

HOW TO HELP A READER THROUGH AN ACADEMIC ARTICLE? SIGNALLING DEVICES IN RESEARCH ARTICLES WRITTEN BY ENGLISH AND SERBIAN ACADEMICS

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Savka Blagojević

University of Niš – Faculty of Philosophy, Serbia

E-mail: savka.blagojevic@filfak.ni.ac.rs

Abstract. *The paper presents a contrastive-linguistic study which examines the employment of linguistic devices (such as logical connectors, sequencers, reminders, announcements, topicalizers and action markers) by which academic writers guide their readers through academic texts. The employment of these linguistic signals is a recommended writing convention within Anglo-American writing cultures, but not sufficiently recognized by a number of non-English academic writers. This assumption is a starting point in our research conducted to compare the use of linguistic signals in academic articles in three scientific disciplines (chemistry, geology and ecology) written by English and Serbian academic writers, as well as to interpret the obtained results in the light of J. Hinds' (1987) new language typology which deals with 'reader's vs. writer's responsibility' for understanding a piece of academic writing. The results of the research show that signalling devices are differently used by the two groups of academics (approx. 62 tokens per 10,000 words in the English academic discourse and 31 tokens per 10,000 words in Serbian academic writers), so that it can be concluded that Serbian academic writing is more 'the reader-orientated' type of discourse, in contrast with English academic style. Besides presenting the results of the conducted research, the aim of the paper is to offer a model by which the use of signalling devices in academic writing could be examined, but also to draw attention to their importance when writing for international academic community.*

Key words: *Writing cultures, academic discourse, signalling devices, non-English academic writers, international academic community.*

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INTRODUCTION

Although we are all aware of the widely recognized assumption about the universal character of the language of science and human knowledge and of the fact that the concepts and procedures of scientific research constitute a secondary cultural system independent from primary systems of different societies (Widdowson 1979: 61), there are still certain aspects of this language which bear culturally-specific elements. These elements vary from culture to culture and reflect the writing habits that the authors have acquired within their own writing cultures, especially those concerning the way by which academic writers present propositional contents to a respectable audience, i.e. to an academic discourse community. However, if the international academic community is a target audience for non-English academics, nowadays accustomed to receiving most of academic publications almost exclusively in English, the question they might ask themselves is how to produce an effective academic text in English in order to be adequately evaluated and accepted by an international readership. This question is not an easy one, since writing for academic purposes goes far beyond the mere knowledge of the English language – it includes the knowledge and practice of writing conventions of the English academic discourse, i. e. the mastering of good writing skills in this language.

One of the writing conventions that the English writing style cherishes is the request for 'the reader-friendly discourse'(Leńko-Szymańska2008), which means that an academic writer is expected to make all possible efforts in his/her piece of writing in order to help the reader through the text. This means that his/her writing should be clearly expressed by explicitly laid out ideas in order to meet the reader's 'discourse expectations' (Clyne 1987), which means, to be constructed the way an academic reader expects it to be¹. Also it should employ a sufficient number of linguistic devices to signal the writer's stance and to guide the reader through the text (Hinds 1987). This demand is usually not easily acquired by non-English academics, whose national writing styles may operate under completely different conventions – not until these writers are made conscious of the existing differences in the two writing styles. However, the first step of a non-English academic in approaching the English type of discourse is to recognize the characteristics of his/her own writing style. This very idea underlies the research intended to compare linguistic signals which English and Serbian authors of academic articles use in order to facilitate their readers' journey through the text. The method used in the research may serve as a model for examining the way signalling devices are used by non-English academics since it reveals how close or remote non-English writing styles are to the English writing style.

THE THEORETICAL ASSUMPTION OF THE RESEARCH

The research is based on the theoretical assumption put forward by an American linguist, John Hinds, in his famous article "Reader Versus Writer Responsibility: A New

¹ An English academic reader expects an academic text to demonstrate a high degree of linear progression and unity, which are established as the most important requirements for a well-written piece of academic text: "... for English readers, unity is important because readers expect, and require, landmarks along the way. Transition statements are very important. It is the writer's task to provide appropriate transition statements so that the reader can piece together the thread of the writer's logic which binds the composition together", Hinds, 1987: 146).

Typology"²: "...that there are different expectations with regard to the degree of involvement a reader will have, and that this degree of involvement will depend on the language of the reader" (Hinds, 1987: 141). This statement conspicuously points at the cultural differences that exist in the way the writer approaches his/her reader: in some writing cultures the responsibility for the successful communication between the writer and the reader rests with the writer. The writer should make his/her writing as clear and reader-friendly as possible, not only by conveying the propositional content in a logical and explicit way, but also by employing a variety of language devices to signal the writer's stance and to guide the reader through the text. In reader-responsible writing, on the other hand, the responsibility to find the way through the text and extract the author's intentions and ideas is left to the reader. The reader is the one who is to make efforts in deciphering a piece of writing. Thus, according to J. Hinds, writing cultures could be distinguished in respect to writer's vs. reader's responsibility for successful written communication: the Anglo-Saxon tradition is said to belong to 'the reader-oriented' one, while the Serbian writing culture has not been classified by this parameter yet. So, my research is an attempt to classify it in this respect.

THE SIGNALLING DEVICES AND THEIR CLASSIFICATION

The subject of the research, labelled 'signalling devices', can be defined as 'natural language expressions whose primary function is to facilitate the process of interpreting the coherence relation(s) between a particular unit of discourse and other, surrounding units and/or aspects of the communicative situation' (Risselda & Spooren 1998:132). They constitute a group of words and expressions which is syntactically and semantically heterogeneous – the reason why it has to be defined first and classified into a classification model suitable for the examining material. The model which we suggest here is the combination of two classification systems offered in the relevant literature by Vandekopple 1985³, and by Crismore & Farnsworth 1993, slightly adjusted to the examining material, with a new group of elements added. Namely, the frequent use of expressions (especially by Serbian authors) by which writers paraphrase their own words in order to clarify them, has made us introduce a new group of signaling devices, conveniently called 'reworders'. So, the systematization of signalling devices for the purpose of this research comprises seven groups, named as: 1) Logical connectors, 2) Sequencers, 3) Reminders, 4) Announcements, 5) Topicalizers, 6) Reworders, and 7) Action markers. (The examples of each of them, as found in English and Serbian corpus and marked with ENG and SER, are presented below):

² The article "Reader Versus Writer Responsibility: A New Typology", published in 1987, is in line with some 'new typology' trends, such as Greenberg's typology (Greenberg 1963) – a typology in which languages are distinguished according to certain basic factors of word order; then a typology which takes into consideration whether sentences are typically 'situation-focused' or 'person-focused' (Monane and Rogers, 1977: 135); the one (Thomson 1978) which distinguishes languages based on whether they use a word order which indicates grammatical relationships (as it is in English), or one in which the movement of constituents is free of grammatical restrictions (as in Spanish), and alike.

³ Although Vandekopple insisted on the employment of both logical and temporal connectors, we have dropped out the group of temporal connectors, as suggested by Crismore, A. & R. Farnsworth, who argue that the analysis of this kind should deal with the linguistic devices which help readers 'understand how the text is connected rather than how events outside the text are related to each other temporally' (Crismore, A. & R. Farnsworth 1993: 46).

- 1) Logical connectors express a logical relation between two parts of the discourse, i.e. ideas or blocks of information (*however, thus, moreover*):

ENG: Proportionality between voltametric current and diffusion coefficient. Accordingly, we chose to potentiostat the microdisk working electrode, at potentials continuously producing a radial diffusion-limiting, steady state current.

SER: Kao što se vidi, za relativno male energije adsorpcije drastično su pomerene oblasti stabilnosti adsorbovanih hidroksida u kiselu oblast. Prema ovome, potpuno je opravdano očekivati i hidrokside metala u adsorbovanom stanju i u kiselim rastvorima.

- 2) Sequencers serve to signalize the order in which the elements of propositional content appear in a discourse (*firstly, secondly, thirdly*), although the use of numbers for this purpose is commonly found as well:

ENGL: The extended description can be simplified by making use of additional assumptions concerning a continuous-flow system. Firstly, the total effective volume V_{aq} , of the continuously renewed aqueous phase in contact with the membrane can be set equal to infinite. Secondly, the concentration gradients within the aqueous phase are assumed to be restricted to a steady-state diffusion layer (Nernstain layer) of given average thickness.

SER: Tek razvoj nuklearne fizike (kako eksperimentalne tako i teorijske) u tridesetim godinama XX veka omogućio je da se problemu nastanka hemijskih elemenata priđe na jedan čisto naučni način. Pre svega, pokazalo se da hemijski elementi mogu i moraju nastajati u zvezdama i da su poreklo elemenata i evolucija zvezda dve najintimnije povezane problematike. Drugo, pokazalo se da se na sva najvažnija pitanja u vezi porekla hemijskih elemenata odgovori mogu dati bilo na osnovu astrofizičkih merenja bilo na osnovu nuklearno-fizičkih laboratorijskih eksperimenata. Treće, teorijska nuklearna fizika i astrofizika daju jedan celoviti adekvatan opis procesa nukleosinteze u zvezdama.

- 3) Reminders are used to connect the previously exposed part of propositional material with the one which follows, by reminding the reader to it (*As stated earlier, as suggested above*)...

ENG: It was suggested above that the fault overlap zone illustrated by this may offer a greater productability, combining strained ground with no through-going fracture.

SER: Pored njih javlja se, kao što je gore pomenuto, manja partija glinaca, koja se proslojava sa tankoslojevitnim biomikritima.

- 4) Announcements serve to announce the propositional content to the readers (*I shall show below, as it will be seen in the next section*):

ENG: As will be discussed later, this antibody coverage was also sufficient to provide rapid binding of analyte to the column, with greater than 99% of the PHP being extracted from a sample in as little as 6s.

SER: Međutim, to ni izdaleka nije tako kao što će se videti na nekoliko primera.

- 5) Topicalizers are used to introduce the theme (topic) into consideration (*In this regard, With regard to, In reference to*):

ENG: With regard to the element distribution during the digestion process, results of the concentration of the elements and ash content of the coal extracts are shown in Table 3.

SER: Što se tiče porekla elemenata i jedinjenja, odnosno onih materija i komponenata koje ih čine "mineralnim", sigurno je da obogaćivanje mineralnim komponentama nastaje u zemljinoj kori kao sredini u kojoj se termomineralne vode nalaze, odnosno u kojoj imaju svoja ležišta.

- 6) Reworders serve to connect two statements in a certain discursal unit by means of explaining previously said in a more precise way (*that is to say, so to speak, in other words*):

ENG: Thus, TG-Lc is an effective method of gradient separation, precisely in the chromatographic region where the ability to perform gradient separations is necessary, at long retention times.

SER: Uproščeno rečeno, pri potencijalima koji su za oko 0,5 V negativniji od potencijala stvaranja AgCl, metalno srebro u rastvoru Cl⁻ jona prevuklo se monoslojem AgCl.

- 7) Action markers have a role to present to the readers the type of a discourse action that will be undertaken in the part of the paper that follows (*to sum up, to give an example*):

ENG: Thus we conclude that the activation energy for the loss of F⁰ is high relative to that for the loss of CF₂⁰.

SER: Navodimo dva specijalna slučaja gornje jednačine koja su interesantna za istraživanja o kojima je bilo govora u prethodnim odeljcima.

THE RESEARCH MATERIAL AND THE METHOD OF THE RESEARCH

The research material comprised 30 articles from three sciences (chemistry, geology and ecology) written by English academics and the same number of articles written by Serbian academics. To ensure comparability between the two sets of corpora, all research articles contained approximately 5.400 words each, so that each of the examined corpora contained 150, 000 words. Since this research is intended as an introduction to a more detailed and comprehensive study of the Serbian academic discourse, at this stage, only the essential criteria for comparing the research articles from the two discourses are included, i.e. the same length of the articles and the same scientific fields to which they belong. However, further research should include some more criteria, such as the previous experience of the academics (whether they are experienced academic writers or novice writers, whether they have published for international readership or not), etc.

The first step in the methodology applied in the research was to identify seven groups of signalling items in both corpora and then to count the number of their appearances in each of them, regardless of the academic discipline to which an article belongs. The oc-

currence of the signaling devices has been counted in each of the articles, and then summed up to get the number for each of sub-corpora. Then the tokens per 10,000 words were counted so that we were allowed to draw a conclusion referring to the use of signaling devices by English and Serbian authors in general, but at the same time to notice the authors' preferences concerning the use of a specific group of signalling devices. Additionally, in order to obtain more accurate results and make valid conclusions on the basis of statistically significant data, a statistical test (Pearson Chi-Square value) was applied.

COMPARISON OF DATA

Table 1. The number of signalling devices in total and per 10,000 words in the two corpora

Corpus	Items found	Tokens per 10,000 words
English (ENG)	986	61,62
Serbian (SER)	510	31,18
Total:	1,496	93,5
Chi ²	152,21	
p-value	0,0001	

The Chi-Square value for the association between English and Serbian corpus was obtained as 152.21 with 1 degree of freedom and a Significance Probability equals 0.0001, which represents a highly significant result. On the evidence of this data, there is a significant difference between the number of signalling devices overall (English 986, Serbian 510, on the total of 150,000 words for each corpus).

Table 2. Types of signalling devices in the two corpora

	Items found in English corpus	Items found in Serbian corpus	Chi ²	p-value
Logical connectors	758	391	117,22	0,000
Sequencers	19	7	5,54	0,019
Reminders	58	28	10,46	0,001
Announcements	31	17	4,08	0,043
Topicalizers	9	6	0,6	0,439
Reworders	17	29	3,13	0,077
Action markers	94	32	30,51	0,000

As for the detailed distribution of the signalling devices in the two corpora, it can be noticed that English academics use logical connectors, sequencers, reminders, announcements and actions markers more frequently than their Serbian colleagues, since the p value for each of these groups of devices is smaller than 0.05, which points at the statistically significant difference in their distributions. So, the values for the five groups of signaling devices, when compared, look this way: logical connectors (Pearson Chi²=117.22, p=0.000), sequencers (Pearson Chi²=5.54, p=0.019), reminders (Pearson Chi²=10.46, p=0.01), announcements (Pearson Chi²=4.08, p=0.43) and action markers (Pearson Chi²=30.51, p=0.000).

However, although it seemed at the first sight that Serbian academics tend to use topicalizers and reworders more often than English academics, a precise analysis has proved that it is not the case, since there is no statistically significant difference in their distributions in the two examined corpora: topicalizers (in the Serbian corpus 9 vs 6 instances in 150,000 words, Pearson $\chi^2=0.6$, $p=0.439$; reworders (in the Serbian corpus 29 vs. 17 instances in 150,000 words, $\chi^2=3.13$, $p=0.077$).

THE INTERPRETATION OF THE RESULTS IN THE LIGHT OF HINDS' NEW LANGUAGE TYPOLOGY

The obtained results unequivocally speak in 'favour' of English academic authors, i.e. of their inclination to use signalling devices abundantly through their texts (approx. 62 tokens per 10,000 words). This fact reflects the English academic style and supports the idea that it is the writer's duty to provide his/her readers with the guidelines through the text in order to facilitate their way through it. However, according to the number of signalling devices used in Serbian academic texts (31 tokens per 10,000 words, and p value 0,0001), it seems that the idea about their importance in academic writing is not sufficiently recognized among Serbian writers: almost all signalling devices are approximately two times more often used by English academics, except for action markers used by English writers – they outnumber even by three times the same group of signalling devices used by Serbian writers. Only the use of reworders and topicalizers does not follow the same tendency: although there are more instances of reworders found in the Serbian corpus, their overall number does not show any statistically important difference in comparison with the number of the same type of signalling devices in the English corpus, so that one cannot outspokenly say that they are favoured by Serbian academics. Similarly, the difference in number of topicalizers used by English and by Serbian writers is so small and statistically unimportant that it can be neglected.

According to Hinds' language typology and on the basis of the obtained data, the Serbian academic discourse can be described as a discourse which relies on the 'reader's rather than on the writer's responsibility' for effective communication. It must be noted that since sharing the same writing habits and beliefs, Serbian academics do not have, understandably, any problem in communicating their ideas to their Serbian colleagues, but the question is to which degree their texts are communicative when presented to the international academic community, even if written in an acceptable form of the English language. Here another aspect of non-native English academic writing comes into play: the transfer from the mother tongue writing style which may hinder successful communication on a global scale (Blagojević 2011). Namely, it is highly realistic to expect that the habit of Serbian academics to avoid using signalling devices in their writing⁴ can be easily transferred to their writing in English for international readership.

CONCLUSION

Although there is a myth among the academics in hard sciences that scientific facts speak for themselves (Latour 1987) and that the form in which they are presented is not important, modern linguistic studies have proved that in the modern world scientific re-

⁴ This practice commonly occurs within educational systems which neglect academic writing courses in favour of developing only the creative type of writing, as it is the case in the Serbian education.

searches are almost as important as the ways they are communicated world widely. This fact also supports the concept of respecting the time of modern readers who appreciate when they are offered information in a smooth and easy way: any unnecessary effort in deciphering an academic text will take the time they may allot to grasping a new piece of information. Accordingly, the idea that an academic writer should make an effort to help readers through the text can be considered as a request of modern academic writing in general, not just as a mere convention practiced by Anglo-American academic writers who promote a reader-friendly type of academic writing. For that reason, it seems reasonable that modern academic writing courses should include the notion of signalling devices and make their importance obvious to non-English academic writers when they write for international academic communication.

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RESEARCH MATERIAL

1. Texts written by English writers (ENG)
Analytical chemistry, American Chemical Society, Washington, editions from 2005 -2008.
European Coal Geology and Technology, Geological Society Special Publication, London, editions from 2003 - 2009.
Enviromental Pollution, Elsevier Science, Great Britain, editions from 2001 – 2007

2. Texts written by Serbian writers (SER)

Hemijski pregled, Srpsko hemijsko društvo, [*Chemical Review*, published by Serbian Chemistry Society] Belgrade, editions from 2006-2009.

Geološki anali balkanskog društva, [*Geological Annals of Balcan Association*], Institut za MKPG, editions from 2004-2009.

Ecologica, Naučno-stručno društvo za zaštitu životne sredine Srbije, editions from 2004 – 2009.

KAKO POMOĆI ČITAOCU KROZ AKADEMSKI TEKST? ANALIZA JEZIČKIH 'SIGNALA' U AKADEMSKIM TEKSTOVIMA ENGLLESKIH I SRPSKIH AUTORA

Savka Blagojević

Rad predstavlja studiju iz kontrastivnih jezičkih istraživanja koja se odnose na proučavanje zastupljenosti jezičkih sredstava pomoću kojih autor teksta vodi svoje čitaoce kroz tekst (kao što su ona koja logički povezuju delove sadržaja, označavaju redosled izlaganja sadržaja, podsećaju na izloženi sadržaj, najavljuju izlaganje sadržaja, ističu temu izlaganja, služe za preformulaciju iskaza i označavaju diskursnu radnju). Korišćenje ovih 'jezičkih signala' u angloameričkom akademskom diskursu je deo akademskog stila, međutim, ne i u akademskom pisanju autora koji ne pripadaju toj pisanoj zajednici. Iz tog razloga, istraživali smo i upoređivali korišćenje jezičkih signala u akademskim člancima engleskih i srpskih autora iz tri naučne discipline – hemije, geologije i ekologije, da bi dobijene rezultate interpretirali u svetlu 'nove jezičke tipologije' Dž. Hajnsa po kojoj se jezici dele na one koji se za čitačevo razumevanje teksta oslanjaju na autorovu, odnosno čitačevo odgovornost. Cilj rada je da ponudi klasifikacioni model po kome se korišćenje jezičkih signala može ispitivati u akademskim tekstovima autora iz različitih pisanih kultura, a isto tako da ukaže na značaj upotrebe ovih sredstava kada se piše na engleskom jeziku za potrebe akademske međunarodne zajednice.

Ključne reči: jezički signali, angloamerički akademski diskurs, akademski članci, akademska međunarodna zajednica