devices, most commonly the screen, mouse and keyboard are physically closest to the user. Aspects connected with the computer hardware are discussed in section 2.4 on user actions, such as pointing and clicking. User interface software is today integrated in the operating system of the computer, for example in the Windows environment. The user interface programme that allows the user to communicate with the World Wide Web is called the *browser*, such as *Internet Explorer* or *Netscape Navigator*. On the World Wide Web, which is the operational environment of electronic commerce, the main interface paradigm is hypertext (see Shneiderman 1998: 554). When WWW content is read, the essential software consists of the browser whose task is to show web pages to the user and interpret the hyperlinks and other active elements placed in the pages (Järvinen 1999: 31; Paananen 2001: 237). The browser is what the user really reads, as Järvinen (1999: 49), following Landow, points out. In Landow's (1997: 58) words, it must be seen as the entrance into the docuverse<sup>8</sup> and a way of being linked with the world of linked hypermedia documents. Apart from text, browsers can present pictures, sound and video in different forms. By means of browsers, users dispense with the installation of user interfaces for each application. Moreover, browsers facilitate the learning of applications because they provide a common platform with similar functions for different applications (Trepper 2001: 119).

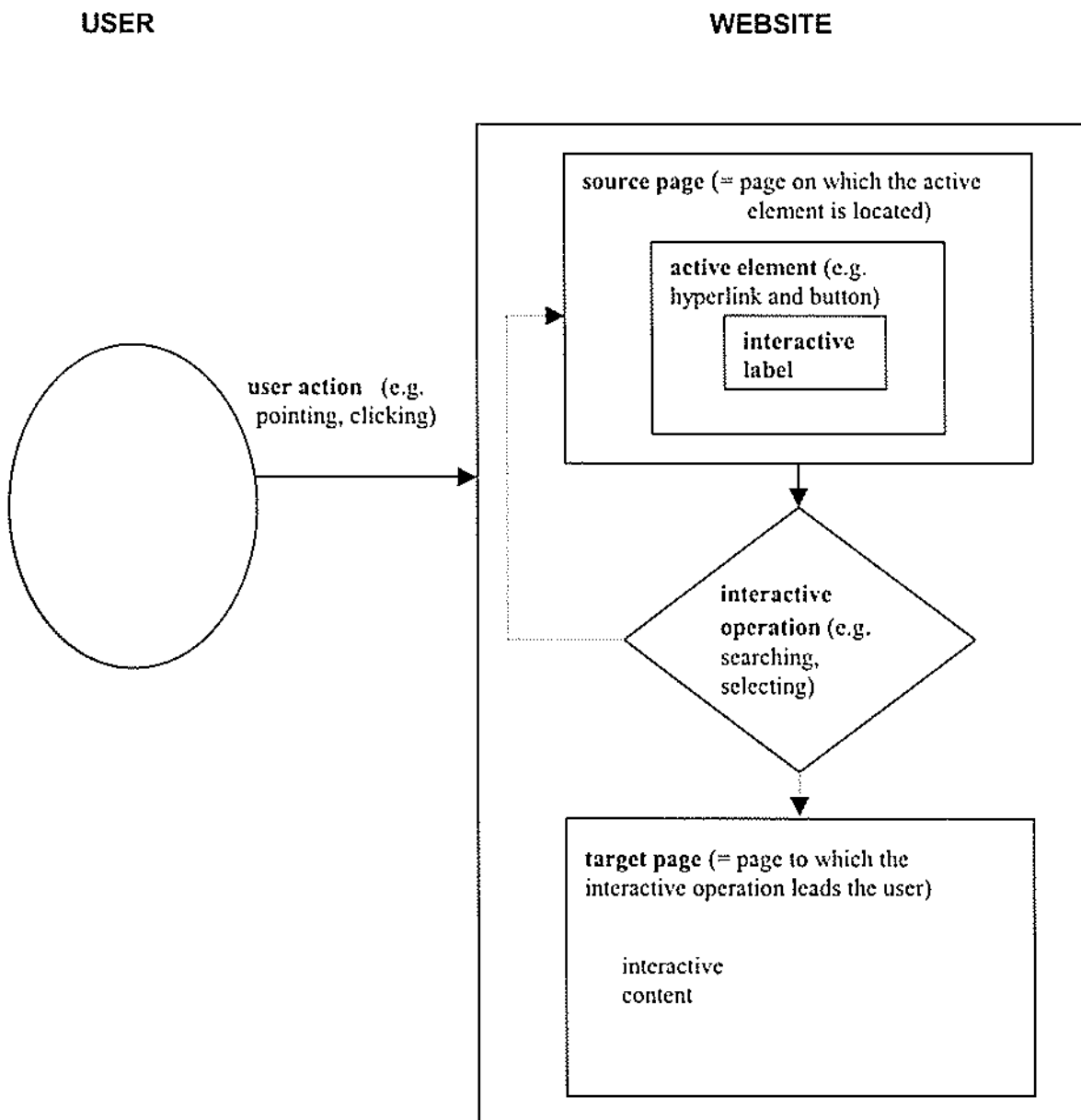
Shneiderman's (1998) object-action interface model offers an analytic viewpoint when the interface structure is examined. The analysis starts with understanding the task. The task includes the universe of real-world objects, which in the case of electronic commerce would include the stores, products, warehouses, payment and delivery systems. Users deal with these objects to accomplish their intentions, such as finding information about

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<sup>8</sup> Docuverse is a term coined by Ted Nelson referring to the integration of all documents on information networks (see Landow 1997: 34; Shneiderman 1998: 553).

products or buying them. Both objects and intentions can be decomposed into smaller units hierarchically. Interface objects and actions correspond to their real-world counterparts. The store is represented metaphorically on a computer screen and the actions that users perform can be decomposed into individual clicks and entries. The principle followed in interface design is that of virtuality: on his/her screen the user has a representation of reality that he/she can manipulate. (Shneiderman 1998: 61–65) The interface is easy to learn if there is sufficient parallelism between the real-life task elements and the interface constituents.

The interface model that is used for the current analysis is presented in Figure 4. The user reads the interactive labels in their context and interacts by pointing, clicking and keying in information. The construction and design of the active element in which the interactive label is embedded determines the type and scope of the consequences brought about by the operation of the active element. The interactive operation may involve virtual movement to another page, which may be accompanied by searching, selecting or submitting information. The web page (for a closer discussion, see section 2.3.1) on which an active element is located is called its *source page*, while the page to which the interactive operation possibly leads the user is the *target page*. The degree of interactivity required of a user on the target page may vary from reading a piece of additional information to submitting personal information or even to personal conversation with a live partner.



**Figure 4.** Primary elements of the user-website interface.

In the following the elements of user-website interaction and their meeting place at the user interface are considered in more detail. First, the components of the WWW structure are examined in 2.3 (and its subsections). This is followed by an analysis of user actions in 2.4. Next, interactive elements are described in 2.5 and target page options are discussed in

2.6. Finally the interactive operations that are used in the empirical analysis are defined in 2.7.

### 2.3 Composition of the World Wide Web

The purpose of this section is to discuss the construction of WWW content and define the building blocks or components of the WWW to the extent that is necessary for the analysis of the language of interaction. My approach is non-IT-professional, and I intend to use commonly used less technical terms for information and communication technological concepts to make the presentation easier to follow. However, this calls for definitions that are adequate and unambiguous in the present context. As has been stated earlier, the World Wide Web refers to all the resources that are accessible on the Internet via a browser. The key components of the WWW are the page and the website. Pages are the constituent elements of a website, which is also regarded as the interaction partner of the user in this study.

#### 2.3.1 Page

The term *page*, which has already appeared in the introductory sections of the study, is metaphorically used to refer to a basic element of a WWW document. A page refers to a part of a document that you can receive to be viewed at a time from a server and which you can read from beginning to end by means of a scrollbar (Alasilta 1998: 71). You can move from one page to another through links, navigation buttons or an URL address. The term *node* (in Finnish *solmu*) is also used by several authors for a WWW page (e.g. Anderson, Benjamin & Paredes-Holt 1998: 204; Kämäräinen 1998: 5; Samsel & Wimberley 1998: 12). WWW pages are usually coded by means of HTML (HyperText Markup Language) but other description languages such as XML, Java or SGML can also be used. The length of a page can vary from one line to several hundreds of lines and it can include pictures. The main part of the web content is located in the pages, which can be

illustrated as the bricks whereas hypertextual links are the mortar that holds the bricks together (Samsel & Wimberley 1998: 12).

Another term worth mentioning in this connection is *lexia*, which was introduced by Roland Barthes. Landow (1992/1997: 64) quotes Barthes' description of *lexias* as brief, contiguous fragments, units of reading into which the text is cut up. Other terms that Landow mentions in the same connection are *node* and *block*. In hypertext literature the term *lexia* is generally used to denote a piece of hypertext that will fit on one screen. In this study *lexia* is considered to correspond to web page content.

### 2.3.2 Website

A *website* is a practice-oriented everyday term for a collection of hyperlinked pages or nodes of a business enterprise or other organisation. The computer on which the website is located is called a *server*. As soon as the server is connected to the Internet, the website content is available on the web. The idea of a website comes close to the concept of a *(hyper-)document*, which is defined as an entity consisting of pages connected with hyperlinks (Alasilta 1998: 72). Järvinen (1999: 30) uses the term *hypertext corpus* to refer to a dynamic composition of text chunks that have been linked with one another. In his terminology, a *document* is a single file or chunk of text that contains hypertextual information. This corresponds to the concept of *page* in the classification of interactive elements used in this study. Similarly, Engebretsen formulates a pragmatic definition of *hypertext* as follows:

Hypertext is a concept for organising and accessing information, based on a technology, which offers the possibility of interconnecting text elements by means of electronic links. The elements can be independent documents (or nodes) or different sequences of the same document. The concept may also be used non-generically ("a hypertext"), about a specific group of text elements interconnected as described above. (Engebretsen 2000)

In this study, the hierarchic categorisation the *WWW - website - page* has been used. The concept of *hypertext* has been reserved for the more generic sense in accordance with Engebretsen's definition above.

### 2.3.3 Frames

The use of frames allows the division of the screen into independent parts, and, consequently, it blurs the clear definition of a WWW page or node. Frames are HTML operated sub-windows, which may be used in two ways. They may be resizable and independently scrollable, or they may be fixed in size and position while the rest of the window scrolls. In electronic stores, the latter method is often used to provide a company banner and main menu that remain the same on all the pages of the e-commerce site.

Nielsen (2000: 85–91) does not recommend the use of *independent frames* because they are in conflict with the idea of the page as the fundamental unit of information and with the use of frames the unit of navigation is different from the unit of view. Instead, he recommends the use of *inline frames* that nest as part of the host page and do not interfere with the navigation process (Nielsen 2000: 91). Fixed frames serving as the main menu including primary product categories have the advantage of giving coherence to the WWW pages constituting an e-store website. A frame like this provides quick access to the different departments and functions of the store, although it takes up a considerable part of screen space.

### 2.4 User actions

The web content described above forms the contextual environment in which user–website interaction takes place. In the following the modes of action at the user’s disposal for this interaction are discussed. User actions are introduced in the subsequent sections in the order of increasing user effort and empowerment. They may consist of one element (e.g. pointing), two elements (e.g. clicking) or the structure may be even more complex.



### **2.4.1 Pointing**

Pointing is the basic action that the users of interactive media have at their disposal. Pointing can be performed by means of direct control on the screen surface or indirect control away from the screen surface (Shneiderman 1998: 316). A touchscreen does not require any pointing device, but allows the user to interact by touching the screen lightly with a fingertip. Other direct-control devices include the lightpen and stylus. Indirect-control pointing devices, such as the mouse and trackball, are far more commonly used in web interaction although they require more learning, cognitive processing and hand-eye coordination than direct control.

Pointing is not an interactive action by itself if it does not produce any interactive result (Bonime & Pohlmann 1998: 119). Rollovers, for example, can be used to create interactivity in connection with pointing. When the cursor enters an active part in a text or picture, also known as a hot area, a pop-up box appears in the screen. For more information about rollover applications, see section 2.6.1. Link titles also belong to the interactive implementations of pointing. Link titles pop up when the user points at a hyperlink, and they contain information about the target of the link. Change in the shape of the cursor into a pointing hand is another example of the interactive consequence of pointing.

### **2.4.2 Clicking**

As Bonime and Pohlmann (1998: 121) express it, the mouse click is the user's ultimate control feature. Clicking always presupposes pointing except for situations when the user wants to resume a computer session after the screensaver has been activated. While pointing is used to select the relevant part of screen information, clicking accomplishes an interactive operation. As we saw in the previous section, pointing can sometimes produce interactive results such as pop-ups, but clicking gives the user a more powerful feeling of

control. By means of the mouse click, the user can choose what information he/she wants to see and what to skip. It must be added, however, that a mouse click may sometimes lead to an attack of pop-ups which are out of the control of the user.

Double clicking has been used to denote a higher degree of control than single clicking. However, its use has diminished because of its more restricted usability. The double click is more difficult to produce: the interval between the clicks should not be too long and the cursor should not move between the two clicks. Bonime and Pohlmann (1998: 122) point out that while pointing has taken on the tasks of the single click, the latter has correspondingly taken the place of the double click.

In the Windows environment the mouse has at least two buttons. The default setting of the right mouse button produces a context menu, which is a floating menu that appears when the button is clicked over a screen item. This menu increases the functionality of the interface by providing the user an opportunity to make various selections. In laptops the pointing device is usually constructed differently. Instead of moving a mouse and clicking its buttons, the user moves his/her index finger on a touchpad and taps the pad to implement interaction.

Clicking is the real action completed by the user who wants to activate a hyperlink. In many cases, this has been explicitly expressed in the link label: *Click here* or *Click this hyperlink* even if this is tautological. Clicking a button, which has been visualised three-dimensionally on the screen, gives the user a strong feeling of control. As Bonime and Pohlmann (1998: 111) state, there is only a slight dissociation in feel to pressing a real button when the user clicks a virtual button on the screen.

### **2.4.3 Dragging and dropping**

The drag-and-drop feature allows the user to grip an object and move it around the screen. The connection between the user's action and the visual feedback offered by the system is

very close (see Cooper 1995: 229). Consequently, drag-and-drop can be regarded to represent a higher level of interactivity than pointing and clicking with regard to such features of the concept as significance of action and user perception that were discussed in section 2.1.

Drag-and-drop is a complex user action, which consists of the following stages: pointing an object, clicking on the object and holding down the button, moving the mouse and releasing the button. In other words, it is a kind of extended click including mouse and cursor movement. Drag-and-drop gives the designer an opportunity to create metaphorical constructions, which enable the user to make virtual product selections, for example. Drag-and-drop is a frequently used device in graphical user interfaces and CD-ROM environments, while applications on the World Wide Web were quite rare and clumsy at the time when the data for the present study was collected. However, because of its concreteness drag-and-drop will be a powerful feature for shopping cart operations when the Internet implementation is sufficiently flexible and user-friendly.

#### **2.4.4 Keying in**

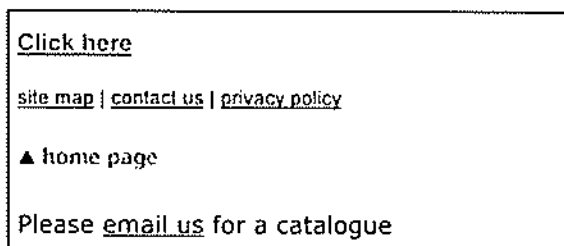
As Bonime and Pohlmann (1998: 124) quite appropriately point out, keying in information is at the top of hierarchy of user control functions because it allows users to formulate in their own words what they want the site to respond to. By means of pointing, clicking and dragging, users can only manipulate objects that have been provided by the website designer, while with the key-in feature users have all the opportunities of language at their disposal. Users may provide search terms to operate search engines, for example. Another type of keying in is required when a customer of an electronic store sends information about delivery and payment options. The content of the input does not affect the interactive process but the form of the input must be in accordance with the requirements of the interactive fill-in form.

## 2.5 Interactive elements on WWW pages

While the user actions, presented in the previous section, are the interactive tools at the user's disposal, hyperlinks, buttons and other interactive elements constitute the implements by means of which websites enable their users to interact<sup>9</sup>

### 2.5.1 Hyperlinks

A hyperlink on a WWW page is a reference to another WWW page and it is currently defined by means of HTML reference tags. It has two roles in hypertext: navigational and representational, which means that it helps a user to navigate the WWW, while it also describes the relation between pages (Garzotto, Paolini & Schwabe 1997: 9). It comprises at least the following information: 1) information about the elements that constitute the link and 2) information about the target of the link. In addition, it may include information about the target frame or target browser window or about the particular spot on a page that the link leads to. The target of the hyperlink is expressed as an URL address, which is either absolute or relative to the location of the current WWW page (Nikkilä & Malmirae 1999: 68, 69; Paananen 2001: 233–235).



**Figure 5.** Examples of hyperlinks.

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<sup>9</sup> Bonime and Pohlmann (1998) make a distinction between "the user's and writer's interactive grammar. The user actions belong to the user's syntax, whereas interactive elements are regarded as units in the website syntax.

Hyperlinks constitute the essential network structure on which the World Wide Web is based. They allow an indefinite number of computer databases to be interconnected and information to be exchanged between all (Graham 1999: 22). The hyperlink connects two nodes and it has a direction, which is determined by the relation on which the link is based (Kämäräinen & Haapasalo 1998: 5). The link (*link label* or *anchor*) can consist of a character, a word, a string of words (phrase), an icon, a picture or animation (or a part of it) or part of an application running on a WWW browser (Bonime & Pohlmann 1998: 20–21; Nikkilä & Malmirae 1999: 68–69). Bonime and Pohlmann use the terms *link* and *hot spot* interchangeably although hot spots are often associated with picture links and more specifically refer to the clickable area of the link (1998: 102). The present browsers also allow the use of link *titles*, short explanations of a link, which pop up when the user points the link label (Nielsen 2000: 60). Link titles help users predict what will happen if they follow the link and they are especially useful with non-textual link labels.

Hyperlinks can refer to any Internet resource whether it is another WWW page, text or spreadsheet document, application programme, real-time broadcasting or chat connection (Nikkilä & Malmirae 1999: 69). What is common to all these situations is the fact that the user is referred from the current location on a WWW page to a new location on the same page or more commonly to a new page. The different functions that hyperlinks may assume are discussed below.

The hyperlink is perhaps the most important of the interactive tools that web users have at their disposal. What makes it different from many other interactive tools such as scrollbars and radio buttons is the fact that the link is intimately embedded in and intertwined with the text: the user is in close contact with language when he/she interacts with the computer by means of textual hyperlinks

A hyperlink is like a signpost showing the way to a possible destination. An underlining, special font or colour and change in the shape of the cursor constitute the signpost itself whereas the link label corresponds to the text on the signpost. As regards a road signpost, the text should not be too long so that the motorists can easily read it when driving. On the

other hand, it should include enough information to allow them to choose the correct route. Engebretsen (2000: 16/26) points out that the indexical quality of the link makes it at the same time a demanding and potent tool. It is demanding, because it may easily cause frustration if it fails to fulfil the user's expectations, but potent, because it can be used to accentuate and shape the semantic dynamics of the content.

Various link taxonomies have been presented in hypertext literature. Garzotto, Paolini and Schwabe (1997: 9, 10) divide links into *perspective links*, *structural links* and *application links*. Perspective links, also known as *bias links*, provide different views about the same content: For example, on e-store websites products may be represented in different languages. Structural links are used for the organisation of the structural hierarchy of a website, while application links are chosen by the designer on the basis of their navigational and semantic features. Miles-Board, Carr and Hall (2002: 76–77) make a primary distinction between *navigation bar links* that expose the basic structure of a website and *associative links* that occur in the content regions of web pages. A similar division with regard to the position of a link in the page structure is often made between *structural* and *embedded* links. Structural linking is usually part of interface design, whereas the responsibility for the design of embedded links falls to content production (Jussila & Leino 1999: 141, 142). Nielsen (2000: 51) uses the term *structural navigation links* for links that outline the structure of the information space and allow users to go to other parts of the space. Structural links are often referred to as *hierarchic links*, because they link the parts of the website or hyperdocument in a hierarchy. Alasilta (1998: 114) has coined the term *layer link* (*kerroslinkki*) for structural or hierarchic links.

Structural links can be grouped in a menu, which opens up when it is pointed at, or they can be arranged as unstructured vertical or horizontal lists, linear structures, arrays or tables etc (see Shneiderman 1998: 568). Thus, the immediate context of link labels may consist of a heading or an instruction text before a list of structural links. In addition, the interpretation of such an interactive label is influenced by the other items on the list of links. Web design guides (see Rosenfeld & Morville 1998: 74, 75) point out that link-labelling systems should be consistent so that the user only needs to learn the labelling

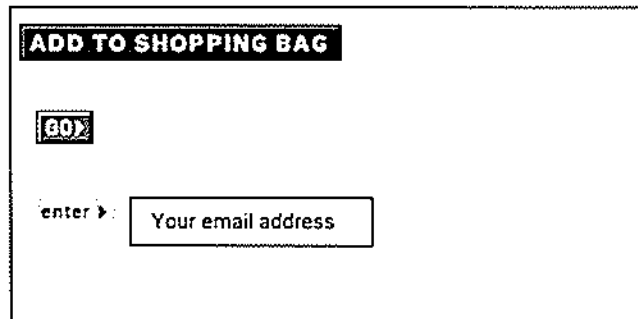
system to be able to interpret individual labels correctly. There are also structural links which do not occur on hierarchic menus or lists but which at the end of the page connect the page to the general outline of the website, for example *Continue Shopping* or *Go to Checkout*.

The main relevance of link categorisations for the current analysis can be seen in distinction between links that organise the website structure and links that provide additional information. The former type is represented by the categories of structural, hierarchic and layer links in the above taxonomies. This is the most frequent type of linking on e-commerce websites. The links are typically located on the top or the left side of the screen as a permanent frame (see 2.3.3) and they guide the user in his/her navigation process. The latter type corresponds roughly to application, associative and embedded links, which are normally found in the page content that varies from page to page. These are referred to as embedded links in my analysis.

### **2.5.2 Buttons**

In the past few years web pages have become increasingly sophisticated. The code used for the creation of pages may include not only hyperlinks leading to other parts of the website or other sites but also sequences of commands known as scripts that start a program to perform a more powerful operation. For example, browsers can interpret scripts that are created by means of scripting languages such as *JavaScript* and incorporated into the web page code. The utilisation of *applets* is another development in web page design. Applets are compact programs that have been placed as embedded objects in web documents. Users can download and run applets from within their browser interface. To play documents created by other applications, browsers may also contain extensions, which are called *plug-ins*. In addition, there are programs called *CGIs* (Common Gateway Interfaces), which allow users to send information to the web server. (Anderson, Benjamin & Paredes-Holt 1998: 269–272; Nikkilä & Malmirae 1999: 263–269) Because of these developments clickable items on a web page may represent a number of various functions.

Items that lead to operations that involve more than just following a hyperlink are generally called buttons.



**Figure 6.** Examples of buttons.

Web buttons have been named after real buttons used on electrical appliances. They are often designed as three-dimensional animated representations, which strengthen the user's sensation of control in the interaction process. Bonime and Pohlmann (1998: 110) list the following functions of the button:

- buttons offer a new set of choices
- they begin a process
- they allow other choices to be processed
- they can be used to signify that all of the other choices made previously are to be accepted
- they can be used to cancel an action that has begun
- they can act as ordinary hot spots.

As can be seen, the list shows overlap between the functions of hyperlinks and buttons. In fact, Bonime and Pohlmann are not quite clear about the distinction between the two tools. On one hand, they use the term *virtual buttons* of graphical representations of real buttons, such as the *Print* button for printing the screen content. On the other hand, they state that in essence buttons are the same as hot spots and they can act as hot spots, which seems to emphasise the external appearance of the web tool. Bonime and Pohlmann describe the role of text in connection with the tools by stating that a piece of text may contain a hyperlink while buttons have labels. The wording implies that in hyperlinks the text is the



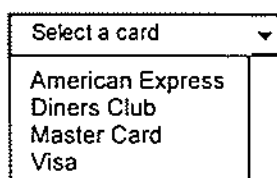
primary element in which the web tool has been embedded while in connection with buttons the text constitutes a label that has been attached to the tool.

In the framework of this study, the distinction between links and buttons is not a matter of primary consequence. Both are clickable tools, which perform interactive operations and which may have textual labels. A clear dichotomy does probably not exist. We could say that prototypical hyperlinks are navigation tools, and the essential thing from the information seeker's viewpoint is what comes next. The role of the link label is important because it should give the right clue. On the other hand, by means of a prototypical button a user performs an action where the main emphasis is on the completion of the action and not on the content of the target page. However, there are intermediary cases. Pressing the *Search* button performs a search function that does not lead to the desired pages but which, however, provides further links to the pages that the user is interested in. A button is usually accompanied by user input, which is either selected from a menu or keyed in by the user. Buttons also occur in connection with other web tools such as dialogue boxes or fill-in forms. Pressing a button often takes the user to a new page, as is the case with hyperlinks. However, the target page may only contain an acknowledgement of a completed action, or the acknowledgement appears on the current page.

Along the lines of the object-action interface model, Shneiderman (1998: 569–571) gathers links, buttons, labels, icons etc under the title "interface action handles". These action handles indicate where the users should click to invoke an action. Actions can be decomposed into a series of clicks and keystrokes, which, together with labels, should be straightforward to help the user work efficiently. From the user's point of view, it is not necessary to know whether clicking an object activates a link or starts a program. The primary goal is successful interaction.

### 2.5.3 Menus and other active elements

A *menu* is a list of choices, which can be made by pointing and clicking the selected item. Preece et al. (1994: 265, 716) define a menu as a set of options displayed on the screen where the selection and execution of one (or more) of the options results in a change in the state of the interface. Menu items can be textual or graphic. Menus often provide a selection of functions that users can perform, links that they can follow or navigational aids (Bonime & Pohlmann 1998: 131). They have the auxiliary function of facilitating and clarifying user selections. To save the valuable screen space website designers often resort to pop-up menus, which are opened by clicking the instruction text in the menu window or the adjacent icon.



**Figure 7.** A menu for credit card selection.

Hyperlinks, buttons and menus share the feature of containing clickable interactive text, which informs of either the function or target of clicking. Other interactive elements include *check boxes* and *radio buttons*, both of which allow entering user selections. Radio buttons are used for mutually exclusive choices while by means of a check box a user can input several selection criteria that are valid simultaneously. A *dialogue box* is a complex interactive element, which may contain various types of elements such as fields to be filled in, buttons, check boxes and radio buttons. Bonime and Pohlmann (1998: 115) call dialogue boxes interactive sentences or *isentences*. They point out that dialogue boxes give users a strong feeling of being in control because of their high level of interactivity allowing a number of selections often at several successive stages. On the other hand, they slow down the action.

## 2.6 Targets of interactive elements

As was stated above, hyperlinks function as signposts showing the way onwards in the hypertext reading process. Therefore, the position and content of the target page is important when the hyperlink relation is determined. As to buttons, the main emphasis of their operation is on the moment of clicking, because by clicking the button the user feeds material into the computer system to be processed. After the click the user may remain on the same page where he/she started but in most cases there is some kind of acknowledgement of the completed function to be seen. Very often hyperlink and button functions are combined: the user performs a button function and is simultaneously taken to a new web page. The target of the active element can be examined from the more technological viewpoint of user interface and from the viewpoint of target page content. The interactivity of a system may be affected by means of interface technology, which determines, for example, the position and size of the target window or the point of arrival on the target page. On the other hand, interaction on the source page gives the user certain expectations concerning interaction on the target page. These target page aspects of interaction will be discussed in the following two sections.

### 2.6.1 Windowing

An important aspect of the user interface that affects the human–computer interaction is the windowing system. This forms a basis for another taxonomy of hyperlinks in addition to the ones presented in section 2.5.1. A hyperlink typically leads the user to a new window, which replaces the present window and provides new links for navigation. This kind of link can be called a *reference link* (Kämäräinen & Haapasalo 1998: 187). A hyperlink may also open a new window on top of the present window, which either covers the whole screen or occurs as a smaller window on the screen (a *pop-up box*). This windowing system can be used to emphasise that the new page contains additional information, and links of this type are called *comment links* (Kämäräinen & Haapasalo:

188). The information of a typical comment link is read or viewed, after which the window is closed. Alternatively, the web page in the additional window may contain further linking. Not even closing the window is required of the user if the window pops up automatically when the cursor hits the link label and disappears without any specific user action when the cursor moves on (*a rollover*). An intermediate form is a temporary pop-up box, which remains on the screen as long as the mouse button is depressed (Bonime & Pohlmann 1997: 129).

Another type of a link is a *replacement link*, the link label of which is replaced by the information referred to by the link (Kämäräinen & Haapasalo 1998: 188). The user stays in the present window and on the present page. A similar interactive result is produced by the operation of a button which performs a function such as *Delete* or *Update* without taking the user to a new page.

The different ways of showing information at the user interface are summarised in the following table. The impact and durability of user interaction increases towards the end of the table.

**Table 1.** Windowing systems.

Window	Description
same window	The user stays in the same window in which the result of link/button operation is shown.
rollover	A window (e.g. link title) pops up when the user points at the active area
temporary pop-up box	A window remains on the screen as long as the mouse button is depressed
pop-up box	An additional window appears when the user clicks on the interactive label and disappears when the user closes it by clicking.
new window on top of the present window	A new window is opened on top of the present window and can be closed by the user by clicking.
new window	A web page in a new window replaces the old window, which can be accessed by the <i>Back</i> button of the browser.

The choice of the windowing arrangement of the target page is one of the variables indicating the significance of interaction (see section 2.1).

### **2.6.2 Interaction on the target page**

The least interactive type of the target window contains text that can be read or a picture that can be viewed, and the only interactive operation that the user has at his/her disposal is to close the window. Additional information may also be presented in the form of further categorisation or it may consist of a section of text followed by a collection of links. Furthermore, the main content of the target page may consist of a list of links, for example pages presenting product categorisation or different forms of customer services. The degree of interactivity is higher, because the user is expected to make a selection, and there is anticipation that another selection must be made before the requested information is accessed.

A target page showing a collection of links may also be the result of a search function. Kämäräinen and Haapasalo (1998: 10) use the term *list node* when they refer to pages containing mainly links as opposed to a *content node*. Even more consequential user interaction is required when the target page contains a *fill-in form*, for which the user is expected to provide information. Information is supplied either by pointing and clicking, by making a menu selection or by keying in information. Personal involvement and sense of interaction and empowerment is the highest when the user keys in personal data (see the classification in section 7.4.1).

### **2.7 Interactive operations**

Interactive operations refer to the functions that are completed by operating active elements, such as links and buttons. In this section interactive operations are defined and categorised for the purposes of the analysis.

Following a link or pressing a button may have different consequences<sup>10</sup> varying from just giving a piece of additional information about a topic on the screen to putting the user under financial obligations. Before clicking the item the user has inherently accepted the request indicated by the link or button. The acceptance is manifested in the click, which is a virtual representation of a real life action. With an emphasis on Laurel's (see section 2.1) aspect of significance in interaction, it can be stated that the more an interactive operation affects matters and the more it involves the user, the higher the level of interactivity is.

Jim Rosenberg (1996: 22) has coined the term *acteme* for the lowest level of hypertext activity. Following a link is the most familiar form of actemes. His investigation of hypertext structure is based on the activities provided by the hypertext for the user. Multiple actemes are combined into an *episode*, which according to Rosenberg is simply whatever group of actemes cohere in the reader's mind as a tangible entity. Episodes constitute the highest-level unit called a *session*. Rosenberg has applied this three-layer analysis to narrative hypertexts, and focuses his attention on episodes. As Tosca (2000) points out, Rosenberg seems to imply that the link's meaning constitutes itself in the next level of the reader's activity and meaning is perceived at a higher level. Tosca herself claims that there is meaning, a cognitive closure, which is created at the acteme level.

Rosenberg's acteme refers to the execution of any embedded interactive structure operation. He (1996: 23) discusses such questions as whether reading a lexia (i.e. web page content) is a single acteme or whether a scrollbar can be regarded as a within-lexia acteme without giving definite answers. Link menus also cause some complications. Rosenberg states that arguably the actual acteme is menu-choice while link-following is a higher-level unit of activity. Clicking an interactive label in the present analysis comes close to the concept of acteme with its varying degree of interactivity. However, the categorisation of *interactive operations*, which is introduced below, includes all interactive e-store operations that involve clicking an interactive label, some of which are not covered

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<sup>10</sup> According to van Eemeren and Grootendorst's (1983:57) speech act terminology these can be characterised as "consecutive perlocutionary consequences" of the utterance (see 5.2).

by Rosenberg's hypertextual analysis. For another thing, the interactive operations defined below are not the lowest rank units in the sense that they may involve several types of user actions, not only pointing and clicking.

For my analysis, I define the following four interactive operations: GO TO, SEARCH, SELECT and SUBMIT<sup>11</sup>. This categorisation reflects the level of the interactivity of interactive operations. The categories form an ordinal scale at levels of increasing significance of interactivity and they are used for analysing the relation between interactive language and interactive operations. Although the analysis is conducted in the context of electronic shopping, the categorisation of operations is applicable to different types of websites. The first two functions are navigational; they help the user find the information he/she is looking for and lead to a new page. The remaining two functions focus on the operation that is being carried out, not on the content of the target page. In practice, different functions are often intertwined. It must be pointed out that the definition and categorisation of interactive operations in this study is not based on the information technological solution that is behind the link or button. Instead, the emphasis is on the communicative and interactional aspects of hypertext activity. The categories of interactive operations are described in the following:

#### 1. GO TO

The GO TO operation typically makes the user jump to the target page or another position on the current page. Having seen the content of the target page, the user has either received the information he/she has been looking for or he/she selects a new route for his/her navigation. On e-store pages, typical instances of GO TO of the former type lead to company presentation or customer information. The latter type of the GO TO operation implies that the user must make a new selection before finding the desired information.

In fact, it would be possible to define a subtype of the GO TO operation to include hyperlinks that open a detour (or an extension), which does not stop the current

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<sup>11</sup> Names of interactive operations are printed in small caps in this study.

navigation process. This type of a VIEW function leads to page, on which the user can find only a *close* or *back* button. It usually gives additional and more detailed information about the topic indicated by the interactive label or its immediate context. Characteristically, the information to be viewed appears in an additional small window, but in some cases the new window opens up on top of the current window covering it altogether. Sometimes the function is activated when the user points to an interactive label and the new information appears in a pop-up window without clicking. The VIEW type of the GO TO operation can also start a multimedia playback, a video or audio sequence, which is run in a window of its own. The operation of *replacement links* (see section 2.6.1) could also be included in this category. They differ from the other VIEW-type links in the respect that the target page of a replacement link does not need to be closed by the user. The reason why I finally did not use VIEW as a separate operation in the analysis but included all instances in the GO TO category was the difficulty in defining a distinct borderline between the two. What combines all instances of GO TO is the provision of new information to be read or viewed.

The use of structural links for organising the range of products of an e-store represents the GO TO operation. The target of GO TO may also require the user to make a selection or submit information. Another subtype of the GO TO operation consists of *bias* (see section 2.5.1) hyperlinks, the use of which determines the views that users have at their disposal. While they make the user move to a new page, they also restrict or increase the number of pages available to the user. The choice of the interface language is a typical bias hyperlink. On e-commerce pages, bias hyperlinks may also offer tailored views for different categories of customers, such as registered customers and newcomers. Actual navigation starts only after the bias has been selected. When implementing the GO TO operation, the user cannot operate it to affect the content of the target page or information stored on the World Wide Web. The user only gains access to pages or applications in the form they are.



## 2. SEARCH

The SEARCH operation is an interactive tool for the user to find information that he/she is looking for, and it presupposes user input, which is either selected from a menu or keyed in as a search term. The operation of the function produces a list of items that meet the search criteria. Consequently, SEARCH allows the user to affect the arrangement of information on the target page but he/she cannot alter its content. Almost all larger electronic stores have a search facility on their home page to facilitate product and information search.

## 3. SELECT

The SELECT operation is more powerful than the navigational functions because it consists in adding, changing or removing information. The user can affect the content of the database and, consequently, of the target page. Adding a product to the shopping cart is a typical example of SELECT. The user may have to specify the quantity, colour, size or model of the product that he/she is going to select. The SELECT operation either requires user input given by means of checkboxes, radio buttons or menus or the selection is connected with a given item on the page, which may be based on earlier selections by the user. During the course of a session the effects of SELECT are cancellable.

## 4. SUBMIT

The consequences of a prototypical instance of SUBMIT are irreversible at least within the scope of the current session. For example, when the user places an order by clicking a button, the e-store receives the order and starts its execution. The order can only be cancelled by contacting the store via email or telephone or in another way. The submitted information may vary from product and delivery information to personal details. The more personal the submitted information is, the more the user commits himself/herself to the action. The SUBMIT operation is always accompanied by user input, which may have been entered at an earlier stage of the shopping procedure and confirmed at the moment or which is keyed in on the current page.

The above categorisation excludes functions that allow the user to manipulate his/her own computer system and interface. *Print this screen* and *Add to favourites* are examples of this type of a local function.

The characteristics of different interactive operations are summarised in Table 2.

Table 2. Characteristics of interactive operations.

Type of interactive operation	Action	User input	Target page	User anticipation
GO TO	leads to a new page	none	information, further navigation, fill-in form	I need to follow this link to find the information I need or to perform the action I want.
SEARCH	finds pages which contain the search term	search term (e.g. product name, quality)	list of links or items	I will find links to information on the desired topic.
SELECT	carries out user selection or modifies it	selection criteria (e.g. quantity, colour, size)	acknowledgement of selection	I can make a choice here, but I will be able to reconsider my selections later.
SUBMIT	sends in user input for processing	non-personal or personal information (e.g. delivery mode, name, address, credit card number)	acknowledgement of receipt of information	I am now supplying information that is needed to complete the action I have decided to carry out.

The extent of the consequences can be illustrated from a negative perspective, that is, by examining the measures that must be taken to cancel the clicking. With the VIEW-type GO TO operation, the annulment of the interactive effects of the interactive operation consists in closing the window by clicking a special *Close* button or clicking the icon in the corner of the window. When the user wants to cancel a GO TO navigation move, he/she can click the *Back* button in the browser window. Sometimes a *Back* link can be found on the web

page, or the user can resort to the navigational aids provided by the website. Similar measures can be taken to correct a SEARCH operation, or the user can simply carry out a new search. The effects of SELECT can be cancelled by clicking a special *Remove* button or by making a new selection. However, navigational moves and selections may already have been recorded by the website, which gives the e-store or other website owner information about the user's behaviour and preferences. Similarly, information that has been sent in by means of the SUBMIT operation cannot be annulled. Sometimes it can be replaced by submitting a new piece of information, but in some cases the user can cancel the effects only by resorting to other media such as mail or telephone.

In this chapter I have examined the elements of user–website communication to the extent that is necessary for the analysis of the language of interaction. These elements are in operation in all types of WWW communication. Narrowing down the view to electronic commerce, I will next examine how interactive elements are utilised in the design of electronic stores and how the interactive process is constructed in the electronic shopping procedure.

### 3 ELECTRONIC COMMERCE

In a narrow sense, *electronic commerce* or *e-commerce* can be defined as business transactions conducted by means of information networks. In broader terms, it includes the sale, payment, presentation, marketing and distribution of services, goods and information as well as technologies that allow these functions (Kettunen & Filenius 1998: 11). Anckar (2002: 3–5) discusses a number of different definitions of e-commerce and adopts the broader definition on the ground that consumers may utilise the services of electronic commerce without actually finalising the transaction online. The term *electronic commerce* has in many contexts (see Puhakainen 2001: 16–18; Turban & King 2003: 3) been replaced by *electronic business* or *e-business*, which encompasses the internal processes of a business. In other words, e-business is not only concerned with buying and selling, but it is "the overall strategy of redefining old business models, with the aid of technology, to maximize customer value and profits" (Kalakota & Robinson 2001: 5). As the present study concentrates on interaction between commercial websites and their customers, and the focus is not on the internal business processes, the term *electronic commerce* will be used in this work (cf. Anckar 2002: 5). Moreover, the viewpoint is primarily that of the customer's, and, therefore, the everyday term *online shopping* will be used synonymously with *electronic commerce*. Online shopping is, in fact, an integral part of the scope of electronic business and often represents it in people's minds.

The present study concentrates on online shopping on the Internet, or more exactly on WWW pages available on the Internet, although the notion of interactive texts is also applicable to all interactive media. The role of television is likely to change when the digital TV gains more popularity. A new form of electronic commerce that is gaining ground is mobile e-commerce, which means electronic commerce over wireless

telecommunication networks. The next few years will show whether mobile e-commerce or *m-commerce* will contribute to the proliferation of electronic business transactions.<sup>12</sup>

### 3.1 E-commerce compared with traditional shopping methods

Electronic commerce provides a number of new opportunities for developing shopping experience especially in the areas of product presentation and retrieval. On the other hand, the online shopping environment lacks some of the features that are present in a traditional store. The social elements of shopping differ from the customary face-to-face contacts, because there is no visible presence of other shoppers or employees. Similarly, some atmospheric qualities such as smells, sounds and lighting effects cannot be utilised or have not been utilised to the full. The traditional store designer has the opportunity of appealing to all senses of the shopper, whereas at the moment the website designer is constrained to predominantly visual resources on the screen (Eroglu et al. 2001: 178, 179). Several analogies can be found between physical stores, mail order and electronic stores. Spiller and Lohse (1998: 30) have listed the comparisons presented in Table 3 below.

Like mail order, online marketing resorts primarily to visual stimulus. In fact, little spoken discourse is needed in self-service stores. Greeting and thanking the cashier are often the only words uttered during the shopping procedure. The shopper is dependent on written information that is contained in signs, posters, price tags and product descriptions. In stores that provide sales clerk service the situation is different, and the discourse usually follows the established shopping script (see section 5.1.4).

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<sup>12</sup> For discussion about the added value of mobile commerce in e-commerce, see Turban & King (2003: 332-380)

**Table 3.** Comparisons between retail stores, paper catalogs and online stores.

Retail store	Paper catalog	Online store
Sales clerk service	Printed product descriptions, sales clerk on the phone, information pages	Product descriptions, information pages, gift services, special search functions
Store promotion	Special offers, lotteries, sale catalogs	Special offers, online games and lotteries, links to other sites of interest, appetizers
Store window displays	Front and back cover, copy quality, product arrangement	Catalog home page
Store atmosphere	Copy quality, graphics, product arrangement, perceived image	Interface consistency, catalog organization, interface and graphics quality
Aisle products	Products on first 2-4 spreads and the middle spread	Featured products on each hierarchical level of the catalog
Store layout	Page and product arrangement	Screen depth, browse and search functions, indices, image maps
Number of floors in the store	Catalog organization	Hierarchical levels of the catalog
Number of store entrances and store outlets/branches	Frequency of mailings, number of unique catalogs mailed	Number of links to a particular catalog
Checkout cashier	Order form, 1-800 phone number	Online shopping basket or order form
See and touch of the merchandise	Limited to image quality and description	Limited to image quality and description, future potentials for sound and video

(Spiller &amp; Lohse 1998: 30)

When analysing the e-commerce web page environment, Eroglu et al. (2001: 179, 180) make a distinction between high and low task-relevant environments. The former includes all verbal or pictorial site descriptors that can be seen on the screen, which facilitate and enable the consumer's shopping goal attainment (e.g. product descriptions, price, terms of trade, pictures of products and navigation aids). Low task-relevant environment refers to information that is relatively inconsequential to the shopping task (e.g. slogans, colours, fonts, amount of white space, icons, pictures other than the merchandise, indicators of

secure transactions). From the viewpoint of the present study, the distinction between high and low task relevance is useful, because it reflects the differentiation between the minimum route or basic script of the shopping procedure and the abundance of all links and functions available to a web user who is navigating the e-store website. This distinction underlies the composition of corpora A and B, which are introduced in section 6.2.

One of the greatest contributions of a hypertextual structure to shopping lies in the fashion it facilitates product search. Products are not restricted to a single physical location but they can be accessed from several angles. In *Cluetrain Manifesto: The end of business as usual*, a book forecasting the future of networked business, Weinberger describes the hyperlink revolution as follows:

Ever since Aristotle, we understand what something is by seeing what category it's in and how it differs from other things in that category. This knowledge hierarchy constrains things to a single category. In a hyperlinked world, however, things can be understood by reference (via metaphor) to other things – and can be like more than one thing at a time. (Weinberger 2000: 121)

Products can be categorised according to several criteria simultaneously on the basis of concept systems that Nuopponen (1994: 233) call *heterarchic* systems in which several concepts can function as superordinates depending on the viewpoint.

Timmers (1999: 9–19) lists some of the key characteristics of the Internet and the World Wide Web and their significance for electronic commerce. Timmers looks at the matter from the viewpoint of business-to-business commerce but many of the features that he has listed are relevant to the assessment of the communicative aspects of electronic business-to-consumer trade. Some central features brought out by Timmers are discussed in the following.

#### *1. Available and ubiquitous*

The utilisation of electronic networks increases the *availability* and *ubiquity* of services offered. An electronic store is open 24 hours a day and available wherever the user has Internet access. Most traditional stores close in the evening, but electronic

commerce offers customers an opportunity to go shopping when they feel relaxed at home and perhaps have more time to concentrate on the shopping procedure. On the other hand, it is possible to make quick purchases in the course of the day without having the trouble to go to the shop. Communicatively, this means that there should be both clear short routes to carry out purchases and opportunities to access a sufficient amount of background information.

### 2. *Global and local*

Electronic commerce can be characterised as *global* and *local* at the same time. A worldwide range of stores opens up for the consumer. However, access to a store does not guarantee delivery to all parts of the world. On the other hand, the web provides opportunities for localising business and reinforcing local business. From the viewpoint of business communication, globalisation presupposes multi-language user interfaces. It can also be assumed that in many parts of the world the social and educational level of the customers who can access the Internet is higher than the average. A business-to-consumer website should, however, be able to serve customers with varying levels of computer literacy.

### 3. *Digitised*

The Internet and its communication systems process information in a digital form, which means that it can be easily stored, transmitted and processed. *Digitisation* makes the convergence of communications, information processing and media possible. Products that can be reproduced digitally and delivered electronically can be sent to the customer with hardly any additional cost. The benefit of digitisation to e-commerce communication can be seen in the fact that the WWW pages can easily be edited and updated. On the other hand, frequent changes in the website content and in website architecture in particular may confuse users and decrease their sense of command.

### 4. *Multimedial*

*Multimedia* enriches the opportunities for marketing. Text and pictures can be accompanied by sound, animation and video. Although the main informational content



of electronic stores is still in the written linguistic code, the multimedial features of the WWW pages are likely to assume a more important role in product presentation in the future.

#### 5. *One-to-one*

*One-to-one* marketing is another characteristic of electronic commerce. Information about the customer can be stored on the computer by means of a *cookie*, which refers to a piece of data that a website sends to the user's computer and uses it to identify returning visitors (Keskinen 2000: 172). Earlier transactions and clicks can be stored, and the seller can use this information to personalise user interface and marketing. For example, *Amazon.com* offers its users a list of recommendations on the basis of earlier purchases. The store can also offer the user a service known as *one-click purchase* to simplify the shopping procedure. This automates and abbreviates the shopping script in an essential way.

#### 6. *Interactive*

Opportunities for interaction combined with the personalisation of marketing efforts and services make the Internet a very effective medium. *Interactivity* is the key issue in the present study. Suffice it to say in this context that electronic commerce provides a number of solutions that can be substituted for the forms of personal contact the extent of which varies a great deal in different types of traditional shops ranging from village shops to hypermarkets.

### 3.2 Types of e-stores

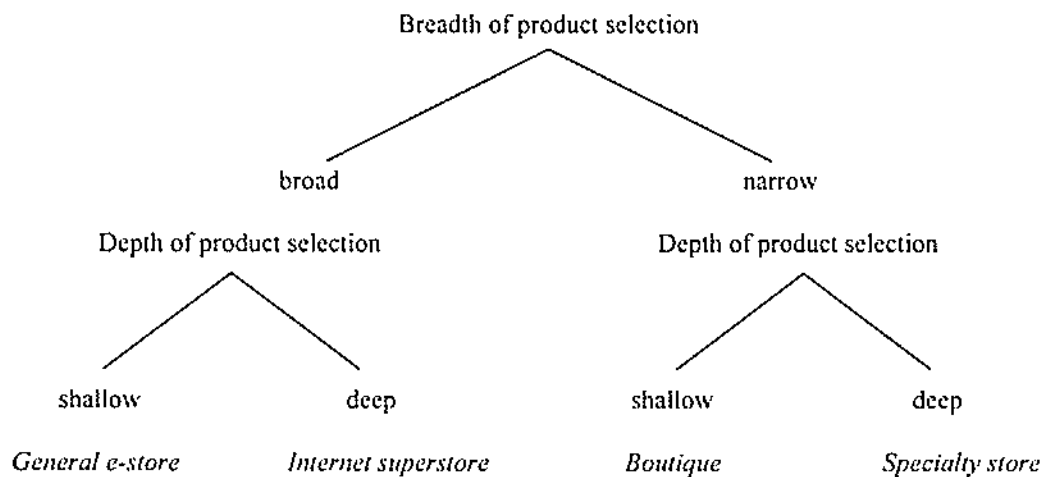
The two main types of electronic commerce are *business-to-business* and *business-to-consumer* trade. Although business-to-business electronic commerce accounts for the larger part of the business<sup>13</sup> (see also Timmers 1999: 5–6), the focus of this study is on

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<sup>13</sup> According to the UNCTAD report (2002), business-to-business trade amounts to 95 % of all e-commerce in most estimates.

business-to-consumer e-stores, which also provide the empirical material for the analysis. More specifically, the target stores represent electronic commerce in physical goods. This differs from electronic commerce in information products (i.e. products in a digital form) in the respect that in the latter case the whole value chain from production to the end user can be handled electronically (Tuunainen 1999: 20). In fact, the form of e-commerce depends on the degree of digitisation on three dimensions. In the purest form of e-commerce the product (or service) sold, the process and the delivery agent (or intermediary) are digital (Turban & King 2003: 4).

Electronic stores can also be classified on the basis of the breadth and depth of the product selection (see Keskinen 2000: 79).



**Figure 8.** Classification of electronic stores according to product selection

Stores that offer a wide range of products with a few options in each category are general e-stores. They can be characterised as “click-and-mortar stores” (Turban & King 2003: 46), because the products of the stores correspond to the goods available in physical brick-and-mortar stores. Most of the stores in the empirical material, for example *J.C. Penney*<sup>14</sup> and *John Lewis* represent this type of electronic commerce. If the product range is both

broad and deep, we can speak of *Internet superstores*. Because the number of items is huge, these stores do not stock the products but deliver them direct from the supplier to the consumer. In the last few years, *Amazon.com* has developed in this direction. Stores with a narrow selection are either *boutiques* specialising, for example, in a particular brand or *specialty stores* offering a wide assortment and expertise. The gift shops among the target companies vary from boutiques with a relatively specialised selection, for example *Eziba* selling handcrafted products or *Sundance Catalog Company* based on the ideology of the *Sundance Community*, to stores with a range approaching that of a department store such as *Gifts.com*.

The number of buyers and sellers can vary on electronic marketplaces. Systems with one buyer can be found in business-to-business trading. In the case of one buyer and one seller the marketplace can constitute a closed extranet system. Several sellers can also be linked with one buyer when raw materials or components are supplied to large industrial firms (Keskinen 2000: 83). In business-to-consumer trade the most common model represents the type with several buyers and one seller. Some electronic malls also provide the framework for several buyers and sellers operating in an integrated system. However, in many cases the portal is the only thing that the stores share and all the other operations are handled independently.

The extent to which businesses make use of the opportunities offered by the World Wide Web vary a lot. Kettunen & Filenius (1998: 36, 37) use a *six-stage model* to describe the development of commercial network services:

#### *1. Absence*

The company is not aware of the opportunities that Internet utilisation offers or does not see any business potential in it.

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<sup>14</sup> The URLs of electronic stores occurring in the corpus are listed in Appendix 1.

## *2. Presence*

The company has a website (home pages) on the Internet. The website is a short introduction of the company and resembles a brochure in an electronic form. Contact information has been given but the site does not offer a direct email contact.

## *3. Product information*

In addition to a static company introduction, the website offers information about the products of the company. There is a direct email link but it is not addressed to any specific person.

## *4. Sales and interactivity*

The company uses the Internet as a sales channel. Customers can place orders via the Internet and detailed information about the products and other services of the company is offered. There are several email addresses for various situations and FAQ (frequently asked questions) lists are also included.

## *5. Integration of internal information*

The network services of the company are integrated with its production and management systems, such as stock control, ordering and financial management.

## *6. Fully integrated services*

All primary business operations of the company make use of network technologies. This combination of the intranet, extranet and Internet supports internal and external company operations and communication.

The electronic stores constituting the corpus of this study have attained at least stage 4 in the above categorisation. The integration of all internal operations in an e-business system is not always visible at the website. However, many of the stores show the availability of a particular product at the moment of ordering, which indicates that stock control is an integral part of the system and stage 5 in Internet utilisation has been attained. On the other

hand, some of the Finnish target companies do not provide an integrated Internet-based payment system but resort to cash on delivery payment.

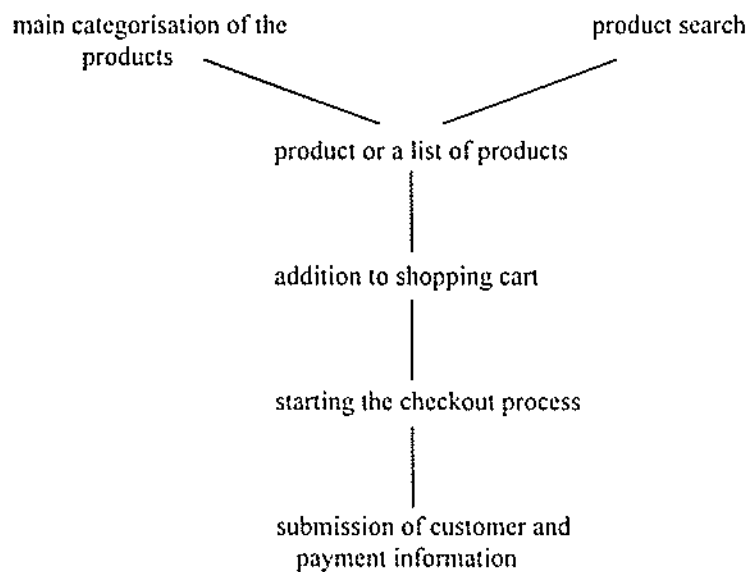
### 3.3 Structure of e-stores

The visible part of the electronic store is the user interface, which is also the focus of interest in this study. The user interface is the topmost layer of the complex system of hardware and software needed for the implementation of e-store application. Reynolds (2000: 24) uses a model that consists of the following three layers:

1. display of information
2. business operations
3. database.

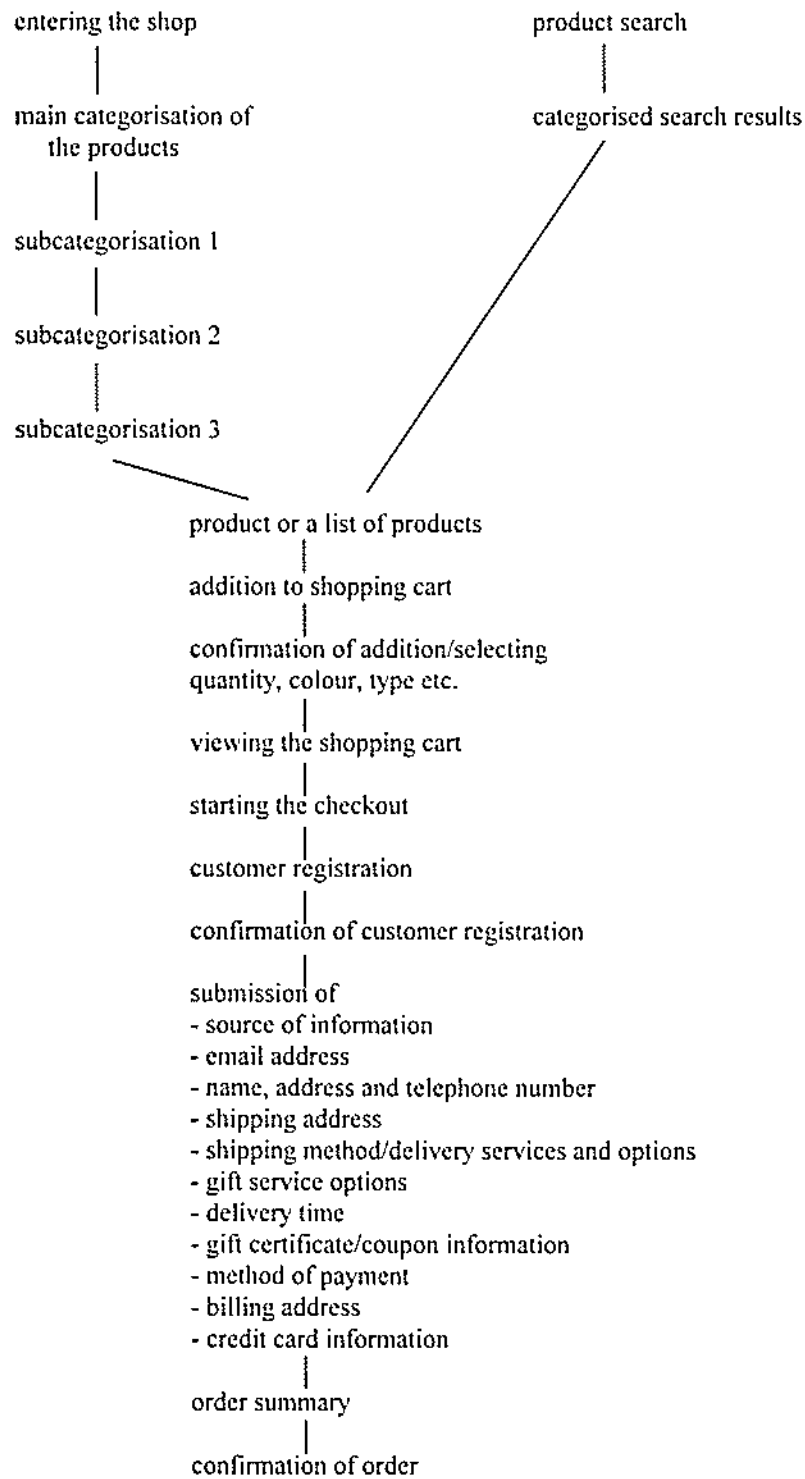
The uppermost layer displays the user interface. The database layer contains storages of customer and product information as well as the editorial content of the store, while the business operations layer consists of facilities for the management of customers, orders and payments and for product search. The layer for the display of information cannot converse with the database layer without taking the rules and limitations of the business operations layer into consideration. The main elements of the user interface are the *product catalogue, shopping cart, order and payment systems* as well as *customer services*, which often include *helpdesk* and *FAQ services*.

The websites of 22 British and American electronic stores I analysed for this study had the basic structure shown in Figure 9. These elements that also form the configuration of the interactive discourse between the website and the user could be found in all target stores.



**Figure 9.** Stages of online shopping.

In fact, the basic structure may sometimes be even shorter. Featured products can be added to the shopping cart straight on the home page, and customer information can be submitted at the shopping cart stage. On the other hand, the website structure is usually more complex and contains more steps. The number of clicks needed for completing the shopping procedure as a new customer varies between 6 and 17, and the average is 9.9 in the empirical material of the study. Figure 10 presents a combination of the various stages at the websites of the target stores.



**Figure 10.** Stages of online shopping represented by separate clicks/pages.

Customer registration prior to check-out was explicitly required by seven stores, while five stores offered optional registration, and in ten stores the check-out procedure was not preceded by a specific registration sequence. In four stores the initial page constituted

**Table 4.** Frequency of steps represented by separate clicks/pages in the shopping procedure.

Separate steps in the shopping procedure	Frequency (n = 22)
entering the shop/decision to shop	4
main categorisation of the products	22
subcategorisation 1	18
subcategorisation 2	10
subcategorisation 3	2
product or a list of products	22
addition to shopping cart	22
confirmation of addition/specifying product details	2
viewing the shopping cart	9
starting the checkout	22
customer registration	7
submitting the email address, name address and telephone number	22
submitting the source of information	2
submitting the shipping address	6
submitting the shipping method/delivery services and options	7
submitting gift service options	3
submitting the delivery time	1
submitting gift certificate/coupon information	1
submitting the method of payment	1
submitting the billing address	1
submitting credit card information	22
confirmation of order	8
product search	22
categorised search results	3



entrance to the store, whereas in the rest of the stores the first page opened up direct as the main page of the store with product categorisations and store information. The frequency of the separate steps represented by their own pages at the websites of the target companies is summarised in Table 4.

In electronic shopping a complete shop or department store must be squeezed into a small computer screen. An e-commerce website should meet the requirements of effective sales and marketing and good information architecture at the same time. A company's website can be referred to as its electronic storefront. According to Turban and King (2003: 45), a storefront usually includes the following elements

- electronic catalogues
- a search engine that helps the user to find products in the catalogue
- an electronic shopping cart for holding items until check-out
- e-auction facilities
- a payment gateway where payment arrangements are made
- a shipment court where shipping arrangements are made
- customer services, including product information and a register for warranties

All these services, except e-auction facilities, were represented in the target electronic stores. A search facility was found in all English-language websites and in 14 Finnish websites out of the total number of 22. The home page is the entrance to the website and provides access to various services, which, besides the ones listed above, often includes a link to a sitemap, FAQs, order status and gift registry.

### **3.4 Interaction and electronic shopping process**

The different facets of interaction and interactivity were discussed in section 2.1. In the context of the present discussion, interaction is seen as communication in an interactive system that is based on digitisation such as an electronic store on the WWW (cf. Puhakainen 2001: 61). Interaction in e-commerce can be categorised according to the level

of human involvement and synchronisation as presented in Figure 11 (Puhakainen 2001: 62).

		Mode of interaction	
		Asynchronous	Synchronous
Level of human involvement needed from the e-store's viewpoint	High	e-mail newsgroups forums	face-to-face phone (chat)
	Low	automated support services	interactive (for example WWW-based) services

**Figure 11.** Types of interaction according to the level of human involvement and mode of interaction.

The focus of this study is on the type of interaction represented by the bottom right-hand box in Figure 11. In other words, an overwhelming majority of the interactive labels that are the object of the study are found in active elements that trigger an immediate programmed response. There are, however, a few instances where the operation of the active element leads to human-to-human interaction via e-mail or chat.

According to Helander and Khalid (2000: 613), in electronic shopping the purchase consists of five decisions:

1. the decision to visit
2. the decision to navigate
3. the decision to buy
4. the decision to pay and
5. the decision to keep.

The significance of interaction increases as the customer goes on with his/her shopping procedure through the five steps of decision. This five-step decision model can be compared to customer involvement models that are based on the cognitive – affective –

conative sequence, such as AIDA (attention – interest – desire – action), which was first introduced by E. K. Strong (Laaksonen 1994: 72). The *attention* of the customer is attracted on web pages or in advertising in other media, which makes the user visit the website. The home page has a crucial role in arousing the user's *interest* and persuading him/her to navigate the pages. The *desire* to buy a product is created at the navigation phase and may be expressed in the form of trying the shopping cart function, which is also an expression of user *action*, which is completed in the checkout procedure.

The focus of this study is on the three steps in the middle in Helander and Khalid's model. The first step, the decision to visit a website, precedes and is a prerequisite for an interactive shopping procedure in the electronic store. The prospective customer enters the shop either by clicking the WWW address that he/she has seen in advertising or received from another source, by using an Internet search engine (e.g. Google, AltaVista) or by clicking an outbound link on another website. Step five, on the other hand, follows the interactive session with a time-span. Steps two, three and four represent immediate interaction between the user and website, and the principal tools that the customer uses in this interactive process are hyperlinks and buttons. There is a clear correspondence between these three steps and the interactive operations GO TO/SEARCH, SELECT AND SUBMIT. A further parallel can be drawn from the development of customer relationship where the following stages can be identified (Keskinen 2000: 94):

- member of the target group
- prospect
- customer
- regular customer
- lost customer.

A web user who makes a decision to visit an e-store site can be regarded as a member of the target group of the store. When the user shows interest in the range of the store by starting to navigate and look for information about the products, he/she becomes a prospective customer who also may try operating the shopping cart function. A prospect becomes a customer when he/she has made his/her first decision to pay for a product

he/she has selected. A regular customer shows a preference for shopping with this particular e-store in the form of repeat orders and acts as its proponent.

The shopping procedure described above can be divided into two main phases: product search and product selection/checkout. These can be referred to as the episodes of a shopping session in accordance with Rosenberg's terminology (see section 2.7). They form independent stages in the process. A web user may only want to find information about a product. Having found this information, he/she finishes the session, which consists of this product selection episode. After the user has made his/her decision to buy a product by clicking the *Add to cart* button, a new episode starts. In fact, this latter phase could be divided into two sub-episodes: product selection or shopping cart phase and checkout phase. As was noted above, the customer makes a new decision to pay for the product after he/she has selected it. At each of these phases there is a possibility that the user discontinues the shopping procedure. The episode structure will be reverted to in section 5.1.4 on frames and scripts. It is one of the criteria according to which the empirical material of the study has been collected and organized (see section 6.2).

#### 4 ELEMENTS OF LANGUAGE OF INTERACTION

In the second chapter human–computer or user–website interaction was examined from the viewpoint of the opportunities that the technological environment offers and the third chapter dealt with the communicative context of electronic commerce. Now it is time to turn to the study of the role of language in interaction. The current chapter focuses on topics on the borderline between the elements, tools and functional purposes of interaction and linguistic research. First, the unit of analysis, the *i-text*, is defined. As was stated in the introduction, online shopping can be seen as conversation between user and website. Consequently, a few words also need to be said about discourse structure and its relevance to the current research problem.

The interpretation of hyperlink labels (also known as anchor texts) and menu or button labels is not only affected by their internal linguistic structure and content but also by the co-text and other contextual features of the source page of the active element. In addition, the content of the page that the operation of the active element leads to, the target page, must be examined. Tosca (2000) states that links force us to make meaning both before and after “travelling” them. In other words, the sequence of interaction must be taken into account in the interpretation of interactive labels.

The results of this analysis provide a basis for the formulation of a set of principles that describe the linguistic manifestations of interactive labels in relation to different interactive consequences of the operation of the active elements. In fact, we are here dealing with relations between two sets of rules. Linguistic grammar describes the syntactic-semantic structure of interactive labels, while the other array of rules interrelates user actions, such as pointing, clicking and keying in, with interactive operations, which may involve, for example, moving to a new page, making a selection or submitting information. In accordance with the analogy of linguistic grammar, user actions can be

said to represent the syntax of the rules concerning interactivity, while the interactive operations represent the semantic level (cf. Shneiderman 1998: 54). The latter set of rules could be characterised as the grammar of interactivity<sup>15</sup> operating in the new dimension allowed for by hyperlinks and other active elements on the WWW page. In accordance with the objective of the study expressed in section 1.2, my focus is on how the grammar describing the syntactic-semantic structure of interactive labels reflects the ways new interactive structures are constructed on the foundation of the linguistic information manifested in interactive labels.

#### 4.1 *I-text*

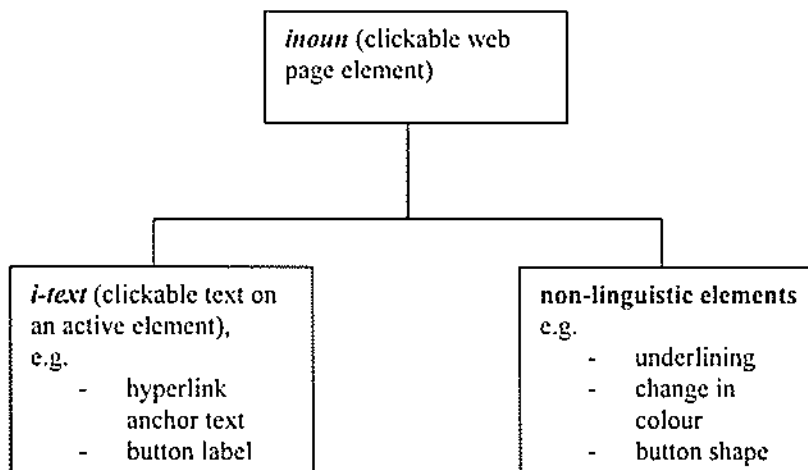
So far terms such as interactive labels, hyperlink anchor texts and button labels have been used in this study, but for the purposes of the analysis I define all these clickable stretches of language as *interactive texts* or *i-texts*. As has already been stated in several connections, on web pages, strings of text, whether they are single words, phrases, clauses or even longer units, may be embedded in interactive elements<sup>16</sup>, such as hyperlinks that allow user navigation, buttons that offer the user an opportunity to search for, select or submit information or menus that are instruments for user selections. The purpose of these text elements is to help users decide whether it is worth their while to operate the element by clicking it and to inform them of the outcome of the operation of the active element. In their guide to writing for interactive media, Bonime and Pohlmann (1998: 101) call these elements *inouns*, but they point out that *inouns* do not have to be nouns or even words in the traditional sense. My object of analysis comes close to the concept of *inoun*, but I will delimit my study to labels that consist of linguistic code. I coined the term *i-text* to avoid the associations of the term *inoun* with the traditional grammatical category. The *i-text* can

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<sup>15</sup> This can be compared to the idea of *hypertext grammar* that Engebretsen (2001: 185, 186) uses in his investigation into the information structure at the hypertext level. He parallels hypertext grammar at the hypertextual level with text grammar at the text level. Engebretsen's hypertext grammar aims to describe the structure and coherence in a grammatical system the units of which do not consist of words, clauses or paragraphs, but of nodes, that is texts, pictures and video clips. The structural fusion of visual and verbal sign systems reflect the information structure of hypertext, which is also influenced by technological aspects.

<sup>16</sup> Interactive elements are also known as *affordances* for user action (Price & Price 2002: 71).

be described as the textual label of an *inoun*, while all non-linguistic features of the *inoun* are regarded as elements of the contextual background of *i-texts* in this analysis. Figure 12 illustrates the concept relation between *inoun* and *i-text*.



**Figure 12.** *I-text* in relation to *inoun*.

In section 2.1, one of the characteristics of the interactive media was found to be that they respond dynamically to the user. *I-texts* have an important directive role in this interaction. An *i-text* can be accompanied or replaced by an icon, but, as was stated above, the target of this study is textual labelling. Technically *i-texts* can be produced in different ways, for example in the form of strings of HTML text or as graphical representations. In this context the main issue is that both the sender and the addressee perceive the labels as texts that can be processed linguistically. On a web page, *i-texts* co-occur with various other items, such as graphical icons, pictures and multimedia links. The user can manipulate these items by means of active elements, which are sensitive to user actions. In other words, he/she carries out interactive operations. By pointing, clicking, dragging or keying in information, users can operate hyperlinks and other active elements in order to perform the operations they wish. In Bonime and Pohlmann's terminology the active elements constitute *iverbs*, the operation principles of which in relation to *inouns* can be

described in what they call grammar of interactivity.<sup>17</sup> *Iverbs* correspond to *active elements* in the terminology of the current study. I will revert to the question of formalising the relations between *i-texts* and interactive operations in section 4.5.

Interactive labels may have different originators. Most of them are created by website designers when they locate the necessary interactive elements on web pages. When ready-made software is used, the elements may have been labelled by the programmer, but in many cases labels can be authored. In some cases the operation of an active element requires user input that complements the *i-text*. For example, in connection with a *Search* button the user has to key in a search item such as product name or type, catalogue number or colour. The interrelations of the *i-text* and its co-text will be discussed in section 4.3. The *i-text* may also consist of a menu selection; users can focus their search on certain given product groups or define their selection on the basis of given options.

As was pointed out in section 2.2, what we can see on a web page consists of content and interface. Web text can act in both roles. *I-texts* belong to the type of web text that is characterised by interface properties because they are associated with interactive elements or affordances that enable user interaction. (Price & Price 2002: 71–72) For example, the link label *Beds* conveys content by indicating the type of products that a furniture store has for sale. At the same time it acts as an interface element, a hot spot that provides the user with an opportunity to find more information about beds. The empirical analysis will show how this “interfaciality” is manifested in e-commerce *i-texts*.

When the role of *i-texts* in user–website communication is discussed, the topic can be approached from two directions. It is possible to start examining the *i-text* itself and proceed to the surrounding context when determining its interactive function. The other alternative is to approach the *i-text* from the web page content as a whole and to ascertain the guiding role of the *i-text* from the viewpoint of its context. The latter approach receives support in web writing and design literature. In their usability study Morkes and Nielsen

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<sup>17</sup> According to Cooper (1995: 217), interface designers often refer to the interface operation as the *verb* and the target of target of the operation or operand (see section 5.5) as the *object*.



(1997) found out that 79 % of the test users scanned a new page they came across and only 16 % read word-by-word. Icons, colours that differ from the background, underlinings, animations or other non-linguistic elements and features guide the user's attention and lead him/her to focus on certain spots on a page (Price & Price 2002: 123, 124; Wodtke 2003: 204, 205). Only then does the user read the text that may be embedded in an active element looking for further information as to the continuation of his/her navigation process. In this way the interpretation of an *i-text* is dependent of the web page content and the stage of the navigation session.

#### **4.2 Co-text of *i-texts***

The *i-text* and the active element in which it is embedded are never isolated items on a web page. Instead, interactive texts are integrated with their surroundings to a varying degree and must be interpreted against the background of the domain that the website represents and the theme of the current page. The home page of a business or organisation, for example, may contain a large number of various items all of which belong to the domain of the site but are not equally closely connected with one another. In order to be able to analyse the relations represented by interactive texts it is essential to know about the connection of an *i-text* with its immediate co-text on the page and the whole source page. In addition, the hypertextual aspect also calls for the consideration of the target page, in other words the relation between the *i-text* and what it leads to. The co-text of the *i-text* can be text items that users produce themselves by keying in the required input, items that appear on the basis of user interaction or items users can simply read on the page.

##### **4.2.1 Language elements created by the user**

Interaction with a website may require user input. When a user wishes to carry out a search within a website or use a search engine to find certain information on the whole World Wide Web, he/she needs to enter a keyword or a combination of keywords. Similarly,

input of recipient information is needed at the checkout phase of an electronic purchase. User input is often intimately connected with the operation of buttons. The “signpost” function of the *i-text* is less central than in connection with hyperlinks. For example, the button label of a product search engine can be replaced by an arrow or another icon (see section 7.1.1).

The input consists of product details: names, types, models, colours, sizes, etc. At the checkout phase, users may have to key in their selections concerning the mode of delivery and payment and submit personal information, such as name, address and credit card number. The more personal information the user is expected to key in, the more significant the interaction can be considered. Button manipulation does not, however, always require input. By pressing a button, the user can, for example, remove an item from his/her selections, cancel his/her input or confirm earlier selections.

#### **4.2.2 Language elements produced by pointing and/or clicking**

There are also co-textual elements which are provided by the website, but to make them appear on the screen the user has to interact either by pointing the *i-text* or by both pointing and clicking it.

A *link title*, which pops up when the cursor hits the link or button, is an essential part of the textual context of a link or button label. Nielsen (2000: 59–62) warmly recommends the use of link titles because of the increased navigation usability, but at the same time he points out that the link anchor (*i-text*) and the text that surrounds it should be understandable to the user even if he/she does not see the link title. In Figure 13, the cursor has hit the *Go* button that represents a SEARCH operation. The cursor has changed into the form of a pointing hand and a pop-up link title *search* has appeared.



**Figure 13.** Link title guidance in connection with a search facility.

Another source for information about the interactivity of a system consists of the *status bar text* at the bottom of the computer screen. I chose not to include status bar texts in the scope of my systematic analysis. Status bar texts are physically farther away from the active element and *i-text* and less conspicuous than other contextual elements because they are outside the browser main window. My personal experience is that as an online shopper I do not follow the content of the status bar as actively as the elements that are more intimately connected with the *i-text*. The status bar usually indicates the URL address of the target of the hyperlink that is being pointed to or Java script information about the button that the user is about to click. However, users can be taught to read the status bar if it contains information that they feel is worth their while to process. When the user clicks, for example, the *House & Home* link on the home page of the *QVC* website, he/she can read the admonition or instruction *Go to the QVC House & Home department* in the status bar, which in this case has adopted the function of the link title. Another type of the rhetoric use of the status bar is represented by the home page of *Presentco*, which contains the aphorism *It's the thought that counts*.

A third type of the co-text of an *i-text* that requires pointing is a *pop-up menu*, which is often used in product categorisation. When the user points at an active area, for example a name of a product category, a menu appears displaying a collection of links leading to subcategorisations.

Both pointing and clicking are required, when a web page asks the user to make a choice using a *drop-down menu*, which is a box with a downward arrow next to it. The user can activate the menu clicking either on the text in the box or on the arrow. The clickable text in the box falls within the definition of an *i-text*, even if the menu is only an auxiliary device to clarify a choice.

#### 4.2.3 Language elements provided by the website

The textual content that the user can see on a web page without any further interaction constitutes a gradience of co-text, the connection of which with the *i-text* varies according to the physical and syntactic closeness. The embedding sentence of an embedded link is very closely associated with the *i-text*, while in the case of an instruction text in connection with a link or button the linkage is somewhat less strong. A title above a list of links is even further, and the other extreme consists of *i-texts* that do not have any contentual connection with the source page.

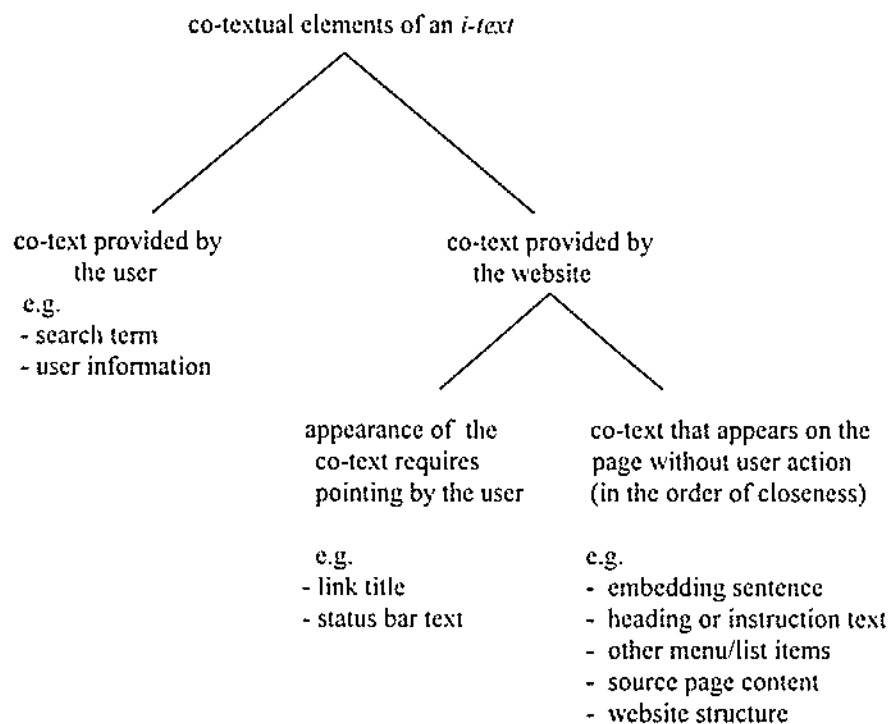
One of the main categories of hyperlinks is embedded links, which are links embedded in the text body, e.g. *Please see the Privacy Policy (Wedgwood), Edit order summary (Ross-Simons)*. The link labels of embedded links are part of the structure of the *embedding sentence*, and their interpretation is guided by the surrounding sentence or wider context. In the above examples the embedded link constitutes the object and the finite verb of the clause, respectively. A more detailed examination of the clausal role of embedded links is conducted in the empirical analysis (section 7.1.3). The examples show that the surrounding sentence or larger section of text often provide a substantial part of the information that is needed for making meaning of the *i-text*, and in this way contribute to the correct interpretation of the hyperlink function. Embedded links are typically associative pointing to pages with more information about the topic indicated by the link label (the *i-text*) (see section 2.5.1).

Other elements of the verbal context (i.e. co-text) of *i-texts* include *headings* and *instruction texts* that precede menus or lists of items arranged vertically or horizontally. For instance, on the home page of *QVC* the navigational links are divided into two groups, which are headed by *Departments* and *Specialty Shops* respectively. On the website of *Marks & Spencer* the corresponding headings are *Departments*, *Features* and *Services*. Headings like these help to outline the content of the page and also contribute to the interpretation of individual link labels. The user may also be instructed in the use of interactive instruments by means of instruction texts, which may refer to a single link or

button, for example *Search* is accompanied by *Enter keyword or catalogue number* on the website of Littlewoods. An instruction text may also be connected with a number of interactive items, for example on the website of Littlewoods, *Ladies*, *Mens*, *Kids*, etc. are preceded by an instruction *to start shopping choose from the departments above*.

The interpretation of an *i-text*, which is a menu or list item, is also influenced by the other items on the list. The *i-text Home* is interpreted differently when it co-occurs with *Back* and *Forward* as opposed to a list containing such items as *Clothing*, *Garden* and *Gifts*. In widening circles, the content of the whole source page and finally the structure of the entire website constitute the background of *i-text*.

Figure 14 summarises the co-textual elements of *i-texts* that have been introduced above.



**Figure 14.** Co-textual elements of *i-texts*.

There is a group of links that belong neither to the structural nor embedded category. These are links that are not connected with the content of the page in any way. They are used for website navigation either within a page (for example, *Top of page* at the bottom of the page or *Back to the top* at certain intervals on the page) or within a site (for example, *Homepage* on the other pages of the site or *Site Map*).

#### 4.2.4 Language elements selected by the user

The web user can use a pointing device to highlight an area, for example a piece of text, on a WWW page. Having selected an object or text (see section 2.3.3), the user can copy and paste it to his/her applications where it can be edited or print it. Bonime and Pohlmann (1988: 123) regard selecting as an interactive preposition (*iprep*) because it places an object (an *inoun*) into position for action by an *iverb* (see section 4.2). As an object or text selected by the user by means of highlighting is not a textual label attached to an active element that already exists on a WWW page, I do not include it in my definition of *i-text*. In this type of web page manipulation the content of the text is completely independent of user action as opposed to interactive labels on hyperlinks and buttons.

#### 4.3 *I-texts* in hypertext

*I-texts* label the points of contact between different phases of interaction and between different pages on a website or the whole World Wide Web. They guide the user from one stage to another in the shopping procedure and often simultaneously from one web page to another. The purpose of this section is to examine the textual environment of *i-texts* that extends beyond the current screenful of information. Landow (1997: 11–14) classifies types of linking on the basis of directionality and the scope of elements, either a specific string or a complete lexia, that are linked. The string at the source of the link relation is equivalent to the *i-text*, while Landow's lexia corresponds to web page content in the terminology of the current study (see 2.3.1). The most basic form of linking is lexia to

lexia, whereas string-to-lexia links are the most common on the World Wide Web. These can be made bi-directional in effect by means of the *Back* button of the Web browser. String-to-string linking allows the website to lead the user to a clearly defined point on the target page, which enables him to perceive the relation between the source and target immediately. The corpus of this study contains mainly *i-texts* that are contained in active elements that lead to an entire page (i.e. string-to-lexia linking) but also instances of elements leading to a specified position on the target page (i.e. string-to-string linking). The latter type is characteristic of the check-out phase in the shopping procedure. In Landow's terminology the *i-text* string on the source page permits a rhetoric of departure orienting the reader. Similarly, a link leading to a string rather than a lexia allows the creation of a rhetoric of arrival.

#### 4.3.1 Text and hypertext

Guides to interactive writing (see Anderson, Benjamin & Paredes-Holt 1998: 200–201; Bonime & Pohlmann 1998: 135; Jussila & Leino 1999: 132–133; Samsel & Wimberley 1998: 15–17) remind that web pages are not successive like individual pages of a linear printed text. Instead, each chunk or page should be sufficiently self-contained so that the user gets an idea what the page is about without having to resort to what precedes or follows it. Therefore, it is interesting to compare the concept of *page* with the concept *text*, as it is understood by text grammarians. At the same time we must not forget that a web page usually contains information in various forms, not only linguistic text. For example, de Beaugrande and Dressler (1981: 3) define text as a communicative occurrence, which meets seven standards of textuality. If any of these standards is not satisfied, the text will not be communicative and, therefore, it will be treated as a non-text. The seven standards might prove useful as guidelines in web page design too:

1. *Cohesion* refers to the grammatical and lexical dependencies that bind a text together. These include anaphoric forms, recurrence and ellipsis. Although web

language is characteristically concise, the text should not be compressed to the extent that lack of cohesion gives rise to ambiguities.

2. *Coherence* denotes the relevance of the concepts and relations in the text to each other. Engebretsen (2000) presents a three-level model of coherence, which distinguishes between intranodal coherence, internodal coherence and hyperstructural coherence. The concept of intranodal coherence is relevant in this connection because it concerns the page or node level of the hypertext and it corresponds to the traditional textlinguistic notion of coherence. The home page of an e-store site is usually more fragmented than the branching pages because it is supposed to contain a summary of the site content. According to Engebretsen, the intranodal coherence can be strengthened at the higher levels by making individual nodes thematically homogeneous so that all subelements will have strong relevance to each other and to those elements that are the same on all pages of the site.
3. The third standard of textuality, *intentionality*, refers to the text producer's attitude that the combination of elements should fulfil the producer's intention to attain a specified goal (de Beaugrande & Dressler 1981: 7). As far as e-store sites and their individual pages are concerned, the goal is unambiguous: to persuade the user to buy a product or service.
4. *Acceptability* is a standard, which concerns the receiver's attitude. De Beaugrande and Dressler's (1981: 7) concept of acceptability is closely related to the idea of relevance: a text must have some use or relevance for the receiver. In Internet communication relevance is particularly important. If too much inferencing is required to make the interpretation relevant, the user may easily realise that he/she is only a click or two away from another competing website. There is also a parallel with the concept of genre. Website designers are freely allowed to use their creativity in their use of resources available, but they must conform to certain conventions within their genre to avoid disapproval and misunderstandings (cf. Bhatia 1993: 14).



5. *Informativity* is connected with the scale known-unknown or expected-unexpected. If too much of the content is known to the receiver, boredom or rejection of the text is the result. In website architecture informativity entails a suitable division of information so that each page has certain new elements but is not too packed with information.
6. The sixth standard of textuality, designated *situationality* by de Beaugrande and Dressler, refers to the relevance of a text to a situation of occurrence. In web communication, the consideration of situationality is important and it essentially includes computer interface factors.
7. *Intertextuality* concerns the factors that make the utilisation of the text dependent on knowledge of one or more previously encountered texts (de Beaugrande & Dressler 1981: 11). This is a feature characteristic of web communication where a page never occurs in isolation but is linked to one or usually several other pages. Engebretsen's (2001: 176) intermodal coherence denotes the relationship between two text nodes in sequence. He points out that the reader will expect coherence between two pages which are linked together or which the system otherwise allows to be read in a sequence.

Eckkrammer (2002: 585–587) states that the criteria of textuality listed above can be regarded as valid for hypertext. She points out that this kind of pragmatic and functional approach can delimit a text in the immense docuverse (see note 4 on page 29) of the World Wide Web if the limits are defined on the genre level. However, this idea of text denotes a more comprehensive unit than a single page. The comparison of the characteristics of a web page to the criteria of textuality can be utilised in the assessment of the impact of co-textual factors on *i-text* interpretation.

#### 4.3.2 Text, discourse and utterances

Interaction between user and website can be examined from the viewpoint of discourse. The terms *text* and *discourse* have been used variably in linguistic literature. Originally, discourse designated mainly spoken language use, while text usually referred to written language. More recently, both terms have been used to include both spoken and written language units with a communicative function. As Crystal (1997a: 116) points out, some scholars talk about spoken and written discourse and others about spoken and written text. The view that the two terms do not refer to different domains but reflect a difference in focus, adopted, for example, by Georgakopoulou and Goutsos (1997: 4), clarifies this terminological ambiguity. They regard discourse as the umbrella term that covers spoken and written communication beyond the sentence and comprises both text and context, whereas text in their view refers to the basic means of this communication. Schiffrin (1994: 20–43) discusses various definitions of discourse and states that discourse can be defined formalistically as the level of language above the sentence or clause or functionally as language in use. She comes to the conclusion that discourse can best be thought of as utterances. In pragmatics utterances denote contextualised units of language production, spoken or written. (Leech 1983: 13; Levinson 1983: 18; Mey 1993: 184; Schiffrin 1994: 41). In other words, an utterance is an instance of a sentence or part of a sentence in an actual context.

Hyperlink labels and other *i-texts* clearly fall into the scope of the above definition of utterances. More specifically, they can be seen as requests, by means of which the website asks the user to carry out certain actions to achieve a commonly accepted goal. In the context of website interaction, an *i-text* can be regarded as an utterance which has a goal of its own. Leech (1983: 14) describes the concept of utterance by stating that it can refer both to the product of a verbal act or to the verbal act itself. He recommends that the term utterance be kept for the linguistic product of uttering and the utterance act be referred to as *speech act* or *illocutionary act*. Therefore, we are likely to gain more understanding of hyperlink relations by means of concepts and approaches adopted from the study of

discourse, in which framework the speech act theory has played an important role. However, more importantly *i-texts* as utterances constitute the starting-point on the basis of which the user starts to make meaning of the content and consequences of his/her actions in the process of interaction. In the study of utterances the discourse structure must be taken into consideration.

#### 4.4 Formation of the grammar of interactivity

The purpose of this section is to recapitulate the elements of user–website interaction that have been defined and discussed above and assign them their appropriate places and functions in the grammar of interactivity referred to at the beginning of this chapter. The hardware configuration, which the user has at his/her disposal, may vary, but in the following we start from the assumption that a standard mouse and keyboard are used as input devices.

The user actions (see section 2.4), which can be referred to as the syntactic level of the grammar of interactivity, are the following:

- point
- click
- key in
- menu selection
- drag-and-drop

Menu selection is also composed of pointing and clicking, but in the present context it is seen as a necessary action in the implementation of a particular interactive operation. The drag-and-drop feature, which is also composed of several sub-actions, is not commonly used in online shopping at the time when this is written although some applications and demo versions can be found on the web (e.g. <http://www.draganddropshop.com>). The e-stores constituting the corpus of the study do not contain any instances of the drag-and-drop feature.

The interactive operations (see section 2.7), which can be regarded as the counterpart of the semantic level in the linguistic analysis, include

- GO TO
- SEARCH
- SELECT
- SUBMIT

Additionally, a subtype named VIEW was defined for GO TO operations leading to a page which can only be viewed and closed but which do not allow further interaction.

From the technological viewpoint or from the perspective of the website syntax, the interactive operations can be divided into hyperlinks, the operation of which involves movement to another virtual location in the WWW, and button functions, the operation of which entails running a program embedded in the WWW page. As was stated in section 2.7, a division into navigational and functional operations can be made on the basis whether the emphasis is on the target page content or source page operation. The two categorisations are summarised in Table 5.

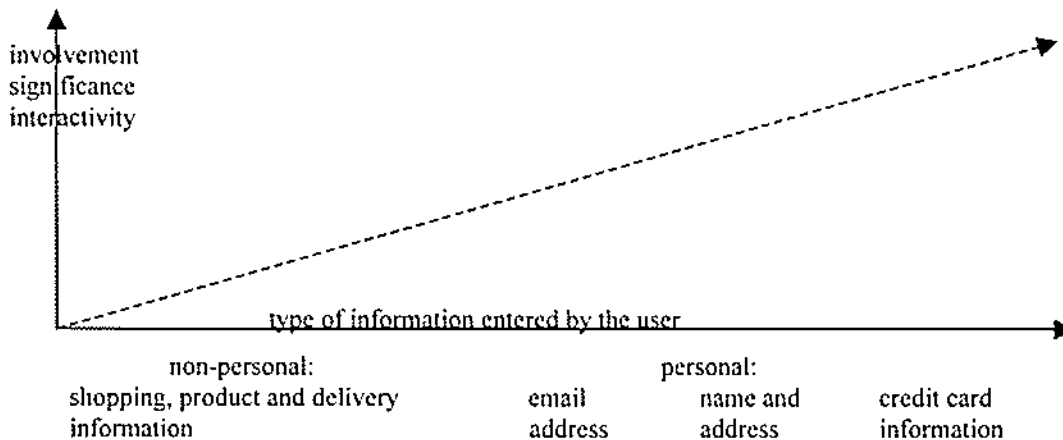
**Table 5.** Categorisation of interactive operations.

	Hyperlink operations	Button operations
Navigational functions	GO TO	SEARCH
Functional operations		SELECT SUBMIT

The various interactive operations involve user actions as follows:

- |        |   |
|--------|---|
| (VIEW  | point <i>or</i> point + click)                                |
| GO TO  | point + click   |
| SEARCH | menu selection + click <i>or</i> key in + click               |
| SELECT | menu selection + click <i>or</i> an earlier selection + click |
| SUBMIT | key in + click <i>or</i> an earlier submission + click        |

The degree of interactivity increases when the amount and sophistication of user action grows. It is also affected by the level of user involvement, which manifests itself in the content of information keyed in. The involvement and, consequently, the significance of interactivity (see section 1.3) increases according to the scale described in Figure 15.



**Figure 15.** Interactivity in relation to the type of information keyed in by the user.

As the interactive operations and user actions do not take place in a vacuum, a number of contextual factors must be taken into account in the utilisation of the grammar of interactivity. The central aspects connected with the user interface can be divided into factors occurring on the source page and factors affecting the target page.

Source page factors include

- the appearance of the active element: underlining, change in colour or font, animation, button form
- possible change in the cursor shape into a hand.

Target page factors include

- the operation of the active element leads to a new page or leaves the user in the current page
- the target page window replaces the current window, opens up in a new window on top of the current window or in an additional window.

These features of the interface can be used to emphasise the user's sense of empowerment and raise the level of interactivity.

The elements of language use in relation to user–website interaction is illustrated in Figure 16. As was stated in section 1.2, this study aims to find out how the syntactic, semantic and pragmatic aspects of language on the left side of the figure mirror the interaction on the right side.

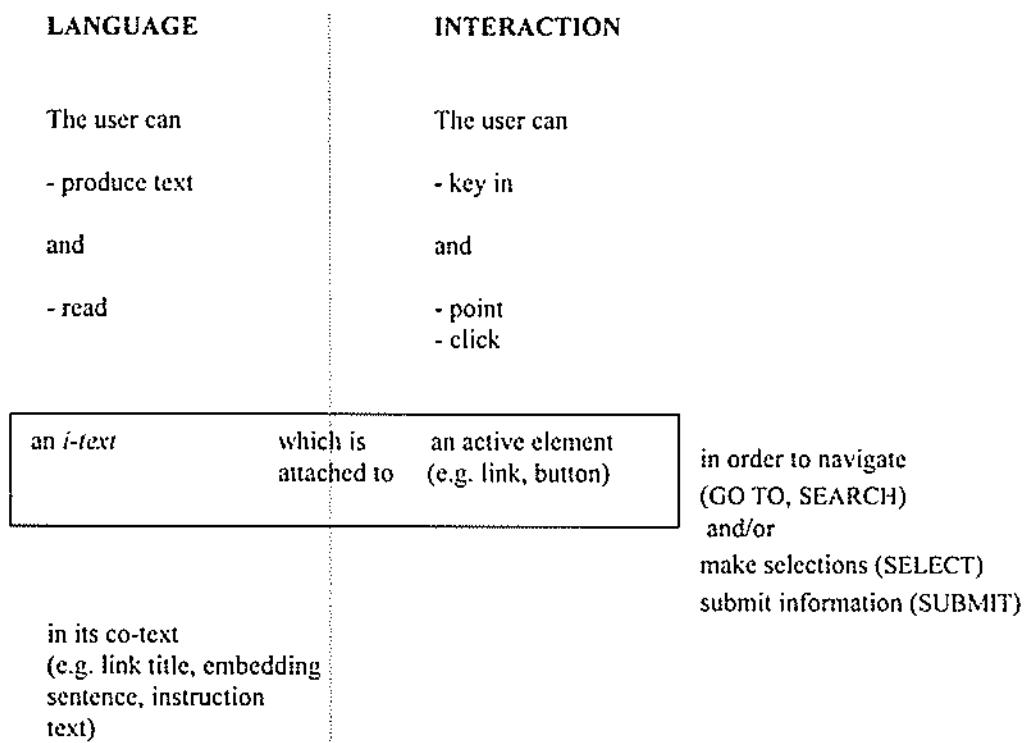


Figure 16. Language and interaction.

Finally, an important factor that must be taken into consideration is the sequential structure of a web session. It is reflected in the discourse structure or the frame or script of the online shopping session (see section 5.1.4). It also entails an increase in user involvement when the user proceeds in his/her interaction process.

## 5. LINGUISTIC-PRAGMATIC APPROACHES TO LANGUAGE OF INTERACTION

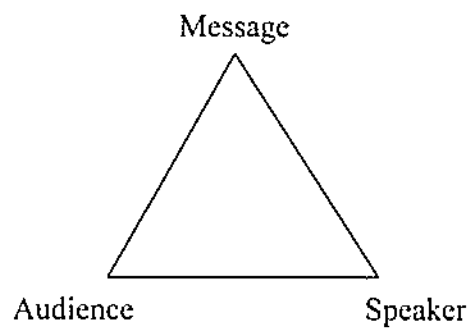
Having discussed the elements of user–website interaction in the e-commerce context and their relations with language, I now turn to the appraisal of linguistic and pragmatic perspectives on the investigation. The main focus is on the contribution that a linguistic approach offers to the analysis of the *i-text* as it was defined in section 4.1. The language of WWW pages can be examined within the framework of any linguistic or pragmatic tradition, but I have endeavoured to find approaches that can give a satisfactory account for hypertextuality, multimediality and interactivity, which are the primary characteristic features of Internet communication. In this section of the study I will focus on theoretical discussion around the following three central questions connected with language of interaction and interactive labels in particular. These three questions correspond to research questions 1, 2 and 3 listed in section 1.2, but now they have been rephrased by means of terminology drawn from linguistic/pragmatic approaches:

1. What is the optimal level of explicitness of an *i-text* to lead the user on the correct track in his/her interpretation process and which items are relevant in the linguistic code?
2. How does an *i-text* in its context express the illocutionary force of the request that it represents?
3. What kind of interactive role does the syntactic-semantic structure of an *i-text* attribute to the web user?

From the viewpoint of communication, the first question relates to the recipient and his/her process of interpreting the message. I use the following example to illustrate the framing of the question. At the checkout stage of electronic shopping, a user encounters the *i-text* Continue. Does Continue give the user sufficient information about what he/she

is doing at the moment and what the consequences of his/her action are? Would it be better to use the scanty screen space for a more elaborated *i-text*, such as *Submit your address and proceed to payment options*? The second question focuses on the sender: what is the apparatus at the sender's disposal to make the addressee perform the function requested? Are the straightforward imperatives *Go*, *Add*, *Click*, etc. needed to direct the user efficiently? Thirdly, the question about the assignment of the user role concerns the message itself and its way of conceptualising reality. For example, the *i-texts* *Click here to register*, *Register here* and *Customer registration* conceptualise the same action differently and award the user different semantic roles in interaction. As will be evident in the following discussion, the three questions posed above are intertwined in many respects.

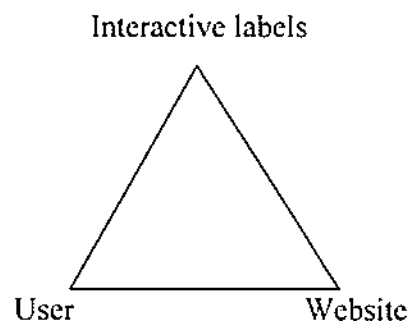
The three poles of communication are often presented visually in a device, which is known as the communication triangle or rhetorical triangle. The triangle, quoted from Anderson, Benjamin & Paredes-Holt (1998: 25), is shown in Figure 17.



**Figure 17.** The communication triangle.

The three poles can alternatively be called sender, recipient and message, which terms I have used above, or writer, reader and text. In the context of the present study, the website can be seen as the immediate sender, the user or customer is the recipient, while interactive labels constitute (the core of) the message. Consequently, the communication triangle can be presented in the form shown in Figure 18.





**Figure 18.** The user–website communication triangle.

The communication triangle must be seen against the background of the contextual factors that were depicted in Figure 2. In other words, communication between user and website takes place in a hypertextual, computerised framework, which is delimited to electronic commerce in this study.

As was preliminarily stated in section 1.4, the first question posed above concerning the explicitness of interactive labels is approached from the principles represented in the conversational maxims formulated by H. P. Grice (1975) and their development particularly in relevance theory, the primary initiators of which are Dan Sperber and Deirdre Wilson (Sperber & Wilson 1986/1995). The question about the illocutionary force is closely connected with the discussion around speech acts and their usefulness in the semantic-pragmatic theory. The final topic that deals with the grammatical structure of interactive labels is addressed from the viewpoint of cognitive grammar by means of examining the profiles of different *i-texts* and the extent of user participation in the profiles primarily on the basis of the grammatical description presented in the works by Ronald W. Langacker (Langacker 1987, 1991a, 1991b, 1999).

The reason why I decided to be eclectic and not to build the framework exclusively on one linguistic approach was already referred to in the introduction. Basically, utterances can be seen to encode two types of information: *representational* and *computational*, or *conceptual* and *procedural* (Wilson & Sperber 1993: 1). The relevance-theoretic framework allows us to examine the interpretation process of the recipient and inferential

communication in connection with human–computer interaction and the explicit/implicit distinction in a way that will give added value to the discussion of the computational or procedural aspects of interactive language. However, both relevance theory and speech act theory are pragmatic approaches that do not offer a framework for the grammatical analysis of *i-texts*. I chose to use the concepts of cognitive analysis for this purpose. Admittedly, I could have resorted exclusively to cognitive grammar in my analysis, because it looks at syntax, semantics and pragmatics as a continuum and claims to have explanatory power in regard to all aspects of language. However, cognitive grammar, whose iconic representation of linguistic structure looks appealing, has its emphasis on the analysis of the conceptual representations of language. Langacker (1995: 115) himself admits that cognitive grammar has devoted less attention to pragmatic functions, although it is a pragmatically oriented type of linguistics attaching a lot of importance to functional considerations and offers its own alternative to the interpretation of speech act functions. Grundy and Jiang aptly characterise the relations between the three approaches (i.e. speech act theory, relevance theory and Langacker’s cognitive grammar) as follows:

The essential facts that a semantics of language production and comprehension has to account for are that a speaker conveys Meaning X in Context Y by means of Form Z and that (all being well) their addressee/s process Form Z, supply Context Y and infer Meaning X. Because the roles of speakers and their addressees are different in that speakers start with a meaning to convey and addressees end by recovering that meaning, pragmatic accounts have typically focused either on production, as in Speech Act theory, or on understanding, as in Grice’s theory of conversational implicature and Sperber & Wilson’s work on relevance. In the cognitive literature, Langacker at one point suggests that conceptualising is identified primarily with speakers and secondarily with addressees (1991a: 318). As we shall see, there is a considerable advantage in a proposal which recognises the conceptualising role of both speakers and hearers. (Grundy & Jiang 2001: 109, 110)

In addition to the communication triangle (speaker/website-audience/user-message/*i-text*), another triad (meaning-form-context) occurs here. With the form, more specifically the *i-text* as the starting-point of the study, we can interrelate the two triads by expressing the role of the *i-text* from the viewpoint of each participant in the communication triangle as follows: 1) the user processes the *i-text*, supplies the necessary context and infers its meaning, 2) the website uses the *i-text* to convey an intended meaning in the context of the online shopping situation and 3) the *i-text* conceptualises a meaning in its context.

non-linguistic features of active elements, such as underlining, button shape or animation, are ostensive stimuli that are designed to attract an audience's attention and focus it on the communicator's meaning (Sperber & Wilson 1986/1995: 153). The *i-text* represents the first layer of information, and the interactive element constitutes the information that the *i-text* information is being pointed out. Ostension starts an inferential process, which is guided by the *i-text*. In other words, the task of the coded communication of the *i-text* is to strengthen ostensive-inferential communication.

Sperber and Wilson (1986/1995: 175) argue that linguistically encoded communication differs from non-verbal communication in the respect that it contains an element of explicitness, which makes it a strong and precise way of communicating. In web communication the role of verbal, graphic code is particularly central because the contextual elements consist of what the user can see on the computer screen. An underlining, a conspicuous colour or font, a button shape etc. acts as ostension drawing the user's attention to an active element, but linguistically encoded information can in a more unambiguous way inform the user of the function and target of the element. The verb *click* is an instance of ostensively communicated information that is linguistically encoded. It makes manifest an intention of making something manifest in a very explicit way. Whether an ostensive stimulus is linguistic or non-linguistic, it follows a communicative principle of relevance, which in its revised form runs: "Every ostensive stimulus conveys a presumption of its own optimal relevance" (Wilson & Sperber, 2000). Before discussing the principle in more detail, let us examine its Gricean background.

In discourse, the process of interaction is cooperative at least to some degree. The participants generally recognise a common purpose, which constrains what they are communicating. Grice, the initiator of one of the major modern pragmatic frameworks, introduced a principle, which he labelled the Cooperative Principle:

"Make your conversational contribution such as is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged." (Grice 1975: 45)

Under this principle he defines four maxims, of which the maxim of relation or relevance runs "Make your contribution relevant" or simply "Be relevant" (Grice 1975: 46). The

Before starting to find answers to the three questions posed at the beginning of this chapter, I will give an overview of the research conducted within the above-mentioned theoretical frameworks and discuss the concepts central to the topic.

### **5.1 *I*-texts and explicit communication**

The degree of explicitness is one of the key factors that have an influence on the hearer's or web user's utterance interpretation process. Explicitness is closely connected with the concept of relevance. When communicating we do not want to spend our time reading or listening to self-evident and obvious facts. As there is plenty of contextual information that can be taken for granted, fully explicit communication would be extremely tiresome. On the other hand, an adequate amount of information should be given to the recipient so that he/she would have the necessary facts to make out the speaker's point. A proper balance between explicitness and a sufficient level of informativeness should be attained. This is especially important in web communication where both the space available and users' span of attention are limited.

#### **5.1.1 Ostension and relevance**

Sperber and Wilson argue that human intentional communication is an instance of *ostension*, which term refers to behaviour that makes manifest an intention to make something manifest (1986/1995: 49). In other words, ostension denotes a speaker's or writer's intention to inform the audience of his/her informative intention. Ostension can range from non-linguistic behaviour such as pointing or other types of body language to explicit saying that the speaker has something to say. Ostension refers to two layers of information: the information that has been pointed out and the information that the first layer of information has been intentionally pointed out (Sperber & Wilson 1986/1995: 50). This can be paralleled with hyperlinks and other similar WWW elements. The external

contribution made at a particular stage of conversation should be appropriate to the needs of the situation. The maxim seems to be in harmony with instructions given in many guidebooks for web writing. According to Leech' (1983: 94) definition, an utterance is relevant to a speech situation if it can be interpreted as contributing to the conversational goals of the speaker or hearer. The goals can be personal (e.g. finding a product) or social (e.g. politeness).

Sperber and Wilson developed the idea of relevance and made it the cornerstone of their approach to communication and cognition. In fact, Sperber and Wilson's relevance is closely associated with another category of Grice's maxims, the maxims of quantity, which run:

- “1. Make your contribution as informative as is required (for the current purposes of the exchange).
2. Do not make your contribution more informative than is required.” (Grice 1975: 45).

Sperber and Wilson (1986/1995: 298) point this similarity out themselves by paralleling the first maxim of quantity with increasing effect and the second maxim with minimising effort in their definition of maximum relevance. As opposed to Grice, they maintain that both explicitly communicated propositions (i.e. what is said) and intended implications (i.e. what is implicated) involve inferences that follow the same principle of relevance. They propose that the hearer should have the right to interpret every utterance with the assumption that it is optimally relevant. Optimal relevance means that adequate effect is effected with minimal necessary effort (Sperber & Wilson 1986/1995: 158). In other words, relevance means balancing contextual effects against processing effort. Sperber and Wilson use the term contextual or cognitive effect to refer to the ability of the new information to alter the addressee's assumptions about the context (either modify their strength, create new ones or erase them) or to derive contextual implications. Relevance theory has been criticised for the all-covering concept of relevance; when the notion of relevance becomes too comprehensive, it loses its explanatory force. Another criticism concerns the concentration of relevance theory on people's cognitive environments and failure to focus on the social dimensions of language (see Mey 1993: 80–82). On the other

hand, it has given rise to a large amount of further research and applications<sup>18</sup>. Relevance theory with its cost-benefit thinking seems to be an eligible candidate for the framework of human-computer communication, which is plainer and more simplified than communication between humans.

In the context of web communication the notion of relevance has been seen to have explanatory force, for example, by Tosca (2000), who has examined the pragmatics of links and applied the theory of relevance to hypertext. Tosca maintains that hypertext can be said to be lyrical because it exploits cognitive conventions that we use to interpret literary, especially poetical texts. She argues that the model can be used to explain both hyperfiction and non-fictional hypertext. Tosca's modified principle of link relevance runs: "Every link communicates a presumption of its own optimal relevance". What she means is that a highlighted word or picture makes the reader understand that the link points to a relevant development of the text and it is worth following. Tosca divides hypertexts into two types:

1. texts which require minimum processing effort and yield maximal informational cognitive effects
2. texts which require increased processing effort and yield maximal lyrical cognitive effects.

She points out that the first structure should not exclusively be related to non-fictional hypertext and the second to hyperfiction. However, the design of e-commerce sites should not be cognitively so demanding that the customers give up in the middle of the process. The linking policy should be closer to the first structure, which, according to Tosca, is characterised by the following features:

- descriptive links and efficient anchors (link labels or *i-texts* in my terminology)
- few strong implicatures (the concept of implicature will be discussed in the following section)
- clear indication what type of information the link leads to
- navigational aids: buttons, maps etc.

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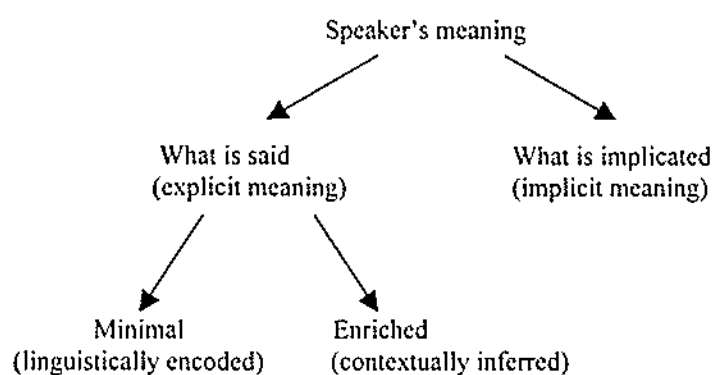
<sup>18</sup> A comprehensive online bibliography of relevance-theoretic research has been compiled by Fransisco Yus. It is available at <http://www.ua.es/dfing/rt.htm>

- indexes and other ways of integrating single nodes into wider structures

This list of Tosca's seems to be in concord with the requirements that are usually set for a functional e-store website and undoubtedly for all kinds of utilitarian websites. The principle of relevance entails that the user follows the path of least effort when he/she is computing the cognitive effects of an utterance. The interactional effects of an interactive operation are reflected in the cognitive effects: the more effective an interactive operation is, the more important it is for the user to receive correct and sufficient information about the consequences of clicking.

### 5.1.2 Explicature and implicature

All linguistic and pragmatic schools seem to agree on the fact that we usually mean more or other things than what we say. In fact, it is possible to define a three-level distinction of meanings (cf. Carston 2002: 17). First, there is linguistic meaning, which refers to the information that is encoded in the lexical-syntactic form or code. The second level represents the propositional expression, which is generally understood as "what is said". Finally, there are the intended implications of the speaker, which can be characterised as the "real" meaning of the utterance. This three-fold construction of speaker's meaning is illustrated in Figure 19, which is adapted from Gibbs and Moise (1997: 67):



**Figure 19.** Construction of speaker meaning.

Not everybody agrees on the scope of explicit meaning as it is presented in this figure. The question about the amount of inferencing allowed for the semantic or explicitly indicated meaning to be generated has been a central topic among semanticists and pragmatists (see Ariel 2002; Carston 2002). Grice (1975: 43–44) states that what is not said is implicated except for some additions such as disambiguation and reference assignment, and this view has been adopted by several linguists and pragmatists. As opposed to the explicit meaning of what is said, Grice used the term “implicatures” to refer to conversational implications. Of the various opinions concerning the limit at which explicit communication finishes and implicit communication starts, relevance theory comes close to the division presented in Figure 19. In the following the contribution of relevance theory to the current research topic will be discussed.

In the relevance-theoretic framework the concept of explicit communication has a wider scope than in the Gricean thinking. Relevance theorists are proponents of the linguistic *underdeterminacy* thesis, according to which linguistic meaning underdetermines what is said (Carston 2002: 19). Carston (2002: 28–42) gives evidence for the *essentialist* view on underdeterminacy, according to which underdeterminacy is universal and there are no sentences that ever fully encode the thought or proposition it is used to express. Sperber and Wilson’s definition of explicit communication encompasses features that are contextually inferred in addition to encoded elements (1986/1995: 182). They use the term *explicature* to represent a development of the coded or linguistic meaning to a fully propositional form. An explicature consists of linguistically encoded and contextually inferred conceptual features. In other words, their concept of explicitly communicated information includes elements that are based on an inference process in the hearer’s or reader’s cognition. Empirical justification for explicatures has been given, for example, by Gibbs and Moise (1997), who showed experimentally that their subjects preferred to regard explicatures as “what is said”. In her analysis, Ariel (2002: 1007–1021) states that the explicature of the relevance theory often, if not always, comes close to the most basic level of communicated meaning, which she proposes to call the “privileged interactional interpretation”.



Explicitness is a comparative feature. For example, the utterances ‘In there’ and ‘The meeting is in room 207’ may express the same proposition, but the former is much less explicit and the interpretation depends heavily on contextual information (Blakemore 1992: 60). The task of the addressee is to flesh out the semantic representation of an utterance by means of contextual information. As far as *i-texts* are concerned, part of the contextual information is contained in the interactive element, such as a hyperlink or a button. A considerable part of the semantic representation is fetched from the semantic frame (see section 6.1.4) of the page or website. The link label Gold on the home page of a jewellery store could be explicated as follows:

Explicating factor:	Explication:
coded meaning	gold = precious yellow metal
the <i>i-text</i> is an item on a list of jewellery items	jewellery made of gold
the cursor changes into a hand when it hits the <i>i-text</i>	click the link to go to the page showing

The whole explicature could be formulated as follows: “The link is telling the user to click the link to go to the page showing jewellery made of gold”. The use of a verb form in the imperative mood is a manifestation of a more explicit explicature. For example, in the *i-text* Go to check-out, the directive verbal form has been encoded, and less inferring is required than in the case of a nominal *i-text* Check-out. When the concrete manipulation of the interactive element has been included in the *i-text*, the explicature is even more explicit: Click the link to go to the check-out. The crucial question of good website design is to find the degree of sufficient explicitness, which takes us back to the concept of relevance.

Tosca (2000) states that in a hypertext we go through an interpretation process twice: the first time to evaluate our choice on the basis of its relevance, and the second to contrast our implicatures with the actual text on the target page. In the matter-of-fact language of electronic business, the interpretation is fairly straightforward because implicatures are fewer than in narrative and poetic hypertexts. Nevertheless, the content of a mouse-click is influenced by the action performed and the interactivity of the content of the target page.

The basic product search and order entry architecture is usually explicit on commercial web pages. The role of implicature is more prominent in hyperlinks that are connected with advertising and special offers. A hyperlink label *14 days till Valentine* does not lead direct to the explicature that by clicking the link the user can access a page displaying a range of Valentine's Day presents and cards. The objective of the link label is to make the user infer "It's time to buy presents or cards for Valentine's Day and this is where I can find them".

### 5.1.3 Code and inferencing

As we have seen above, human communication is based on a linguistic code on the one hand and an inferential process on the other. Therefore, coded or linguistic communication constitutes only part of the meaning conveyed by an utterance, and mere message decoding without taking the context into consideration is not enough for a reasonable interpretation of an utterance. Coded communication forms the basis for an inferential process that takes place in the addressee's cognition. According to the proponents of relevance theory, the process of inferencing from the coded meaning to the explicature is guided by the principle of optimal relevance. The solution that involves the least effort is chosen if it meets the requirements of relevance.

What is the point of contact between the relevance of explicit information and interactivity? The correct balance between the explicit coded content of *i-texts* and the amount of required inferencing is important from the viewpoint of interactivity. If the *i-texts* of an e-store are vague and their contextual effects do not correspond to user expectations, this results in inappropriate click-followings, hesitation and frustration. This undermines the sense of user control, which is one of the elements of interactivity. Excessively explicit *i-texts*, on the other hand, take up more screen space and increase redundant processing effort. Therefore, a good balance between explicitness and need for inferencing contributes to efficient interactivity. Added explicitness often means added

illocutionary force and more active user involvement. Consequently, the three questions that were presented at the beginning of this chapter are closely interconnected.

#### 5.1.4 Frames and scripts

Inferencing cannot be discussed without reference to the concept of frame, which together with related concepts, such as scripts, schemas and scenarios have been used in linguistic research in a number of ways. More generally, frames can be conceived as global patterns that contain commonsense knowledge about some central concept (de Beaugrande & Dressler 1981: 90). In fact, a frame can be seen as a system of concepts, which are related in a way that to understand one concept you need to understand the whole system (Petrucci 1996: 1). Frames provide an inferential base for the understanding of the utterance (Levinson 1983: 281). The force and function of utterances is understood against the background of a frame of teaching, shopping, seeing a doctor etc. In the following we will discuss the use of frames and related concepts in linguistic analysis and assess the relevance of frames and scripts to the present study.

Langacker's *domain* is a parallel concept with the frame. According to Langacker (1987: 63), semantic units are characterised relative to cognitive domains, and any concept or knowledge system (e.g. a kinship network, the human body, a speech situation) can function as a domain. Domains are seen as coherent areas of conceptualisation against the background of which semantic units are characterised. Langacker (1987: 150) defines a conceptual complex, which could be instantiated by a shopping situation, as an abstract domain. In the framework of cognitive grammar, frames provide an alternative approach to the profile/ground analysis for looking at the cognitive background of clause patterns. The frame description consists of the participants of an event and the viewing arrangement, which is called the perspective (Ungerer & Schmid 1996: 205–207). In Fillmore's (1977: 104) 'commercial event' frame the participants or categories are the buyer, seller, goods and money. The perspective determines which of the participants is selected for the subject or object position. In the case of a commercial event, the verbs *buy*, *sell*, *cost* and *charge*

provide different syntactic perspectives assigning the roles of the subject and object to different participants. The choice of the verb does not only determine a certain syntactic structure, but it also evokes a certain cognitive perspective on the situation.

An area of research to be mentioned in this context is *genre analysis*. Following Swales (1990: 58), Bhatia (1993: 13) defines genre as "a recognizable communicative event characterized by a set of communicative purpose(s) identified and mutually understood by the members of the professional or academic community in which it regularly occurs." Genre analysis emphasises socio-cultural, institutional and organisational aspects, and is applicable to various professional fields in the WWW environment. Bhatia (1993: 21) points out that while schemas, frames and scripts are based on the organisation of presupposed knowledge in an individual, the structuring of genre analysis reflects accumulated and conventionalised social knowledge that is available to a discourse or professional community. It can be discussed whether the idea of genre is applicable to the topic of this study, that is, *i-text* interpretation of a web user in the specific context of electronic commerce. Online shoppers could be regarded as a virtual discourse community (see Swales 1990: 21), whose communicative purpose is to find or buy a particular product. Roberts (1998) analyses personal home pages as a genre, which he defines as "texts that have a similar set of purposes, mode of transmission, and discourse properties" (p. 79). He states that commercial home pages constitute a genre distinct from personal home pages on the basis of the narrative discourse property of the latter genre.

My approach is not genre analytical in the socially oriented sense proposed by Swales and Bhatia although the analysis has several elements, such as an analysis of syntactic properties and discursal structure, similar to the procedure of genre analysis in its linguistic and structural description. The current study rests more heavily on the grammatical analysis and the role of coded language as a starting-point of an inferential process than typical genre analysis does. However, the concept of genre can be approached from the relevance-theoretic framework. In his article dealing with indirect directive utterances in technical instructions, Aitken (2002: 116–119) introduces a cognitively based

concept of genre, which is seen as a generic frame specifying assumptions of a communicative event in the framework of relevance theory.

The notion of frame has significance, not only for the formation of the clausal structure, but also for larger units, which extend over the boundaries of a single structure. The frame constitutes the background on which the inferencing process is based. As we saw in section 5.1.2, the emergence of the explicature and implicature in the relevance-theoretic approach is dependent on the frame. For example, in a shopping situation or 'commercial event' the existence of certain factors is taken for granted. The inference process based on these assumptions and guided by the principle of relevance forms the hearer's or reader's interpretation of the coded communication.

In this context, the difference between *expert* or *specific knowledge* and *general* or *everyday* knowledge must be considered. The inference process is dependent on the background knowledge, which constitutes a conception of structured objects, events and actions, i.e. a frame, in the addressee. If the understanding of a text or seeing it as a coherent whole is based on general knowledge, no inferencing that requires specific knowledge should be required of the addressee (Rothkegel 1991: 193, 194). Koskela (1997), for example, has studied inferencing based on three different levels of knowledge in scientific and popular scientific texts: 1) inference based on general information, 2) inference based on knowledge of scientific practice and 3) inference based on expert knowledge. The results of her study show that in popular scientific texts inferencing on level 1 is essential while in scientific texts inferencing on level 3 is required. Inferencing on level 2 appears equally in science and popular science. A parallel can be drawn from this analysis to online shopping. The shopper needs information about 1) the shopping procedure in general, 2) the use of computer interface and 3) the electronic shopping process. The three levels are comparable to Nielsen's (1993: 43, 44) three main dimensions on which users' experience differs: knowledge about the task domain, knowledge about computers in general and expertise in using the specific system. Consequently, the question of the inferential frame is of great importance in e-store design. To be able to perceive a coherent whole in an online shopping procedure, the user must

have both knowledge of a shopping situation in general and an adequate level of computer literacy. In business-to-consumer trade the designer of a website is bound to face the question what a prospective customer is supposed to know about business procedures on the World Wide Web. The demanding task of information architecture and web editing is to assess the strength and accuracy of the frame or script that a customer might have of dealing with electronic commerce.

The frame can be called a *script* especially if it is given a sequential structure. A script is a knowledge structure designed for frequently recurring event structures (Ungerer & Schmid 1996: 213, 214). Scripts have a pre-established routine (de Beaugrande & Dressler 1981: 91) and they are seen as more dynamic than frames in structure (Taylor 1995: 87). Schank and Abelson (1977: 38) refer to scripts as mechanisms that people have developed to deal with sequences of events that frequently occur in a specific order. They state that there are certain groupings of causal chains in the form of large conceptual units. We resort to scripts in our inferential process when we interpret sequences in which some steps have been left out of the causal chain. Hence, the script provides the necessary connectivity to stories such as "Peter went to the supermarket. He paid for his purchases with his credit card. The cashier smiled at him." By means of the shopping script we fill in the slots in the story. The existence of a script also has syntactic consequences. In the story above, the word *cashier* takes the definite article without explicit introduction because the script has already implicitly introduced her (Schank & Abelson 1977: 41).

As was noted above, scripts are characteristically used to represent larger sequences of events. Events can be divided into scenes in which the people and objects that constitute the situation are specified. An online shopping situation could be described by means of a script, which consists of three scenes: product search, making a selection (shopping cart function) and checking out. The participants are the buyer represented by the web user and the seller represented by the website. The objects or props involved include products, shopping cart and order form or, more exactly, their virtual representations. The web user has certain experiences and expectations concerning the shopping procedure, which make up the script. The more experienced online shopper the user is, the more established the

script becomes. A great deal of *i-text* interpretation is based on this cognitive script. The script resembles Jim Rosenberg's (1996) *episode*, which was discussed in section 2.7. Rosenberg defines an episode as an element of hypertext activity, which consists of link-followings and cohere into an entity in the reader's mind. Thus, it can be characterised as a script in a hypertextual environment.

## 5.2 *I-texts as directive utterances*

So far we have examined utterances mainly from the recipient's perspective. Thomas (1995: 2, 21, 22) points out that both utterance or contextual meaning and speaker intention or force should be taken into consideration in the pragmatic theory. As there is both a speaker and a hearer in communication, she suggests "meaning in interaction" as a definition of pragmatics. This idea is very compatible with user–website communication, where the full meaning of a clickable item constitutes itself in the combination of an utterance contained in the *i-text*, its illocutionary force indicated linguistically or non-linguistically in the *i-text*, its co-text or context on the source page and its target page. Relevance theory and speech act theory are pragmatic approaches that look at utterances from different viewpoints. Relevance theory is primarily interested in the inferential interpretation process that takes place in the hearer, whereas speech act theory emphasises the speaker's role and the force of the utterance.

### 5.2.1 Speech act theory

Central concepts related to the study of verbal acts include illocutionary force and speech acts. As Yli-Jokipii (1994) points out, one of the main contributions of speech act theory introduced by Austin (1962) and developed by Searle (1969), was the substitution of the concept of *utterance* or *act* for *sentence* as a unit of description. For another thing, speech act theory involved extralinguistic features, such as participants in a speech situation and circumstances, in linguistic analysis.

Austin, who launched the speech act theory, made a distinction between three senses of an utterance which are performed simultaneously when someone is saying something (Austin 1962: 98–102):

1. locution(ary act): the actual utterance of words
2. illocution: the force or intention associated with the words uttered, such as request
3. perlocution: the effect of the illocution on the hearer

If someone says at breakfast *I'd like some toast* (locution), the illocution would be the request *Pass me the toast please* and the perlocutionary effect would probably be that another person passes the toast. Searle, who developed Austin's theory, concentrated on the examination of illocutions. He emphasised the distinction between the illocutionary force of the utterance and its propositional form (Searle 1969: 30; 1979: 1). Searle (1979: 12–17) categorised illocutionary acts into five groups: assertives, directives, commissives, expressives and declarations. In the context of this study the category of directives is of interest, because according to Searle's definition directives are attempts by the speaker to get the hearer to do something and in a similar fashion hyperlinks and web buttons invite the users to click them.

The grammatical form and the pragmatic function are not necessarily congruent. We do not only use the imperative form to express requests, and, conversely, imperatives can also occur in many other functions. The situation where one type of clause is expressed metaphorically as another is known as *grammatical metaphor* (Halliday 1994: 57). An interpersonal metaphor of mood refers to speech functions manifested in various formulae (Halliday: 365). In the speech act theory this incongruence has been addressed by introducing the concept of *indirect speech acts*, which refer to cases in which one illocutionary act is performed indirectly by performing another (Searle 1979: 31). For example, a customs officer may say: "You need to show your passport" to a traveller to request him to show the passport. In other words, a directive act is performed by means of an assertive act. Searle (1979: 31, 32) claims that "in indirect speech acts the speaker communicates to the hearer more than he actually says by the way of relying on their mutually shared background information, both linguistic and non-linguistic, together with



the general powers of rationality and inference on the part of the hearer.” He also points out that politeness is the main reason for indirectness (p. 48). Trosborg (1995: 205) presents a summary of request strategies, which builds on the work of Austin (1962), Searle (1969) and other speech act pragmatists. These strategies are shown in Table 6 at levels of increasing directness.

**Table 6.** Request strategies.

Request strategies		
Situation: The speaker requests to borrow the hearer’s car.		
1. Indirect request	Hints (mild) (strong)	<i>I have to be at the airport in half an hour. My car has broken down. Will you be using your car tonight?</i>
2. Conventionally indirect (hearer-oriented conditions)	Ability Willingness Permission Suggestory formulae	<i>Could you lend me your car? Would you lend me your car? May I borrow your car? How about lending me your car?</i>
3. Conventionally indirect (speaker-based conditions)	Wishes Desires/needs	<i>I would like to borrow your car. I want/need to borrow your car.</i>
4. Direct requests	Obligation Performatives - hedged - unhedged Imperatives Elliptical phrases	<i>You must/have to lend me your car. I would like to ask you to lend me your car. I ask/require you to lend me your car. Lend me your car. Your car (please)</i>

(Trosborg 1995: 205)

To be able to assess the variety (or lack of variety) of requests occurring in e-commerce *i-texts*, this wider spectrum of request strategies that are available in English serves as a point of comparison. The empirical analysis of *i-texts* will show the frequency of indirect requests in the context of online shopping.

Illocutionary acts may have to be ratified by the hearer. Correct *uptake* that follows the utterance shows that the hearer has understood the force and the content of the utterance (Levinson 1983: 237; Mey 1993: 116). However, the perlocutionary effects of the

utterance are more interesting from the viewpoint of interaction than the mere indication and understanding. According to Austin, perlocutions consist in the performance of the act referred to in locutions and illocutions and includes the intentional or unintentional effects or consequences of the act (Austin 1962: 101, 106; Searle 1969: 25).

The role and importance of perlocutions have been examined by van Eemeren and Grootendorst (1983), for example. They point out that speech acts are not performed only with the intention to make the hearer understand but the speaker rather tries to elicit a particular response from the listener. In this way, they draw a distinction between *communicative* and *interactional* aspects of language. The illocutionary act, the purpose of which is to make the hearer understand, is related to the communicative aspect whereas the perlocutionary aspect is linked with the interactional sense. Furthermore, van Eemeren and Grootendorst (1983: 24) introduce a distinction between *inherent* and *consecutive* perlocutionary effects. The former concept refers to the acceptance of the speech act by the listener while the latter covers all other consequences of the speech act. This distinction can be compared with the list of expected replies to requests presented by Yli-Jokipii (1994: 60). According to her, in written discourse, the writer wants the reader 1) to perform a physical act, 2) to perform a verbal act or 3) to reach a cognitive state favourable to the writer. The uptake following an *i-text* always presupposes the physical act of clicking and in connection with a number of functions performing the verbal act of keying in information. Reaching a cognitive state of clicking corresponds to van Eemeren and Grootendorst's inherent perlocutionary effects. If the user's acceptance is not manifested in clicking, it is not possible for him/her to go on with the interaction process.

In their discussion about the relation between illocutions and perlocutions, van Eemeren and Grootendorst mainly focus on *illocutionary perlocutions* (p. 27), which are realised on the basis of the understanding of an illocutionary act. They also restrict the perlocutionary consequences to effects intended by the speaker. Daniel Marcu (2000), who in his article describes perlocutions as the Achilles' heel of speech act theory, criticises the straightforward correlation between illocutionary acts and perlocutionary effects by emphasising the importance of the characteristics of the hearer and speaker and the

structure of the utterance and by pointing out the difficulty to draw a distinct line between perlocutions that are successful and perlocutions that are not. To the degree that we regard clicking the hyperlink or button as a perlocutionary act in the web context, the assessment of perlocutionary effect is easier to detect and measure on the WWW than in personal interaction. The analysis of van Eemeren and Grootendorst, quoted and commented on by Trosborg (1995), can be used as a useful point of comparison for our present discussion.

If a parallel is drawn between utterances and *i-texts*, as has been suggested above, we could say that the link or button label text corresponds to the locution. It is a string of words or a single word that can be read as such, for example *Add to the cart*. The illocutionary act performed by these words is the order or request to add a product to the virtual shopping cart. The inherent perlocutionary effect of this request is the user's decision to buy this particular product. The consecutive perlocutionary effect of the utterance is manifested as the hyperlink click, which virtually represents the selection of the product in the real world.

It may sometimes be the case that the user clicks on the hyperlink just because it is there without reading the link label properly. This is reminiscent of van Eemeren and Grootendorst's (1983: 27–29) non-illocutionary perlocutions. This type of perlocutionary consequence is exemplified by startling when someone suddenly shouts at the hearer. The hearer is suddenly in the state of alert without really knowing what the shout was about.

### 5.2.2 Speech acts in other theoretical frameworks

In relevance theory, the usefulness of speech acts as theoretical explanatory machinery has been questioned. According to the relevance theory, all hearer interpretation is guided by the principle of relevance: the user adopts the first accessible interpretation that is sufficiently relevant. In other words, he/she searches for maximum contextual effects with minimum processing effort. Sperber and Wilson (1986/1995: 244–246) maintain that many speech acts are either institutional, that is, belong to the study of a particular

institution (e.g. bidding at bridge or declaring a war in politics) or can be interpreted by the hearer correctly without the recovery of a specific speech act (e.g. predicting, claiming, warning). However, the speech acts *saying*, *telling* and *asking* do not belong to either of the above classes but require another type of interpretation. For example, the propositional form of the link label *Go to the checkout* would be *The addressee (or the user) goes to the checkout*, which is not the explicitly communicated assumption of the utterance. The content of the link label would rather be described as *The speaker (or the link) is telling the user to (click the link to) go to the checkout*. In other words, in order to be able to interpret an *i-text* in the intended way, the user has to recover the *tell to* assumption, which is reminiscent of a speech act in a directive function. In relevance theory the coded communication and the decoding process are seen as a starting point for the inferential process and can be compared with the locutionary level in Austin's model.

In the systemic-functional grammar developed by Halliday, language is seen to have three basic functions: ideational, interpersonal and textual. Expressions of illocutionary force are incorporated in the grammatical system in the interpersonal and textual functions. Halliday (1994: 68) distinguishes between two basic types of speech role: giving and demanding and between two fundamental types of commodities that are exchanged: goods-&-services and information. By means of these two variables he defines the four basic speech functions as follows:

offer:	giving goods-&-services
command:	demanding goods-&-services
statement:	giving information
question:	demanding information

In this classification of speech functions *i-texts* inviting the web user to interact can be categorised as commands or questions or combinations of the two functions. The user is either requested to click an active element or to provide information by selecting an option or keying in and confirm his/her input by clicking the active element. The page content outside active elements and their immediate co-text carries out the function of giving. In his treatment of speech functions Halliday does not use the terms illocutionary force or

speech act. Instead, he handles speech acts in terms of the concept of grammatical metaphor, which was referred to above (Halliday 1994: 342–367).

Cognitive grammar, within the framework of which the syntactic-semantic relations represented by *i-texts* will be discussed in the following section, does not regard any separate pragmatic speech act machinery as necessary. Pragmatics is seen as a natural continuation in the continuum of vocabulary, syntax and semantics. Cognitive grammar accounts for speech acts by means of the concepts of the *ground* and *viewing arrangement*. The ground, which includes the participants and circumstances of the speech event, functions as the domain when the meaning of an expression is described (Langacker 1991b: 495). According to Langacker, all expressions are more or less grounded in their background, for example by means of tense, mood and determiners. The ground is an even wider concept including such aspects as the speaker's desires and intentions and the hearer's expectations. Illocutionary force and other speech act qualities are based on these psychological aspects of the ground (Langacker 1991b: 496). The concept of viewing arrangement refers to the full circumstances of a speech event together with the relationship between the ground and the situation under description. It is linked with the stage metaphor, which describes the relationship between offstage observer and onstage event (Ungerer & Schmid 1996: 198). For example, requests can be represented in Langacker's description as a viewing arrangement that involves the hearer in a certain way in the onstage event.

### 5.3 *I-texts* as linguistic expressions

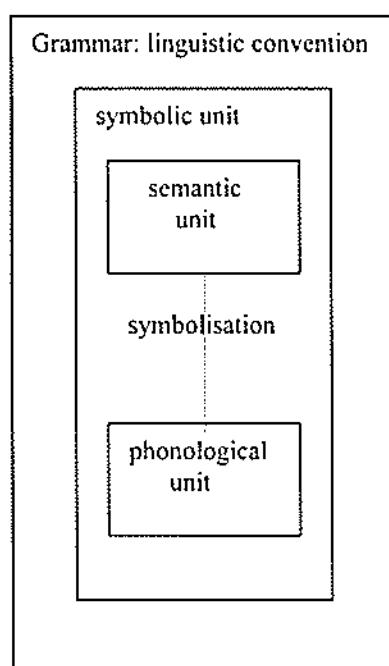
Hyperlink labels and other *i-texts* represent a code. The web user must resort to this code when making his/her decisions in the interaction process with a website. According to Halliday (1994: xxx), a grammar is an attempt to crack the code. In the Hallidayan grammar, it is the intermediary between the semantic and phonological levels of language and consists of morphology, syntax and vocabulary. In relevance theory, the code constitutes the input for linguistic processing while verbal communication comprises

inferential and decoding processes. The decoding process starts from a signal, such as spoken or written words, and produces a message which is associated to the signal by a code (Sperber & Wilson 1986/1995: 13). By means of decoding the addressee recovers the semantic representations communicated by the sender. Sperber and Wilson (1986/1995: 174) point out that human communication is never only coding and encoding; the semantic representations must be inferentially enriched before they can be taken to represent anything of interest to communicators. However, coded or linguistic communication is unique in the respect that it provides explicitness, which with other forms of communication would be impossible. Furthermore, coded communication is regulated by a grammar, which is remarkably stable. In web communication, the code and the results of the decoding process are particularly important in the absence of several such contextual clues that face-to-face communication situations offer. Relevance theory does not offer tools for the analysis of the structure of coded communication but needs to be complemented by grammatical description.

In the cognitive framework the task of coding is to find appropriate linguistic expression for a conceptualisation (or meaning). The target structure of coding is a usage event (an utterance) produced by a speaker for a particular purpose (Langacker 1987: 65, 66). If the target structure is in accordance with the conventional units of the language, the coding and decoding process is relatively straightforward. In most cases, however, the linguistic expression underspecifies the target structure and only conveys the conventionalised semantic value. The conceptualisation of a usage event is context-dependent, and this contextual meaning includes aspects that are not linguistically coded (Langacker 1987: 157). Therefore, in cognitive grammar, semantics is considered to be encyclopaedic in nature. The fascination of cognitive grammar in the description of linguistic structure lies in the simple inventory of grammatical elements. In the following sections I shall discuss the elements of grammatical description from the viewpoint of *i-texts*.

### 5.3.1 Linguistic units, schema and elaboration

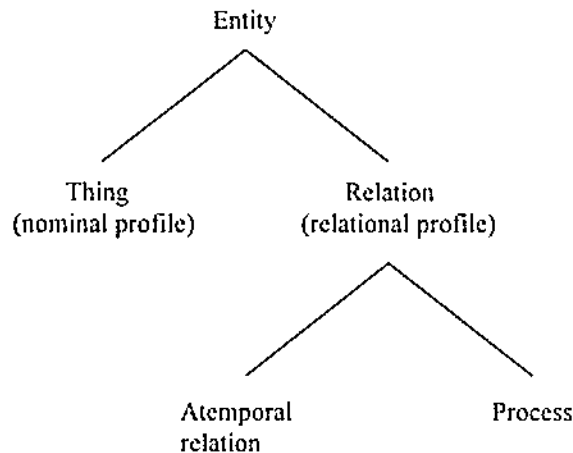
Grammar in the cognitive terms can be described as a structured inventory of conventional linguistic units (Langacker 1987: 57). A unit is a structure, which is available to the speaker as such, but it may be complex internally. Linguistic units are of three different types: *phonological*, *semantic* and *symbolic*. Symbolic units represent the symbolic relationship between a semantic unit and a phonological unit, as depicted in the following figure. (Langacker 1987: 57–58, 77)



**Figure 20.** Linguistic units in cognitive grammar.

Minimal symbolic units in language are morphemes such as prepositions and case endings. Minimal semantic units are called *predicates* (or *predications* if we extend the term above the morphemic level). The structure of a predication takes the form of a *profile* against a *base*. The profile constitutes the focus or the prominent point in a predication. The hyperonymic concept for all predications including nouns and relations is *entity*. Predications that profile *things* are nouns while predications that profile *relations* are

either verbs (*temporal profile* or *process*) or units profiling an *atemporal relation*, e.g. adjectives, adverbs and prepositions (Langacker 1987: 183). Atemporal relations can be categorised into two subtypes, which will be introduced in connection with the discussion of scanning in the following section. The schematic hierarchy of grammatical profiles is presented in Figure 21 (Langacker 1987: 249).



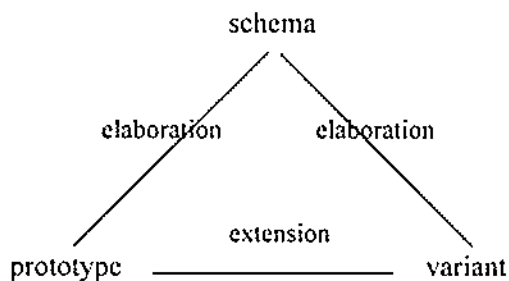
**Figure 21.** Hierarchy of predications and profiles.

The reason for examining profiling in the current context is its relevance for the inherent interactivity of a predication. We will revert to the profile/base contrast in section 5.3.2 after a discussion of language as a schematic structure.

De Beaugrande and Dressler (1981: 90) define *schemas* as "global patterns of events and states in ordered sequences linked by time proximity and causality." This idea of schemas is closely associated with the concepts of frames and scripts, which were discussed in section 5.1.4. Langacker's term schema has a wider scope and does not necessarily refer to ordered sequences. According to Langacker (1991a: 17), grammatical categories such as nouns and verbs are maximally schematic abstractions. When we move on from the grammatical categories to lexical categories, the level of schematicity decreases (noun - countable noun - furniture - bed - bunk). The relation of a schema and its *elaboration* is equivalent to that between a superordinate and subordinate concept in a taxonomic hierarchy. A schema is "an abstract characterization that is fully compatible with all the



members of the category it defines" (Langacker 1987: 371). For example "bed" elaborates the schema "furniture". It has all the characteristics of furniture and, in addition, certain more precise specifications. Categorisation can also be based on *prototypes*, which are typical instances of a category and most likely to be chosen to represent the category (Langacker 1987: 371). While schemas are characterised by relations of elaboration, prototypes are characterised by relations of *extension*. Extension is based on a comparison between two concepts: a prototype and a variant. Because variants may differ in their degree of similarity to the prototype, the category membership is gradual (Palmer 1996: 97). The schema and prototype categorisation is illustrated in the following figure quoted from Palmer (1996: 97) based on Langacker (1987: 373):



**Figure 22.** Categorisation by schema and prototype.

Prototypicality is connected with the notion that is known as *basic level* categorisation. Categories are not only organised in a hierarchy from the most general to the most specific. The cognitively basic categories are in the middle of this categorisation where we perceive the most obvious differences between objects and organisms. The basic level is the cognitively most salient level of categorisation that provides the most economical balance between internal similarity and external distinctiveness. (Lakoff 1987: 13; Ungerer & Schmid 1996: 66–71; Taylor 1995: 46–51) Accordingly, *apple* is conceived as more basic, distinct and salient than *fruit* and *chair* is a basic level term as opposed to *furniture* at a higher level or *armchair* at a lower level.

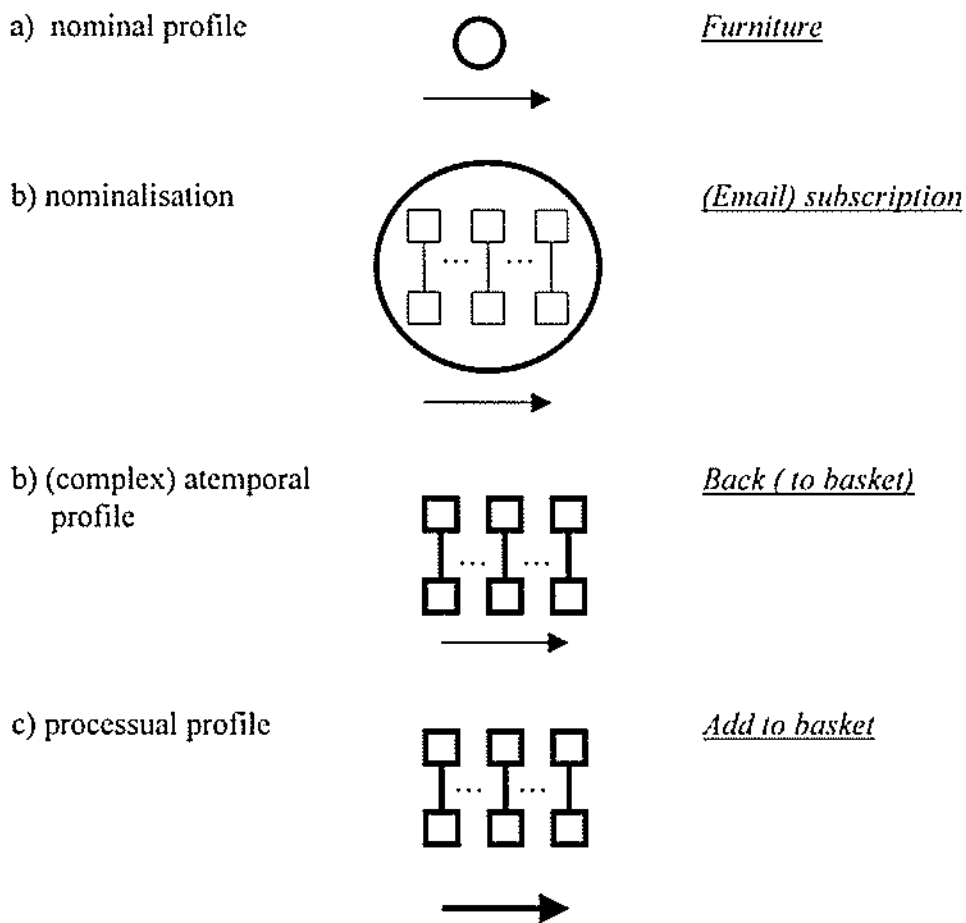
What are the points of contact between the idea of schematicity and the interactive labels of a website? The concept of schematicity can be seen to contribute to the analysis of these

labels with regard to both their target and the function they represent. First, the use of hyperlinks allows a combination of schema and prototype categorisations and provides an opportunity to make use of human basic level preference. In product display the strict classical categorisation can be complemented and modified by adding useful prototypes particularly at the basic level of conceptualisation. The main categorisation of a furniture store based on rooms *Kitchen*, *Living room*, *Bedroom*, etc. may be complemented by direct linking to prototypical pieces of furniture such as *Sofas* or *Beds*. For another thing, the *i-text* may refer to the function carried out by the active element in which it is embedded on a scale varying from a highly schematic representation to an elaborated description. For example, at the stage when the customer is requested to submit his/her address, the link label can be a highly schematic *Continue* or *Proceed* or a request with a more elaborated content *Add address*. Despite its concrete character, the verb *click* is in a way the most schematic *i-text* in the context of WWW language, because clicking is in fact the only procedure that can be accomplished in connection with any *i-text* and may have highly varying consequences.

### 5.3.2 Linguistic structure: profiling and scanning

The prominence of different parts of sense perceptions in the way it was understood by gestalt psychologists is the basis of the contrast between *figure* and *ground* in cognitive grammar. The figure/ground distinction is used in cognitive grammar to explain the semantic segregation between profile and base, which was referred to in the previous section. It is interesting to see that the figure/ground contrast is considered important in all visual design of web pages, not only in the linguistic sense discussed in this context (see Kostelnick & Roberts 1998: 53–61). The figure or the most salient element in a relational structure is called a *trajector* while the ground is called a *landmark* (Langacker 1987: 217). At the clausal level, the subject is the syntactic trajector and the object is the syntactic landmark. The trajector can be seen as the more active participant in the relation. This applies to atemporal relations too. In the relation profiled by preposition *to* in *trains to London*, the train is conceptualised as the moving object while London is the target.

Nouns do not manifest trajector/landmark structure except for nominalisations, in which this built-in segregation can be discerned although it is not profiled. Figure 23 (cf. Langacker 1987: 220, 247) below illustrates the types of profiles described above. The squares represent entities and the circles things, while the lines stand for relations between entities and the arrows refer to time. Profiling is expressed by means of boldfaced items. In all these instances the trajector is indeterminate; whoever reads the *i-texts* can be assigned the trajector role.



**Figure 23.** *I-text* profiles.

When a temporal aspect is added to the figure/ground distinction, we can speak of different operations of *scanning*. The notion of scanning is connected with the distinction between verbs and nouns (Langacker 1987: 143–145). Verbs designate sequences of figure/ground configurations conceived as being distributed over a continuous series of

points of time. Langacker calls this mode of cognitive processing *sequential scanning*. It reminds us of a film that represents successive configurations in a way that the viewer perceives them as a coherent scene. In *summary scanning* all facets of a scene that may be composed of a number of events are conceived as coexistent and simultaneously available. The configuration is frozen in the same way as it is in a photograph. The i-text Select a product represents sequential scanning and profiles a scene with a temporal profile. The nominalised i-text Product selection is an example of summary scanning, in which all the componential states of the process are conceived as a collective entity (Leino 1993: 90). On the basis of their complexity, atemporal relations can be divided into two subtypes. *Stative* or *simple* atemporal relations profile a single state, which remains unchanged. It is exemplified by the preposition *on* in the i-text As seen on TV. A *complex* atemporal relation cannot be reduced to a single consistent configuration. It profiles a series of states, but, unlike a process, it is scanned summarily. A participial construction like Running the home is an instance of a complex atemporal relation. (Langacker 1987: 220, 249; Leino 1993: 90)

To sum up, profiling extends from the process manifested by a verb or clause to the nominal thing along the continuum: *process – complex atemporal relation – simple atemporal relation – thing* (Langacker 1991b: 423). The analysis of the user roles (section 5.3.3) will be based on this sequence complemented with a distinction between deverbal nominalisations and other nouns profiling things. Another concept connected with profiling that will be referred to in the analysis is the *profile determinant*. In composite constructions, a component structure the profile of which represents the profile of the composite whole is the profile determinant (Langacker 1987: 235). For example, in the i-text Solid Silver Animals (presentco) *animals* is the profile determinant, as is *click* in the frequent Click here.

### 5.3.3 Roles and interaction

What makes a website interactive is the opportunity that it affords the user to actively participate in the communication process. The higher the user's level of involvement is and the more empowered he/she feels, the more interactive the website can be considered. I believe that an investigation into the roles of the participants in the process profiled by interactive texts contributes to the understanding of relations between linguistic or coded communication and interactive operations. In the tradition of case grammar these roles have been assigned such names as semantic deep-structure cases (Fillmore 1968) or thematic relations (Gruber 1976). In case grammar theory the content of a clause is represented in the form of relations between a central verb and the cases required by the semantic valence of the verb. Fillmore's (1968: 24–25) original collection of case roles consists of six cases: Agentive, Instrumental, Dative, Factitive, Locative and Objective. Benefactive and Comitative are also mentioned as possible deep-structure cases (Fillmore 1968: 32, 81). In a later work, Fillmore (1971:42) developed his case system and introduced a list of eight cases: Agent, Experiencer, Instrument, Object, Source, Goal, Location and Time. In the case grammar matrix model, in which elements of earlier case grammar models have been incorporated, Cook (1989: 191) defines the following propositional cases, i.e. cases dependent on the valence of the verb: Agent, Experiencer, Benefactive, Object and Locative. In addition, he introduces a list of modal cases, which do not enter into the classification of verbs. These include Time, Manner, Instrument, Cause, Result, Purpose, outer Locative, and outer Benefactive. Without defining these case roles in more detail, we can state that they are meant to be universal categories with clear-cut boundaries.

Before discussing the concept of role in cognitive grammar, the process types and participant roles of systemic-functional grammar should be given some consideration. In systemic-functional linguistics the function of language is to construe experiences into process types, which include *actional* or *material*, *mental* and *relational* processes (Halliday 1994: 106,107; Stillar 1998: 22). In action processes there is an agent, a

participant who performs the action. Mental processes involve a processor whose internal experiences, such as perception or cognition, are processed. Thirdly, relational processes make use of a linking verb to express, for example, identification or classification. (Stillar 1998: 23–25) There is congruence in this classification with the level of the interactive participation on the part of the human actor. In an action process he/she has an active role and the action prototypically extends to a goal, while in mental processes the action takes place within the actor. Relational processes do not presuppose active participation because they construe experiences that do not involve action.

Langacker (1991a: 210, 236) introduces a list of roles, which resembles the case relations presented by Cook and other case grammarians, but he defines his *role archetypes* differently. Role archetypes organise our conception of certain typical roles that participants play in events. They belong to our general conceptual system, and, therefore, they are not specifically linguistic. Although the list of roles is open-ended, only a few qualify as archetypal. These include:

- Agent: the role of a person who volitionally carries out physical activity which results in contact with some external object and the transmission of energy to that object.
- Patient: the role of an inanimate object that absorbs the energy transmitted by externally initiated physical contact and thereby undergoes an internal change of state.
- Instrument: the role of an inanimate object manipulated by an agent to affect a patient.
- Experiencer: the role of an individual engaged in some type of mental process (intellectual, perceptual or emotive).
- Mover: the role of an entity that changes position with respect to its surroundings.
- Absolute: the role of a participant whose role in a process is viewed in isolation from the flow of energy and causal interactions.

Langacker's role archetypes reflect the roles of participants in the causal chain and reflect the flow of energy along the action chain. The order of the energy flow hierarchy is *agent* > *instrument* > *patient/mover/experiencer* (Langacker 1991a: 238). He also presents an *initiative hierarchy*, which shows the capacity of a participant to function as an original source of energy and initiate contact with other entities. In this hierarchy the agent ranks highest. It is followed by the experiencer, which initiates only abstract interactions, and the other role archetypes. These hierarchies are represented in Table 7, in which *source domain* and *recipient domain* refer to the direction of energy transmission, while the distinction between *active* and *passive participants* is based on the initiative hierarchy of the roles (Langacker 1991a: 239)

**Table 7.** Role archetypes.

	Source domain	Recipient domain
Active participant	agent	experiencer
Passive participant	instrument	patient mover absolute

Langacker (1991b: 324–329) discusses the semantic role of indirect objects, and considers both the roles of an experiencer and a recipient or possessor as good candidates for prototype status. In that context, he states that the two roles are often intertwined and hard to distinguish. In my analysis, I have adopted a comprehensive concept of the experiencer covering the experiencers of emotions and sensations and recipients in the transfer of products and information.

There is a rough correspondence between Langacker's role archetypes and participant roles in functional grammar. The agentive archetypes resemble the central participant role in the functional material or action processes, while the experiential archetype corresponds to the central participant in the Hallidayan mental processes (Halliday 1994: 109-112;

Stillar 1998: 22–24). In addition, there are relational processes, whose central functions include classification and identification. These will be discussed in connection with the semantic relations represented by hyperlinks (see section 7.3.3.2). Halliday also defines a specific role of *beneficiary*, which acts as an indirect object, and a number of circumstantial roles, which are not as directly involved in the process as the participant roles.

The definitions of the role archetypes indicate that an *i-text* shows the highest degree of interactivity if the user is assigned the agent role, for example in *Search* and *Add to basket*. In cognitive terms, the subject is the uncoded trajector in the relation profiled by the *i-text*. In *i-texts* of the type *Proceed to checkout* or *Return to homepage* the user has a hybrid role of an agent-mover. In other words, by being an active participant in an action the user simultaneously affects his/her own virtual position. The role of an experiencer is also an active one: *View the picture* or *Read our privacy policy*, but now the object is not affected by the action. The rest of the roles constitute the group of passive participants.

When the *i-text* profiles a process, in other words when it contains a verb, the participant roles are manifestly obvious. The *i-text* is the least interactive when it profiles a thing, i.e. in the case of a nominal link or button label. However, nominalisations (see section 7.3.3.1) constitute some gradation in interactivity within the nominal profile. As far as atemporal relations are concerned, we have to look at the trajector/landmark profile to assess the level of interactivity. The user activity is more explicit if the user functions as the trajector of the relation. In the *i-text* *Back to home page*, the user is the trajector who goes to the home page, which is the landmark of the relation. In contrast, in an *i-text* denoting product categorisation *For the home*, the trajector of the atemporal relation is the uncoded ‘products’ or ‘articles’, which does not involve the user in the same way as in the previous case. In the case of nominal *i-texts*, there is no explicit user role. Nominalisations, however, show traces of a user role structure, as will be shown in the empirical analysis. The different *i-text* profiles and user roles are summarised in the following table:



**Table 8.** *I-text* profiles and user roles.

The <i>i-text</i> profiles:	<i>I-text</i> :	User role:
a process (= temporal relation)	<u>Search</u> <u>Add to basket</u>	agent
	<u>Go to checkout</u>	agent + mover
	<u>View the image</u>	experiencer
an atemporal relation	<u>Back to shopping</u>	The user is the trajector in the relation.
	<u>For the home</u>	The user is not the trajector
a thing	<u>Registration</u>	The user's agentive role can be traced in nominalisation.
	<u>Furniture</u>	No explicit user role

An additional remark about user roles must be made. *I-text* utterances are requests made by the website, and the user is the party that is asked to act. In a few exceptional instances, these roles are reversed, and the *i-texts* have been formulated as the user's requests for the website to carry out the task, as in Register me (Marks & Spencer). This question of perspective will be commented on in section 9.1.

The reason why I found Langacker's user roles suitable for my analysis is their compatibility with the classification of the consequences of user action in user–website operation. When the user acts as an agent, he/she can change the contents of the database and of the target page, which is the patient of the action undergoing an internal change of state. The user role of an agent-mover corresponds to the situation where the user can access a page but cannot change its content. However, the user is an active participant in the process moving virtually from page to page, while as an experiencer he/she looks at a picture or reads a text, which affects his/her own internal state of mind. These

correspondences can be compared with the definitions of interactive operations in section 2.7.

#### 5.4 Contrastive study

The World Wide Web was originally a completely English medium. As the web is becoming increasingly multilingual, there has been a growth of interest in translation issues and localisation (Crystal 2001: 223). English is still seen as a standard, and a lot of technical terms used on the WWW are derived from English. Research within contrastive linguistics has a new domain to be conquered in the language of networks.

Contrastive analysis is an area of applied linguistics, which developed in the latter half of the 20th century with the aim to carry out structural comparison of language systems in order to predict learning problems and find solutions to them. In the context of this study the practical objectives of contrasting languages could be described as facilitating navigation and information seeking on international WWW sites from the user's point of view and creating efficient and functional hyperlinking from the designer's viewpoint.

Contrastive studies are either directional or non-directional. In a directional study one of the languages is chosen as the source language, the equivalent structures of which in the target language are looked for and examined. In the generative-transformational approach the contrasts could be expressed as a series of conversions performed on the source language to produce the forms of the target language. Di Pietro (1971: 17, 18) classifies this type of analysis as an *operational* contrastive study as opposed to *taxonomic* studies in which elements of grammar that are not shared by the languages are merely identified according to their hierarchical importance. A third type in Di Pietro's classification consists of *autonomous* contrastive studies, in which each language is described independently and in its own right.

Another typology of contrastive studies is introduced by Krzeszowski (1990), whose classification is based on different types of *tertia comparationis* and levels of equivalence. A contrastive study must have a combining factor serving as a yardstick against which equivalences can be evaluated. This common platform is called *tertium comparationis* (Krzeszowski 1990: 15). Krzeszowski defines semantic-syntactic equivalence as an ideal *tertium comparationis* for contrasting constructions, systems or rules in two languages. He uses the term *2-text* to refer to pairs of text, written or oral, in two languages used as data in contrastive studies (Krzeszowski 1990: 25). *2-texts* can either function as translation or not. Studies, in which constructions in two languages are analysed, are based on *2-texts*, which are translation equivalents.

The *tertium comparationis* of my study is something that comes close to Krzeszowski's pragmatic equivalence, which means a relation between *2-texts* in such a way that they evoke maximally similar cognitive reactions in the users (Krzeszowski 1990: 30). I will base my comparison on the interactive function of hyperlinks. The analysis is non-directional and the data consists of *2-texts* which are not translations but are functionally constrained. The *2-texts* are *i-texts* from English and Finnish WWW pages of electronic commerce facilities selling consumer goods. The interactive operation represented by the active element in which the *i-text* has been embedded provides the common ground against which the semantic-syntactic manifestations of the link and button labels can be compared. As Krzeszowski (1990: 221) points out, this type of pragmatic equivalence constitutes a gestalt in the sense described by cognitive linguists (cf. Ungerer & Schmid 1996: 33). The most salient parameters of the utterance manifest themselves in the *i-text* and afford it its gestalt. In my analysis I intend to find out how the parameters of a prototypical gestalt of different interactive operations are expressed in English and in Finnish.

Wierzbicka (1991) makes use of a semantic metalanguage, which is based on universal semantic primitives to give a framework for her cross-cultural pragmatics. Decomposing *i-texts* into language-independent semantic components would be one way of establishing a *tertium comparationis* for the analysis. Wierzbicka's approach, which has been criticised

for oversimplification and conflating the metalanguage with underlying thoughts (see Palmer 1996: 188), provides insight into the comparison of English and Finnish *i-texts* as representations of interactive semantics. However, in the present topic the cross-cultural aspect seems to be less important than the medium of communication. For example, the avoidance of the use of the imperative in polite requests in spoken and written English cannot be seen in the web language. The same tendency can be seen in Finnish. The proliferation of imperative forms can be explained by means of the optimal relation between processing effort and contextual effects.

### 5.5 Synopsis of the linguistic/pragmatic approaches

The objective of the study, which was stated in section 1.2, can now be reformulated as the examination of the role of coded linguistic communication manifested in *i-texts* as guideposts for interaction in the framework of the pragmatic and semantic approaches that have been discussed in the previous sections from the viewpoint of hypertextual commercial communication. To illustrate the constitution of the research target, we can draw a metaphoric parallel from mathematics and computer programming. The mathematical expression  $3 \times 4$  stands for multiplying 4 by 3. The multiplication sign  $\times$  in the expression is called an *operator*. An operator is used to manipulate individual data items and return a result. These items, numbers 3, the multiplier, and 4, the multiplicand, in our example, are called *operands*. The whole expression  $3 \times 4$  stands for an *operation* that yields a particular result. Similarly, in programming operators are instructions given to the computer so that it can perform some task or operation. An operand can be anything that you can cause operators to perform an operation on. (cf. Cooper 1995: 217–219)

In the context of this study, active elements (i.e. hyperlinks, buttons and menus) are operators that perform interactive operations (e.g. moving to a new page, searching or selecting information) on operands that consist of interactive labels exhibited by the operators. The result of the operation is shown to the user on the screen as a new page, search results, acknowledgement of completed selection etc. The two systems,

mathematical operations and interactive operations on the web are paralleled in the following figure:

	Mathematics		Interaction on the web	
	Term:	Examples:	Term:	Examples:
<b>Operand</b>	multiplier and multiplicand	3 and 4	interactive label ( <i>i-text</i> )	<u>Furniture</u> , <u>Chairs</u> , <u>Search</u> , <u>Add to cart</u>
<b>Operator</b>	multiplication sign	x	active element	hyperlink, button
<b>Operation</b>	multiplication	3 x 4	interactive operation	going to a new page, searching, selecting
<b>Result</b>	product	12	completed operation	a new page, search results, acknowledgement of a selection

**Figure 24.** Web interaction paralleled with mathematical operations.

In fact, this parallel includes one more level that stands for concrete actions. Pushing the buttons on a calculator or writing numbers on paper could be compared with pointing and clicking. In section 2.4 these user actions were discussed.

By means of the concepts of this parallel, we can paraphrase the aim of the study as an attempt to find out what clues the linguistic code of the operands (interactive labels) in the context of the corresponding operators (interactive elements) give about the interactive operations and their results. In mathematics, both operators and operands affect the result in a logical and predictable way. As far as web interaction and communication is concerned, the interrelations of the interactive operations, elements and labels are far from being as straightforward and unambiguous as in mathematics or programming. However, my hypothesis in section 1.2 was that the consequences of interactive operations are reflected in the *i-texts* attached to active elements.

The point of departure of the analysis is the linguistically communicated and linguistically encoded information conveyed by the *i-texts* of e-store web pages. My intention is to examine this linguistic phenomenon from interactional and communicative viewpoints, which would contribute to the understanding of the nature of language, and not primarily to apply a particular linguistic theory to my research problem. Syntactic, semantic and pragmatic aspects are intimately interwoven in *i-text* interpretation, which also justifies a multi-theory approach. The discussion starts from the pragmatic viewpoint: the ostensive nature of the *i-text* context and the inferential process it initiates. Finally, the conceptual or representational meaning and structure is examined as such. At each level of the analysis, the main focus is on the contribution of *i-texts* to the user–website interaction.

An interactive element represents ostension showing the user that it has something worth the user's attention to communicate. When starting to interpret an ostensive stimulus, such as an active hypertextual element with a textual label, in the relevance-theoretic framework a web user is supposed to follow the path of least effort and stop at the first interpretation that meets his/her expectation of relevance (Sperber & Wilson 1986/1995: 272). The linguistically encoded *i-text* and contextually inferred features, which include the effect of the active element, form the explicature, which in this analysis is considered the primary intended meaning of the *i-text* in its context. Explicit coding may communicate about the actual function of clicking, the virtual interactive operation or the content of the target page. Alternatively, it may contain communication about two of these topics or all of them. The explicature is a comparative feature: when the proportion of the linguistically encoded information is larger, the explicature will be more explicit. Although the most explicit way of communicating is not necessarily the most effective, it can be assumed that the communicator explicitly expresses the aspects that he/she wants to emphasise especially in the type of non-literary communication that utilitarian websites represent.

At the other stage of inferencing, assumptions that are not explicitly communicated are implicatures. The role of implicatures in electronic commerce is less important than in

fiction hypertext, except that online advertising often makes use of clever implicatures. The communicative intention of the *i-text* is fulfilled when the user performs the action and in this way interacts with the website. Performing the action, which manifests itself in clicking on the active element, constitutes an interactive operation, the basic level of hypertext activity, the content of which varies in effect. Regularities and tendencies that can be detected in the connections between *i-texts* and corresponding interactive operations are described in a set of principles that can be referred to as “the grammar of interactivity” (see section 4.4), which gives an additional hypertextual dimension to the grammatical analysis of linear text.

The *i-text* must be examined in the context of the active hypertext element in which it has been embedded, because in addition to acting as an ostensive stimulus the active element gives the *i-text* its interactive quality and conveys the illocutionary force of the *i-text* utterance either alone or together with the linguistically encoded content. The contribution of the speech act theory can be seen in its idea of looking at an utterance as a multi-layer structure of speech acts, which has its equivalent in the multi-dimensionality of hypertext. The perlocutionary effect of clicking may be achieved by means of illocutionary force, which may have non-linguistic or linguistic manifestations.

Relevance theory is capable of accounting for the development of the logical form of an utterance into full-fledged information carriers with relevant propositional and illocutionary content. However, it requires a syntactic theory to complement it in the syntactic analysis of utterances. Cognitive grammar is used in the present study as the theoretical basis for the examination of the *i-text* and its immediate context as a coded message with a particular linguistic structure. Basically, relevance-theoretic thinking presupposes an autonomous syntax, which does not intrude into the area of pragmatic functions. However, there does not seem to be any strong sentiment among relevance theorists against a relatively free choice of the syntactic theory although problems concerning the interface with cognitive grammar and other functional approaches are brought out (Rocchi 2002a; Unger 2002). Consequently, cognitive grammar has been used as the theoretical platform for the examination of the lexico-grammatical structure of *i-*

*texts* in my analysis. The emphasis is on the conceptualisation of the semantic roles that *i-texts* assign to the web user in the interactive procedure between website and user. The conceptualisation of the *i-text* can be decoded with regard to linguistic conventions or grammar into semantic representations. The semantic representations of the *i-texts* can be seen as relations between figure and ground. In addition to describing the interactive operation of the active element, the *i-text* may represent a semantic relation between source and target. For the analysis of the linguistic code, cognitive grammar provides a unified theoretical basis, which combines lexical, syntactic and semantic aspects.

Before putting the pieces together and formulating the composition of the theoretical framework in the form of a chart, I will further discuss some of the differences and points of contact between the different approaches introduced in the above sections. The problem concerning the interface between relevance theory and cognitive grammar, which was referred to above, results from the fact that the two theories seem to intrude into each other's territory. Relevance theory is often regarded as a theory that extends the domain of pragmatics at the expense of linguistically encoded semantics: the explicit content of an utterance consists of both semantically represented and pragmatically inferred elements. On the other hand, cognitive grammar does not see any clear-cut boundaries between syntax, semantics and pragmatics but regards them as parts of a continuum. The apparent discrepancy between the continuism of cognitive grammar and autonomous syntax has been discussed by Harder (1999). He proposes that a notion of partial autonomy of syntax be adopted to reconcile between the semantically based idea of syntax in functional and cognitive linguistics and the obvious instances of indirectness between syntactic and semantic structures that autonomists base their views on.

A more fundamental source of incompatibility between cognitive and relevance-theoretic viewpoints, pointed out by Andrea Rocci (2002b), is the fact that relevance theory with its concept of pragmatic inference is based on the idea of logical forms and truth-conditional semantics, which do not find place in the conceptual system of cognitive grammar. On the other hand, the figure/ground segregation, which is fundamental to cognitive semantics, has been widely applied in linguistic analysis. Grundy & Jiang (2001) propose that the



concept of figure/ground *gestalt* can contribute to the understanding of the salient inferential process against the background of contextual ground. Panther and Thornburg (1998) have also presented an interesting cognitive approach to inferencing. They describe speech acts and their felicity conditions as action scenarios, which consist of BEFORE, CORE, RESULT and AFTER components (p. 758, 759). Panther and Thornburg contend that their scenario structure helps to account for the fact that interactants seem to draw their inferences effortlessly and instantaneously and it also gives an opportunity to describe the conceptual nature of inference patterns.

What combines cognitive grammar and relevance theory is their view on the relation between language and the surrounding world. Neither of these theories wants to segregate language as a system independent of context, but both of them can be regarded as theories encompassing different aspects that influence communication. However, cognitive grammar and relevance theory clash in the respect that the former cherishes a holistic view of language and communication, whereas the latter proposes a modular structure for the interpretation of coded and inferential communication.

The reason why I did not base my whole analysis on cognitive grammar with its all-inclusive coverage of the sub-areas of linguistics was discussed at the beginning of this chapter. I recapitulate the main point by pointing out that the main focus of the research in the cognitive framework has been on conceptual relationships, whereas inferential systems that typically fall into the domain of pragmatics, have received less attention. Langacker (1991b: 494–506) integrates speech acts and conversational structure into his cognitive framework by means of the concepts of grounding and viewing arrangement. Although *i-texts* could have been examined as request scenarios or other similar cognitive relation networks, I found the ideas of relevance theory as a natural starting-point for the interpretation of *i-texts* in their interactive operations. The explication into which the semantic form of an utterance is enriched in an inferential process provides a useful tool for the analysis. Yet, I believe that the more established the web practices become the more often we can see links and buttons that can be characterised as conventional units of the communication system which are readily available to the user without detailed

inferencing. Wilson and Sperber (2000) point out themselves that the subtasks of the overall comprehension process are not handled in a sequential order starting from explicatures and going on through implicated premises to implicated conclusions. Instead, the subtasks are developed in parallel responding to the expectations of the hearer, which may be revised or specified during the process.

To sum up, the *i-text* can be seen as the starting-point of an inferential process, which it activates in the audience, in web users. From the communicator's viewpoint it is an instance of ostension, which indicates the website's intention to inform the user of its informative intention. The *i-text* in its context in an active element also carries illocutionary force attempting to make the user act. The conceptual structure of the *i-text* may assign the user a role in the action represented by the linguistic code. This communication process takes place in the context of hypertextual environment of electronic commerce.

As shown in Figure 25, the *i-text* may reflect interactivity:

- by assigning the addressee an interactive role in the grammatical relation that the *i-text* represents
- by referring to the actual or virtual interactive function or the target of the function, the interactive content of which may vary.
- by indicating illocutionary force (e.g. verb in the imperative)

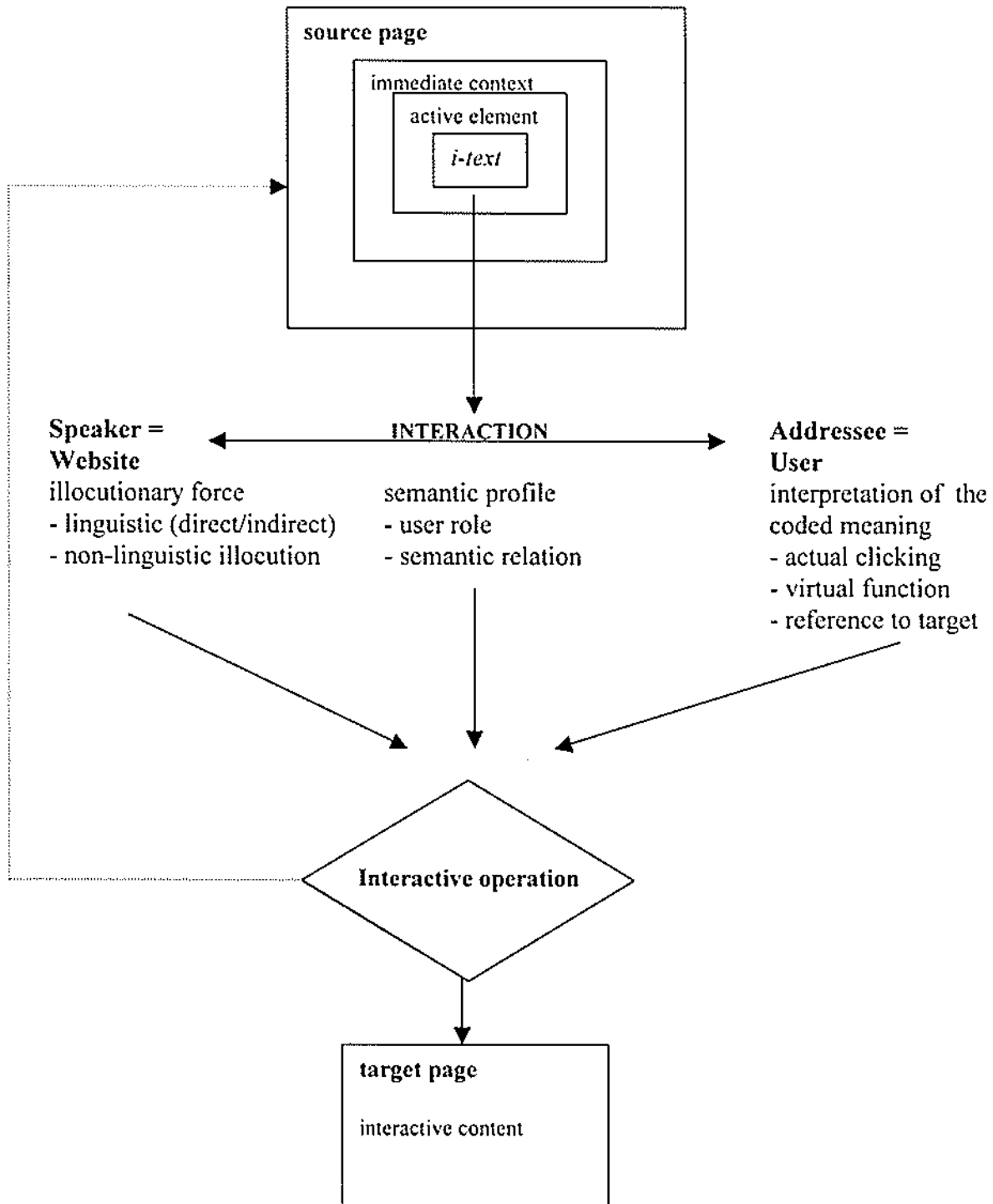


Figure 25. Elements of the framework of the study.

The diagram shows the *i-text* in its context on the source page (i.e. language of interaction) and its features in user–website interaction (i.e. interactive language) examined in this study. The diamond representing the interactive operation may refer to a) transition to a new page, b) transition to a new page together with another more powerful function such as submission of information or c) a function without transition to a new page (indicated by a dotted arrow in the diagram).

## 6 METHOD AND DATA

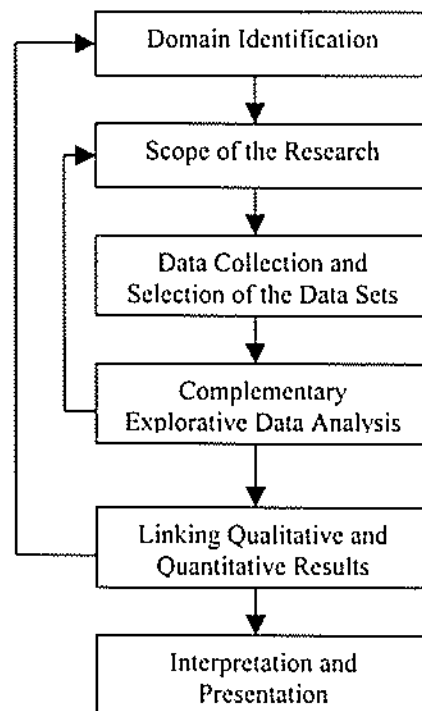
The methodological outline of the study was given in the introduction. In the following sections, flesh is added to the bones and the methods and data of the investigation are dealt with in more detail.

### 6.1 Methodological choices

My approach to the research problem is an empirical one. On the basis of data gathered from existing e-commerce websites, I aim to examine how the linguistic code of interactive labels acts as an indicator of interactive operations. As I described in section 1.5, the analysis is based on categories, and, therefore, the study can be seen as a piece of research under the umbrella of content analytical research strategy. In its broad sense, content analysis does not only pertain to the communicative content of text or discourse but also of its linguistic form (Titscher et al. 2000: 55). In the purest form of content analysis, the categories are quantifiable and they should be defined before coding is undertaken (Titscher et al. 2000: 58). The contribution of the linguistic theories on which the analysis is based brings along qualitative emphasis, which means a more intricate development in the formation of the categorisation, which is derived from both the theoretical framework and the experiences gained in the process of data gathering (see Kiviniemi 2001: 73–74). For example, the categorisations of interactive operations and semantic relations did not get their final form until considerable part of the data had been gathered.

The empirical material of the study is too small to allow far-reaching global generalisations concerning utilitarian WWW communication, but it is large enough for discovering certain trends in the use of language in user–website interaction. It also makes

it possible to use some quantification and quantitative methods alongside with qualitative examination. I have used a research schema that roughly corresponds to the Internet research schema presented by Sudweeks and Simoff (1999: 39), which is illustrated in the following figure.



**Figure 26.** Stages of Internet research.

The essential stage in the process presented in Figure 26 is the complementary explorative data analysis, which refers to an investigation where qualitative and quantitative methods are used to complement each other. As far as natural language is concerned, it is not possible to calculate exact numerical algorithms, which would explain a particular usage. It would have been fascinating to define a procedure, which would produce a particular linguistic manifestation of an *i-text* on the basis of a number of syntactic, semantic and pragmatic factors. This proved to be impossible because of the multi-faceted combination of factors affecting the language of interaction. However, quantitative methods allow us to find certain tendencies and interdependencies between various factors, which help us understand the formation of the use of linguistic forms in particular functions. Consequently, I have calculated frequencies of category codings and some correlations

between categories, most of which have been established on the basis of a qualitative scrutiny of the material in the theoretical and domain-specific framework of the study.

As the data analysis in the Internet research model presented by Sudweeks and Simoff exemplifies, the advantage of the methodological triangulation of quantitative and qualitative approaches lies in the fact that the different perspectives help to compensate the weaknesses of each method (Flick 2002: 265). The quantitative categorisation of the research material generalises and simplifies the richness of language use in interactive labels and makes it easier to find certain tendencies in this great variety that prevents us from seeing the wood for trees. On the other hand, there is the danger of cleaning away the interesting exceptional cases, the qualitative discussion of which adds to the contribution of the study. As will be described in section 6.3, the explorative stage of the study is characterised by qualitative analysis, which is followed by coding and categorisation based on the principles of quantitative content analysis. The examination of the findings takes place as a combination of a quantitative analysis based on frequencies and a qualitative assessment of the results.

The basic observation unit or unit of analysis in the empirical study is the *i-text* as it was defined in section 4.1. Titscher et al. (2000: 32) present the following classification of the functions of text material in research:

- |          |   |
|----------|---|
| The text | 1) as text                                    |
|          | 2) as representation                          |
|          | a) of features of the groups investigated     |
|          | b) of features of the situations investigated |

The main emphasis of the current study is on the type of study represented by category 2b in the above classification, because the *i-texts* are not only examined as such, but the focus of interest is on the role of the text as an indicator of user–website interaction. The observation units were analysed according to 25 variables and allocated to respective categories, which describe a) background information of the e-stores, b) characteristics of *i-texts*, c) characteristics of the immediate co-text of *i-texts* and d) interfacial and internodal properties in connection with *i-texts*. A detailed description of the variables is presented in section 6.3 and in Appendix 2. Nominal scale coding is used in connection

with most variables, while ordinal and ratio scales are applied when possible. An attempt was made to secure the relevance of the results by aiming at conceptual correspondence between the theoretical concepts and categories of the data.

## 6.2 Data

As was stated in the introduction, the empirical material of the study was gathered from existing electronic stores. The search for e-commerce websites was started at the randomly selected web portals of Netscape<sup>19</sup> and MSN<sup>20</sup> and continued on their equivalent UK sites. The electronic stores found were examined one by one, and the ones meeting the following criteria were selected as target stores:

- type of business: the store represents business-to-consumer trade
- product range: articles for the home and/or gift items are included in the range of products
- integration level of electronic operations: the whole shopping procedure except product delivery (electronic catalogue, ordering and payment) can be completed on the web.

It must be pointed out that convenience sampling as a data gathering method does not guarantee the representativeness of the sample to the population as a whole. In the current context, stores that can be accessed from popular portals are likely to represent above-the-average level with respect to the quality and width of product range and efforts made in website design. However, this is not critical to the main issues under consideration in this research, in which giving a comprehensive overview of e-commerce websites is secondary to finding out possible equivalences between language and interactive operations. An equal number of American and British websites were selected, although usages in the USA and the UK are not contrasted in the study. The number of 22 e-stores in the corpus guaranteed the saturation of the central categories in the analysis (see section 6.3). A few notes concerning the compilation of the Finnish corpus are made in section 8.1.

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<sup>19</sup> <http://www.netscape.com>

<sup>20</sup> <http://www.msn.com>



The *i-texts* constituting the corpus were collected from the pages that represent the purchase process from beginning to end. The pages and the phases of the shopping procedure can be categorised in the order of the major customer decisions (see section 3.4) as illustrated in Table 9.

**Table 9.** Page content according to customer decision.

Customer decision	Page	Type of <i>i-texts</i>
decision to navigate	1. home page	product categorisation
	2. product categorisation page	product search
decision to buy	3. product information and selection page	product selection product details
	4. shopping cart/basket	selection options starting checkout
decision to pay	5. customer information entry	submission and confirmation of order
	6. credit card information entry	
	7. order confirmation	

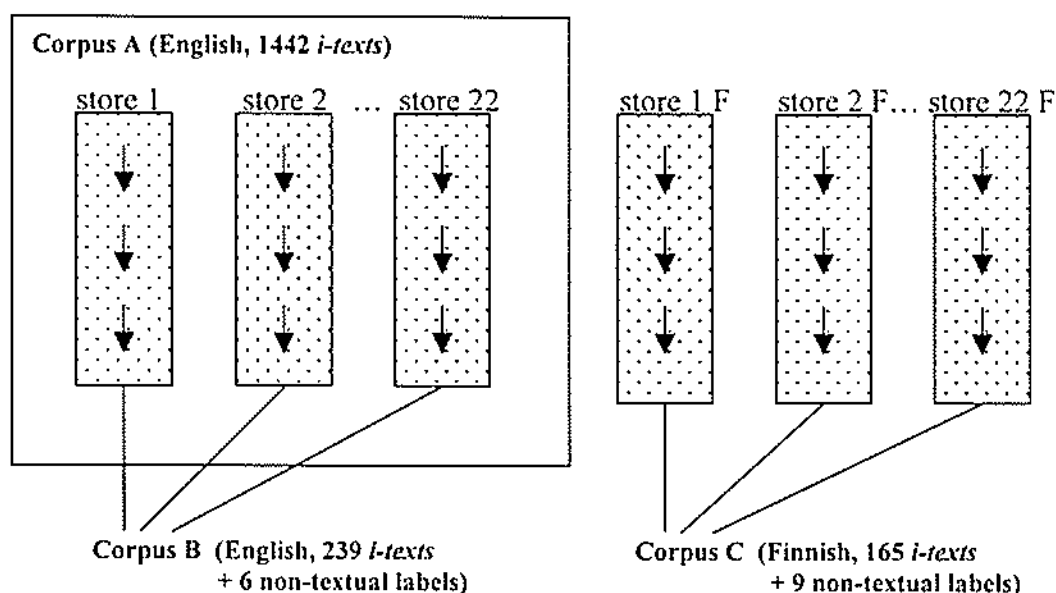
As we saw in section 3.3, the store home page contains links to a large amount of information, the most essential of which from the viewpoint of the shopping procedure are the ones that guide the web user to find the product he/she is looking for. Sometimes the home page only contains an invitation to shop while the main categorisation of the products can be found one click below the home page. Having found the product after a categorisation or search process, the customer is on a page where he/she may have an opportunity to examine the product in more detail, compare it with other similar products or make a decision to shop for it. In each store I selected a random product in one of the following categories: bedding, bathroom or gift items. As far as the Finnish e-stores are concerned, a wider range of products was included. On the shopping cart page (and even

later) the customer can reconsider his/her selections and modify them and decide whether he/she wants to start the order entry process. At the stage when the customer keys in his/her credit card number, he/she has usually made his/her final decision to buy the product. The purchase is confirmed either on the same page where the payment information is entered or on the following order confirmation page. Interactive texts that are collected from these pages representing the sequential phases of the buying process provide overall coverage of the characteristics of different *i-texts* in the context of online shopping.

The corpora of the study and the extent of each were briefly presented in the introduction. The following three corpora have been used in the analysis:

1. Corpus A: all *i-texts* on the pages along the route representing the shopping procedure through the websites of the 22 English e-stores
2. Corpus B: *i-texts* representing the necessary clicks to complete a shopping procedure on the websites of the 22 English e-stores; Corpus B is included in Corpus A.
3. Corpus C: *i-texts* representing the necessary clicks to complete a shopping procedure on the websites of the 22 Finnish e-stores

The *i-texts* in the corpora represent situations where the web user is shopping for the first time with a particular electronic store. The corpora of the study are presented diagrammatically in Figure 27 below. The dotted blocks with arrows represent the sequences of *i-texts* in the sequences of necessary steps in the online shopping procedure, while the large square stands for all *i-texts* on the web pages that have been used as the source of empirical material.



**Figure 27.** The corpora of the study.

A few notes need to be made about the composition of the corpora. Corpus A contains 1442 *i*-texts, the distribution of which between the 22 British or American websites is shown in Appendix 2. An additional remark must be made concerning the compilation of corpus B. Not all necessary steps were accompanied by an *i*-text in the target online stores; instead, they were represented by an icon or a picture. In addition to the 239 items which are also included in Corpus A, Corpus B contains six instances of such zero *i*-texts, each of which was supplied with linguistic code in its immediate context. In four cases there was an instruction text and in three instances both an instruction text and a link label. Similarly to the English Corpus B, the Finnish Corpus C consisting of 165 *i*-texts must be complemented with nine instances of zero *i*-texts so that complete sequences of clicks would be represented. In eight instances an icon or a picture is accompanied by an instruction text and in three instances both an instruction text and a link label are available. The corpus also contains one case, in which an icon of a shopping cart occurs alone without any linguistic information about the interactive operation.

The data collection method allows for quantitative analysis to a certain degree. It is possible to find out the frequency of *i*-texts with certain qualities in a particular interactive

operation. As far as overall quantitative comparisons between different types of *i-texts* are concerned, the limitations set by the stage-by-stage sampling must be taken into consideration. Finally, a note needs to be made about the quantitative bias towards the target-oriented GO TO *i-texts* in the corpus. To avoid this bias, it would have been possible to use stratified sampling and include an equal number of *i-texts* representing different interactive operations. However, the data gathering principle adopted in the current study makes it possible for the corpus to mirror the proportional frequencies of different types of interactive operation on WWW pages. *I-texts* representing GO TO operations can be expected to manifest a wider internal variety than the *i-texts* attached to the more function-oriented button operations.

### 6.3 Flow of the analysis

The purpose of the first stage of the empirical analysis was to form an overall picture of the whole spectrum of labels occurring in active elements in the hypertext structure of e-store websites. It also helped me to evaluate the applicability of the classifications used in hypertextual and linguistic analysis to the current issue. My starting point was neither to create an exclusively corpus-based classification in the manner of the Grounded Theory approach nor to use a complete system of categories established beforehand in accordance with the principles of classical content analysis, but rather to base the analysis on a combination of previous findings and observations concerning the material gathered for this study. Consequently, the construction of the theoretical framework of the study and the empirical research were not two distinct and successive phases of the project. Instead, the definition of concepts and categories was influenced by the empirical data that was collected for the purposes of the study. The categories of types of interactive operation and interactive target page content, in particular, were formed by means of data-based examination. However, the general outline of the research process follows the principles of content analysis. When the categorisation and coding system had been established, all empirical material was recoded using the same codes and categories.

The initial categorisation based on earlier research and the results of browsing a large number of e-commerce facilities was used as a tool to analyse *i-texts* on two websites, one British and the other American. Because the observational unit was the *i-text*, which encompasses not only link labels but also strings of text embedded in other interactive elements, the existing hyperlink classifications were not sufficient to cover the whole variety of research material. On the basis of the observations at the first stage of the analysis, some additions and adjustments were made to the categorisation and coding system, after which data gathering was continued. Both the development of the theoretical basis and the emergence of new types of *i-texts* in material gathering were taken into consideration in the empirical analysis in the course of the whole investigation process. After about a dozen e-stores had been investigated in accordance with the principles described in this section, the occurrence of new types of *i-texts* seemed to be infrequent. The system of categories proved to be relatively stable and in this sense a saturation point had been reached. When 11 American and 11 British e-stores had been scoured, I had a corpus of 1442 *i-texts*. The criteria according to which the websites, pages and active elements were selected are discussed below.

The observational unit, the *i-text*, was analysed with regard to the variables listed in Table 10, which also shows the measurement scale. Most of the variables only allow nominal scale measurement. The categorisation used with respect to each variable can be found in Appendix 1. The variables representing interactivity (interactive operation, interactivity of the target page and user role) have been treated as ordinal scale variables, and the grounds for their mutual order have been given in the appropriate parts of the analysis. Only two variables, one representing the number of words in the *i-text* and the other indicating the node level, that is the number of clicks from the home page, can be measured on a ratio scale. This, naturally, sets restrictions on the scope of quantitative analysis, as nominal scale variables only allow the calculation of frequencies and modes. Some of the key variables of the study, however, have been analysed on ordinal scales. Consequently, it is possible to compute correlations that are essential to the results of this analysis provided that the order of variable values is well grounded. A spreadsheet application was used for

gathering data, calculating frequencies and crosstabulations, while correlations were calculated by means of a statistics program.

**Table 10.** Variables of the analysis.

Type of information	Variable	Measurement scale
A. Background information about the store	1. language 2. company name 3. type of store	nominal nominal nominal
B. <i>I-text</i> characteristics	4. <i>i-text</i> wording 5. number of words 6. syntactic structure 7. countability of the nominal head 8. semantic relation 9. user role 10. explicitness 11. schematicity of explicit content 12. relation to source page content 13. discourse function	nominal ratio nominal nominal nominal ordinal nominal nominal nominal nominal
C. Co-text characteristics	14. link title wording 15. embedding sentence or instruction text wording 16. user role in link title 17. user role embedding sentence or instruction text 18. user input	nominal  nominal ordinal  ordinal nominal
D. Context and interface characteristics	19. visual effects of the active element 20. accompanying icon 21. node level 22. type of source page 23. interactive operation 24. interactivity on the target page 25. window of the target page	nominal nominal ratio nominal ordinal ordinal nominal

The groups of categories listed above have been chosen to correspond to variables in the research problem: the *i-text* in its immediate linguistic and non-linguistic context at a certain phase of the shopping procedure is examined with regard to the interactive

operation represented by the active element and the semantic relation between the source and target page.

#### 6.4. On the validity and reliability of the study

The methodology used in a study must be considered by assessing how valid, reliable and objective data it provides. In the positivist tradition, the following criteria are applied to research (Denzin & Lincoln 1998: 186):

- *internal validity*, which refers to the degree to which research results map the phenomenon in question
- *external validity*, which denotes the generalisability of research results
- *reliability*, which describes the replicability of the research, and
- *objectivity*, which refers to the extent to which research results are free from bias.

In the following I will discuss each of these requirements with respect to the current study.

The internal validity of a study is connected with the ability of its theoretical framework to account for the phenomena under research in a reasonable way (cf. Engebretsen 2001: 24). The suitability of the linguistic and pragmatic theories, from the perspective of which the research problem has been approached, has been dealt with in chapter 5. During the research process I have several times been asked why I did not choose semiotics as the basis of my theoretical approach. These questions have been raised because of the multimedial character of web pages, which usually contain a lot of non-textual elements, such as icons, pictures or audio and video sections all of which contribute to the communicative effect of a website. A semiotic framework would have been able to provide concepts and analytic tools for an investigation of all these elements. My primary interest, however, was from the very beginning in the role of coded communication in the electronic shopping procedure. Consequently, my focus has been on utterances that consist of linguistic code and I have included the non-textual elements in the contextual part of my framework. Language is after all a powerful medium of communication, and it has survived very well in the revolution of communication technology.

Whether the variables that I chose to be constituents of interactivity, really represent the interactive character of *i-texts*, must be left open for discussion. I have sought to find grounding for my choices in the grammatical and pragmatic theories that I have used when constructing the theoretical basis for my study. This study represents theory triangulation in the literal sense of the word: I decided to look at the research phenomenon, interactive labels as utterances, from three angles: the semantic-grammatical structure in the framework of cognitive grammar, directive utterances as they are understood in speech-act theory and instances of coded communication as a basis of user inferencing in the relevance-theoretic sense. The weakness of this approach is that within the scope of a single study it is impossible to go into each theoretical framework in such detail as would be desirable. On the other hand, it opens up a number of opportunities for further research in new media communication at the same time as it validates the current findings.

Observations are externally valid when the researcher describes the situation as it really is and is able to draw correct conclusions from the situation observed (Grönfors 1982: 174). As was stated in section 6.2, the corpus of the study is a convenience sample; the target e-stores were found by means of search engines and portals by selecting each store that met the predefined requirements of an electronic store. The validity of the sample can be examined at two levels: 1) are the 22 stores that were included in the corpus a representative sample of business-to-consumer electronic commerce facilities and 2) are the *i-texts* that were selected from these 22 websites a representative sample of the interactive labels occurring on the sites? In addition to the grounds of the compilation of the corpus that is presented in section 6.2, I would like to emphasize that a level of saturation with respect to central categories was attained when about half of the stores in the empirical material had been analysed. Although there are variations, the basic structure of e-stores is relatively stable. An alternative method would have been to scour a larger number of stores in search for *i-texts* representing particular types. In that case the sequential character of shopping sessions would have received less attention. The generalisability of the research results to other types of websites was referred to in the



introduction. The interactive operations as such can be found on the websites of all types of organizations, but the lexical content is naturally domain-dependent.

Reliability is a factor contributing to the validity of a study. The interpretation of the collected material is reliable if it does not contain inconsistencies (Grönfors 1982: 175). The definition of categories and coding was performed by one person, and, therefore, intra-individual checking has not been used (see Pitkänen & Kohonen 1984: 69–71). As was pointed out in section 6.2, all material was recoded every time when changes to categories were made. The reliability of research is also dependent of the documentation of the research process (Flick 2002: 221). Because of the transient nature of WWW content, print-outs were made of the WWW pages from which the material was gathered. The *i-texts* and their categorisations were recorded in a worksheet of a spreadsheet program. Each *i-text* on the worksheet can be identified by means of a serial number, which was also marked on the corresponding print-out. This made it possible to trace the intranodal and intermodal relations of the *i-texts* even if the WWW pages had been changed or removed.

The question of adequate documentation is also connected with the objectivity of research, which can be characterised as the external reliability or confirmability of the study (Miles & Huberman 1994: 278). In sections 6.2 and 6.3 I have made an effort to describe the procedures in a way that is sufficiently explicit to allow a replication of the study. The study data have also been retained and they are available for reanalysis. Freedom from bias, which is the primary attribute of objectivity, has been pursued by means of presenting sufficiently comprehensive background information and describing the procedures explicitly. Bias manifested in predilection for certain theoretical standpoints instead of competing ones is inevitable.

## **7 I-TEXTS AS A REFLECTION OF INTERACTION**

The aim of this chapter is to present the results of the analysis of the *i-texts* that constitute the empirical data of the study. The analysis is based on the discussion in chapter five, in which the theoretical linguistic framework of the study was introduced. We will first look at *i-texts* as ostensive stimuli that attract users' attention and carry illocutionary force urging them to interact. We will start by briefly studying non-linguistic stimuli occurring in connection with *i-texts* and interactive elements in which they are embedded. Non-linguistic ostensive stimuli do not require much processing effort of computer/Internet literate users but they can seldom guide the user sufficiently without the support of linguistically encoded information. Next, we will examine the illocutionary force, which is linguistically indicated either in the *i-text* or its immediate co-text. This is followed by the examination of explicitly indicated information in the *i-texts* and the degree of required inferencing. Finally, the syntactic-semantic structure of the *i-texts* and the user role in this structure are analysed. At each stage of the analysis, the focus is on the contribution of the *i-texts* to user–website interaction. The results of the analysis are drawn together in the investigation of *i-text* representation at the different stages of the electronic shopping procedure.

### **7.1 Illocutionary force of a request in contextual elements and in *i-texts***

On WWW pages active elements labelled with *i-texts* constitute the points of contact in user–website interaction. Hyperlinks, buttons and other active elements enable the user to make his/her selections and influence the flow of interaction. The purpose of this section is to examine how the user is encouraged to interact with the website and what the role of *i-texts* is in relation to other indicators of interaction, whether they are linguistic or non-linguistic. The concepts of illocutionary force and ostension overlap each other. For

example, underlining below an *i-text* acts as ostension, in other words it makes it manifest that the *i-text* contains a message, which is worth the user's attention. But underlining does not only indicate that the *i-text* contains something important to the user. At the same time it is a manifestation of illocutionary force urging the user to click the active element.

Illocutionary force may be carried by

1. non-linguistic indicators (underlining, different font or colour, image of a button, change in the cursor shape, etc.)
2. linguistic indicators which can be found
  - a. in the co-text (link title, embedding sentence, instruction text, status bar text) and/or
  - b. in the *i-text* itself.

On a WWW page illocutionary force indicating devices (cf. Verschueren 1999: 25) may occur singly or in combination. Because of the compactness of *i-texts*, the markers of illocutionary force are often only non-linguistic or the rhetoric space of the *i-text* is expanded by means of the co-text. We could apply Mark Bernstein's (2000: 216) terms *collage* and *montage* to the indication of illocutionary force by means of several simultaneous or sequential markers. By collage he means spatial juxtaposition of arguments conveyed to the web user. For example, the request to click may be indicated in the link label, link title and status bar simultaneously. Temporal juxtaposition, in which the user is addressed by means of sequential messages in the *i-text*, is called montage. In the following, we will first examine in what ways the implements indicating illocutionary force contained in the *i-text* code are strengthened or replaced by non-linguistic markers or indicators located in the co-text.

### 7.1.1 Ostension and illocutionary force in the non-linguistic context

As was stated in section 5.1.1 behaviour that makes manifest an intention to make something manifest is ostensive behaviour. The external characteristics of a hyperlink, button or menu are part of ostension; their task is to attract the user's attention and point out the information that is contained in the *i-text*. These ostensive features include

- change in the shape of the cursor (usually into a pointing hand)
- underlining
- text colour which differs from the colour of the surrounding text
- change in colour when the cursor hits the *i-text*
- font which differs from the font of the surrounding text
- change in font when the cursor hits the *i-text*
- button-shaped active element
- animation
- picture or icon

Several of these features often co-occur, which increases their effect. Some of them are dynamic in the sense that they occur in connection with mouseover, whereas other features are static on the source page. Kostelnick and Rogers (1998: 13–22, 183) introduce a list of six strategies that are used both in a verbal and visual sense to create rhetorical impact: arrangement, emphasis, clarity, conciseness, tone and ethos. The ostensive features listed above belong mainly to the category of emphasis, the function of which is to add to the prominence or intensity of expression. In most cases they instantiate the basic gestalt principle of figure/ground contrast (Kostelnick & Rogers 1998: 53).

In addition to the visual non-textual signals, the text *Click here* or *Click this link/button* can also be regarded as part of the ostension because it doubles the message carried by other ostensive features. In addition, it is an indication of illocutionary force in the directive function of an order or request. From the interactive point of view, an *i-text* of this type manifests a role in involving the user in the process. These aspects of linguistically encoded information will be discussed later. As for the non-linguistic features, Table 11 shows their frequency in the corpus according to the interactive operation they represent (n=1422). Change in cursor shape is always a change from an arrow into a pointing hand. Change in colour can affect either the *i-text* itself or its background.

**Table 11.** Frequency of non-textual features according to interactive operation.

Non-linguistic feature	SUBMIT	SELECT	SEARCH	GO TO	Total
Change in cursor shape	78	107	25	1198	1408
Underlining	0	18	0	489	507
Button-shaped element	79	89	23	105	296
Change in colour	0	1	0	271	272
Menu	0	14	2	2	18
Change in font	0	0	0	12	12
Animation	0	1	1	2	4
Total number of instances (=n)	84	130	27	1201	1442

The table shows that the division into button and hyperlink functions (see Table 5 in 4.4) does not necessarily correspond to the external appearance of an active element. A number of GO TO hyperlinks (105 occurrences) have been formed into a shape of a button, while some SUBMIT, SELECT or SEARCH operations do not have the appearance of a button. The change of the cursor shape into a pointing hand seems to accompany an *i-text* in 97.6 % of all the instances in the corpus. In fact, it is a concrete way of ostension showing a piece of information that the website wants the user to pay attention to. As Järvinen (1999: 49) states, this change into a pointing hand helps even an inexperienced web user find his/her way from one document or page to another.

The non-linguistic features listed in Table 11 often co-occur with one another. The most frequent combinations in the data of the analysis were the following :

change in cursor shape + underlining	442 instances
change in cursor shape + button-shaped element	278 instances
change in cursor shape + change in colour	206 instances
change in cursor shape + change in colour + underlining	65 instances
change in cursor shape + change in font	12 instances

A change in cursor shape occurred as the only non-linguistic feature in connection with 401 *i-texts*, while the button was the only non-linguistic indication of the existence of an active element in 16 cases.

Icons may accompany *i-texts* or they can replace them. The latter cases have not been included in this study, because the focus of interest is on the linguistically encoded content. The most frequent types of icons have been listed in Table 12. All types of stylised arrows and arrowheads have been categorised as arrows, which form by far the most common type of icon. Additionally, a photographic image was detected to co-occur with an *i-text* in 69 instances.

**Table 12.** Frequency of different types of icons in connection with *i-texts*.

Type of icon	Frequency
Arrow	134
Cart, basket or bag	19
Magnifying glass	10
Cross	8
Question mark	4
Padlock	3
Other	69
Total	247

As Landow (1997: 60) points out, text itself without explicitly visual materials contains a lot of visual information in addition to alphanumeric code. Besides the features mentioned above, he mentions, for example, spacing, paragraphing and assigning specific locations on the page as examples of this visual information. For another thing, the division between text and visual elements as labels of interactive instruments does not seem to be clear-cut but it rather forms a continuum. On one hand, we have clearly textual elements, which are prototypically hyperlinks embedded in the page content or *lexia*. On the other hand, there are button-shaped elements such as logos with a piece of text that can function as link labels. The text in the logo is not necessarily relevant to the outcome of the link following and may not be linguistically decoded by the user. Further, there are icons that do not contain any textual elements but are stylised pictures, the function of which is not to provide information about the things they represent but to suggest a particular interactive

operation (see Kostelnick & Roberts 1998: 359, 360). An iconic magnifying glass represents searching, a shopping cart stands for product selection, a padlock security and so on. In the semiotic sense, the form of an icon explicitly signals what it is about. Finally, there are the graphic elements, such as underlining, colour and font, which do not manifest any topological similarity of an icon between a sign and what it denotes (cf. Sebeok 1994: 28). As ostensive stimuli, they do not inform the user of the function and target of the operation of an active element without linguistic information.

### 7.1.2 Link titles

With the discussion of link titles we move over from non-linguistic to linguistically encoded information. The informative and guiding function of link titles was introduced in section 4.2.2. Link titles are efficient ostensive stimuli attracting the user's attention by popping up when the cursor enters an active area on the screen. They provide an additional opportunity for the website designer to inform the user about the interactive operation implemented by an active element. This section aims to explore the ways in which link titles are used in the corpus e-stores to carry illocutionary force.

Link titles were found to occur in connection with 331 *i-texts* out of the total of number of 1442 in the corpus material, which represents a frequency of 23.0 %. In other words, approximately one in four *i-texts* was equipped with a link title. The distribution of the occurrence according to interactive operation is presented in Table 13.

**Table 13.** Occurrence of link titles according to interactive operation.

Interactive operation	Occurrences of link titles	Total number of <i>i-texts</i>	% of all occurrences of the interactive operation
SUBMIT	41	84	48.8
SELECT	59	130	45.4
SEARCH	14	27	51.9
GO TO	217	1201	15.0
Total	331	1442	23.0

The figures in the table reveal that link titles are more frequently used in connection with button functions (i.e. SEARCH, SELECT and SUBMIT) than with hyperlinks: in about half of the cases a button label has a link title while only 15 per cent of the link labels are furnished with a title. In 250 cases, which is 75.5 % out of the total number of 331 link titles, the *i-text* is repeated in the title. This appears to be waste of web page space if the repetition is not motivated by greater emphasis placed on the *i-text* context or by technological reasons. In a few cases the link title is similar to the *i-text*, but lacks a word repeating only the keyword(s), e.g.:

<i>I-text:</i>	Link title:
<u>100 % secure ordering</u>	<i>Secure ordering</i> (Furniture123.)
<u>Share with a friend</u>	<i>Share</i> (Ross-Simons)

**Table 14.** Direct requests in *i-texts* and link titles.

		<i>I-text</i>		
		Imperative	Non-imperative	Total
Link title	Imperative	45	13	58
	Non-imperative	9	14	23
	Total	54	27	81



Table 14 presents the co-occurrence of direct requests in *i-texts* and link titles that are not identical with the corresponding *i-texts*. In more than half of the cases both the *i-text* and the corresponding link title were found to be in the imperative, which meant boosted illocutionary force. From the viewpoint of interactivity, the main focus of interest is on instances in which the link label adds illocutionary force to the *i-text*. In a few instances, web designers had used the opportunity of inducing the user to click an active element by equipping an *i-text* that had a nominal or atemporal profile with a link title that exhibits a processual profile in the form an imperative. A majority of these occurrences consist of the collection of links that constitute the main categorisation of *The gift delivery co.*, which had link titles with the formula *Click here for...e.g.:*

<i>I-text:</i>	Link title:
<u>Hampers</u>	<i>Click here for Hampers (Gift delivery)</i>
<u>For Her</u>	<i>Click here for Presents For Her (Gift delivery)</i>

A few similar instances could be found on other websites too:

<i>I-text:</i>	Link title:
<u>Wishlist</u>	<i>Add to wishlist (Spiegel)</i>
<u>OK</u>	<i>Order now (Presentco)</i>

The corpus also contained link titles that instantiate a more active user role than an *i-text*, although the *i-text* represents a processual profile. This means a change of the user role from agent-mover to agent (see 5.3.3), e.g.:

<i>I-text:</i>	Link title:
<u>Go</u>	<i>Submit search (JCPenney)</i>
<u>Proceed</u>	<i>Place order (McCord)</i>

On the website of *www.presentco.uk* an example could be found of a directive link title in which it is the user that makes a request to the e-store website:

<i>I-text:</i>	Link title:
<u>Tips &amp; help</u>	<i>Please help me to choose</i>

In some instances the profiling is reversed: a processual *i-text* in the imperative has a link title with a nominal profile. Now the illocutionary force is contained in the *i-text*, while the link label functions as an additional ostensive signal:

<i>I-text:</i>	Link title:
<u><i>Request a Catalog</i></u>	<i>Catalog Request</i> (www.ross-simons.com)
<u><i>Click Here for Valentines Day Gifts</i></u>	<i>Valentines Day</i> (www.giftdeliveryco.com)

The analysis showed that link titles were not widely used to convey illocutionary force in user–website interaction despite the opportunities they afford. Link titles would be a suitable medium to urge, convince or reassure web users, who are pondering whether to click an active element or not. Elliptical utterances could be fleshed out into explicit directives. The reason why the potential of link titles is not fully exploited might be, besides mere negligence, designers' cautiousness not to make web pages too complex. An additional link title also increases the reading effort of the user. The relation between the contribution of an additional signal and the processing effort it requires is discussed in connection with the relevance-theoretic framework.

### 7.1.3 Embedding sentences

Co-textual elements other than link titles do not appear on the screen on the basis of user interaction, such as a mouse rollover, but they are part of the stationary page content. When link taxonomies were discussed in section 2.5.1, embedded links were found to form one of the primary link categories. Embedded links are amalgamated into the surrounding sentence structure, which guides the user in the interpretation of the *i-text*.

The word or words constituting the *i-text* may have different syntactic functions in the sentence in which it has been embedded:

object:	<i>Please read our <u>Terms &amp; Conditions</u>.</i> (McCord)
subject:	<i>Your <u>basket</u> contains:</i> (John Lewis)

complement:	<i>Become a <u>registered Spiegel shopper</u>.</i> (Spiegel)
finite verb:	<i><u>Edit order summary</u>.</i> (Ross-Simons)
finite verb + adverbial	<i><u>Click here</u> to sign up for an account</i> (Eddie Bauer)
finite verb + object	<i><u>Contact us</u> if you have any comments or queries</i> (McCord)
finite verb + prep.phrase	<i>Click here to <u>return to your shopping cart</u>.</i> (Gifts)
infinitive clause:	<i>You can <u>view your order</u>.</i> (Ross-Simons)
head of a prep.phrase:	<i>You can contact us by <u>email</u>.</i> (Ross-Simons)
adverbial:	<i>If you'd like to add items from our mail catalog click <u>Here</u>.</i> (Domestications)

Even a complete sentence that is embedded in the lexia may function as an *i-text*:

*Can't remember your password? Get a new one.* (Eziba)

Table 15 shows the occurrence of embedded *i-texts* according to their grammatical function and sentence type.

**Table 15.** Distribution of embedded *i-texts* according to their grammatical function and sentence type.

Grammatical function of the <i>i-text</i>	Sentence type			
	Assertive	Directive	Interrogative	Total
Subject or part of subject	5			5
Object or part of object		17	1	18
Complement		1	1	2
Head of a prepositional phrase	5	6	1	12
Adverb		1		1
Infinitive	4	2		6
Finite verb (+ object/adverbial)		34		34
Complete sentence embedded in the page content		9		9
<b>Total</b>	<b>14</b>	<b>70</b>	<b>3</b>	<b>87</b>

The focus of this discussion is on instances in which an embedding sentence gives an *i-text* additional illocutionary force, in other words on instances in which the *i-text* proper does not contain a finite verb. Characteristically, such an *i-text* is a hyperlink label that constitutes the object or is included in the object in a sentence, or, in cognitive terms, the landmark of a processual relation. The *i-text* may comprise the whole noun phrase (excluding an article or a possessive pronoun) that constitutes the object, e.g.:

*Select a payment option* (JCPenney)

*Check out our FAQs* (Domestications)

*Show me the Weekly Specials* (Eddie Bauer)

In the last example above the request is directed to the website. The *i-text* may also consist of a modifying noun in the object noun phrase:

*See our delivery and pricing policies*. (Marks & Spencer)

In addition, the *i-text* may be the head or landmark of a prepositional phrase:

*If you need to change any items, please go to the shopping basket to correct them.*  
(Domestications)

An indirect speech act is instantiated by the following question, in which the user is requested to click the link to order a catalogue by asking him/her whether he/she has already ordered one. The *i-text* is the object of the sentence:

*Have you ordered your latest catalogue?* (McCord)

When an infinitival structure constitutes the *i-text*, the embedding structure may add to the illocutionary force of the expression by means of an imperative form. In the following two examples the embedding sentence is assertive. The user could give the *i-text* an imperative interpretation with full illocutionary force without having to process the embedding sentence, because the imperative and infinitive forms are identical in English.

*You may log out now* (JCPenney)

*You can Continue Shopping* (Ross-Simons)

These examples instantiate embedding sentences that can be seen as indirect speech acts in the same way as the interrogative sentence above. A directive speech act is expressed by means of an assertive utterance.

Instances of button labels that have been embedded in an instructive sentence are far less common than embedded hyperlinks. In fact, I was able to detect only one instance of a button label that constituted a part of an embedding sentence. The label was attached to an active element representing the SELECT function:

*Click here to add to shopping bag/send details to friend* (McCord)

Embedding sentences around *i-texts* that contain a verb in the imperative explicate the directive contained in the verb. These are comparable to the explicatures of *i-texts* that will be dealt with in 7.2 and the subsequent sections.

#### 7.1.4 Instruction texts

In the context of this study the term *instruction text* refers to all strings of texts that occur on the web pages in connection with active elements and give users guidance about their operations. As a concept, *instruction text* is more vague than, for example, *link title*, because the line of distinction between an instruction that is closely connected with an *i-text* and other web page content is sometimes hard to draw. Instruction texts were found to occur in all interactive operations as the following table shows.

**Table 16.** Occurrence of instruction texts in different interactive operations, with the exclusion of embedding sentences.

Interactive operation	Occurrences of instruction texts	Total number of <i>i-texts</i>	% of all occurrences of the interactive operation
SUBMIT	15	84	17.9
SELECT	16	130	12.3
SEARCH	12	27	44.4
GO TO	383	1201	31.9
Total	426	1442	29.5

The table also shows the proportion of *i-texts* with an instruction text according to interactive operation. In connection with button functions instruction texts inform the user of the operation of an active element, and with the GO TO operation the task of the instruction text is to help the user with navigation. As far as the illocutionary force is concerned, we are interested in such *i-text*/instruction text combinations in which an instruction text enhances the directive force of an *i-text*. In order to be able to find such instances, we need to crosstabulate the instances of *i-texts* and instruction texts according to whether the user is addressed in a direct way by means of an imperative form or not. Table 17 presents the results of this crosstabulation:

**Table 17.** Direct requests in *i-texts* and instruction texts.

		<i>I-text</i>		
		Imperative	Non-imperative	Total
Instruction text	Imperative	36	137	173
	Non-imperative	34	219	253
	Total	70	356	426

The figures in the table reveal that there are 137 instances in which the instruction text indicates greater directive force than the corresponding *i-text*. Most of these are occurrences of texts that precede hyperlink menus or lists of hyperlinks, e.g.:

Instruction text:

*Shop by category*

*Choose an item below*

*I-text:*

*Spring sale/Fashion bedding / Kids' room/Bedding basics* etc. (JCPenney)

*Heart Towels/Egyptian Cotton Towels* etc. (Domestications)

In a few cases a nominalised *i-text* gets additional illocutionary force from an instruction text that has a verb in the imperative form, e.g.:

Instruction text:	<i>I-text:</i>
<i>Choose Enhanced Checkout if...</i>	<u>Enhanced Checkout</u> (Target)

The illocutionary force of an *i-text* with a verb in the imperative can also be strengthened by another imperative form in the instruction text. The user role may change from an agent-mover to an agent (see section 5.3.3), e.g.:

Instruction text:	<i>I-text:</i>
<i>Shop from our catalogs</i>	<u>Go</u> (JCPenney)

Both the *i-text* and the instruction text may contain an explicit imperative that assigns the user the agent role:

Instruction text:	<i>I-text:</i>
<i>Swap recipes and tips with members</i>	<u>Share</u> (Martha Stewart)

The topic of user role in the *i-text* itself will be reverted to in section 7.3.5.

As far as indirect speech acts are concerned, only one instance of an assertive instruction clause was found. It occurred in connection with an *i-text* in the imperative:

Instruction text:	<i>I-text:</i>
Your order is not complete until you click here:	<u>Complete your order</u> (Wedgwood)

### 7.1.5 *I-texts* and illocution

*I-texts* representing indirect speech acts were found to be rare in the corpus with only a few exceptional occurrences, whereas imperative forms were frequent. Out of the total number of 1442 *i-texts*, 491 were found to contain a verb form in the imperative, 10 were questions addressed to the user, 16 questions of other types and three elliptical assertive clauses. In other words, very few instances of the indirect request strategies that were presented in Table 6 in section 5.2.1 were detected. Communication on utilitarian websites is characteristically succinct and straightforward, and it appears that users are often addressed in a direct way. Instead, elliptical expressions are frequent, but the type of

enriching and inferencing required by them can be characterised as implicit, not indirect. It can be concluded that in the user instructions of English-language electronic stores politeness is seldom expressed by means of indirect speech acts. In the context of this study, the distribution of the imperative is closely associated with the occurrence of processual profile, which will be discussed in section 7.3.1.

Even if the sentence type of an *i-text* is marked as interrogative, it can be regarded as an instance of ellipsis rather than an indirect speech act. For example, *Forgot password?* (Martha Stewart) and *Need help?* (Marks & Spencer) can be seen as elliptical forms for 'situations in which the customer has forgotten his/her password or needs help'. However, if the relation between user interaction, that is clicking, and the *i-text* is examined, these interrogative *i-texts* can be categorised in the first request category in Table 6. In some cases the instruction text is interrogative and the *i-text* proper contains an imperative to offer a solution to the problem expressed in the question, for example:

Instruction text:	<i>I-text:</i>
<i>Need to make a return/exchange?</i>	<i>View return and exchange policy.</i> (Target)

An embedding sentence may also sometimes represent interrogative and assertive sentence types, as could be seen in section 7.1.3. Additionally, five occurrences of *please* were found. Overall, the study showed the prevalence of the fourth category in Table 6. As was stated in the above sections, illocutionary force of a request may be expressed in the *i-text* and in its co-text simultaneously. The empirical material was found to contain 11 instances with triple requestive force; the *i-text*, its link label and instruction text each were in the imperative. For example, on the website of J. C. Penney the *i-text* Go in connection with a SEARCH function was accompanied by an instruction text *Search entire site* and a link title *Submit search*.

When illocutionary force is encoded in the imperative form of an *i-text*, it may focus on the concrete or virtual action either on the current page or on the target page. In connection with a majority of hyperlink labels, the illocutionary force is manifested in the non-linguistic characteristics of active elements without any coded request. The content of



explicitly coded information and the role of inferencing is dealt with in the following section.

## 7.2 Explicitness of *i-text* functions

The purpose of this section is to look at the *i-texts* with regard to the explicit information that they contain. The concept *explicature*, which was formed in the framework of relevance theory, will be used as a tool for the analysis. As was pointed out in section 5.1.2, the explicitness of an explicature in the sense that Sperber and Wilson use the term is a matter of degree because it is dependent on the relative contribution of the linguistically encoded information. When there is more linguistic information, the interpretation of the utterance requires less inferencing. When the coded communication represented by the *i-text* is enriched into an explicature in online shopping situations, the user makes use of general assumptions about hypertext communication and the structure of electronic stores in his/her interpretation process. A highlighted word or text string denotes a request to point and click, and the change in the shape of the cursor from an arrow into a hand emphasizes this request. Although this communicated message of the existence of an active element is non-linguistic and in that sense implicit, the reaction it triggers in the web user is easily conditioned. Incidentally, for this reason it is advisable not to use underlining in hypertext because it usually causes frustrated efforts to click the underlined element.

According to Sperber and Wilson (1986/1995: 218), a speaker, or a website in the context of the present study, aiming at optimal relevance will leave implicit everything that the web user can be trusted to recover with less effort than processing an explicit prompt would require. The question is how much information the website can leave implicit without risking the intended inferencing by the user. If the hearer's or user's resources are overestimated, all implicit meanings are not necessarily recovered (Grundy 1995: 142). On the other hand, the recipient may infer implicit meanings that were not intended by the communicator.

All active elements in a hypertext can be assumed to share the explicature: "The active element (link or button) is requesting the user to click the active element...". This information may also be linguistically encoded either in the *i-text* itself or in its co-text. The continuation of the explicature differs according to the interactive operation that the mouse click represents. The explicatures of the interactive operations defined in section 2.7 can be schematised as follows:

"The active element is requesting the user to click the active element to

1. GO TO            go to the page containing navigation leading to X or information on X." (where X prototypically stands for the *i-text* designating target page content)
2. SEARCH        search the website for information denoted by the keyword that has been keyed in or selected from a menu by the user."
3. SELECT        send in or confirm the selections made by the user."
4. SUBMIT        submit the information that has been input by the user on the current page or confirm the submission performed at an earlier stage of interaction."

The proposition encoded in the *i-text* may be embedded in a range of higher-level schemas, which stand for three levels: 1) the actual (physical) user action, 2) the virtual interactive operation and 3) the target of the function. A link label *Pamper her* (Presentco) leading to a list of gift items represents a logical form that is embedded in a hierarchically structured explicature as follows:

Level:	Explicature:
1. actual user action	The link is requesting the user to click the link
2. interactive operation	to go to a page containing information
3. target	on gift items with which the user is requested to pamper his girlfriend/wife.

A great deal of enrichment is required before the web user arrives at the full explicature. However, it is based on assumptions that are easily accessible to the user on the basis of contextual factors. The user is navigating a web store which specialises in gifts for women and the *i-text* in question is an item on a list of present categorisation including such items as *flowers, pottery, lingerie and jewellery*. It must be pointed out that deriving assumptions of this type is culturally dependent so that direct translations of multilingual websites may not always work out in the best possible way.

An *i-text* may contain coded information on different levels. The following are instances of the GO TO operation:

- level 1: *Click here*
- levels 1 and 2: *Click here to return to previous screen* (Gift delivery)
- levels 2 and 3: *Return to Main Page* (Eddie Bauer)
- levels 1 and 3: *Click here to leave a message* (Presentco)
- level 3: *Meet The Hosts* (QVC) (the email button to contact the hosts is available on the target page)
- levels 1, 2 and 3: *Click to view larger image* (McCord)

The same principle applies to nominalised *i-texts* that do not have a processual profile. The link label *Quick Search* (Needapresent) can be interpreted in the schema at level 2 whereas *Enlarged view* (Gifts) represents levels 2 and 3: *The hyperlink is requesting the user to click the link to view an enlarged picture of the product. I-texts that contain information about the target (level 3) only are characteristically nominal.*

In the following, the examination of the explicitness of *i-text* inferencing starts from level 1 and proceeds to levels 2 and 3. This section attempts to explore how *i-text* interpretation follows the principle of relevance and how explicitly user interaction manifests itself in explicatures. The occurrence of the three levels described above (actual clicking, interactive operation and reference to the target page content) in the *i-texts* has been summarised in Table 18.

**Table 18.** Explicit i-text content according to interactive operation.

Interactive operation	Levels of explicit information							Total
	1 clicking	1+2 clicking, interactive operation	1+2+3 clicking, interactive operation, target	1+3 clicking, target	2 interactive operation	2+3 interactive operation, target	3 target	
SUBMIT	0	0	0	0	75	0	9	84
SELECT	0	2	0	1	81	29	17	130
SEARCH	0	0	0	0	25	2	0	27
GO TO	29	0	3	11	13	52	1093	1201
Total	29	2	3	12	194	83	1119	1442

As could be expected, with the hyperlink operation GO TO, the emphasis seems to be on the reference to the target page content, whereas in connection with SEARCH, SELECT and SUBMIT the code concentrates on information about the interactive operation represented by the button on the current page. Explicit requests to click seem to be relatively infrequent in the corpus material, and in connection with button functions they only occur exceptionally. An almost complete absence of reference to clicking can be seen in the smaller Corpus B, in which only the *i-texts* constituting the shortest possible routes to carry out a shopping procedure have been included. The division of the *i-texts* into the categories of explicit information in Corpus B is shown in Table 19.

**Table 19.** Explicit *i-text* content according to interactive operation in Corpus B

Interactive operation	Levels of explicit information in <i>i-texts</i> (n=245)								Total
	1 clicking	1+2 clicking interact. operation	1+2+3 clicking interact. operation target	1+3 clicking target	2 interact. operation	2+3 interact. operation target	3 target	non- verbal	
SUBMIT	0	0	0	0	58	0	3	0	61
SELECT	0	0	0	0	12	26	14	0	52
SEARCH	0	0	0	0	18	1	0	2	21
GO TO	0	0	0	1	4	8	94	4	111
Total	0	0	0	1	92	35	111	6	245

In Table 19 functionally oriented information has a more pronounced position than in the table calculated on the basis of the whole corpus, because in the smaller Corpus B the proportions of various interactive operations are more balanced.

The limited space of button and hyperlink labels restricts the scope of explicit information that can be included in *i-texts*. Websites can use the co-text of *i-texts* (link titles, instruction texts, embedding sentences) to provide a larger amount of linguistically coded information. The different levels of explicitness in *i-texts* and their immediate co-texts, which may consist of link titles, embedding sentences or instruction texts, will be studied in more detail in the following sections.

### 7.2.1 Clicking explicitly indicated in the *i-text*

The explicit directive *Click here* awards the user the role of an agent. It empowers the user in the interaction and makes him feel an active participant in the event. As was noted earlier, *click here* can be regarded as part of the ostension indicated by a hyperlink or

button. By using this phrase the website author attempts to make sure that the user follows the clues provided by such non-linguistic features as underlining, special colour or font, or animation. Table 20 shows the occurrence of *Click (here)* in the corpus. The figures indicate frequencies of strings of texts that either include or consist of *Click (here)* according to the interactive operation.

**Table 20.** Occurrence of *Click (here)* in the corpus.

Interactive operation		Frequency of <i>Click (here)</i> in the corpus			
Type	Number	In <i>i-texts</i> (n = 1442)	In instruction texts (n = 510)	In link titles (n = 331)	Total
SUBMIT	84	0	6	0	6 (4.8 %)
SELECT	130	3	2	0	5 (3.8 %)
SEARCH	27	0	0	0	0 (0.0 %)
GO TO	1201	42	12	10	64 (5.3 %)
Total	1442	45	20	10	75 (5.2 %)

The frequency of the explicit *click* in connection with the VIEW-type GO TO operation, that is, a link leading to information to be read or seen without further navigation opportunities (see section 2.7) is higher, 9.6 % of all occurrences (n= 104), than with other types of GO TO links. This may result from the fact that VIEW is not a necessary step in the navigation and shopping process, and when the e-store tries to induce the customer to peep into a particular special offer or advertisement it puts more emphasis on the link by adding an explicit invitation to interact.

When the *i-text* consists only of the phrase *Click* or *Click here*, the interpretation of the consequences of clicking must be based on the page context. A preceding sentence or longer section of text may contain the explanation:

*Forgot your password? Click here.* (Spiegel)

*Click here* as an *i-text* may also be embedded in a sentence context, which also guides the user in the interpretation process:

*Want a flexible account...? Click here to apply instantly.* (Littlewoods)

*Click here to add or change your Gift Wrap.* (QVC)

More commonly the *i-text* itself contains information about the consequences of clicking, which may vary from viewing to making a selection:

*Click here to see a larger view* (Sundance)

*Click here for our Terms and Conditions.* (John Lewis)

*Click here to order* (Gift delivery)

The *Click here* directive can also be included in the link title, which pops up when the cursor hits the *i-text*. None of such instances of link titles in the empirical material of this study occur in combination with an *i-text* with a processual profile. Instead, the *i-text* profiles a thing or an atemporal relation as can be seen in the following examples:

<i>I-text:</i>	Link title:
<i><u>Details</u></i>	<i>Click Here For Details</i> (McCord)
<i><u>For Her</u></i>	<i>Click here for Presents for Her</i> (Gift delivery)

Finally, the user may be explicitly requested to click in the immediate co-text of the *i-text*, either in the sentence in which the *i-text* has been embedded or in a separate instruction that accompanies the *i-text*:

*Click here to return to your shopping cart.* (Gifts)

*Please enter your payment information and click the 'Proceed' button.*  
(*I-text: Proceed*) (Wedgwood)

In his WWW usability guide Jakob Nielsen (2000: 55) gives two reasons for avoiding anchor texts of the type *Click here*. First, he points out that only mouse-using visitors do click, while users with alternative input devices do not. Second, *Click here* carries hardly any information as such and is not a suitable design element to attract the user's attention. From the viewpoint of relevance, the contribution of *Click here* to the contextual effects of the *i-text* is very small. It does not contain new informational elements but duplicates the

information conveyed by the visual effects of a hyperlink or button. Let us compare different ways of link formation:

- (a) *Click here to return to your shopping cart.*
- (b) *Click here to return to your shopping cart.*
- (c) *Click here to return to your shopping cart.*
- (d) *Return to your shopping cart.*

In (a) the user's focus of attention is drawn to clicking, and to be able to interpret the effects of the action the user must resort to text outside the scope of the *i-text*. There is no ambiguity about the content of the interactive operation, but some extra cognitive processing is required to find out the content especially if there are several *Click here*'s on the same page. In alternative (b) the focus is on the relevant information but having the request *Click here* and the target of clicking separately causes some distraction when the user is considering the implementation of link following. In the third alternative both the interactive operation and its consequence have been included in the *i-text* in which two levels of information, a virtual function and its real-life representation, have been paralleled. This arrangement also makes the *i-text* relatively long, which means increased processing effort. In (d) the explicit request to click has been left out and the *i-text* contains the essential information about the link relation. The processual profile with a verb in the imperative guarantees the user an active role as the agent-mover, although the role is not quite as empowering as the role of the agent in connection with the verb *click*. What makes (a), (b) and (c) different from (d) is the fact they imply that following the link is at the user's discretion whereas (d) sounds like a more unconditional command. Link (d) could be furnished with a link title, which would soften this impression.

In addition to the four alternatives listed above, the corpus of the study also exhibits one case of highlighted *here* in connection with *click*:

*If you'd like to add items from our mail catalog click Here.* (Domestications)

In this case the *i-text* is highly uninformative, because only the place of clicking is explicitly expressed in the linguistic code, and, furthermore, the clickable item has already been indicated by underlining. The underlined *here* profiles an atemporal relation between the user and the act of clicking (see section 7.3.2)



The SEARCH and SUBMIT operations require user input, which precedes clicking. Occurrences referring to this user action were found to be infrequent in the empirical material. The verb *enter* occurred once in the *i-texts* in connection with SEARCH and SUBMIT each. In addition, it was found twice in the instruction texts of SEARCH and in four instances of SUBMIT instructions. Both entering and clicking are included in the instruction text of a SUBMIT operation in the following example:

*Please enter your payment information and click 'Proceed'*  
(the *i-text* is *Proceed*) (Wedgwood)

This two-level encoding in the form of an *i-text* and an instruction seems to serve both experienced e-shoppers, who only need to decode the *i-text* to derive the necessary assumptions, and newcomers, who may resort to the instruction text to get support for their next move in the interaction process.

### **7.2.2 Interactive operation explicitly indicated in the *i-text***

Clicking the active element is the obvious action that must be performed if the user wishes to follow a link or complete a button function. The next level of the *i-text* explication as it was presented in section 7.2 concerns the nature of the interactive operation that is embedded in the active element. As the button functions SUBMIT, SELECT and SEARCH are more function oriented, we might have reason to assume that they are more often accompanied by *i-texts* with an explicitly coded interactive operation than the hyperlink function GO TO, which could already be seen in Tables 18 and 19 in section 7.2. The proportion of *i-texts* which only encode the level of the interactive operation is shown in Table 21.

**Table 21.** Explicitly coded interactive operations.

Interactive operation	<i>I-text code</i>		
	Number of i-texts showing the interactive operation	Total number of i-texts in the corpus	Proportion of explicit function coding
SUBMIT	75	84	89.3 %
SELECT	81	130	62.3 %
SEARCH	25	27	92.6 %
GO TO	13	1201	1.1 %
Total	194	1442	13.5 %

At the interactive operation level, *i-texts* may be composed of the following elements:

1. an explicit indication to the interactive operation, which can be
  - a direct reference to an interactive operation, e.g. Submit
  - a semantically more elaborated lexeme describing the virtual function behind the interactive operation, e.g. Buy
  - a semantically more schematic lexeme representing the interactive operation, e.g. Continue.
2. a reference to the content of the current page, which can occur in connection with
  - a direct reference to the interactive operation, e.g. Submit order
  - a more elaborated lexeme, e.g. Buy this product.

In addition, the *i-text* OK represents a less explicit indication of an interactive operation. It does not represent a processual profile, as will be seen in the discussion on the *i-text* structure in section 7.3. I propose the following order according to explicitness starting from the most explicit category:

1. an elaborated description of an interactive operation accompanied by a reference to the source page
2. an elaborated description of an interactive operation

3. a direct reference to an interactive operation accompanied by a reference to the source page
4. a direct reference to an interactive operation
5. a schematic description of an interactive operation
6. a non-processual description of an interactive operation

On the basis of this categorisation, the following table can be compiled showing the degree of explicitness according to interactive operation. The total number of occurrences (n= 277 in Table 18) also includes the instances in which the indication of the interactive function is accompanied by a reference to the target page, which are discussed in more detail in section 7.2.3. In other words, all instances of coded indications of interactive operations are covered here.

**Table 22.** Explicitness of the indication of interactive operation.

Interactive operation	elaborated description + reference to source page	elaborated description	direct reference to interactive operation + reference to source page	direct reference to interactive operation	schematic description	non-processual representation	Total
SUBMIT	11	14	7	10	31	2	75
SELECT	21	40	12	27	8	2	110
SEARCH	1	0	0	14	12	0	27
GO TO	2	8	3	49	3	0	65
Total	35	62	22	100	54	4	277

The table shows that a direct reference to the interactive operation using the exact lexeme in the left-hand column or its close synonym is the most frequent category. The more elaborated descriptions of interactive operations seem to be more common than the schematic representations, which are not infrequent either. From the user's viewpoint, the more elaborated formulation of the type *Submit your name and address* instead of a schematic *Continue* is often more helpful and creates confidence, although it requires

more processing effort. There seems to be some interdependence between the explicitness of the *i-text* formulation and the strength of the corresponding interactive operation. Spearman's correlation coefficient between the two variables is 0.432 at the significance level of 0.01. In other words, the more powerful an interactive operation is, the more explicit information the *i-text* provides about the operation. The rather frequent occurrence of *Continue* and *Continue to checkout* in connection with the SUBMIT function weakens this correlation. In fact, we can detect another factor working in the opposite direction, which can more distinctly be seen in the smaller Corpus B consisting of the *i-texts* constituting the shortest possible route of clickings with 127 occurrences manifestly indicating the interactive operation. Calculated on the basis of this material, the correlation between explicitness of the function and the level, that is the number of clicks from the home page, is clearly negative. Spearman's correlation coefficient is  $-0.350$ . This may be explained by the fact that the schematic *Continue* often occurs at the final stages of the shopping procedure, because the e-store designer assumes that the shopping script is sufficiently strong for the customer to infer the intended meaning of the *i-text* without difficulty.

The representations of the various compositional alternatives shown in Table 22 are worth more detailed exploration. The coded information in the *i-text* may consist of the same lexical items that have been used as the names of the interactive operations in this analysis or their close synonyms. A verb in the imperative may occur alone or it may be followed by a noun referring to the content of the current web page (alternatives 1 and 2 in the above categorisation):

SUBMIT:	<u>Submit, Send, Save &amp; Continue</u>
SELECT:	<u>Select, Add, Choose color, Apply changes</u> cancelling selections: <u>Remove, Clear, Delete</u>
SEARCH:	<u>Search, Find</u>
GO TO:	<u>Go, Proceed, Continue</u>

The meaning of the *i-text* is sometimes highly schematic, and the verb constituting the *i-text* may occur in several interactive operations. *Continue* was found in SUBMIT, SELECT

and GO TO operations in the corpus and *go* was used for SUBMIT, SEARCH and SELECT operations. The interpretation of coded communication represented by a verb of the type *continue* requires a great deal of contextual information. The code only carries illocutionary force in the form of the imperative form and a request to the user to go on with the shopping procedure at the current phase in the shopping script. The use of *continue* is based on the assumption that the user has a clear idea of the script to be followed. Although *continue* used alone most often occurs in connection with the SUBMIT function, it fails to encode the submission of the information that the user has keyed in on the current page and only indicates progression in the procedure. The *i-text* Save & continue (Eziba) includes the two aspects incorporated in the SUBMIT function: submission of user input and movement to a new phase and page.

SELECT differs from SUBMIT in the respect that it does not necessarily imply movement to a new page but rather concentrates on the function on the current page. In Table 23, SUBMIT and SELECT are compared in relation to the windowing system in the user interface.

**Table 23.** Target of the interactive operations SELECT and SUBMIT.

Target window	SELECT	SUBMIT
The user is taken to a new page	58	79
An additional window is opened on top of the current page.	4	0
The user remains on the current page	68	5
Total number of occurrences	130	84

The material shows that SELECT frequently makes the user stay on the current page, whereas SUBMIT in most cases opens a new window. In the only instance of *continue* as an *i-text* indicating SELECT the user is requested to select from a menu of information sources the channel that led him to the website, which is not a typical SELECT task.

Characteristically SELECT is connected with product and delivery selections in the framework of electronic commerce.

The lexeme *go* occurs more often in connection with other functions than with GO TO. Most often it is used to denote the SEARCH operation, in which cases it can be accompanied by an instruction text indicating the interactive operation more precisely. Two instances of SUBMIT coded by means of *go* were found in the corpus. In both of these cases, the button was on the home page and the user was guided by means of an instruction text about the function:

*Enter your e-mail address to receive...(Target)*

*Catalog quick order: Type the catalog item number... (Eddie Bauer).*

The non-occurrence of the indication of the actual or virtual function of hyperlinks especially without reference to the target of the link is in accordance with the principle of relevance. The contextual effects of *go* or *view* would be very small, and decoding the verbs would require unnecessary processing effort. The target of link following may be indicated in the surrounding text. In the corpus, two instances of *go* in the GO TO operation were accompanied by the instruction texts *Please click GO to go to the next page (Furniture123)* and *Shop from our catalogs (JCPenney)* respectively.

Coded communication may also contain more elaborated information about the interactive operation that falls into a particular operation category. The *i-text* may denote the interactive operation or it can also encode the information submitted, selected or searched, which has been provided by the user. Instances found in the corpus are listed in the following table:

**Table 24.** Elaborated *i-texts* encoding interactive operations.

Encoded <i>i-text</i> includes	SUBMIT	SELECT
interactive operation	<u>Login</u> <u>Order</u> <u>Pay by flexible account</u> <u>Purchase</u> <u>Sign in</u>	<u>Amend</u> <u>Buy</u> <u>Purchase</u> <u>Update</u>
interactive operation + reference to user input	<u>Complete checkout</u> <u>Confirm order</u> <u>Place your order</u> <u>Use gift certificate</u>	<u>Amend item</u> <u>Confirm changes</u> <u>Edit item</u> <u>Empty cart</u> <u>Set currency</u> <u>Update shopping bag</u>

The inclusion of reference to user input contributes to create a feeling of confidence. Lexical choices also affect the amount of effort required by the cognitive processing of an *i-text*.

### 7.2.3 Interactive operation and target explicitly indicated in the *i-text*

When we move on to *i-texts* in which the linguistically coded information about the interactive operation is complemented by information about the target page content, the focus moves to the GO TO operation although SELECT is also well represented. This tendency can be seen when the frequencies in Table 25 are compared to the ones in Table 21 in the previous section.

**Table 25.** Explicitly coded interactive operations and targets.

Interactive operation	<i>I-text</i> code		
	Number of <i>i-texts</i> showing the interactive operation and target	Total number of <i>i-texts</i> in the corpus	Proportion of explicit function and target coding
SUBMIT	0	84	0.0 %
SELECT	29	130	22.3 %
SEARCH	2	27	7.4 %
GO TO	52	1201	4.3 %
Total	83	1442	5.8 %

A categorisation similar to the one presented at the beginning of section 7.2.2 is applicable to the *i-texts* of the interactive operation + target type with the exception that instances containing reference to the input on the current page and information about the target simultaneously were very rare in the corpus. With a VIEW-type GO TO *i-text*, one instance with lexically coded information on the interactive operation, source page content and target page was detected: *See it larger* (JCPenney). The verb can have a more elaborated meaning with a semantically more complex structure, such as the paronymic (see Cruse 1986: 130) *enlarge*, and include both the function and target elements, e.g. *Enlarge image* (Marks & Spencer) or the explicit coding about the target may be left out, e.g. *Enlarge* (QVC), *Pan and zoom* and *Zoom in/out* (JCPenney). In connection with GO TO, the combination interactive operation + target provides a means to include illocutionary force and important information about the link target in a meaningful way in the *i-text* code: *Go to checkout* (Wedgwood) and *Return to Main Page* (Eddie Bauer). The lexemes *see* and *view* occur both in instances where no further navigation is possible, as in *See product* (Littlewoods) and *View larger photo* (Spiegel) and in instances where the target page provides new routes for navigation or other selections, e.g. *View shopping cart* (Gifts) and *See previous item* (Littlewoods).



In connection with button functions, the occurrence of target page information seems to be uncommon with the exception of the SELECT operation. In total 23 instances of the type *Add to bag/cart/order* were detected in the empirical material. In 19 cases clicking the *i-text* leads the user to a page showing the current contents of the shopping cart, in three cases the user remained on the present page with an indication that the shopping cart had been updated and in one instance an additional window showing the cart appeared on the screen. The interpretation of *Add to bag* may be affected by such structurally similar *i-texts* of the GO TO type as *Proceed/go to checkout*, *Return to shopping*, in which both the interactive operation and target are explicitly coded and which take the user to the page indicated. Similarly, *Add to bag* may be understood, not only as a SELECT operation, but also as a signpost to the content of the shopping cart. On the other hand, this does not follow the model of the shopping procedure in a physical store: a customer does not jump into the shopping cart together with the products he/she has selected in order to see his/her purchases.

#### **7.2.4 Target explicitly indicated in the *i-text***

As a hyperlink is conceived as a stepping-stone to new information, we can assume that information about the target page is an essential element of the hyperlink label. The corpus of this study confirms this assumption, which can be seen as high percentages indicating the proportion of coded information solely about the target in connection with the GO TO operation.

**Table 26.** Explicitly coded target page information according to interactive operation.

Interactive operation	<i>I-text</i> code		
	Number of <i>i-texts</i> showing target page information	Total number of <i>i-texts</i> in the corpus	Proportion of explicit target page coding
SUBMIT	9	84	10.7 %
SELECT	17	130	13.1 %
SEARCH	0	27	0.0 %
GO TO	1093	1201	91.0 %
Total	1119	1442	77.5 %

In the corpus material, coded information about the target in connection with SUBMIT seems to occur at checkout or payment option on the websites of several e-stores, the contextual elements of which are summarised in Table 27. In these instances the coded *i-text* completely ignores the submission of information at the current stage of the procedure. On the websites of *Littlewoods*, *J.C.Penney* and *Target* the information being submitted is optional and submission benefits the user, whereas on the other two sites the user is expected to submit essential personal information. However, the website of *Needapresent.co.uk* uses an instruction text to advise the user to check the input. It seems that *i-texts* like this combine the elements of SUBMIT and GO TO operations with an emphasis on the latter aspect, which is the explicitly encoded part of the explicature of the *i-text* on the button label.

**Table 27.** Examples of SUBMIT *i-texts* indicating target.

	Website				
	Littlewoods	JCPenney	Target	QVC	Needapresent
<i>i-text</i>	<u><i>Pav by credit card</i></u>	<u><i>Credit card; Gift card/certificate</i></u>	<u><i>Express checkout; Enhanced checkout</i></u>	<u><i>Express check-out; Custom check-out</i></u>	<u><i>Pay now on our secure server</i></u>
co-text		Instruction: <i>Select a payment option</i> Link title: <i>Credit card Gift card or Certificate</i>	Instruction: <i>Choose Express Checkout if...</i>	Instruction: <i>Use "Express Check-out" when your order is to be billed..."</i>	Instruction: <i>Now check your details, then click below to be transferred to our secure server</i>
user input on the current page	promotion code	special ordering instructions	promotion/source code	email address or Q member number PIN	name and address
target page content	submission of name and address , credit card information	submission of credit card information	opportunity to sign in	submission of credit card information delivery address	submission of credit card information

**7.2.5 Explicitness and the co-text of *i-texts***

Tosca’s relevance principle according to which every link communicates a presumption of its own optimal relevance cannot be expanded as such to cover all types of *i-texts*, because SELECT and SUBMIT do not only denote communicative situations but primarily represent shopping transactions. Anyway, if the user’s intention is to make a purchase that he/she regards as an acceptable goal of his/her action, he/she can assume that each active element leads him/her to information or a stage in the process that can be supposed to be useful to him/her. When the user ponders the usefulness of clicking on an interactive element, the

interpretation of the *i-text* is in a key position. The ostensive signals of the active element usually draw his/her attention first on the *i-text* code. If he/she cannot give the *i-text* a relevant interpretation, he/she is likely to look for clues in the immediate co-text, and all this occurs in the frame of the shopping procedure that the web user has in his/her mind. If the search for relevance is too laborious, the user easily abandons the whole session. In the following we will look at instances of each interactive operation where the informational content of the *i-text* is meagre and the co-text must be resorted to in user interpretation.

As we saw in section 7.2.1, the corpus contains a number of instances of *i-texts* that consist of mere *click here* in connection with the GO TO operation. The *i-text* code does not contain any information about the target of the link operation and the user must look for relevance for carrying out the action in the embedding sentence or other source page content. The endeavour for the brevity of expression should not jeopardise the user's willingness to follow a link out of curiosity. The eye-catching or ostensive effect of *click* diminishes, if it is used excessively, as is the case with all rhetorical devices. The same applies to the verb *go*, which also occurs alone as an *i-text*. It is somewhat more informative than *click*, because it indicates virtual movement, in other words, that clicking the active element makes the user jump to another page or another location on the same page but it does not say anything about the destination. The verb *see* does not occur alone as an *i-text*, but instances of *See previous item* and *See next item* (Littlewoods) could be found. The page content implies that the target of the link is information about a product similar to the one on the source page but the user does not know what the item exactly is on the basis of the *i-text* code.

The *i-text* in connection with the interactive operation SEARCH is almost always very short, in most cases it consists of a single word, either *search* or *go*. When the *i-text* is *go*, all instances in the corpus were found to contain the lexeme *search* or its synonym either in the instruction text or in the link title. SEARCH is also accompanied by user input either in the form of a menu selection or a keyword entered by the user, which guarantees the user the cognitive effects he/she might be looking for.

Both SELECT and SUBMIT are closely connected with the source page content and their interpretation is guided by the script of the shopping procedure. However, when the *i-text* of an interactive element is schematic, such as *continue*, *proceed* or *OK*, the code gives a very limited informational basis for interaction. On the website of *Furniture123.co.uk*, the verb *continue* occurs alone in connection with SELECT with a link title, which is also *continue*, on a page on which the customer starts the check-out process and is asked about the source of information where he/she heard about the company. In connection with SUBMIT, *continue* occurs alone as an *i-text* in 15 instances, nine of which are accompanied by the link title *continue*. *Proceed* occurs five times; in three instances there is co-textual information in the instruction text or link title and in two instances the link title is *continue*, which does not add to the cognitive effects of the *i-text* except maybe strengthening them. In addition, *OK* could be found twice as an *i-text* on a page where credit card information was submitted. In all these instances the web user must rely on the shopping frame or script and the contextual information of his/her own submission to make the decision whether to click or not.

#### 7.2.6 Evaluation of the explicitness of *i-texts*

In the previous sections we have investigated the explicit content of *i-texts* from the viewpoint of relevance. A few summarising comments remain to be made. To begin with, it must be noted that the notion of relevance varies according to the technological development and level of the users' computing skills. Technological innovations together with a larger bandwidth may change the structure and operations of online shopping dramatically. Although website development is an ongoing process, at the current technological level, website design seems to have a fairly established structure in the field of electronic commerce. However, there are still potential customers and web users for whom shopping on the Internet is a new experience and who need hands-on guidance with their interaction process. Therefore, the communication contained in *i-texts* has a varying degree of contextual effects depending on the user's knowledge of computing and Internet navigation. As has been pointed out earlier, the most important information in *i-texts* that

occur in connection with hyperlinks concerns the target of the link, while the *i-texts* that have been embedded in operational buttons should essentially inform of the function that clicking the active element produces.

Having examined the explicit communication of e-store *i-texts*, we can review the findings and assess to which extent the concept of relevance is relevant from the viewpoint of user-website interaction. Relevance theory does not claim that the communicator always expresses his/her ideas with optimal relevance. If this were the case, relevance would be obvious and add nothing of interest to the discussion (cf. Mey 1993: 81). In contrast, the receiver is allowed to presume that the communicator has made his/her stimulus as relevant as possible. This relevance is dependent on and compatible with the communicator's cognitive goals, his/her abilities and preferences (Aitken 2002: 127; Sperber & Wilson 1986/1995: 270).

Instances that deviate from the dichotomy of target-oriented link labels and function-oriented button labels are the most interesting. If the web user knows the basics of Internet communication, the inclusion of reference to clicking always looks irrelevant, because it does not seem to have significant cognitive effects. However, the explicit coding of clicking contributes to the strengthening of previously held assumptions. A hesitant user is pushed to interact by intensifying the non-linguistic ostension by means of explicit linguistic code. The communicator assumes that the user finds something of interest on the target page that he/she might not be aware of. If the user feels that the target is not worth his/her attention, frustration is created. In other words, the website runs the risk of losing the user's confidence if *click here* messages proliferate on its pages. We must remember, though, that in the context of sales and marketing, customers are used to such aggressive communication.

At the later stages of the shopping procedure, the user's options are narrowed down to basically two decisions: to continue or to quit. In principle, buttons without any verbally encoded labels would be sufficient in some cases, because by now the user should have formed a clear shopping script in his/her cognition and knows that the only way to

complete the procedure is to click. Again the *i-text* does not create new contextual implications but it strengthens available assumptions. The relevance-theoretic optimal balance between cognitive effects and processing effort provides a rationale for the assessment of effective user–website communication and interaction. As opposed to face-to-face communication in which the communicator is offered a number of subtle clues concerning the receiver’s expectations, in user–website communication the communicator must establish a standard average formulation for his/her utterance. To increase the interactivity of the website, the designer should be able to make the correct prediction of what makes it relevant for the user to read an *i-text* attached to an interactive element.

### 7.3 *I-text* profile and user role

The aim of this section is to examine the grammatical structure of the *i-texts* that constitute the empirical material of the study. Grammar is here understood in accordance with the cognitive framework as patterns of integration of symbolic structures from simple to more elaborate expressions (Langacker 1991b: 46). The semantic pole of the symbolic structures and its function as the indicator of interaction is the main focus of attention.

As was noted in section 5.3.2, linguistic expressions may designate temporal relations, which are called processes, atemporal relations or things. The entity that is elevated to a prominent position is known as its profile (cf. Langacker 1987: 183). In other words, we can divide *i-texts* semantically into expressions manifesting processual, atemporal or nominal profiles. The category of verbs is prototypically characterised by its energetically interactive features (Langacker 1991b: 14). Therefore, we will first look at *i-texts* that contain a verb and profile a process, and analyse the participant role (see section 5.3.3) of the user in the semantic relation. Next, we will examine verbless constructions, in which traces of user interaction can be detected in a number of atemporal relations and nominalisations. Finally, nouns that refer to physical objects do not manifestly involve the user in any action and are thus least interactive in this sense. The proportions of the different types of structures are shown in Table 28.

**Table 28.** Grammatical profile of the *i-texts* in the corpus.

<i>I-text</i> profile	n	%
Processual	520	36.1
Atemporal	111	7.7
Nominal		
- nominalisations	104	7.2
- other nouns	707	49.0
Total	1442	100.0

The selective data gathering method of this study does not allow any absolute computations concerning the proportions of various grammatical structures occurring in interactive labels. However, the results of the analysis are indicative of the general frequencies of different constructions. The material shows that all types of structures are represented in *i-texts*, and although nominal structures account for more than half of all occurrences, neither atemporal relations nor processes, in particular, are infrequent.

Having discussed the semantic profiles of *i-texts* and the roles they assign the web user, we shall relate the user roles with the interactive operations that were defined in section 2.7. My objective is to find out whether any correlation can be detected between the significance (i.e. impact or powerfulness) of the interactive operation and the role assignment of the *i-text* profile. Another aim is to ascertain whether the linguistic code of an *i-text* anticipates the level of interaction expected of the user on the target page of the active element in which the *i-text* occurs.

From the viewpoint of interactivity, it is interesting to find out the cases in which the web user is the trajector (see 5.3.2), that is the syntactic figure or the most prominent participant, in a relation. This is because the trajector is the active moving element within a relational profile. As we saw in section 5.3.3, in processual expressions the participants of the process manifest different roles such as agent or experiencer, which can be



characterised as active participants in a processual relation. In addition, a role of an agent-mover was defined. The user is assigned the role of an agent when the verb denotes an activity in which the subject (a human actor = user) volitionally affects the object (content of the database, the effects of which the user can in most cases see in the appearance of the target page):

*Change login information* (John Lewis)

*Add to favourites* (John Lewis)

When the user has the role of an agent-mover, he/she is active but also moves herself, which means a virtual movement in the website content. This is an instance of what Cook (1989: 203) calls coreferential roles, in other words, two roles that are applied to a single noun. Langacker (1991: 237) speaks of hybrid roles that combine features of two or more role archetypes.

*Return to the Eziba home page* (Eziba)

*Proceed to checkout* (Allders)

An experiencer is engaged in mental activity, which is intellectual, perceptual or emotive:

*Remember item* (presentco)

*See more items like those in your cart* (Gifts)

The agent and experiencer roles are also often combined in situations where the human actor is volitionally acting and having a mental experience at the same time:

*View revised return policy* (J.C.Penney)

In this analysis, agent-experiencers of this type have been categorised as experiencers, because the activity that they designate does not affect the object.

The three roles mentioned above seem to be relevant to the present analysis because a somewhat similar division into three alternatives can be seen in the effects of the interactive operation on the database and target page content. First, an interactive operation may alter the content of the database by adding or removing items, the influences of which may be shown on the target page. Second, an interactive operation may offer the user content that exists on the World Wide Web, but the user has an opportunity to affect its arrangement. Third, the user may operate an interactive element to access web pages without being able to influence their content. A prototypical agent

affects the internal structure of another participant in the process but remains unaffected himself/herself, whereas an agent-mover is active but also changes his/her own (virtual) position. The activity of an experiencer does not affect the object of the activity; in fact, the object has some influence on the mental process in the experiencer.

### 7.3.1 *I*-texts with a processual profile

*I*-texts containing a verb in the imperative form profile a process in which the user is assigned a particular role. Similarly, interrogative clauses may involve the user in a particular way. A role analysis based on the archetypal roles that were introduced and discussed above was applied to the empirical material. Table 29 shows the occurrence of explicit processual profiles (either imperatives or questions) in the *i*-texts of the corpus according to the interactive operation they represent. No complete assertive sentences were detected in the corpus. Occurrences of the verb *click* are included in the figures.

**Table 29.** Occurrence of processual profile in *i*-texts according to interactive operation.

Interactive operation	Occurrences of processual profile	All occurrences	Occurrences of processual profile as a percentage of all occurrences
SUBMIT	78	84	92.7
SELECT	124	130	95.4
SEARCH	25	27	92.6
GO TO	293	1201	24.4
<b>Total</b>	<b>520</b>	<b>1442</b>	<b>36.1</b>

Table 29 shows quite a clear division in the use of *i*-texts with a processual profile in the corpus. In the function-oriented button labels in connection with SUBMIT, SELECT and SEARCH, the occurrence of a verb is the standard, whereas in target-oriented hyperlink labels representing a GO TO operation, verbs are less frequent. The higher frequency of verbal structures in connection with VIEW-type navigation was referred to in section 7.2.1.

Imperatives lack an overt subject because the addressee is conceived as the trajector of the process in the cognitive model that represents ordering (Langacker 1991b: 504). The *i-text* does not necessarily contain other elements except the verb form in the imperative, and the user needs to resort to the contextual information on the page to attain appropriate conceptualisation. Although the focus of interest is on the linguistic code of *i-texts* at this phase of the study, it must not be forgotten that *i-texts* do not occur in isolation, but they should be seen against the background of the web page on which they are located. However, in many cases the *i-text* code is richer than a mere verb in the imperative informing the user of the process and its target in a more detailed way. The structures shown in Table 30 were detected in the empirical material in connection with a verb in the imperative. The examples have been arranged according to the interactive role assigned to the web user. Verbal complementation does not add to the level of interactivity as far as the sense of user empowerment and activity is concerned. Instead, it may contribute to interactivity by decreasing hesitation about the effects of clicking the active element.

The empirical material also contains *i-texts* with a clausal interrogative profile. When the web page poses a question to the user, the *i-text* assigns the user a role, in most cases the role of an experiencer, in the same way as in connection with imperatives. *I-text* questions are often elliptical:

*Forgot your password?* (JCPenney)

*Need help with an order?* (Domestications)

An instance of a question that is posed by the user was detected in the corpus:

*Can I change it?* (Presentco)

This structure adds a more involving and personal tone to interaction, but it deviates from the convention that *i-texts* represent utterances made by the computer to guide the user (see section 9.1).

**Table 30.** Grammatical structures of processual *i-texts* according to user role.

Syntactic structure	User role		
	agent	agent-mover	experiencer
verb	<u>Remove, Register, Submit</u>	<u>Go, Proceed</u>	<u>Review</u> (Eziba)
verb + object	<u>Establish Membership</u> (QVC); <u>Request a Catalog</u> (Ross- Simons)		<u>View shipping costs</u> (Martha Stewart)
verb + prep. phrase	<u>Pay by credit card</u> (Littlewoods)	<u>Return to main page</u> (Eddie Bauer)	<u>View as list</u> (Marks & Spencer)
verb + adverbial	<u>Order now</u> (Gift delivery)		
verb + infinitive	<u>Click to select</u> (Eddie Bauer)		
verb + object + prep. phrase	<u>Pamper her with a Shiatsu Massage</u> (Presentco)		
verb + adverbial + infinitive	<u>Click here to order</u> (Gift delivery)		
verb + complement			<u>Get well</u> (Target)
verb + object + complement			<u>See it larger</u> (JCPenney)

*I-texts* may also consist of questions that are not addressed to the user. They have been formulated as questions that the user may have in mind at that particular phase of their Internet session but the clause does not assign the user any role in the process profiled by the *i-text*.

What is quick checkout? (Eddie Bauer)

How do these work? (Gifts)

In the latter example *these* refers to icons that represent the shopping cart function, registry and electronic gifts. On a couple of websites questions were found to be used in product categorisation, for example:

What's new, What's on sale, What's hot, What's in season

(Domestications)

*I-texts* like this can be rephrased as *articles/things that are new*, which leads to an interpretation of an indirect question. The use of the interrogative is probably based on the assumption that the form of a question may arouse curiosity in users.

Not a single instance of a complete assertive clause was found in the corpus. There were two tokens of *Thank you*, which may be considered an elliptical clause. In addition, one case of an elliptical subordinate clause *as seen on TV* was found. All of these were used for product categorisation.

### 7.3.2 *I-texts* profiling an atemporal relation

In the framework of cognitive grammar atemporal relations represent an intermediary between processes and things. In 5.3.2 we saw that Langacker makes a distinction between simple and complex atemporal relations. A simple atemporal relation represents a state or a stative relation whereas complex relations resemble processes in the respect that they profile a series of states. However, they differ from verbs in their way of scanning. Complex atemporal relations are instances of summary scanning (see section 5.3.2) like simple atemporal relations and nouns.

As was noted in section 5.3.2, the user may constitute the trajector in the atemporal relation. The trajector is typically unspecified and cannot be found in the code. On the scale of interactivity, the cases in which the user is the trajector in the syntactic-semantic structure and assumes a role in the profiled relation involve the user more than in relations in which the user does not participate. Table 31 presents the occurrence of *i-texts* with an atemporal profile in the corpus. The table shows that *i-texts* profiling an atemporal relation are infrequent in English except in the GO TO function. Consequently, the following discussion primarily concerns hyperlink labels.

**Table 31.** Occurrence of atemporal profile in *i-texts* according to interactive operation.

Interactive operation	Occurrences of atemporal profile	All occurrences	Occurrences of atemporal profile as a percentage of all occurrences
SUBMIT	2	84	2.4
SELECT	2	130	1.5
SEARCH	0	27	0.0
GO TO	107	1201	8.9
<b>Total</b>	<b>111</b>	<b>1442</b>	<b>7.7</b>

We shall first examine instances of a complex atemporal relation involving an infinitive, participle or adverb, and after that focus on stative relations manifested by an adverb, adjective, conjunct, preposition or noun in the genitive case. What combines all these structures and distinguishes them from nominal entities is the fact that they profile a relation rather than the separate entities interconnected by the relation (cf. Langacker 1987: 215). The corpus of the study shows that English *i-texts* with a complex atemporal profile assign the user the role of the trajector in the relation, whereas in instances with a stative profile the user does not participate in the landmark/trajector relation.

Infinitives and participles are the most verb-like manifestations of atemporal relations. Because they derive from verbs, the profiled relation is characterised with reference to a process (Langacker 1991a: 82). All the six infinitival *i-texts* that were found in the corpus are links that are embedded in a sentence with a finite verb. These infinitives are identical with corresponding imperatives, which affects their conceptualisation. If the web user does not read the embedding sentence at all, he/she will read the *i-text* as an imperative:

*You may log out now (JCPenney)*

*Click here to return to your shopping cart (Gifts)*

Languages that lack this kind of formal similarity between imperative and infinitive, for example Finnish, cannot utilise embedded linking in a corresponding way.

As far as predications including *-ing* forms are concerned, there is a continuum from full deverbal nouns to present participles. A cursory look at a more traditional grammatical analysis might be useful for the clarification of this diversity. Quirk, Greenbaum, Leech and Svartvik (1985: 1290–1292) categorise the gradience of *-ing* forms basically as follows:

1. deverbal nouns with an indefinite article and plural ending, e.g. *some paintings of Brown's*
2. verbal nouns which are abstract uncountable nouns that can be preceded by a definite article, adjective premodifier or genitive, e.g. *Brown's deft painting of his daughter is a delight to watch.*
3. gerunds with a mixture of nominal and verbal characteristics, e.g. *Brown's deftly painting his daughter is a delight to watch.*
4. (present) participle, e.g. *Brown deftly painting his daughter is a delight to watch.*  
*Brown is painting his daughter.*

Category 4 has the prototypical characteristics of an atemporal relation while categories 1 and 2 represent a nominal profile. Category 3 is a middle ground between nominal and relational profiles. Because *-ing* predications often occur in link and button labels independently without an embedding clause, it is very hard to locate each instance in its correct place on the scale even if the page context guides the interpretation. For example, if the other items on a menu or list are nominal, an *-ing* predication tends to be conceptualised nominally. In the present analysis, *-ing* predications that are accompanied by an object or adverbial have been categorised as atemporal relations, e.g. *Running the Home* (Spiegel), *Lounging around* (Needapresent), while *-ing* forms occurring alone are regarded either as atemporal relations, e.g. *Sharing* (Eziba), *Entertaining* (Target) or nominalisations, e.g. *Shopping* (Wedgwood). When an *-ing* form is preceded by adjectival modification, it is classified as a nominalisation, e.g. *100 % secure ordering* (Furniture123). As far as an overall picture of the *i-text* structure is concerned, the division is not quantitatively essential in the analysis because the whole proportion of *i-texts* containing an *-ing* form was found to be low. Because of the low frequencies (4 instances with an object and adverbial, 11 other instances classified as atemporal relations), no distinction was made between complex and simple atemporal relations in the analysis.

The number of *i-texts* containing an adverb or an adverb together with a prepositional phrase is eight and six, respectively. In most cases the adverb is *back*, where the user is a virtual agent-mover in a process forming the trajector of the adverb. *Back* refers to the page from which the user has arrived on the present page. A prepositional phrase may explicitly describe the target of the *back* link:

*Back to product review* (Littlewoods)

*Back to payment* (Marks & Spencer)

In addition, two instances of the adverb *outdoors*, one instance of *out and about* and one instance of *here* were found in the corpus. *Here* is embedded in the sentence *If you'd like to add items from our mail catalog click here* (Domestications) where the user has the agent role in the process that constitutes the trajector in the relation designated by the adverb.

The number of adjectival *i-texts* in the material of the study is as low as 13, which includes four instances of *OK*. *OK* as a button label can be interpreted either as an adjective or as an adverb, and it indicates that by pressing the button the user accepts the function that the button represents. Adjectives as *i-texts* can be divided into two main groups: adjectives that highlight a salient feature as a criterion for product categorisation, for example *electrical* and *plain*, and adjectives that define the position of the target in relation to the current page: *previous*, *next*. The latter type of adjectival use is frequently used in product listing. Unlike the adverb *back*, the adjective *previous* does not encompass the user in the semantic relation but only relates the target page with the current page. Neither the adjective nor the adverbs are informative because they do not contain any information on the target page content. Many guides to WWW writing advise not to use deictic expressions but do not give reasons for this recommendation, as Kämäräinen and Haapasalo (1998: 213) have noticed. They point out that the informational content of a deictic expression detached from its context is empty and this may create a feeling of secrecy or mystique. This may sometimes serve its function, but it requires more processing effort and reliance on contextual information than explicit labelling.



Five occurrences of nouns in the genitive or possessive pronouns as *i*-texts were found in the corpus. The unspecified trajector of a relation profiled by the genitive or possessive designates the products that are meant for the landmark representing the person in a benefactive relation: Women's, Men's, Children's (JCPenney), His, Hers (Eziba).

Only two tokens of a conjunct as an *i*-text occurred in the empirical material. Both of them were instances of Just because (Eziba, Target), which was used as the name of a category of gifts for no particular occasion. *Because* predicates a causal relationship between two processual relations, in which the user may participate, for example *Buy this gift for your friend just because you like her a lot*.

The most frequent type of an atemporal relation in the corpus was found to be a prepositional phrase with a total number of 52 occurrences. In none of these instances does the user participate in the relation profiled by the *i*-text. In most cases, the unspecified trajector refers to a product category in a benefactive relation, e.g. For him, For her, For kids, For entertainers (Gifts) or circumstantial, e.g. For any occasion, For Easter (Martha Stewart). One of the e-stores combines a prepositional phrase with an adjective or other type of modification For her practical, For her romantic, For her at work, For her treat yourself (Gift delivery). Another type of *i*-text consists of the preposition *about* and its landmark, e.g. About us, About quick checkout (Gifts). The covert trajector refers to information to be found on the target page about the topic specified by the landmark of the preposition *about*. Still another, less frequent, type of a prepositional relation designates the price, e.g. Under £10 (Maelstrom), Up to \$25 (Eziba).

### 7.3.3 *I*-texts with a nominal profile

More than half of the *i*-texts in the corpus of the study (56.2 %) have a nominal profile consisting either of a single noun or a noun phrase as the profile determinant (see 5.3.2). Table 32 shows the distribution of the nominal profile between different interactive operations.

**Table 32.** Occurrence of nominal profile in *i-texts* according to interactive operation.

Interactive operation	Occurrences of nominal profile	All occurrences	Occurrences of nominal profile as a percentage of all occurrences
SUBMIT	4	84	4.8
SELECT	4	130	3.1
SEARCH	2	27	7.4
GO TO	801	1201	66.7
<b>Total</b>	<b>811</b>	<b>1442</b>	<b>56.2</b>

The figures in the table show clearly that nominal *i-texts* are characteristically linked with the GO TO operation. The types of nominal structures shown in Table 33 were found in the corpus:

**Table 33.** Nominal structures in the corpus.

Nominal structure	Examples
noun	<i>Kitchen, Toys, Privacy</i>
noun + noun	<i>Catalog Request</i> (Spiegel), <i>Product Portfolio</i> (Wedgwood)
noun and/& noun	<i>Baby &amp; Kids</i> (Martha Stewart), <i>Cards and Wrapping</i> (Presentco)
noun – noun	<i>Furniture - bedroom</i> (Littlewoods), <i>Curtains - drapes</i> (JCPenney)
proper noun	<i>Paul Costelloe</i> (Wedgwood), <i>Northern Nights</i> (QVC)
adjective + noun	<i>Special offers</i> (Presentco), <i>Simple refunds</i> (Marks & Spencer)
possessive/genitive + noun	<i>Our guarantee</i> (Ross-Simons), <i>Sponsors' index</i> (Martha Stewart)
noun + prepositional phrase	<i>Gifts by Horoscope</i> (Gift delivery), <i>Armoires in 3-D</i> (Eddie Bauer)
noun phrase + adverb	<i>Account cards online</i> (John Lewis), <i>Chocolate here</i> (Presentco)
noun phrase + relative clause	<i>Chocolates that taste sensational</i> (Presentco)

A noun phrase may be followed by two prepositional phrases, which results in a relatively long *i-text*: Chocolates with cash back from Payhound (Presentco). A few other instances of long nominal link labels could be found in the data of the study, e.g. Style File: Trends, Fashion Shows, Videos, Horoscopes & More (Spiegel), QVC General Terms and Conditions of Use (QVC). The mode value of *i-text* length of both nominal and all *i-texts* is two words.<sup>21</sup>

### 7.3.3.1 Nominalisations

A noun refers to a region in a cognitive domain, and a prototypical noun profiles a concrete thing. Although nouns do not highlight any specific relational roles which would manifest themselves in website–user interaction, there is a specific group of nouns that describe similar events as verbs do. Nouns of this type occur as heads of noun phrases known as nominalisations, and they are morphologically related to verbs (Quirk et al. 1985: 1288). The type of nominalisation that is of interest in this context is also known as the class of action nominals, which are intermediate between typical verbs and nouns (Koptjevskaja-Tamm 1993: 5, 6).

As was stated in section 7.3.2, in English there is a gradience from deverbal count nouns to participles. The focus of this section is on deverbal and verbal nouns, which in cognitive terms represent summary scanning of an event as opposed to sequential scanning which manifests itself as a verb. Langacker (1991: 98) points out that nominalising a verb endows it with the conceptual properties characteristic of nouns. The profile of a nominalisation shifts from a process to an abstract region, which consists of a set of interconnected entities. In the terms of a more traditional approach to grammar, a nominalisation has a systematic correspondence with a clause structure (Quirk et al. 1985: 1288). Catalogue Request is a link to a facility by means of which ‘a web user requests a

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<sup>21</sup> In their web writing guide, Price and Price (2002: 237, 238) state that brevity is not a virtue in headings. They advise the writers to make the heading (i.e. the *i-text*) fully expressive of the content, but to start off with a keyword that the user can spot when skimming through a list of links.

catalogue', and by clicking *Product Search*, 'the web user can search for a product'. In the background the web user can be seen as an agent in an event, although the linguistic code manifests a nominal entity. Similarly, Stillar (1998: 25), who represents the Hallidayan school, points out that a nominal group such as *a government investigation* realises two processes: a relational classification process in which *investigation* is classified as a *government* one and a mental cognitive process where *investigate* is the process and *government* is either the processor or the phenomenon depending on whether the *government* is investigating or being investigated.

There are also instances of nominalisations denoting actions in which the user does not participate, although he/she can be seen as a beneficiary of the action:

*Gift wrap and Delivery*<sup>22</sup> (Maelstrom): the e-store wraps the gift

*Product recall* (Marks & Spencer): the e-store recalls a product

The frequent link label *Help* can be interpreted either as a nominal 'help available here' or 'by clicking this link the user receives help', or as a verb, in which case the user requests the website to help him. Because an overwhelming majority of *i-texts* represents situations where the website is the one that makes the request, I suppose that the first alternative is more natural.

As an indicator of the interactive operation designated by the *i-text*, nominalisation does not seem to have a very important role, because nominal profiles in general are infrequent in *i-texts* that represent interactive operations with greater user empowerment or interactional significance. Table 34 shows the occurrences of nominalisations paralleled with the number of all nominal *i-texts* in the corpus material.

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<sup>22</sup> This can be compared with the *i-text cards & gift wrap* (Needapresent), in which *gift wrap* designates the material in which the gifts are wrapped. The other element of the *i-text*, *delivery* and *cards* respectively guides the conceptualisation and interpretation process.

**Table 34.** Occurrence of nominalisations in relation to all *i-texts* with a nominal profile according to interactive operation.

Interactive operation	Occurrences of nominalisations	Occurrences of <i>i-texts</i> with a nominal profile
SUBMIT	2	4
SELECT	3	4
SEARCH	2	2
GO TO	97	801
<b>Total</b>	104	811

All the instances of nominalisation representing the SUBMIT or SELECT operations consist of the word *checkout* either with a premodifier: Enhanced/Express/Custom Checkout or alone. Similarly, the two instances of nominalisation in connection with the SEARCH operation are Product Search and Quick Search. In word formation these are known as instances of conversion, which means derivation of a word in a new word class without the addition of an affix (Quirk et al. 1985: 1558). When words like *checkout* and *search* occur without modification, they are regarded as verbs in the present analysis. The orthography of the word *checkout* does not facilitate interpretation since in most cases it is written as a compound word either without or less frequently with a hyphen. The two-word version *check out* was found only at one website.

As was the case with the occurrence *i-texts* with a processual profile, nominalisations are relatively more frequent in the VIEW type of the GO TO operation. Link labels such as Delivery, Pricing, Secure payment typically provide additional information of the activity represented by the nominalisation in an additional window.

### 7.3.3.2 Other nominal *i-texts*

When the parts of speech are defined on a conceptual basis, nouns denoting physical objects can be said to be the most prototypical members in the category of nouns. Concrete

and abstract nouns that have not been derived from verbs show the least inherent interaction. However, nominal *i-texts*, as link labels in particular, are very frequent. The *i-text* code neither designates an interactive operation nor assigns an active role to the web user but reflects a semantic relation between the link label and the content of the target page. The relationship between a nominal *i-text* and the target page that the active element with the *i-text* points to is briefly examined in the following.

Identification and categorisation seem to form the main semantic relations indicated by nominal *i-texts*. In an identificational relation the *i-text* acts as a label, which represents a chunk of information on the target page (cf. Rosenfeld & Morville 1998: 72). Nominal *i-texts* also represent the primary way of coding in product categorisation and other categorisations that occur in the online shopping context. The link label may profile a number of semantic relations between the source and target pages. The following classification is based on the system of the participant roles in relational processes and circumstantial functions in systemic-functional grammar (Halliday 1994: 119–158; Stillar 1998: 25, 26). It also has elements derived from the classification I used in my earlier study, a contrastive investigation into the local cases in Finnish and their equivalents in English (Laine 1997). My classification of semantic relations was based on the list of cases in Cook's (1989: 191) case grammar model, on the list of semantic fields in Jackendoff's (1983) conceptual semantics, applied to Finnish by Leino et al. (1990) and a list of relations given by Leino (1993) in a cognitive framework.

1. The relation between the *i-text* and the target page content can be *identificational*. Identification in this context refers to a situation in which the *i-text* functions as the title of the content of the target page. 401 *i-texts* in the corpus, one in four occurrences, can be regarded as representatives of this type of *i-text* usage. Although this type of link-target relation can be described by means of *i-texts* with a processual profile, e.g. What is Quick Checkout (Eddie Bauer), a complex atemporal profile, e.g. How to shop (Domestications) or a stative atemporal profile, e.g. About us (JCPenney), a majority of occurrences or 89.8 % have a nominal profile. Nominal *i-texts* may consist of a single noun, e.g. Security, Conditions

(John Lewis), a compound noun, e.g. Customer service (JCPenney), two nouns juxtaposed by means of *and*, e.g. Terms and conditions (Wedgwood), proper noun, e.g. SuperTarget (Target), or a noun modified by an adjective, e.g. Easy returns (Eddie Bauer), a possessive, e.g. Our guarantee (Ross-Simons) a prepositional phrase, e.g. Item on air (QVC) or an adverb, e.g. Chocolate here (Presentco).

2. When there is a relation of *attribution* between the *i-text* and the target, the target page content has some quality attributed to it in the *i-text* (cf. Halliday 1994: 120). In cognitive terms, the *i-text* highlights a salient feature of products or other items on the target page. The nominal profile occurs in more than half of the instances of an attributive relation in the corpus. The salient feature may be
  - a brand: e.g. Lenox, Whirlpool, Royal Velvet in connection with an instruction text *shop by brand* (JCPenney)
  - price: e.g. Clearance (Ross-Simons), Sale (Eziba)
  - style: e.g. Countryside, Romance (JCPenney)

The salient characteristic often occurs as an adjectival modifier in an *i-text*, the profile determinant of which is a noun functioning in a hyponymic classificatory relation (see point 3) to target page items, for example Electrical appliances (John Lewis), Patriotic gifts (Gifts). The modifier may also denote a salient feature representing a *material* relation, e.g. Down comforters, Down pillows (Eddie Bauer).

3. *Classification* is a typical relation represented by an *i-text* and the target of the active element. Classification is characteristically based on a hyponymic or meronymic relation. In a hyponymic relation the *i-text* is schematic with regard to subcategorisation or listing on the target page. Each target page item can be regarded as an instance or elaboration of the *i-text*. Nouns in the *i-texts* are typically divisible, in other words plural count nouns (e.g. Shoes, Perfumes, Clothes) or non-count nouns (e.g. Lingerie, Jewelry, Cutlery) (See the analysis in 7.4.2). A meronymic relation refers to a part-whole relationship as a basis of categorisation (Cruse 1986: 159). The source item is not a schema to the meronyms but it

constitutes the whole of which the meronyms are parts or elements. No genuine meronymic categorisations were detected in the corpus, if spatial and circumstantial relations which are described below are not included in this category.

4. In a *benefactive* relation the *i-text* denotes the recipient of the items listed on the target page. A benefactive *i-text* often profiles an atemporal relation, but nominal profiles are also frequent, e.g. Men, Women, Kids, Baby.
5. In a *spatial* relation the *i-text* constitutes the space in which the target page items can be found, e.g. Bathroom, Kitchen, Bedroom in the categorisation of furniture, furnishings and accessories.
6. A relation of *purpose*, which comes close to the following circumstantial relation, connects an activity or state on the source page with items by means of which the activity is carried out or state is achieved on the target page, e.g. Health & Fitness (Sundance), Home décor (Gifts), Family fun (Target), Storage (Marks & Spencer). Examined from the viewpoint of the target page, this relation can be characterized as an instrumental relation.
7. It is hard to draw a distinct borderline between spatial, purpose and *circumstantial* relations. However, in a circumstantial relation space may be one categorising element while the emphasis is on the temporal and functional aspects, e.g. Golden Jubilee, Mother's Day (John Lewis), Bath (Target).

Table 35 presents the occurrence of *i-texts* as instruments of categorisation and the frequency of the nominal profile in this *i-text* function.



**Table 35.** *I*-texts used for categorisation.

Semantic relation between the <i>i</i> -text and target page items	Occurrences with a nominal profile	Total number of occurrences	Frequency of the nominal profile, %
Identification	360	401	89.8
Attribution (salient feature)	21	37	56.6
Hyponymic classification	244	244	100.0
Benefactive	33	66	50.0
Spatial	63	67	94.0
Purpose	18	22	81.8
Circumstantial	82	99	82.8
Total	821	936	87.7

The figures in the table show that an overwhelming majority of the *i*-texts used denoting identification and categorisation have a nominal profile. In this connection, it might be interesting to see what kind of relational profiles are represented in this function. In the *spatial* domain the non-nominal instances are atemporal relations consisting of a prepositional phrase, e.g. *At home* or *For the home*. As was stated above, in the *benefactive* domain relational profiles are common, and the *i*-text designates an atemporal relation either by means of a preposition, e.g. *For him*, *For entertainers* or a possessive or genitive, e.g. *Men's*, *Children's*, *His*, *Hers*. The *circumstantial* domain manifests a wider variety of constructions, which are either atemporal, such as prepositional phrases *For the holidays* (Martha Stewart), adverbs *Out and about* (Ncedapresent) –ing participles *Sharing* (Eziba) or exceptionally also temporal processes, e.g. *Get well* (Target) in gift categorisation. A *purpose* relation may be represented by an ing-participle *Pampering* (Target) or an imperative *Pamper her* (Presentco), and two instances of a conjunct *Just because* could also be found. A categorisation based on a salient feature can be expressed by a processual profile in the form of a question, e.g. *What's new*, *What's hot* (Maelstrom) or sometimes by an atemporal profile with an adjective, e.g. *Electrical* (Allders) or a prepositional phrase *Under £10* (Maelstrom).

### 7.3.4 *I-text* profile and multiple operations

The analysis in the previous sections has been carried out in accordance with the strongest interactive operation that the active element and its interactive label represent. However, GO TO is often combined with interactive operations that empower the user more. In other words, active elements that represent SUBMIT, SELECT and SEARCH functions often take the user to a new page at the same time as the operation itself is carried out. This phenomenon can be examined by means of a crosstabulation of the interactive operations and target page windows shown in Table 36.

**Table 36.** Target page window according to interactive operation.

Interactive operation	Window of the target: the interactive element				Total
	leads to a new page	opens an additional window	leads to another place on the same page	remains on the same page	
SUBMIT	79	0	0	5	84
SELECT	58	4	0	68	130
SEARCH	26	0	0	1	27
GO TO	1072	101	3	25	1201
<b>Total</b>	<b>1235</b>	<b>105</b>	<b>3</b>	<b>99</b>	<b>1442</b>

The following observations that can be made on the basis of the information shown in the table. First, the SELECT operation seems to fall into two groups of approximately the same size, one which includes GO TO and the other in which the function is carried out without taking the user to a new page. For another thing, within the GO TO operation the target page window arrangement seems to have more variation than is the case in connection with other interactive operations.

Let us examine the SELECT operation first by means of the information displayed in the following table. Does the role assignment of the *i-text* contain any indication whether the selection is accompanied with a move to a new page or not?

**Table 37.** User role and target page in the SELECT operation.

User role	Target: The active element with the SELECT function			
	leads to a new page	opens an additional window	makes the user stay on the same page	Total
agent	46	4	66	116
agent-mover	8	0	0	8
nominalisation	3	0	0	3
no explicit role	1	0	2	3
<b>Total</b>	<b>58</b>	<b>4</b>	<b>68</b>	<b>130</b>

There is no clear indication of different role assignment except for the fact that a number of instances of the role of agent-mover can be found in cases where the user is led to a new page, while the role is not represented in instances where no movement is involved. In fact, in these instances no reference is made to the selection; only the movement is explicit: *Go/proceed to checkout*. The examination of the syntactic structure of the two categories based on the target window shows, that a path expression, which consists of a verb and a prepositional phrase is much more frequent in instances where the user is taken to a page, e.g. *Add to basket*, *Save to registry* (Gifts). On the other hand, a verb + direct object structure is more common in the category involving no movement, e.g. *Remove item*, *Add wrapping* (Allders).

In this connection a few words could be said about the target of the SUBMIT operation, which in most cases seems to be a new page. In the few instances where the user stays on the current window after the operation of SUBMIT, the submitted information does not seem to be an obligatory phase in the shopping process but is connected with some auxiliary function such as sending a gift message, requesting optional customer registration or using a gift certificate. For example, on the home page of *Furniture123* the user is asked whether he/she wants a newsletter to be sent by email. After submitting his/her email address, the user receives an acknowledgement thanking for the submission but he/she is not transferred from the home page. In these instances, the *i-text* structure or user role do not differ from other types of SUBMIT.

The target page variation in connection with GO TO is not a question of multiple operations, but it can be utilised in the definition of the VIEW subtype of the GO TO navigation function. As was described in section 2.7, this subtype refers to instances where the active element opens an additional window, which constitutes a detour from the original navigation process. Table 38 helps us to find out whether the VIEW type *i-text* differs from other navigational *i-texts*. The table shows the frequencies of each role as percentages to facilitate comparison.

**Table 38.** Proportions of user roles in the GO TO operation according to target.

User role	Window of the target: the interactive element				
	leads to a new page (n = 1072)	opens an additional window = VIEW (n = 101)	leads to another place on the same page (n = 3)	remains on the same page (n = 25)	Total (n = 1201)
agent	17.0	28.7	0.0	20.0	18.0
agent-mover	1.4	0.0	0.0	0.0	1.2
experiencer	3.5	6.9	33.3	8.0	3.9
participant in an atemporal relation	2.5	2.0	0.0	0.0	2.4
nominalisation	3.3	5.9	0.0	4.0	3.5
no explicit role	72.4	56.4	66.7	68.0	70.9
<b>Total</b>	100.0	100.0	100.0	100.0	100.0

The percentages in the table show that the user is more frequently assigned the role of an agent in the VIEW-type operation than in navigation where the user is led to a new page in the original process. This is, in fact, against the hypothesis that the larger the effects of a function are, the more active the user role is. A VIEW operation that makes it possible to resume the original navigation just by closing the window can be considered a less powerful function than a GO TO operation that transfers the user from the current window.

In the latter case the source window can only be accessed by pressing the *Back* button in the browser window or perhaps by means of a hyperlink that allows the user to return. Some of the instances can be explained by noting that the operation of VIEW may resemble a technical button in a concrete function, e.g. *Zoom in/out* (JCPenney), *Enlarge the image* (Littlewoods).

### 7.3.5 User role in the *i-text* in relation to interactive operation

In the previous sections I have given an overview of how the *i-text* reflects the user role in processual, atemporal and nominal constructions. The aim of this section is to interrelate the user roles with the interactive operations that were defined in section 2.7. The interactive operations were categorised according to their interactive effectiveness and user involvement as follows:

1. SUBMIT                    the user affects the database by submitting new information
2. SELECT                    the user affects the database by making selections between given options
3. SEARCH                    the user forms a collection of links by submitting a keyword or selecting a keyword from given options
4. GO TO                     the user accesses a new web page or changes location on the current page

Before examining the correlation between user role and interactive operation, it will be useful to see the distribution of different grammatical structures with regard to interactive operation. When examining Table 39, we should take into consideration that a number of *i-texts* (87 instances) are embedded links, the structures of which are contained in the embedding sentences. This co-textual aspect has already been discussed in section 7.1.3.

**Table 39.** Grammatical profile of the *i-texts* according to interactive operation.

Grammatical profile	Interactive operation				
	SUBMIT	SELECT	SEARCH	GO TO	Total
Nominal profile	4	4	2	801	811
Atemporal profile	2	2	0	107	111
Processual profile	78	124	25	293	520
Total	84	130	27	1201	1442

The table shows clearly that processual (i.e. verbal) structures are proportionally more frequent in connection with function-oriented *i-texts*, while target-oriented hyperlink *i-texts* generally instantiate nominal structures although verbs are not infrequent either. The investigation of mere grammatical forms does not, however, give a correct picture of the interactive character of interactive labels, although verbal structures with a processual profile provide the basis for more active user roles. The assignment of a particular user role can be regarded as a more precise indicator of interactivity.

As we saw in section 5.3.3, the role of the user varies according to the semantic relation profiled by the verb. The classification of roles presented in that connection is rough and there are participant roles that do not seem to conform to role archetypes. However, generalisation of this type makes it possible for us to analyse the relationship between the *i-text* and interactive operations. In processual expressions with an imperative, the addressee is the trajector of the mandated process. The trajector assumes a particular role on the basis of energy transmission and initiative hierarchies, which were discussed in section 5.3.3. In section 7.3 reasons were given for the choice of the roles of agent, agent-mover and experiencer as the basis of this analysis. An agent is the source of the energy flow and has an effect on other participants in the process, while an agent-mover is affected himself/herself by the process even though he/she is the active participant. An

experiencer takes the second position after the agent on the initiative hierarchy scale, but his/her action does not have direct influence on the other participants.

A less explicit user role can be seen in atemporal relations, in which the addressee or the user constitutes the trajector in the semantic relation. Instances of this type of relation form the next level on our scale of interactivity. In the same category I have also included such *i-texts* that contain a possessive denoting the user, e.g. *Your/my account*. In fact, the head noun is the profile determinant, which would presuppose categorisation as a nominal expression. However, the possessive form involves the user in a direct way even though the owner *you* or *I* is not the trajector but the landmark in the atemporal relation. As Langacker (1999: 181, 182) points out, the owner is assigned the status of the reference point and landmark in possessive construction even though in corresponding clauses with the verb *have* the landmark/trajector alignment is converse: *You/I* (trajector) *have an account* (landmark).

On the interactivity scale, instances of atemporal relations described above are followed by nominalisations, which represent summary scanning of a nominalised process in which the user is an active participant. The least interactive grade of interactivity is represented by all other *i-texts* whether relational or nominal without an indication of active user participation. To sum up, the following scale of interactivity constitutes the basis for the analysis.

User role:	<i>I-text</i> example:
1. agent	<u><i>Edit shopping cart</i></u> (QVC)
2. agent-mover	<u><i>Proceed to order summary</i></u> (JCPenney)
3. experiencer	<u><i>See more linens</i></u> (Wedgwood)
4. participant in an atemporal relation	<u><i>Back to payment</i></u> (Marks & Spencer) <u><i>Your basket</i></u> (Presentco)
5. nominalisation	<u><i>E-mail registration</i></u> (Spiegel)
6. other nouns	<u><i>Account cards online</i></u> (John Lewis)

In order to find out whether the user function and interactive role are interrelated, I arranged the user roles on an ordinal scale in the order shown above from the most active/distinct role to the least active/distinct and respectively the interactive operations in the order of their interactive effect. The most powerful function SUBMIT was divided into three subcategories on the basis of the information submitted: 1) credit card information, 2) other personal information and 3) information concerning product and delivery. The SUBMIT function may concern information that is submitted on the current page or the confirmation of information that has been preliminarily submitted at an earlier stage of the session. The frequency crosstabulation of these two qualitative variables is shown in Table 40.

**Table 40.** User roles and interactive operations (Corpus A).

User role	Interactive operation						
	SUBMIT			SELECT	SEARCH	GO TO	Total
	credit card information	other personal inf.	non-personal inf.				
agent	30	35	6	116	13	216	416
agent-mover	2	4	1	8	12	15	42
experiencer						47	47
atemporal relation						29	29
nominalisation		2		3	2	42	49
no explicit role	2		2	3		852	859
Total number of <i>i-texts</i>	34	41	9	130	27	1201	1442

The role of the agent shows the highest frequency in connection with interactive operations involving the greatest significance or sense of empowerment. Conversely, the proportion of *i-texts* that do not assign the web user any interactive role is the highest in the GO TO category. Spearman's bivariate correlation coefficient calculated on the basis of the figures in Table 40 shows a correlation of 0.557 at the significance level of 0.01, which means that the interactive effect of an active element correlates significantly with the



manifestation of the user role in the *i-text*. In other words, to some extent the web user may resort to the linguistic form of an interactive label as an indicator of the significance that clicking the active element involves.

A similar correlation coefficient can be calculated in Corpus B, which is smaller but which exhibits more balanced proportions between the interactive operations. Table 41 is a contingency table drawn up on the basis of the *i-texts* in Corpus B. The corresponding Spearman's coefficient is even higher, that is 0.664, than in the larger corpus. The higher figure partly results from the absence of VIEW-type links, which are often represented by imperative *i-texts*.

**Table 41.** User roles and interactive operations (Corpus B).

User role	Interactive operation						Total
	SUBMIT			SELECT	SEARCH	GO TO	
	credit card information	other personal information	non-personal information				
agent	28	20	5	41	7	20	121
agent-mover	2	3		7	10	4	26
experiencer						7	7
atemporal relation						1	1
nominalisation				2	2	2	6
no explicit role	2		1	2		73	78
Total number of <i>i-texts</i>	32	23	6	52	19	107	239

The correlation coefficient calculated on the basis of the figures in Tables 40 and 41 does not differentiate between the three levels of explicitness. In other words, the active role of the user may be connected with the actual clicking, the virtual function that the clicking activates or the content of the target page. If the *i-texts* including a *click (here)* request are excluded, the correlation between user role and interactive operation will be even higher,

since *click (here)* predominantly occurs in connection with the GO TO operation as we saw in section 7.2.1. In website design the linguistic code is a dependent variable, because in the first place, there is a particular function, the independent variable that is labelled with an *i-text* manifesting a particular interactive role. The web user starts from the *i-text*, the conceptualisation of which leads him/her in the current context and discursive frame to a relevant interpretation of the interactive operation. The coefficients of determination, the square of the correlation coefficient, are 0.310 and 0.441 calculated on the basis of the figures in Tables 40 and 41 respectively. In other words, 31 % or 44 % of the variance in the interactive operation can be assumed to be associated with the variance in the user role conceptualisation.

### 7.3.6 *I-text* anticipating interaction on the target page

*I-texts* do not only reflect the interactive operation that an active element carries out but they may also carry information about the target of the function. This applies particularly to the GO TO hyperlinks, the main task of which is to function as a signpost to the target page especially on utilitarian websites, where frustrating link followings may easily make the visitor give up and turn to another site. The aim of this part of the study is to examine whether the linguistic code manifested in *i-texts* reveals any aspects of the interactive content of the target page. In an earlier analysis (Laine 2002: 67, 68) I have examined this anticipation of interaction by means of a continuum that was based on the interactive operations with the addition of dividing the GO TO operation into three categories according to the degree of navigation that is required of the user on the target page. The three subcategories were the following:

- a) Further navigation is required: the main content of the target page is a collection of links (called a *list node* by Kämäräinen and Haapasalo (1998: 10)) and further navigation is necessary for the user to find the information he/she is looking for.
- b) Further navigation is optional: the main content of the target page is information about a product or another topic but the page also contains further linking.

- c) Further navigation is not possible: the target page contains information to be read or seen, but the only active element that the user has at his/her disposal is a link back or a close button.

This analysis yielded a very low correlation coefficient (Spearman 0.113) between user role and target page interactivity. To find out a reason for this low figure, I calculated a corresponding correlation coefficient between the user role and the above subcategorisation of the GO TO *i-texts* excluding such instances in which other types of interaction (SUBMIT, SELECT or SEARCH) takes place on the target page. The resulting correlation coefficient was  $-0.250$ , which means that a more active user role is more frequent in cases where less navigation is needed on the target page. On the basis of this observation I have examined the relationship between user role and target page interactivity at two levels. Similarly to the above discussion with regard to the interactive operation on the current page in 7.3.5, the first part of the analysis has been carried out between the relation between the user role in processual, atemporal and nominal *i-texts* and interactive operations on the target page. Second, *i-texts* leading to pages with GO TO interaction have been examined to find out whether the linguistic form gives any clues as to how much further interaction is required of the user to find the information he/she is looking for.

#### **7.3.6.1 User role in the *i-text* and interactivity on the target page**

In the electronic shopping procedure, like in any other website activity in connection with which information is sought and submitted, interaction is an accumulative process in which every phase is based on the results of the previous user action in the way that Rafaeli and Sudweeks described an interactive system (see section 2.1). The target page of an *i-text* relation may represent various degrees of interactivity. I have used the same categorisation of the target page content as in section 7.3.5 with the addition of a category named 'acknowledgement of a completed action', which is typical of a page ending a session and does not presuppose further interaction in the current session. To sum up, the target page categorisation according to expected interactivity is as follows:

1. SUBMIT credit card information
2. SUBMIT other personal information
3. SUBMIT non-personal information
4. SELECT information
5. SEARCH for information
6. GO TO another page to continue navigation
7. acknowledgement of a completed action

My analysis of the target page content is based on the assumption that the user follows the complete shopping procedure from arriving at the home page to the final purchase. In other words, the analysis is made at the shopping session level (see section 3.4). If we examine user activity at the episode level (see section 3.4), the status of the target page will be different. When the user, for example, arrives on the product selection page, he/she has completed the product search episode and no more interaction is needed if he/she just wanted to find information about a particular product, which he/she might buy in a local store. However, if we look at the shopping session as a complete whole, the product selection page represents interactivity level 4 in the above categorisation. The user is expected to make his/her selections and go on shopping.

Table 42 presents the interrelations between the user roles, which were defined in section 7.3.5 and the target page interactivity in accordance with the above categorisation on the part of the GO TO operation. This information should help us to answer the question whether the linguistic code of a hyperlink *i-text* helps the user to predict the degree of interactivity, that is, the type and scope of decisions he/she is supposed to make on the target page.

**Table 42.** User role in GO TO *i-texts* and target page interactivity.

User role	SUBMIT			SELECT	SEARCH	GO TO	Acknow- ledgement of a completed action	Total
	credit card inform- ation	other personal inform- ation	non- personal inform- ation					
agent	2	91	14	17	7	80	5	216
agent-mover	2	2		4		7		15
experiencer		9		17		19	2	47
atemporal relation		7	1	5		16		29
nominalisation		12	4	3	4	19		42
no explicit role	1	27	6	52	1	764	1	852
Total number of <i>i-texts</i>	5	148	25	98	12	905	8	1201

Spearman's correlation coefficient calculated on the basis of the figures of the above table is 0.501, which shows a significant positive correlation between the manifestation of the user role and target page interactivity. The more powerful user interaction is expected on the target page of a hyperlink, the more manifest and active role the user has in the semantic structure of the corresponding *i-text*. The following examples are given to illustrate this interrelation. The user is more likely to face a SUBMIT type interaction on the target page if the *i-text* contains an imperative assigning him the role of an agent.

*Order Gift Certificates* (Eddie Bauer)

*Add to Wishlist* (QVC)

Less often the user has no explicit role in the *i-text*:

*Free catalog* (Sundance)

*Wishlist* (Spiegel)

The high frequency of inexplicit role assignment in connection with the SELECT operation on the target page is due to the session/episode distinction referred to above. When the

shopping procedure is examined as a whole, a product selection page is normally preceded by a page on which a number of products have been listed and the particular product the user has in mind is identified by clicking a link, which typically has a nominal profile representing the product name. The analysis would be different if product search was examined as a separate episode, because the product selection page would be the final step in the episode.

The high frequency of pages containing another GO TO operation on the target page of a GO TO operation calls for additional analysis of *i-texts* occurring in this type of combination. In particular, the high number of *i-texts* with no explicit role assignment brings up the question whether there is anything in the syntactic-semantic structure of the *i-text* that reflects the navigation process that is to be expected. That will be the next topic of the current analysis.

#### 7.3.6.2 *I-texts* and navigation on the target page

The *i-texts* of hyperlinks that anticipate the occurrence of the GO TO function on the target page may assign the user a variety of roles as the following examples show.

User role:	<i>I-text</i> :
agent	<u>Visit our stores</u> (Ross-Simons)
agent-mover	<u>Return to Shopping</u> (Sundance)
experiencer	<u>View Entire Collection</u> (Martha Stewart)
trajector in an atemporal relation	<u>Back to shopping basket</u> (Littlewoods)
nominalisation	<u>Subscriptions</u> (Martha Stewart)

However, in 764 instances out of a total number of 852 (89.7 %) the *i-text* does not involve the user directly, and in 663 cases it has a nominal profile. As far as interaction is concerned, we can use the categorisation into three navigational subcategories that were mentioned in section 7.4. If the target page is a list node (see 2.6.2), in other words its

main content is a collection of links, the user needs to go on interacting until he/she finds a content node with more profound information about a product or service he/she is interested in. The main content of the target page may also consist of such information but the user is also offered opportunities for further interaction by means of a number of links on the page. The third type of a GO TO operation on the target page consists of only one link, which leads back to the source page or closes the window. There are no clear-cut boundaries between these three categories, and I have based my categorisation on the criterion whether the main content of the target page is functional with a number of links, informational with a number of additional links or without any further linking. Another complication results from the fact that the main categorisation of an e-store may remain as a stable frame during the course of the whole shopping session. As a majority of links that lead to a GO TO operation and do not exhibit any explicit user role are nominal, I wanted to find out whether the countability of the nominal profile determinant has any influence on the interactive content of the target page. The categorisation that has been described above yields the following table:

**Table 43.** *I-text* profile and navigation on the target page.

<i>I-text</i> profile		Number of i-texts leading to a page with a go to function			
		Main content: navigation/categorisation	Main content: information with further navigation	Main content: information to be read or seen	Total
Nominal	Singular count noun	113	34	17	164
	Plural count noun	218	30	17	265
	Mass noun	146	33	22	201
	Proper name	22	10	2	34
Atemporal		67	11	5	83
Processual		13	3	1	17
Total		579	121	64	764

As has been pointed out above, nouns show the least inherent interaction because they profile things, not relations. The purpose is first to discuss whether the linguistic code of nominal *i-texts* conveys any indication of the interactive content of the target page. Traditionally a distinction has been made between countable and uncountable nouns or count and mass nouns. In cognitive grammar this distinction is considered to have a conceptual basis. According to Langacker (1987: 189), a count noun is a bounded region in some cognitive domain. In other words, it instantiates a thing with certain limits, while mass nouns are unbounded. Plural count nouns can also be regarded as a type of mass nouns, because they act like mass nouns in their behaviour in relation to determiners and quantifiers, for example (Langacker 1991a: 350).

A characteristic feature of a mass noun is that any subregion within its scope is representative of the whole region. For this reason, mass nouns qualify for categorisation on the basis of schemas, prototypes or basic level terms. Langacker (1987: 189) proposes that all nouns instantiate the schematic entity 'thing', while Taylor (1993) bases his description on prototypes. According to Taylor, 'thing' is a prototype for count nouns while 'substance' is a prototype for mass nouns. In addition to prototypical substances, the latter group includes nouns designating activities (e.g. *dancing, research*), emotional states (e.g. *anger, love*), plural mass nouns (e.g. *clothes, groceries*) and such uncountable superordinates as *fruit* and *furniture*. Nouns that designate activities were discussed in section 7.3.3.1 dealing with nominalisation. In the context of this section both non-action and action nominals are included in the analysis. The mass/count distinction applies to action nominals too (Langacker 1991a: 97–100).

The characterisations of mass and count nouns lead to the assumption that *i-texts* that represent the GO TO function consist of mass nouns or plural count nouns more frequently if the main content of the target page is navigation, or, in accordance with the terminology referred to section 2.6.2, if the target is a list node rather than a content node. The proportional frequencies of different types of nouns calculated on the basis of the figures



in Table 43 are presented below in Table 44. Only the *i-texts* with a nominal profile have been included in the calculation.

**Table 44.** Frequencies of noun types according to the navigational content of the target page.

Type of noun (n = 664)	Target page content %			
	Main content: navigation/ categorisation	Main content: information with further navigation	Main content: Information to be read or seen	Total proportion
Singular count noun	22.6	31.8	29.3	24.7
Plural count noun	43.7	28.0	29.3	39.9
Mass noun	29.3	30.8	37.9	30.3
Proper name	4.4	9.3	3.4	5.1
Total	100.0	100.0	100.0	100.0

The table shows that there is no clear interdependency between the countable/uncountable distinction and the navigational target, although some general conclusions can be drawn. Singular count nouns seem to become more frequent when the navigational process advances, whereas the proportion of plural count nouns is smaller when the target has more content and less navigation. Against the expectations on the basis of the above discussion, the proportion of mass nouns increases towards the end of a navigational path. In fact, the mass noun *i-texts* that lead to information to be read designate such ideas as *security* or *privacy* or they represent a variable usage between count and mass nouns, e.g. *delivery*.

#### 7.4 *I-texts* in the electronic shopping script

So far in this study the *i-texts* have been examined from the viewpoint of the interactive operation they represent and the interactivity of their target page. The purpose of this part of the analysis is to relate the *i-texts* to the structure of the electronic shopping procedure. I

aim to look at the *i-texts* as parts of the discourse that the user carries out with the website as he/she proceeds from the navigation phase to the final submission of his/her order. For this purpose I picked the *i-texts* that form the shortest possible shopping route and included them in a smaller corpus, Corpus B (see section 6.2). To be able to form a continuous flow for each website, I had to add a few observational units which lacked a linguistic *i-text* and the active element was either a picture or an icon. However, linguistic code occurred in combination with all of these non-verbal elements either in the form of an instruction text or a link title.

I examined the link and button labels in the shopping script in two dimensions. First, I compared the *i-texts* of the 22 web stores according to the stage in the shopping procedure and generalised the *i-text* representation on the basis of the different elaborations at each step of the procedure. Second, I compared these schematic representations of the different stages and explored how the coded communication develops as the shopping event proceeds.

#### **7.4.1 *I-text* representation at the different stages of the shopping procedure**

In section 5.3.1 two structuring principles were discussed: elaboration of a schema and extension from a prototype. My original intention was to abstract a schematic representation of the *i-text* at each stage of the shopping procedure, but I soon faced problems similar to the ones Taylor (1995: 67, 68) describes in his book on linguistic categorisation. He states that, for many categories of natural language, it is not possible to abstract a schema that would be compatible with all category members. The only abstractions that could be made on the basis of the corpus of the study were the following:

- in main categorisation all *i-texts* represent summary scanning
- in product selection (adding to cart) all *i-texts* profile a relation
- in customer registration all *i-texts* represent sequential scanning, profile a relation and assign the user the role of an agent.

These schemas provide very little information about the overall syntactic-semantic structure of *i-texts* in the context of online shopping. For another thing, Taylor points out that schemas are probably accessible only to more sophisticated, reflective language users. Cognitive research has shown that basic level salience and category extension around central typical instances occurs before categorisation by schema. We can assume that an ordinary busy web user might rely more on a prototypical instance than on an abstract schema when starting his/her interpretation process.

The term *prototype* can be understood in two ways. The term can be applied to a particular entity, which is the central member of a category. Alternatively, it can refer to a schematic representation of the conceptual core of a category. Consequently, we cannot say that a particular entity is a prototype, but rather that it instantiates the prototype. (Taylor 1995: 59) The latter, more abstract way of understanding the prototype provides the basis for my analysis. Table 45 presents the occurrence of central syntactic, semantic and lexical features at the essential stages of the shopping procedure in the corpus material. The frequencies have been indicated as percentages so that they can be compared more easily. On the basis of the typical features shown in the table, prototypical link and button labels can be characterised stage by stage as follows:

#### 1. Main categorisation

All tokens of main categorisation *i-texts* in the material represent summary scanning. More than two thirds are nominal while the rest of the cases profile an atemporal relation. Somewhat more commonly the noun or nominal partnership is divisible (a plural count noun or a mass noun) than a singular indivisible count noun. Instances of *i-texts* are listed in the following in the order of prototypicality.

*Gifts/Home Decor* > *For the home/For Her* > *Home Store/The Perfect Gift*

**Table 45.** Occurrence of some central features at the different stages of the shopping procedure (included in Corpus B).

Features	Main categorisation (n = 22)	Sub-categorisation (n = 32)	Product search (n = 20)	Product information (n = 19)	Product selection (n = 24)	Starting checkout (n = 25)	Submitting information (n = 70)
Scanning - sequential - summary	100.0	3.1 96.9	90.0 10.0	5.3 94.7	95.8 4.2	92.0 8.0	94.3 5.7
Profile - relational - atemporal - processual - nominal - mass/count pl - count sg	27.3 27.3 72.7 45.5 27.3	25.0 21.9 3.1 75.0 59.4 15.6	90.0 90.0 10.0	10.5 5.3 5.3 89.5 57.9 31.6	100.0 100.0	92.0 92.0 8.0	98.6 4.3 94.3 1.4
User role - agent - agent/mover - experiencer - no explicit role			35.0 50.0 5.0 10.0	5.3 94.7	95.8 4.2	60.0 32.0 12.0	87.1 7.1 5.7
Lexical manifestation - go - search - add - checkout - continue - submit - proceed			45.0 35.0		79.2	40.0	42.6 11.4 7.1
Occurrence of other elements - theme - path					4.2 83.3	4.0 28.0	40.0 4.3

## 2. Subcategorisation

Summary scanning is still prevalent; there is only one instance of sequential scanning, in which the verb occurs in an additional request addressed to the user. The nominal profile and divisibility is more characteristic than in main categorisation.

*Beach towels/Women > For Any Occasion*

### 3. Product search

Product search *i-texts* characteristically profile a process, which also means sequential scanning. The most frequent verb *search* assigns the user the role of an Agent, while in connection with *go* the user is an Agent-Mover.

*Search* > *Go*

### 4. Product information

Links leading to the desired product are even more frequently nominal than links used for categorisation. The noun or nominal head is more often in the plural than in the singular.

*JC Penney Solid Color Towels* > *Venetian Teddy Bear*

### 5. Product selection

Product selection, the stage at which the product is added to the shopping cart, is characteristically processual. There is one instance of an atemporal profile, but it occurs in connection with a processual instruction sentence. In most cases the path of the selected product to the cart is also profiled in the *i-text*.

*Add to cart/basket/bag* > *Buy*

### 6. Starting checkout

Technologically, the interactive element that invites the user to start the checkout process is a hyperlink although it often has been formed into a shape of a button. In my analysis, I have included these *i-texts* in the category of SELECT, because at this stage the customer in a way confirms his/her selections and decides to pay for them. In other words, he/she is not only navigating further but makes a decision to commit himself/herself to earlier decisions.

However, in most e-stores the customer is given an opportunity to change his/her mind concerning purchases during the checkout procedure

*I-texts* in which the user is requested to start his/her order entry usually contain a verb in the imperative. Consequently, they are instances of sequential scanning and processual profile. As was pointed out earlier, the word *checkout* can often be understood both as a verb and a noun, but in my analysis the verbal interpretation has been selected whenever possible. With the most frequent verb *checkout* the user has the role of an agent, and when other verbs occur the path of the customer to checkout has been explicitly profiled.

Checkout > Go to checkout

#### 7. Submitting information

*I-texts* in connection with information submission resemble the previous two stages to a high degree. However, with comparison to starting the checkout process, the submission *i-texts* assign the user more often a more empowering agentive role. Compared to product selection *i-texts*, they more often indicate the Theme of the process explicitly. These differences result from lexical choices, as the following instances show:

Continue > Continue checkout > Submit Order > Proceed

#### 7.4.2 Development of *i-texts* along with the shopping procedure

The coded communication conveyed by *i-texts* can be examined from the viewpoint of relevance. In product search (categorisation and product information) summary scanning, which allows the user to experience the *i-text* content as a coherent whole, seems to be in accordance with the relevance principle. The information that the user needs most concerns the target page, not the interactive operation, which also explains the rareness of explicit requestive forms in general and of the verb *click* in particular. In the corpus of the study, three stores (*Allders*, *Furniture123.co.uk* and *The gift delivery co*) use the verb *click* in the links leading to featured products on the home page, for example. In those instances

the purpose is not to help the user find something that he/she is looking for but arouse interest and make the user interact accordingly.

As the shopping event proceeds and the user has to make decisions that involve him/her more in the process, *i-texts* are more processual and assign the user a more active role. This could be seen in a clear correlation between the user role and interactive operation in section 7.3.5. When examining the sequence of actions in a shopping event, we can calculate a similar correlation between user role and stage in the procedure in Corpus B. The categories of the user role are the ones that were defined in 7.3.5, while the categorisation of the stage in the shopping procedure is as follows:

1. home page
2. product categorisation
3. product selection
4. shopping cart
5. buyer information entry
6. credit card information entry
7. order confirmation

These categories represent the source page content of the *i-texts*. The user role seems to correlate negatively with the stage of the shopping procedure (Spearman's correlation coefficient is  $-0.621$ ). In other words, the user role is less active closer to the beginning of the procedure, and the further away from the home page the user advances, the more distinct the user role becomes. The correlation is somewhat less stronger (Spearman's  $\rho = -0.568$ ) if we relate the user role to the number of clicks that the user has performed to reach the page on which the *i-text* in question is to be found. As the number of necessary clicks to complete a shopping procedure varies between 6 and 17 in the e-stores in the corpus, the shopping stage analysis with 7 phases makes the different stores more comparable with one another.

The development of the *i-text* structure along with the shopping procedure can be investigated from the perspective of the benefit and obligatoriness of an action. Nemo (1999) applies a two-dimensional analysis to directives, which is based on the scalarisation and dependency of an action. Scalarisation is based on the criterion for whom it makes a difference if the addressee acts on a directive utterance (speaker-scaled actions) or not (addressee-scaled actions). On the other hand, performing an action may be dependent either on the speaker or on the addressee. These two variables produce the following grid with four options, which I have adapted to the user–website context (Nemo 1999: 407):

**Table 46.** Orientation of scalarisation and dependency.

	User-dependent options	Website-dependent options
User-scaled options	<b>advice</b>	<b>permission</b>
Website-scaled options	<b>request</b>	<b>order</b>

In a shopping situation, it is the customer who makes the decisions, and in that sense all the directives expressed by *i-texts* are generally user-dependent. However, in certain situations, for example if access to certain pages requires registration, the directives can be regarded website-dependent. As far as scalarisation is concerned, the assessment depends on how desperately the customer wants to have a particular product. Naturally, it is always in the interest of the store to be able to sell. We could assume that at the beginning of the procedure *i-texts* are more advisory, and after the customer has made his/her decision to buy, they start to resemble more requests or even orders, because to be able to get the product, the customer must follow the steps of the checkout procedure. However, the e-store designer must remember that at any moment the customer may decide to quit or click away to another site. It is difficult to say whether this scale from advice to requests is reflected in the *i-texts*, because the change in the grammar seems to be dependent on the interactive operation. At the product search phase the active elements are hyperlinks, and



after the product selection, the SELECT and SUBMIT functions come into play. In addition, on the basis of the empirical material we can conclude that indirect requests and polite forms are very rare in the language of web interaction.

### 7.5 Characteristics of language of interaction

Before drawing together the main findings of the empirical analysis in this chapter, it might be useful to review the different roles assigned to coded communication in the approaches used in the analysis. This is connected with the discussion about the semantic/pragmatic interface. In relevance theory the interpretation starts with an ostensively communicated utterance, for example a link label *Back to home page*. This linguistically encoded representation is developed into an explicature pragmatically in an inferential process, which is heavily based on contextual factors and includes a higher level speech-act description: *The link asks the user to click the link to go<sup>23</sup> back to the home page of the website*. A substantial part of the explicit information is created by means of pragmatic inferencing. In cognitive grammar a usage event is coded in the *i-text*, which profiles an atemporal relation between a covert trajector and the landmark *home page*. The addressee is generic, because it applies to any user who happens to see it (cf. Langacker 1991b: 503). For a computer literate user, the cognitive model that underlies the *i-text* is that of ordering or requesting. Both the speech act and the action itself lack coding, in other words they are off stage (cf. section 5.2), whereas the profiled relation between a moving implicit trajector in the direction of a landmark is on stage.

In the following, the mode values of the variables representing explicit coding, cognitive profiles and roles as well as manifestations of illocutionary force are presented. In this study the interactive operations have been classified into two main categories: hyperlink functions and button functions (see Table 5 in section 4.4). Table 47 shows the proportions of the central mode values according to this division.

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<sup>23</sup> *Going* in this context is understood virtually. In fact, the computer system provides access to the home page for the user

**Table 47.** Mode values of central variables in hyperlink and button functions.

Variable	Hyperlink functions GO TO (n = 1201)	Button functions SEARCH, SELECT, SUBMIT (= 241)
grammatical profile	nominal (66.7 %)	processual (94.2 %)
user role	no explicit participant role (70.9 %)	agent (83.0 %)
illocutionary force	no linguistic indication (77.2 %)	imperative (92.5 %)
explicit code	target (91.0 %)	interactive operation (75.1 %)

Although it is impossible to calculate any standard deviations on nominal and ordinal scale variables, the percentages show that there is a fairly clear dichotomy between hyperlink and button function *i-texts*. The variables presented in Table 47 go hand in hand; when an *i-text* has a nominal profile, it cannot manifest a very clear user role or express illocutionary force and it tends to denote the target rather than the function. However, the empirical analysis in chapter 7 revealed that there is variation within each interactive operation with respect to the variables of the analysis. There are intermediate values between the two poles, and the borders between categories are fuzzy. The *i-text* of a hypertext label may profile an atemporal relation, the user role may be partly explicit, for example in a nominalisation, the illocutionary force may be expressed in the form of an indirect speech act and the linguistically explicit explicature may denote both target and function. We can find a continuum of linguistic expressions with respect to the prototypicality of the *i-text* in each function. The following table illustrates this kind of continuum in connection with the GO TO operation presented at decreasing levels of prototypicality.

**Table 48.** Prototypicality of *i-texts* in connection with the GO TO operation.

<i>I-text</i>	Deviation from prototypicality
<u><i>Bedroom</i></u>	no deviation
<u><i>For her</i></u>	profiles an atemporal relation
<u><i>Subscriptions</i></u>	user role can be detected in nominalisation
<u><i>Enlarged view</i></u>	indicates function and target; nominalisation
<u><i>Contact us</i></u>	assigns agent role, profiles a process, illocution
<u><i>Continue</i></u>	assigns agent role, profiles a process, illocution, indicates function

The last item on the list is the least prototypical instance of a GO TO *i-text*, because it has none of the features put forward in Table 47 as typical features of a link label. The fairly frequent *Click here* is also a very atypical GO TO *i-text*, but the embedding sentence expresses the target of the link explicitly. The linguistic structure of the *i-texts* representing button functions resembles a mirror image of prototypical GO TO *i-texts*.

The following *i-texts* exemplify the continuum in connection with SUBMIT:

**Table 49.** Prototypicality of *i-texts* in connection with the SUBMIT operation.

<i>I-text</i>	Deviation from prototypicality
<u><i>Purchase</i></u>	no deviation
<u><i>Go</i></u>	user role: agent-mover
<u><i>Pay now on our secure server</i></u>	indicates target
<u><i>Express Check-out</i></u>	indicates target; nominalisation
<u><i>OK</i></u>	profiles an atemporal relation, no illocution
<u><i>Credit card</i></u>	no user role, nominal profile, no illocution, indicates target

It is more difficult to differentiate between the three button functions SEARCH, SELECT and SUBMIT. The following table summarises the mode values of the key variables according to interactive button function.

**Table 50.** Mode values of central variables according to button function.

Variable	SUBMIT	SELECT	SEARCH
grammatical profile	processual (92.3 %)	processual (95.4 %)	processual (95.3 %)
user role	agent(-mover) (92.9 %)	agent(-mover) (95.4 %)	agent(-mover) (95.3 %)
illocutionary force	imperative (92.3 %)	imperative (95.4 %)	imperative (95.3 %)
explicit code	interact. function (89.3 %)	interact. function (62.3 %)	interact. function (95.3 %)

The figures in the table show that the syntactic level of the code does not provide vital clues as to the interactive operation of the active element, and, therefore, information at the lexical level would be expected to be more helpful. Lexical choices do contribute to the interpretation of *i-texts*, as we saw in section 7.2.2 except in instances where a semantically schematic word, such as *continue* has been chosen. The user must resort to the frame of the session when interpreting the interactive effects of clicking an element. Naturally, the user input that is required in connection with clicking guides the user a lot.

To sum up, there is a significant positive correlation between the construction of the linguistic representation of the *i-text* and the consequences of the corresponding interactive operation. If the correlation was complete, SUBMIT *i-texts* would always be of the type *Submit your name and address* manifesting a directive in the imperative and containing an elaborated description of the operation, while GO TO *i-texts* would be nominal phrases such as *Gifts* or *Terms*. The main reasons for the lack of such complete correlation have turned out to be the following:

- *I-texts* which contain an explicit manifestation of clicking typically occur with the GO TO function in instances where the website attempts to attract the user's attraction. In

other words, the action can be regarded user-scaled and user-dependent (see 7.4.2) and it is outside the minimum route required for completing a purchase procedure.

- In connection with GO TO *i-texts* that represent the VIEW subtype, the interactive consequences of which can be considered the least powerful, explicit imperative forms, such as *View the picture* or *Read the conditions* often occur. These are also user-scaled; it is to the user's own benefit to see the information.
- Towards the end of the purchase process the *i-texts* tend to be quite schematic of the type *Continue*, because by then the customers are expected to be familiar with the shopping script.

## 8 CONTRASTING ENGLISH AND FINNISH *I-TEXTS*

The objective of this part of the study is to find out whether the observations of the use of linguistically coded communication as an indicator of interactivity are applicable to other languages than English. There are two reasons for the inclusion of this section in my research. First, although the material that was used in the empirical study represents English *i-texts* and the analysis was conducted within the framework of English grammar, my primary intention was not study the structure of the English language but rather to examine the role of language in general in user–website interaction. The second reason is more practical. On the World Wide Web, English is the predominant language of communication, but electronic stores selling consumer goods should operate in the native language of the customers in order to be successful marketers (see Turban & King 2003: 490–492). Consequently, my intention was to collect some material from a number of Finnish e-stores and analyse it in a way that would be comparable to the analysis into English *i-texts*. Although the concepts of this discussion are derived from contrastive analysis, this is not a contrastive study in the first place. The contrastive character of the study cannot, however, be ignored, because languages construe reality differently and there are features in the syntactic-semantic structure of each language that affect its use in human-website interaction.

### 8.1 Data of the study

The Finnish corpus of the study consists of *i-texts* gathered from the websites of 22 electronic stores. Data gathering was conducted in the same way as was the case with the English corpus. The selected stores include all Finnish web stores that could be characterised as general e-stores at the time of the research. Compared to the English corpus, the product range had to be augmented with stores selling clothing and home

electronics so that an equivalent number of stores could be attained. The requirement for an integrated payment system also had to be compromised because cash on delivery, invoicing or Internet banking systems are generally used in Finland instead. The *i-texts* that constitute the minimum route when buying a product as a new customer have been included. The total number of tokens in the material is 174 but in 9 instances a particular step in the shopping procedure was represented by an icon or picture, which leaves us with 165 *i-texts*. In the product search phase, both search through a categorisation system and search by means of a search engine are represented in the material. In other words, the compilation of the Finnish corpus follows the same principles as the English B corpus (see section 6.2). In this discussion English refers to the language covering the *i-texts* of both British and American origin. Like its English counterpart, the Finnish collection of websites represents retail trade in consumer goods, but the range of products is wider including household appliances and clothing.

Finnish websites are generally smaller and their hierarchical structure is flatter than that of their English counterparts. The average minimum number of clicks to complete the purchase procedure as a new customer is 7.0, while in the English corpus the equivalent figure is 9.9. This results partly from the fact that the Finnish corpus contains only six department stores or general e-stores with a wide range of products, in other words all Finnish electronic department stores available at the time of the study. The rest of the stores have a limited range selling domestic goods, textiles, furnishing, gift items, clothing and electrical appliances. A product search facility is provided by 14 sites.

When contrasting English and Finnish, we should take their typological differences into account. English is a relatively analytic language, in the syntax of which word order has an important role, while Finnish is an agglutinating language with a rich case system. Consequently, Finnish words are longer<sup>24</sup>, which is likely to be reflected in a lower number of words per clause. The average number of words in the English corpus is 2.0 per *i-text* whereas in Finnish the corresponding figure is 1.4 words. Finnish web vocabulary is

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<sup>24</sup> Word length in Finnish and other languages including English is discussed, for example, by Niemikorpi (1991:89-95)

not quite as established as it is in English. For example, the English verb *click* referring to the usual user action with a mouse has several equivalents in Finnish, one of which *klikata* has been adopted directly from English.

## 8.2 Explicitness of *i-texts*

The explicitness of the Finnish *i-texts* can be examined by means of the three-level categorisation, which was introduced in section 7.2. An *i-text* may explicitly communicate the concrete clicking, an interactive virtual operation, the target of the operation or a combination of these three levels. The occurrence of different levels of explicit information in relation to interactive operations is summarised in Table 51, which can be compared with Table 19 showing the corresponding information in the English Corpus B.

**Table 51.** Explicit *i-text* content according to interactive operation in Finnish *i-texts*.

Interactive operation	Levels of explicit information in <i>i-texts</i>								Total
	1 clicking	1+2 clicking interact. operation	1+2+3 clicking interact. operation target	1+3 clicking target	2 interact. operation	2+3 interact. operation target	3 target	non-verbal	
SUBMIT	0	0	0	0	34	1	4	2	41
SELECT	0	0	0	0	19	22	5	3	49
SEARCH	0	0	0	0	12	1	1	3	17
GO TO	0	0	0	0	2	2	62	1	67
Total	0	0	0	0	67	26	72	9	174

There does not seem to be much difference between the English and Finnish *i-texts* with regard to the type of explicit information that they show. The interactive operations



SEARCH, SELECT and SUBMIT contain function-oriented information, whereas the link operation GO TO is primarily connected with *i-texts* manifesting information about the target. No explicit reference to clicking was found in the Finnish *i-texts*, while there was one instance of a combination of clicking and target in the English Corpus B. Two references to clicking were detected in the instruction texts accompanying *i-texts*. In the two collections of *i-texts* that are compared here, the *i-texts* represent the shortest possible route from home page to checkout, which helps to explain the non-occurrence of explicit indications of clicking. In order to be able to proceed, the user must take clicking for granted. References to clicking might have been found, if a larger corpus equivalent to the English Corpus A had been collected. This remains to be examined in the future.

Let us have a closer look at instances in which the interactive operation is explicitly expressed in the *i-text*, in other words categories *interactive operation* and *interactive operation + target* (altogether 93 occurrences in Table 51). A similar analysis to the one carried out in section 7.2.2 has been conducted with regard to the Finnish material. The linguistically explicit information about the interactive operation in these 93 instances was distributed along the scale of explicitness as the following table shows:

**Table 52.** Explicitness of the indication of interactive operation.

Interactive operation	elaborated description + reference to source page	elaborated description	direct reference to interactive operation + reference to source page	direct reference to interactive operation	schematic description	non-processual representation	Total
SUBMIT	14	3	0	0	16	2	35
SELECT	3	22	0	0	8	8	41
SEARCH	0	2	0	10	0	1	13
GO TO	0	1	0	1	1	1	4
Total	17	28	0	11	25	12	93

The figures in the table reflect the fact that it is quite common at Finnish-language websites to attach a schematic *Jatka* ‘continue’ or *Jatka tilaamista* ‘continue to order’ to the SUBMIT and SELECT operations. The more elaborated *Lähetä/vahvista tilaus* ‘send/confirm order’ with the SUBMIT operation or *Lisää ostoskoriin* ‘add to basket’ with SELECT are also relatively frequent. The rich local case structure of Finnish makes it possible to indicate a function by means of a non-verbal (non-processual) construction, e.g. *Kassalle* ‘to the checkout’, *Ostoskoriin* ‘into the basket’. In English, a prepositional phrase is not sufficient but must be accompanied by a verb: *Go to checkout*, *Add to basket*.

### 8.3 User role and interactivity

As was pointed out in section 5.4, the common yardstick for comparing English and Finnish *i-texts* would be a type of pragmatic equivalence, which is composed of similar perlocutionary effects: clicking an active element as an actual function and simultaneously performing a virtual interactive operation. In this study *i-texts* with their immediate co-text and context have been characterised as requests for the user to click the active element. The proportions of different grammatical profiles in the Finnish corpus (Corpus C) and the equivalent proportions in the English Corpus B are presented in Table 53.

**Table 53.** Frequencies of grammatical profiles in Corpora B and C.

Profile	Corpus B English		Corpus C Finnish	
	n	%	n	%
Nominal	66	27.6	64	38.8
Atemporal	20	8.4	17	10.3
Processual	153	64.0	84	50.9
Total	239	100.0	165	100.0

Table 53 shows that the proportion of *i-texts* with a nominal profile is higher in the Finnish corpus than in the English one while the processual profile seems to be relatively more frequent in English. The chi square test shows that the difference between Finnish and English *i-texts* is statistically significant at the significance level of 0.05. The lower frequency of processual profile in Finnish indicates that the user is assigned an active role more often in English than in Finnish. Consequently, we shall first find out to which extent Finnish *i-texts* assign the user an active role in interaction. The categorisations of user role and interactive operation are the same that were used in section 7.3.5 concerning the English material. Table 54 presents the crosstabulation of user role and interactive operations on the Finnish e-store websites.

**Table 54.** User roles and interactive operations (Corpus C).

User role	Interactive operation						
	SUBMIT			SELECT	SEARCH	GO TO	Total
	credit card information	other personal information	non-personal information				
agent	6	25		29	12	2	74
agent-mover		1		4		1	6
experiencer						1	1
atemporal relation		1		6		1	8
nominalisation	1					2	4
no explicit role	1	4		7	3	57	72
total number of <i>i-texts</i>	8	31	0	46	15	65	165

Spearman's correlation coefficient calculated on the basis of the figures shows a clear correlation (0.674) between the manifestation of user role and interactive operation. The correlation is almost the same as in the corresponding English corpus (0.673). In other words, both English and Finnish interactive labels manifest a similar interdependence

between the user role assignment and the effectiveness or significance of the interactive operation.

#### 8.4 *I*-texts in the electronic shopping discourse

In the following the Finnish *i*-texts are examined in the electronic shopping discourse stage by stage. At the same time, comparisons with English *i*-texts are made where appropriate.

##### 1. Main categorisation

The profile of the main categorisation is nominal in Finnish if we look at the profile determinant of the *i*-texts. In English, one in four main categorisation *i*-texts profiles an atemporal relation and has the syntactic structure of a prepositional phrase. The nearest Finnish equivalent would be a noun or pronoun in a local case, but no occurrence of an *i*-text with such a structure was found except for one composite structure containing an atemporal relation with a genitive case *naisten paidat* 'women's shirts'. This profiles a benefactive relation between the product and those who the product is meant for. The occurrence of the word *home* in a prepositional phrase in English *i*-texts obviously results from the fact that the single word *home* would be ambiguous as a categorisation term. It could be interpreted either as a link to the home page of the site or a link to articles for the home. Therefore, prepositional phrases such as *at home* and *for the home* and partnerships such as *home store* are used for the sake of clarity. In the presentation of gifts and articles of clothing *i*-texts such as *for him* and *for her* neatly categorise the products according to sex. An equivalent structure with a local case would not be possible in Finnish without a clarifying noun. Deverbal nouns can be found both in Finnish and in English *i*-texts representing summary scanning of a process: *sisustaminen* 'decorating', *asuminen* 'living' and *Living*.

## 2. Subcategorisation

The *i-texts* representing subcategorisation also seem to have a nominal profile in Finnish, while in 25% of the English *i-texts* at this particular stage of the shopping procedure profile an atemporal relation and there is also a case of a processual relation. The non-occurrence of oblique cases in *i-texts* representing categorisation in Finnish is an indication of the principle of relevance: an *i-text* in the nominative case encodes a label, which is the key feature from the viewpoint of communication. Decoding a noun phrase in the nominative requires less effort than decoding a local or more abstract oblique case profiling a relation. On the other hand, to form the desired explicature the addressee must "inflect" the nominal to be able to interpret the relation between the label and content of the target page. In addition, inflected nominal forms are often long and difficult to perceive because the stem of the word may also change to some extent.

## 3. Product search

*I-texts* indicating product search by means of a search engine differ from categorisation labels in both languages in the respect that they are predominantly processual. In the Finnish material, one instance of *OK* as an *i-text* was found accompanied by an explanatory link title and instruction text. In Finnish, the prototypical verb is *hae* 'search', whereas in English *go* is more frequent than *search*. *Go* as the *i-text* verb normally requires more coding in the form of a link title or an instruction for the addressee to arrive at the correct interpretation of the button function. The same applies to situations where an icon has been substituted for a textual label. In Finnish such instructions as *pikahaku* 'quick search', *tuotehaku* 'product search' and simply *haku* 'search' occurred. The English counterpart *search* can be interpreted either as a verb or as a deverbal noun if it is not preceded by a modifier. In Finnish, dual interpretation is not possible, because the noun and the verb are morphologically different.

#### 4. Product information

*I-texts* leading to information about a particular product are characteristically nominal both in English and in Finnish. One instance of an atemporal relation, an adjective denoting colour could be found in both languages. Similarly, both the English and Finnish material contained one instance of a processual profile. In English, it occurred in connection with the product name: *The Lunch Cooler - click here for full product description*, while the Finnish instance consisted of a verb *näytä* 'show' in combination with an instruction text showing the name of the product.

#### 5. Product selection

The *i-texts* representing product selection are to a large extent structurally similar in the two languages. They contain a verb, prototypically *lisää* 'add' or *osta* 'buy' in Finnish and *add* and less frequently *buy* in English. The verb that designates adding is accompanied by a path expression which manifests itself as a noun in the illative case in Finnish and as a prepositional phrase in English. Unlike English, Finnish exhibited *i-texts* that contain only a path expression: *koriin* 'into the basket', *ostokoriin* 'into the shopping basket'.

#### 6. Starting checkout

In English, 92% of the *i-texts* which urge the user to start to check out have a processual profile, while the corresponding figure in Finnish is 68.2%. In Finnish, the *i-text* may consist of a noun in the allative case profiling an atemporal path relation in which the addressee is the trajector. One in five Finnish *i-texts* in the corpus exhibited the word *kassalle* 'to the checkout', whereas in English no instance of a prepositional phrase could be found in this function. In Finnish the verb is also more often accompanied by a theme or a path expression while it more often occurs alone in English

## 7. Submitting information

English and Finnish *i-texts* representing submission of information show for the most part similar structures. Most of the *i-texts* contain a verb in the imperative form. However, Finnish seems to show instances of summary scanning somewhat more often than English.

**Table 55.** Occurrence of central features in Finnish *i-texts*.

Feature	Main categorisation (n = 21)	Sub-categorisation (n = 13)	Product search (n = 11)	Product information (n = 17)	Product selection (n = 21)	Starting checkout (n = 22)	Submitting information (n = 42)
Scanning - sequential - summary	0.0 100.0	0.0 100.0	90.9 9.1	5.9 94.1	85.7 14.3	68.2 31.8	85.7 14.3
Profile - relational - atemporal - processual - nominal - mass/count pl - count sg	0.0 0.0 0.0 100.0 100.0 0.0	0.0 0.0 0.0 100.0 69.2 30.8	100.0 9.1 90.9 0.0	11.8 5.9 5.9 88.2 35.3 52.9	95.2 9.5 85.7 4.8 0.0 4.8	95.5 27.3 68.2 4.5 0.0 4.5	92.8 7.1 85.7 7.1 0.0 7.1
User role - agent - agent/mover - experiencer - trajector - no explicit role			90.9	5.9	85.7 0.0 0.0 14.3	50.0 18.2 22.7 9.1	69.0 2.4 14.3 14.3
Lexical manifestation - <i>hae</i> - <i>lisää</i> - <i>osta</i> - <i>jatka</i> - <i>kassalle</i> - <i>hyväksy</i>			72.7		47.6 28.6	31.8 36.4	38.1 14.3
Occurrence of other elements - theme - path					4.8 61.9	36.4 40.9	52.4 2.4

The information in Table 55 is comparable with the corresponding information concerning the English data in Table 45. The most conspicuous differences include the following features:

- summary scanning is more common in connection with button functions in Finnish
- atemporal profile occurs in hyperlink functions in English, while in Finnish it is relatively frequent in connection with button functions
- English somewhat more frequently assigns the user the role of an agent(-mover) than Finnish

On the whole, the two languages show similar usages that can be regarded as characteristic of web language in general. Direct requests are used in both languages. The rich system of local cases in Finnish allows the use of atemporal relation to represent virtual motion. In other words, a dynamic expression does not necessarily need to contain a verb. In English, motion is incorporated in the verb, which may be complemented by a path expression in the form of a prepositional phrase. Furthermore, morphological differences between English and Finnish have an effect on somewhat different solutions in website design. In English, the verb stem, present tense and imperative forms are represented by a single form, while in Finnish each of these grammatical forms is morphologically different. This complicates the use of embedded links in Finnish and may also require additional consideration with regard to the processing effort needed for the interpretation of *i-texts*.



## 9 CONCLUSIONS

This research focused on the features of language as indications of interactivity on e-commerce websites. The examination of empirical material revealed that interactivity is reflected in the language of interaction with respect to the explicitness of linguistically encoded information, expressions of directive illocutionary force and profiling the user role in the syntactic-semantic structure of interactive labels. The findings in the English corpus were largely maintained in the analysis of the Finnish material.

A linguistic analysis can have either a descriptive (what the usage is) or a normative (what the usage should be)/prescriptive (how the usage can be improved) point of departure (cf. Karlsson 1994: 21,22; Crystal 1997a: 2, 3; see also the discussion about the normative/positive dichotomy in Anekar 2002: 27–29). So far, my intention has been to follow the principles of descriptive analysis although at some points the appropriateness of a particular usage has been questioned. In no event can we draw the straightforward conclusion that what is frequent or common usage is good usage. This final part of the study includes a cautious step in the prescriptive direction. In other words, while assessing the results, I also aim to point out some aspects concerning the use of language that are worth consideration in e-commerce website design.

The role that language plays in user–website interaction is dependent on the current stage of technological development. As has been pointed out, the e-store design and architecture was first based on printed sales catalogues, which still constitute the basic model for the layout of many electronic stores. At the same time electronic stores have started to manifest features that utilise the new media technology. In this final chapter, the main findings of the analysis will be brought together and a few conclusions from the viewpoint of functional and effective *i-text* design will be drawn. Secondly the future prospects with respect to the technological development in the field will be discussed briefly. Finally, the results of the current research will be assessed with regard to suggestions for further study.

### 9.1 Towards more functional and interactive *i-texts*

The essential features of an electronic store with a high degree of interactivity were listed in Figure 3. The user should be provided a sense of empowerment and he/she should feel like an active partner in the process with a high level of involvement. In addition, the discourse structure and utterance content should be clear enough so that the user does not have to hesitate about his/her decisions and feel uncertain about the consequences of interaction. In fact, empowerment, activeness and involvedness are facets of the same characteristic and deeply interrelated. They are associated with such linguistic-pragmatic features as expressions of illocutionary force and assignment of user role. On the other hand, user confidence or minimisation of hesitation is closely connected with the sufficient level of explicitness of communication. In website design, a fair balance between all these factors should be found. The linguistic code can be used to reflect these features by means of its lexico-semantic content and syntactic structure.

The study was based on the methodological (Figure 2 in section 1.5) and communicational (Figure 18 in chapter 5) triangles, which were complemented by the triad consisting of form, meaning and context. This framework was used to address the research questions posed in section 1.2 and reformulated at the beginning of chapter 5. To start the user's interpretation process, *i-texts* may provide linguistically coded information at three levels: the actual user action, the virtual interactive operation or the content of the target page. The way user processes this information seems to follow the principle of relevance. Explicitly coded targets generally occur in connection with hyperlinks, while coded interactive operations accompany situations where user interaction has more significant consequences. *I-texts* vary in the degree of schematicity in reference to interactive operations and their targets. In operation-related contexts, a higher level of explicitness can be attained if the *i-text* consists of a verb denoting the elaborated interactive operation represented by the active element. To decrease the user's hesitation about the outcome of carrying out a function, reference to the source page content, the target page or both can be added.

As far as the illocutionary force of the *i-texts* is concerned, direct speech acts manifested in the imperative form characterise the SEARCH, SELECT and SUBMIT operations, whereas the GO TO operation often lacks linguistically coded illocution. On the basis of the summary in section 7.6, we could draw the conclusion that the imperative is the syntactic form that best meets the requirements of user role assignment, that is the activeness of the user in the action, and involvedness in situations where the function is in focus. It carries directive illocutionary force, it encourages the user to interact by assigning him/her an active role in the interaction process and it leads the user to intended interpretation of verbal communication without taking up too much space on a web page. The imperative represents a direct speech act, and it does not require unnecessary processing effort, because no implicit contextual assumptions need to be made with respect to user operation.

From the syntactic-semantic perspective, the analysis showed that a processual *i-text* commonly guides a user who is selecting and submitting information or using a search facility. Nominal *i-texts* are most frequently used for navigation. According to the study of the empirical material, almost all nominal (98.8 %) and atemporal (96.4 %) *i-texts* were connected with the GO TO operation of hyperlinks. In other words, when a user comes across an *i-text* with a noun as its head on an English-language website, he/she can assume that clicking the active element takes him/her to another web location but does not have other consequences. The same general presumption applies to all *i-texts* that do not contain a verb. In case of processual *i-texts*, the situation is more complex. Most *i-texts* connected with the SUBMIT, SELECT and SEARCH operations contain a verb in the imperative, but so do a quarter of the GO TO *i-texts*. In connection with GO TO, a processual *i-text* may anticipate more consequential interaction on the target page.

*I-texts* cannot be examined in isolation, but their linguistic and non-linguistic context has an important role in their interpretation. They may be embedded in a linguistic structure, they may be constituents in an arrangement of a larger information system and they may constitute a phase in a frame or script. Co-textual elements, such as link titles, embedding

sentences and instruction texts, can be used to increase explicitness, accentuate illocutionary force and modify user role assignment. Wider conceptual factors, for example references to politeness and cultural aspects, were not the primary focus in this research. However, the study showed that both in English and in Finnish indirectness is seldom used to convey politeness in e-commerce discourse.

The study of the language of e-commerce websites revealed that electronic stores do not make full use of the opportunities that the technological environment offers. For example, the efficient use of link titles is often neglected. In most cases the titles only repeat the content of the corresponding *i-texts*. The communicative effectiveness of the websites would be enhanced if the roles of *i-texts*, link titles and other immediate co-text element, such as embedding sentences or instructions, were given a careful thought to. The most essential information could be included in the *i-text*, because it catches the user's attention first and additional information, the relevance of which is dependent on contextual factors, could be rendered in co-textual elements.

The question of empowerment is connected with the perspective of user–website interaction. Traditionally, the computer has been regarded as the party that gives the commands and the user is expected to obey the instructions given by the technological system. The user's way to communicate is to use the user actions at his/her disposal: pointing, clicking and keying in. This casting of roles has also been adopted in website design. Only in 5 instructions out of the 1442 *i-texts* of the corpus the user commands the system to carry out a task or puts a question to the system, e.g.

*Move to my wish list* (Target)

*Remind me* (Presentco)

In addition, six instances of the type *My account/details/orders* could be found. In all other instances the website is the requesting or commanding party. These utterances are confirmed by clicking. However, the degree of empowerment is not primarily dependent on the question who is commanding whom, but on the feeling whether the user has power to influence the course of events. After all, it is the user who clicks or fails to click. The classification of the interactive operations used in the current analysis is based on this

rationale. It must be added that consistency in the role assignment throughout the shopping procedure seems natural in user–website interaction.

From the viewpoint of relevance, the inclusion of *click here* in the *i-text* seems to be unnecessary when the clientele is supposed to have a relatively clear communicative frame of WWW navigation. However, this is a question of scalarisation, too. If the option is speaker-scaled, in other words, if it is important for the website to make the user see a page that he/she has not intended to visit in the first place, the addition of the request *click here* might be justifiable, for example, to make the user buy something on impulse. However, an imperative verb indicating the interactive operation explicitly would be a better alternative. Instead of *Click here for information about our novelties*, an *i-text* formulation of the type *See our novelties* would be more appropriate and economical. Additionally, a website designer should give a second thought, before he/she decides to use such labels as *Continue*, *Next* or *OK*.

## 9.2 Role of linguistic code in the interactivity of electronic stores in the future

The rapid development of information and communication technology will undoubtedly affect the communication structures in electronic commerce. The development of speech-recognition technology will allow the users to communicate with e-stores orally, which will alter the role of the written code at websites. The users need not key in information or click the mouse to navigate a website and carry out interactive operations. This development, together with the emergence of more and more non-English e-store websites, will have far-reaching consequences for commerce especially in developing countries. Face-to-face communication by means of inexpensive web cameras and online telephony may also be important elements in this technological progress. However, these developments are not assumed to do away with the need for written linguistic code on the World Wide Web.

Electronic commerce will make use of technologies that are used for virtual reality games and applications today. Virtual reality apparatus will make it possible to go shopping into an electronic mall, pop into shops, look at and even touch products. At the moment, the equipment required for such a virtual shopping tour including a special helmet and gloves is still heavy and expensive, which makes it unattainable to ordinary consumers. Another type of technology that is already developing fast is the kind of tailor-made shopping, which includes, for example, for a customer to try on various garments or to decorate his/her room reproduced on the screen with different colours and materials. Will these developments do away with the need of written linguistic code in online shopping? With the increase of visual, non-textual elements and opportunities of oral communication, user–website interaction will not be as dependent on written code as it is today. As far as *i-texts* are concerned, button labels are more easily replaceable by icons or spoken signals than link anchor texts, because the latter represent a much wider variability. Written language is a strong and explicit way of communicating information about the target of the link. It must also be remembered that leading edge technology becoming common prevailing practice will take its time, and several technologies are used concurrently for quite a long period.

Along with the advancement of new technologies, business communication faces new challenges. In effective communication a thorough understanding of the interface between humans and technology is vital. Because of the global character of the new media systems, intercultural considerations also require attention. Applied linguistics and communication studies need to respond to these challenges.

### **9.3 Final assessment and suggestions for further research**

The grammars, in the comprehensive sense of the word, of natural languages make use of an immense number of ways of conveying ideas both in speech and in writing. The grammar of interactivity, as it was depicted in section 4.4, is much more limited and straightforward as far its forms of expression are concerned, although the multimedia

features contribute to its repertoire of means of expression. When two so different systems are paralleled, it is not reasonable to expect that one-to-one equivalences could be found. This study, however, disclosed some tendencies of convergence in the linguistic structure and corresponding interactive operations. The function/target orientation of explicit information manifested in an *i-text* seems to be markedly determined by the interactive operation. Correlation was detected between the linguistic coding of the role attributed to the user in the interactive labels and the power of the corresponding interactive operation. This is also reflected in the illocutionary force of *i-texts*. Nevertheless, no type of language use, whether linear or hypertextual, can be categorised and typified tightly. Instead, tendencies and prototypical instances can be traced, and these findings can be utilised in the creation of communicative and interactive web pages.

While the number of web users increases and Internet services become an increasingly important part of everyday life, questions of age and educational discrimination deserve consideration and it would be useful to find out their relevance to language use in the WWW context. The current situation makes website designers face the challenge of creating websites representing different levels of sophistication. Younger and more educated web users seem to prefer clever websites that give them a chance to show their inventiveness and navigational skills. At the same time there is a demand for simple and straightforward websites without any unnecessary complexities. The sophistication of websites can be adjusted by varying the proportion of linguistically encoded information in relation to all explicitly communicated information in the relevance-theoretic sense of the terms. The larger amount of linguistically encoded information a website offers, the easier it is for less experienced (but not illiterate) users to navigate it. Additionally, the relation between explicitly and implicitly communicated information determines the sophistication of a website. The current study does not answer the question whether electronic stores selling goods and services aimed at younger or more computer-oriented customers differ from other stores with regard to explicitness. Further research should be conducted to explore this possible variation. The perspective of business communication would be fruitful in the examination of questions like this, in which the characteristics of both the target audience and the maintainers of websites are essential.

The section contrasting English and Finnish interactive labels showed that the ways in which language reflects interactivity follow similar patterns in the two languages with the exception of restrictions imposed by structural differences. It remains to be answered whether this generalisability results from the origins of the Internet in the English language and the dominance of English on the WWW or whether it is typical of the medium as such. Additional research is needed to examine the multilingual aspects of online shopping. The Finnish corpus of my study was delimited to the examination of the minimum path in the shopping procedure, because the aim was to find out whether similar tendencies in the language of interaction could be detected on non-English websites. Expanding the Finnish corpus to equal the English Corpus A in this study would allow more extensive conclusions. Another interesting prospect would be to include a larger number of languages in the study. In multilingual studies the cross-cultural aspect must always be taken into consideration even if the World Wide Web also has unifying and standardising effects.

A fruitful approach to the study of language of interaction is offered by research combining linguistic analysis and user observation in the way that Nielsen<sup>25</sup>, for example, has conducted it. This type of inquiry would benefit from a solid linguistically/pragmatically oriented framework based on cognitive grammar or relevance theory, for example. By varying the linguistic code of the language of interaction, it would be possible to examine language as one of the factors influencing users' interaction behaviour. For example, users' clicking paths or psychophysiological reactions could be monitored. Another, less technical method, would be a survey study based on user inquiry. The important point is to make the results of the linguistic-pragmatic research available for the applications of website design.

The question about the generalisability of the results of the study across languages was referred to above. It can also be assessed whether the study yielded results that are generalisable to web communication outside the scope of electronic commerce. As was

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<sup>25</sup> See Jakob Nielsen's home page at <http://www.useit.com>



noted in section 1.1, several utilitarian websites have structures similar to electronic stores. Consequently, the results of this analysis are likely to be generalisable to the language of interaction on the websites of cities, universities, museums, governments, public utilities, professional associations and other similar organisations. In fact, a number of electronic stores are linked with a background organisation or community that offers a wide variety of services and information. At all events, similarities and genre-specific differences between various types of websites are worth exploring.

I believe that the main contribution of my study is to bring together ideas from hypertext research, human-computer interaction and linguistic/pragmatic analysis. New links between different areas of study open up new ways of thinking and help us to make the most of the World Wide Web as a powerful communication medium.

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## APPENDICES

## Appendix 1: Electronic commerce websites used in the corpus of the study

## 1 English-language electronic store websites

No	Company name	Date of citation	URL	Reference abbreviation
1	J.C. Penney	4 Dec. 2001	<a href="http://www.jcpenney.com">http://www.jcpenney.com</a>	JCPenney
2	John Lewis	12 Mar. 2002	<a href="http://www.johnlewis.com">http://www.johnlewis.com</a>	John Lewis
3	Domestications	17 Jan. 2002	<a href="http://www.domestications.com">http://www.domestications.com</a>	Domestications
4	Littlewoods extra	11. Jan. 2002	<a href="http://www.littlewoodsextra.com">http://www.littlewoodsextra.com</a>	Littlewoods
5	Furniture123.uk	7 Mar. 2002	<a href="http://www.furniture123.co.uk">http://www.furniture123.co.uk</a>	Furniture123
6	Target	7 Mar. 2002	<a href="http://www.target.com">http://www.target.com</a>	Target
7	Eddie Bauer	10 Jan. 2002	<a href="http://www.eddiebauer.com">http://www.eddiebauer.com</a>	Eddie Bauer
8	Spiegel	10 Jan. 2002	<a href="http://www.spiegel.com">http://www.spiegel.com</a>	Spiegel
9	Sundance Catalog Company	22 Feb. 2002	<a href="http://www.sundancecatalog.com">http://www.sundancecatalog.com</a>	Sundance
10	QVC	15 Jan. 2002	<a href="http://www.qvc.com">http://www.qvc.com</a>	QVC
11	McCord	15 Jan. 2002	<a href="http://www.emccord.co.uk">http://www.emccord.co.uk</a>	McCord
12	Wedgwood	11 Mar. 2002	<a href="http://www.wedgwood.com">http://www.wedgwood.com</a>	Wedgwood
13	Presentco	19 Mar. 2002	<a href="http://www.presentco.co.uk">http://www.presentco.co.uk</a>	Presentco
14	Alders	18 Feb. 2002	<a href="http://www.alders.com">http://www.alders.com</a>	Alders
15	Maelstrom	18 Feb. 2002	<a href="http://www.maelstrom.co.uk">http://www.maelstrom.co.uk</a>	Maelstrom
16	The gift delivery co.	18 Feb. 2002	<a href="http://www.giftdeliveryco.com">http://www.giftdeliveryco.com</a>	Gift delivery
17	Marks & Spencer	18 Feb. 2002	<a href="http://www.marksandspencer.com">http://www.marksandspencer.com</a>	Marks & Spencer
18	Gifts.com	19 Feb. 2002	<a href="http://www.gifts.com">http://www.gifts.com</a>	Gifts
19	Ross-Simons	22 Feb. 2002	<a href="http://www.ross-simons.com">http://www.ross-simons.com</a>	Ross-Simons
20	Eziba	19 Feb. 2002	<a href="http://www.eziba.com">http://www.eziba.com</a>	Eziba
21	Needapresent.co.uk	13 Mar. 2002	<a href="http://www.needapresent.co.uk">http://www.needapresent.co.uk</a>	Needapresent
22	Martha Stewart	13 Mar. 2002	<a href="http://www.marthastewart.com">http://www.marthastewart.com</a>	Martha Stewart

## 2 Finnish-language electronic store websites

No	Company name	Date of citation	URL	Reference abbreviation
30	Hobby Hall	5 Feb. 2002	<a href="http://www.hobbyhall.fi">http://www.hobbyhall.fi</a>	Hobby Hall
31	netAnttila	20 Feb. 2002	<a href="http://www.netanttila.com">http://www.netanttila.com</a>	Anttila
32	netista.com	20 Feb. 2002	<a href="http://www.netista.com">http://www.netista.com</a>	Netista
33	Lahjatalo Miia Pihkola	22 Feb. 2002	<a href="http://www.miiapihkola.fi">http://www.miiapihkola.fi</a>	Miia Pehkola
34	Cellbes	15 May 2002	<a href="http://www.cellbes.fi">http://www.cellbes.fi</a>	Cellbes
35	Ellos	15 May 2002	<a href="http://www.ellos.fi">http://www.ellos.fi</a>	Ellos
36	Jokipiin Pellava	25 Feb. 2002	<a href="http://www.jokipiinpellava.com">http://www.jokipiinpellava.com</a>	Jokipiin Pellava
37	Kaluste Niemelä	25 Feb. 2002	<a href="http://www.kauppa.kalusteniemela.fi">http://www.kauppa.kalusteniemela.fi</a>	Kaluste Niemelä
38	Halpa-Halli	15 May 2002	<a href="http://www.hhnet.fi">http://www.hhnet.fi</a>	Halpa-Halli
39	Decoron Concept	16 May 2002	<a href="http://www.decoron.fi">http://www.decoron.fi</a>	Decoron
40	<a href="http://www.koskenkorva.net">www.koskenkorva.net</a>	16 May 2002	<a href="http://www.koskenkorva.net/verkkokauppa/">http://www.koskenkorva.net/ verkkokauppa/</a>	Koskenkorva
41	Suomen Punainen Risti	16 May 2002	<a href="http://www.redcross.fi">http://www.redcross.fi</a>	SPR
42	Caratia	16 May 2002	<a href="http://www.caratia.fi/kauppa/">http://www.caratia.fi/kauppa/</a>	Caratia
43	Intersport Seinäjoki	16 May 2002	<a href="http://www.shop.kolumbus.fi/seinajoenurheilukeskus/">http://www.shop.kolumbus.fi/ seinajoenurheilukeskus/</a>	Intersport
44	r-collection	16 May 2002	<a href="http://www.r-collection.com">http://www.r-collection.com</a>	R-collection
45	Extashop	17 May 2002	<a href="http://www.extashop.com">http://www.extashop.com</a>	Extashop
46	Muoti Obelia	17 May 2002	<a href="http://www.muotiobelia.kauppa-paikka.net">http://www.muotiobelia.kauppa- paikka.net</a>	Obelia
47	Lundia	17 May 2002	<a href="http://www.lundia.fi">http://www.lundia.fi</a>	Lundia
48	Kuntek Computer	17 May 2002	<a href="http://www.kuntek.net">http://www.kuntek.net</a>	Kuntek
49	Veikon Kone	17 May 2002	<a href="http://www.veikonkone.fi">http://www.veikonkone.fi</a>	Veikon Kone
50	<a href="http://www.tuontitukku.net">www.tuontitukku.net</a>	17 May 2002	<a href="http://www.tuontitukku.net">http://www.tuontitukku.net</a>	Tuontitukku
51	Konepiste	17 May 2002	<a href="http://www.konepiste.com">http://www.konepiste.com</a>	Konepiste

**Appendix 2: Variables of the analysis****A. Background information about the store****A1 Language**

- 1 American English
- 2 British English
- 3 Finnish

**A2 Name of store****English-language electronic store websites:**

- 1 J.C.Penney
- 2 John Lewis
- 3 Domestications
- 4 Littlewoods extra
- 5 Furniture123
- 6 Target
- 7 Eddie Bauer
- 8 Spiegel
- 9 Sundance Catalog Company
- 10 QVC
- 11 McCord
- 12 Wedgwood
- 13 Presentco
- 14 Allders
- 15 Maelstrom
- 16 The gift delivery co.
- 17 Marks & Spencer
- 18 Gifts.com
- 19 Ross-Simons
- 20 Eziba
- 21 Needapresent.co.uk
- 22 Martha Stewart

**Finnish-language electronic store websites:**

- 30 Hobby Hall
- 31 netAnttila
- 32 netista.com
- 33 Lahjatalo Miia Pihkola
- 34 Cellbes
- 35 Ellos

- 36 Jokipiin Pellava
- 37 Kaluste Niemelä
- 38 Halpa-Halli
- 39 Decoron Concept
- 40 [www.koskenkorva.net](http://www.koskenkorva.net)
- 41 Suomen Punainen Risti
- 42 Caratia
- 43 Intersport Seinäjoki
- 44 r-collection
- 45 Extashop
- 46 Muoti Obefia
- 47 Lundia
- 48 Kuntek Computer
- 49 Veikon Kone
- 50 [www.tuontitukku.net](http://www.tuontitukku.net)
- 51 Konepiste

A3

## Type of store

- 1 department store/general e-store
- 2 specialty store



### Crosstabulation of the background characteristics

#### I English-language electronic store websites

Store	Country	Type	Number of <i>i</i> -texts in the corpus
J.C.Penney	American	department store	105
John Lewis	British	department store	84
Domestications	American	department store	70
Littlewoods extra	British	department store	57
Furniture123	British	specialty store/furnishings	49
Target	American	department store	99
Eddie Bauer	American	department store	85
Spiegel	American	department store	68
Sundance Catalog Company	American	department store	49
QVC	American	department store	84
McCord	British	specialty store/furnishings	41
Wedgwood	British	specialty store/interior, gifts	57
Presentco	British	specialty store/gifts	79
Allders	British	department store	42
Maelstrom	British	specialty store/interior, gifts	48
The gift delivery co.	British	specialty store/gifts	35
Marks & Spencer	British	department store	89
Gifts.com	American	specialty store/gifts	79
Ross-Simons	American	specialty store/interior, gifts	55
Eziba	American	specialty store/interior, gifts	68
Needapresent.co.uk	British	specialty store/gifts	36
Martha Stewart	American	department store	63
		<b>Total</b>	<b>1442</b>

## II Finnish-language electronic store websites

Store	Type	Number of <i>i</i> -texts in the corpus	Number of icons/pictures replacing <i>i</i> -texts
Hobby Hall	department store	8	1
netAnttila	department store	11	0
netista.com	department store	9	0
Lahjatalo Miia Pihkola	specialty store/gifts	6	0
Cellbes	department store	9	0
Ellos	department store	15	1
Jokipiin Pellava	specialty store/gifts, textiles	9	0
Kaluste Niemelä	specialty store/furniture	10	0
Halpa-Halli	department store	7	3
Decoron Concept	specialty shop/jewellery	6	0
www.koskenkorva.net	specialty shop/gifts, textiles	5	1
Suomen Punainen Risti	specialty shop/gifts, stationery	6	0
Caratia	specialty shop/jewellery	5	0
Intersport Seinäjoki	specialty shop/sports equipment	5	2
r-collection	specialty shop/clothing	8	0
Extashop	specialty shop/watches, tools	4	0
Muoti Obelia	specialty shop/clothing	7	0
Lundia	specialty shop/furniture	5	0
Kuntek Computer	specialty shop/computing	7	1
Veikon Kone	specialty shop/home electronics	10	0
www.tuontitukku.net	specialty shop/home electronics	5	0
Konepiste	specialty shop/home electronics	8	0
	<b>Total</b>	<b>165</b>	<b>9</b>

B. *I-text* characteristicsB4 *I-text* wording

B5 Number of words

B6 Syntactic structure

- 1 noun, common case (English), nominative (Finnish)
- 2 NP (noun phrase), noun + noun
- 3 noun/NP *and* noun
- 4 noun – (*hyphen*) noun
- 5 proper noun
- 6 NP, adjective + noun
- 7 NP, possessive + noun
- 8 noun + prepositional phrase
- 9 NP + adverb
- 10 NP + relative clause
- 11 gerund
- 20 adjective
- 21 adverb
- 22 PP (prepositional phrase): preposition + NP/noun
- 23 possessive or genitive
- 24 conjunct
- 25 adverb + PP
- 31 ing-form + noun/NP or adverbial
- 32 infinitive
- 40 verb (in the imperative)
- 41 verb + noun/NP/pronoun
- 42 verb + PP
- 43 verb + adverb
- 44 verb + noun/NP/pronoun + PP
- 45 verb + adverb + infinitive
- 46 verb + noun/NP/pronoun (complement)
- 47 verb + infinitive
- 50 question addressed to the user
- 51 other questions
- 52 assertive clause
- 55 numeral
  
- 101 noun, partitive (Finnish)
- 105 noun, allative (Finnish)
- 107 noun, illative (Finnish)
- 110 verb + noun in a local case (Finnish)
- 111 verb + NP (object) + noun in a local case (Finnish)
- 120 noun + apposition (Finnish)

- B7            Countability of nominal head
- 1 countable, singular
  - 2 countable, plural
  - 3 uncountable
- B8            Semantic relation
- 1 action
  - 2 direction
  - 3 observation
  - 4 identification
  - 5 attribution (salient feature)
  - 6 hyponymic classification
  - 7 benefactive
  - 8 spatial
  - 9 purpose
  - 10 circumstantial
- B9            User role
- 1 agent
  - 2 agent-mover
  - 3 experiencer or agent-experiencer
  - 4 participant in an atemporal relation
  - 5 nominalisation
  - 6 other
- B10           Explicitness
- 1 clicking
  - 2 clicking + interactive operation
  - 3 clicking + interactive operation + target
  - 4 clicking + target
  - 5 interactive operation
  - 6 acteme + target
  - 7 target
  - 8 adverb referring to clicking
- B11           Schematicity of explicit content
- 1 elaborated description of interactive operation + reference to source page content
  - 2 elaborated description of interactive operation
  - 3 direct reference to interactive operation + reference to source page content
  - 4 direct reference to interactive operation
  - 5 schematic description of interactive operation
  - 6 non-processual description of interactive operation
- B12           Relation to source page content

- 1 embedded object
- 2 embedded subject
- 3 embedded complement
- 4 embedded verb
- 5 embedded infinitive
- 6 embedded adverbial (head of a PP)
- 7 embedded clause
- 8 menu item
- 9 item on a vertical list
- 10 item on a horizontal list
- 11 input + button
- 12 text- or item-bound link/button
- 13 menu title
- 14 independent link/button

B13

## Discourse function

No	Abbreviation	Discourse function
1	shop	go shopping/enter the shop
2	maincat	main categorization
3	subcat1	subcategorisation 1
4	subcat2	subcategorisation 2
5	subcat3	subcategorisation3
6	prod	product or a list of products
7	add	add to cart
8	addQ	select quantity
9	addV	select colour
10	addT	select type
11	addZ	select size
12	addR	select recipient
13	addconf	confirm addition to cart
14	view	view shopping cart
15	check	proceed to checkout
16	reg	register/sign in
17	regack	acknowledgement of registration
18	reg2	sign in as a registered customer
19	submit	submit information
20	submitE	submit email address
21	submitN	submit name, address and telephone number
22	submitS	submit shipping address
23	submitB	submit billing address
24	submitD	submit shipping method/delivery options
25	submitP	submit gift certificate/coupon informations
26	submitL	submit source of information
27	submitG	submit gift service information
28	submitM	submit method of payment
29	submitY	submit delivery time
30	submitC	submit credit card information
31	submit Z	submit date of birth
32	submitX	submit sex
33	submitH	submit personal code
34	confA	confirm address
35	summ	order summary
36	conf	accept order summary/submit order

37	search	search function
38	searchM	search with a menu selection
39	searchP	search with a keyword
40	searchlink	link leading to search function

### C. Co-text characteristics

- C14      Llink title wording
- C15      Embedding sentence or instruction text wording
- C16      User role in link title
- 1 agent
  - 2 agent-mover
  - 3 experiencer or agent-experiencer
  - 4 participant in an atemporal relation
  - 5 nominalisation
  - 6 other
  - S link title is the same as *i-text* wording
- C17      User role in the embedding sentence or instruction text
- 1 agent
  - 2 agent-mover
  - 3 experiencer or agent-experiencer
  - 4 participant in an atemporal relation
  - 5 nominalisation
  - 6 other
- C18      User input
- 1 credit card information
  - 2 name and address
  - 3 email address (+ password)
  - 4 product and delivery information
  - 5 menu selections
  - 6 previously submitted information
  - 7 previously selected information

### D. Context and interface characteristics

- D19      Visual effects of the active element
- H change in cursor shape (into a pointing hand)
  - C change in colour
  - F change in font
  - U underlining
  - B button
  - M menu

A animation

D20 Accompanying icon

- 1 cart, basket, bag
- 2 arrow
- 3 question mark
- 4 information sign
- 5 cash register
- 6 truck, lorry
- 7 magnifying glass
- 8 cross
- 9 envelope
- 10 printer
- 11 padlock
- 98 photograph
- 99 other

D21 Node level

D22 Type of source page

- 1 home page
- 2 categorisation
- 3 product selection
- 4 shopping cart
- 5 buyer information entry
- 6 credit card information entry
- 7 order confirmation

D23 Interactive operation

- 1 submit
- 2 select
- 3 search
- 1 go to

D24 Interactivity on the target page

- 1 fill in credit card information
- 2 fill in other personal information
- 3 fill in non-personal information
- 4 make selections
- 5 search information
- 6 navigation (categorization)
- 7 information to be read + further navigation
- 8 information to be read or seen
- 9 note of a completed function

**D25** Window of the target page

- 1 leads to a new page
- 2 opens an additional window
- 3 leads to another place on the source page
- 4 stays on the current page