Borrowing Terms from English in the Term System of Computer and Information Technologies in Bulgarian and Russian

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Abstract—**The present research is dedicated to the appearance: borrowing the English terms regarding the computer and information technologies in Bulgarian and Russian. In this article the stylistic differentiation of the vocabulary in the computers and information technologies is observed. There is a review of the means of forming words. A special attention is paid to the ways of loaning the computer terms.**

Keywords—borrowing; a term; term system; computer technologies; information technologies; professionalisms; a professional slang; word formation; affixation; conversion; sintax combinations; abbreviation; direct loans; loan translations; semi loan translation; transliteration; transcription

I. INTRODUCTION

Although the computer terms have an international character, a great part of them in Bulgarian and Russian are taken out of English language. Regarding this, R. S. Stoyanova, notes that "The tendency to borrow terms from English terminological systems can be traced in most world's developed languages. Applying a common language facilitates international communication and encourages information exchange." [1].

In the professional and the ordinary conversation and also in the education, the not literal translation of the terms is not so used, than their transcription or transliteration to the corresponding language:

- bg. клик [klik] — rus. клик [klik] < eng. Click — click on the key of the computer mouse;

- bg. акаунт [akaunt] — rus. аккаунт [akkaunt] < eng. Account — a name and user for entering the system;

- bg. драйвър [drayvar] — rus. драйвер [drayver] < eng. Driver — a device, a program for managing a device or a process;

- bg. юзър [yuzar] — rus. юзер [yuzer] < eng. User — user of a personal computer.

According to the opinion of O. B. Tishtenko, "related to the ignorance or insufficient understanding of English, many specialists in the area of the computer technologies, not only in the conversation, but in the teaching of users beginners, in the literature, and the everyday newspapers and media, often use.

It is the inadequate translation of the words, and often improperly" [8]. This is also valid and for the Bulgarian terms in the computer and information technologies.

II. SOURCES OF THE MATERIAL

The structure of the computer terms is observed of a point of view of its presentation in schoolbooks, learning aids, school programs in Informatics and Information Technologies in 9th grade [2], 9-10th grade [3], IX и X grade [4], 9th grade [5], 9th grade [6] in the High Schools and the Universities [7]. The terms are of the following themes of the school programs in Informatics and Information Technologies for the High Schools and Universities [in particular The University of Economics-Varna]:

- introduction in the Informatics (subject and structure; information activities and processes; representing the information);

- hardware (bases of the computers; system devices; basic sub systems; tendencies in development of the computers);

- software (essence and purpose; classification);

- algorithms (essence and way of description);

- programming (languages and background);

- Information technologie (operation system; an office package Microsoft Office; working on project; Photoshop; WEB design ; computer nets and computer security).

III. STYLISTIC DIFFERENTIATION OF THE VOCABULARY OF COMPUTER AND INFORMATION TECHNOLOGIES

According to L. Kirova, in the modern computer vocabulary it should "the special vocabulary area to be differentiated functional-stylistic" [9].

A. Neutral Terms

"Usually, they have a complex structure, structed by synapse, as they express the relations "gender-species-sub-species". They are usually calcified complex or occupied simple lexemes, but other medium situations between these variants are also possible. They call definitive." [9]. They are usually used in the public speech, in front of an auditory, in a specialized literature:

- bg. *бисквитки* [biskvitki], rus. *куки файл* [kuki fayl] < eng. *Cookies* — a small file, recorded on your computer when you connect to a distant internet site through a browser [20, 120];

- bg. *копирам* [kopiram], rus. *копировать* [kopirovat'] < eng. *Copy* — a command of the operation system, which copied the content of one file into another into a recording device [20, 121];

- bg. *операционна система* [operatsionna sistema], rus. *операционная система* [operatsionnaya sistema] < eng. *OS* — a software, managing the main operations with the hardware at a low level and the organization and management of the files without being necessary the user to manage it [20, 331];

- bg. *обновявам* [obnovyavam], rus. *обновить* [obnovit'] < eng. *Update* — First, main file, which is updated by adding a new material; second, printed info, an updated version of an old info; Third, a new version of a system, sent to users of an existing system [20, 484].

B. Proffesionalisms (Operative Terms)

They are short names. They are worked in the daily routine. They have only one meaning. They have an informative character. "The maximum adherence to the original term in English keeps the single meaning of the word untouched, and the short foreign form is economic and signalize at once that the word works in a special vocabulary area" [9]. For each neutral term there is a corresponding home term. The professionalisms are mostly with an English base but are built through different ways of vocabulary making. They are terms at speech level, and the necessity of communication with maximum speed and minimum efforts creates conditions for their use in the everyday speech:

- bg. *zip-вам* [zip-vam] — < eng. *Compress*;

- bg. *браузвам* [brauzvam] — < eng. *Browse*;

- bg. *ъпгрейдвам* [apgreydvam] — < eng. *Upgrade*;

- bg. *трайъл* [trayal] — < eng. *Trial*;

- bg. *плъг-ин* [plag-in] — < eng. *Plug-in*.

C. A Professional Slang

There are a lot of arguments leaded in the professional and non-professional areas which is a professional slang and which not. To the people who are not taught and inscribed in the computer area, the professionalisms are also slang and stereotypes. But to the professionalists "the clean slang layer of the computer vocabulary is original, funny, a play with the utterance, i.e. the socio vocabulary variables are accepted as markers." [9]. Through a metaphoric transfer (calcification): the professional slangs always create new shaped meaning of ordinary, wide used words in the native language. Through a transliteration: "to the English language bases there are applied native speech models of suffocation" [9]. Namely, through these untraditional, vocabulary making models and suffixes, the terms become marked. They are resulting in variants of international names:

- bg. *личица* [lichitsa] — rus. *смайлики* [smayliki] < eng. *Smilies*;

- bg. *мейл* [meyl] — rus. *мейл* [meyl] < eng. *E-mail*;

- bg. *фрий (безплатна версия)* [friy (bezplatna versiya)] — rus. *бесплатная версия* [besplatnaya versiya] < eng. *Freeware*;

- bg. *паяк (търсеща система, метатърсачка)* [payak (tarseshta sistema, metatarsachka)] — rus. *паук* [pauk] < eng. *Methasearch*.

IV. WORD FORMATION

The word formation is a way for filling the language with lexical means in a quantity way. In the Bulgarian Dictionary of Interpretation, the following definition is given: "Word formation is forming new words on the base of existing one crowned words with the help of special language means." [10, 898]:

A. Affixation

When forming the computer terms in English, Russian and Bulgarian affixes are used. The affix is "word forming and word changing part (suffix, affix), which is usually added to the base or root" [10, 38]. The most common affixes which are used from a long time ago in the Bulgarian language are:

- Prefixes of Latin and Ancient Greek: micro-, auto-, inter-, mega-, macro-, mini-, super-, multi-: bg. микропроцесор [mikroprotsesor] — rus. микропроцесор [mikroprotsesor] < eng. Microprocessor [11, 465]; bg. микрофон [mikrofon] — rus. микрофон [mikrofon] < eng. Micropfone [11, 465]; bg. мултимедия [multimediya] — rus. мультимедиа [mul'timedia] < eng. Multimedia [11, 483]; bg. интерфейс [interfeys] — rus. интерфейс [interfeys] < eng. Interfase [11, 396]; bg. интерактивен [interaktiven] — rus. интерактивный [interaktivnyy] < eng. Interactive [11, 395]; bg. интернет [internet] — rus. интернет [internet] < eng. Internet [11, 397]. The prefix "re-" (as its meaning is a repetitive action): bg. рестартиране [restartirane]

[12, 262] — (but: rus. перезагрузка [perezagruzka]) < eng. Restart. The prefix "cyber-" is related to the internet: bg. кибер (интернет) кафе [kiber (internet) kafe] — (but: rus. интернет кафе [internet kafe]) < eng. Cybercafe (a place with computers where customers can pay to use the Internet) [11, 186]; bg. киберпрестъпления [kiberprestapleniya] — rus. киберпреступность [kiberprestupnost'] < eng. Cybercrime (crime that is committed using the Internet) [11, 186]; bg. киберпространство [kiberprostranstvo] — rus. киберпространство [kiberprostranstvo] < eng. Cyberspace (a place that is not real, where electronic messages exist while they are being sent from one computer to another) [11, 187]. The prefix "e-" means "electronic": bg. e-mail – rus. e-mail < eng. e-mail (First, a way of sending electronic messages and data from one computer to another; second, a message or messages sent by email) [11, 242]; bg. е-обучение [e-obuchenie] [19] — rus. электронное обучение [elektronnoye obucheniye] < eng. e-learning [13, 23]; bg. е-книга [e-kniga] — rus. э-книга [e-kniga] < eng. E-book (a book that you can read on a computer screen or on an electronic device that you hold in your hand [11, 237];

- The slang semi affix "net-" has a meaning of something connected with the internet: bg. нетбук [netbuk] — rus. нетбук [netbuk] < eng. Netbook (a laptop designed expecially for using the Internet and email) [11, 493]; bg. нетикет [netiket] < eng. Netiquette (the rules of correct or polite behavior among people using the Internet) [11, 493].

B. Conversion

In the conversion we observe passing from one part of the speech in another: from a verb into a noun or adjective, without a change of the meaning:

- bg. *кликване с мишката* [klikvane s mishkata] — (but: rus. *щелчок мыши* [shchelchok myshi]) < eng. *Click* (from the verb click — a click with the mouse);

- bg. *рестартиране на компютъра* [restartirane na kompyutara] — (but: rus. *перезагрузка* [perezagruzka]) < eng. *Restart* (from the verb restart — restart the operating system again).

C. Synaptic Combinations

According to L. Kirova [9], the question is about absolutely finished and sustained combinations of grammatically depended between themselves words. The component explained which can be used solely because it is a gender content, is a noun in the role of aid word. These computer terms are principally two components. "The terms are calked from English, and then are included as components. When there are more than two components in the source language, the same is abbreviated and then we include more components" [9, 10]. Totalizing the material in the researches of L. Kirova [9] и D. Zautashvili [14, 131], we can give the following examples of the synaptic combinations:

1) In Bulgarian:
- bg. *абсолютно кодиране* [absolyutno kodirane] (programming in a machine language by using an absolute addresses) [12, 10];

- bg. *виртуална памет* [virtualna pamet] (a technics for managing the RAM Memory,within which a part of it is stored on the hard disk) [12, 45];

- bg. *виртуална реалност* [virtualna realnost] (systems allowing simulations of a real situation,in a virtual environment) [12, 45];

- bg. *двукратно щракване* [dvukratno shtrakvane] (a fast double click on the basic key of the mouse which objects or commands are activated.) [12, 61]。

2) In Russian: rus. кодопреобразователь [kodopreobrazovatel'] — eng. code converter (a program or device transforming one code of information into another).

3) By first English component (morphologic and graphic non adapted) and second: It is without sense of its origin is changed according to the rules of the Bulgarian word forming.
- bg. HTML (Hyper Text Markup Language) формат [format] [7, 408];

- bg. URL (Uniform Resource Locator) адрес [adres] [7, 407] – rus. URL адрес [adres];

- bg. LCD (Liquid Crystal Display) монитор [monitor] [7, 59] – rus. жидкокристаллический монитор [zhidkokristallicheskiy monitor];

- bg. GPU графичен процесор [grafichen protsesor] (Graphic Processing Unit) [7, 58]

4) With an English component (morphologic non adapted) and a usual Bulgarian component: bg. видео плеър [video plear], bg. рестор система [restor Sistema]; bg. юзър интерфейс [yuzar interfeys]; bg. таргет група [target grupa]; bg. уеб дизайн [ueb dizayn]; bg. имейл адрес [imeyl adres]; bg. компресиран диск [kompresiran disk].

D. The Syntax ways Are Summarized into the Models as Follows

1) A two component model "noun-noun": bg. гугъл диск [gugal disk] — eng. Google Drive; rus. веб-администратор [veb-administrator] (in eng. web, administrator); rus. веб-сайт [veb-sayt] (in eng. web, site); rus. интернет-контент [internet-kontent] (in eng. internet, content); rus. веб-дизайн [veb-dizayn] (in eng. web, design); rus. интернет-провайдер [internet-provayder] (in eng. internet, provider); rus. веб-мастер [veb-master] (in eng. web, master); rus. видео-салон [video-salon] (in eng. video, salon); rus. интернет-промоушен [internet-promoushen] (in eng. internet, promotion).

2) A two component model "adjective-noun": bg.: мрежов адаптер [mrezhov adapter] (a hardware device, which allows to the computer to connect with a

commutative or other net device) [12, 184]; bg. мрежов сървър [mrezhov sarvar] (a powerful computer assuring access to the net resources (files, printers and etc.) to the working stations in the net, and managing the shared resources) [12,185]; bg. интергриран софтуер [intergriran softuer] (a program application, which has the functionality of some other applications) [12, 110]; bg. потребителски интерфейс [potrebitelski interfeys] (a method of interaction between the consumers and information systems) [12, 232]; rus.: сетевой адаптер [setevoy adapter]; rus. электронная почта [elektronnaya pochta];

3) A two component model "particle-noun": bg. съхранени данни [sahraneni danni] – rus. сохраненные данные [sokhranennyye dannyye] < eng. stored data; bg. изчислителни сървъри [izchislitelni sarvari] – rus. вычислительные серверы [vychislitel'nyye servery] < eng. Computing servers; bg. command интерфейс [komanden interfeys] [13, 39] – rus. командный интерфейс [komandnyy interfeys] < eng. command-line interface.

4) Poly component terms (with three and more terms): They can be realized by the models as follows:

- "noun + on + noun": eng. sitemap (bg. карта на сайт [karta na sayt]) [13, 75];

- "adjective + adjective+noun": bg. графичен потребителски интерфейс [grafichen potrebitelski interfeys] [13, 39] – compare: rus. графический интерфейс пользователя [graficheskiy interfeys pol'zovatelya] < eng. graphical user interface;

- "noun + for + adjective + noun": eng. fingerprint sensor (bg. сензор за пръстови отпечатъци [senzor za prastovi otpechatatsi]) [13, 45].

5) A verb construction "verb+verb": bg. отрежи и постави [otrezhi i postavi] — rus. вырезание и вставка [vyrezaniye i vstavka] < eng. Cut and Paste [7, 190]; bg. копирай и постави [kopiray i postavi] — rus. копировать и вставлять [kopirovat' i vstavlyat'] < eng. Copy and Paste [7, 190]; rus. тащи и бросай [tashchi i brosay] — compare: bg. теглене и пускане [teglene i puskane] — < eng. Drag and Drop [12, 225].

E. Abbreviation

The abbreviation helps to remove the inconvenience with the long synaptic combinations. According to the Bulgarian dictionary of Interpretation, the abbreviation is "forming the abbreviations, reductions" [10, 15]. If the original English naming of computer terms is contented of 3 words, mostly in the written Bulgarian the new combination is not created, but its abbreviation is inserted.

The abbreviation is in the written and spoken speech. The abbreviations are turned in full-length words, which we can find out in the dictionaries. They have an international character and are written in Latin. Namely these terms Zautashvili [14] makes a classification, which according to us, can be applied in Bulgarian language also. In the

Bulgarian discourse in Computer and Information Technologies, the abbreviations can be divided into:

1) Literal:
- ASCII (American Standart Code of Information Interchange) – кодова таблица [kodova tablitsa] [7, 26];

- MVA (Multi-Domain Vertical Alignment) – тип LCD матрица [tip LCD matritsa] [7, 60];

- CPU (Central Processing Unit) — процесор [protsesor] [7, 33].

2) Literal –slovak:
- DRAM (Dinamic RAM) — динамична памет [dinamichna pamet] [7, 48];

- SRAM (Static RAM) — статична памет [statichna pamet] [7, 48];

- SDRAM (Synchronous Dynamic RAM) — синхронна динамична памет [sinhronna dinamichna pamet] [7, 49].

3) With two bases:
- PCI-e (PCI Express) — an interface with a very high speed of transfer, assuring an ability for a multiple functioning of several canals (highways) for transmitting [7, 36];

- DVI-D (Digital Visual Interfase Dual Link) — a digital video interface with a work ability in two modes [7, 64];

4) With aiding symbols:
- LCD/LED (Liquid Crystal Display/Light-Emitting Diode) – LCD monitors with LED technology [LCD monitori s LED tehnologiya] [7, 60];

- Windows 2000 Professional — a version of the operational system MS Windows [7, 85];

- Windows XP — a version of the operational system MS Windows [7, 86].

V. WAYS OF BORROWING OF THE TERMS

In the Bulgarian and Russian computer terminology, the English is "a common source for borrowing new meanings [<…>] and names for them" [15]. Taking a look at the researches of L. Kirova we make the statement that the meanings and the way of writing down the computer terms in Bulgarian and Russian are transferred to the English [15]. The opinion of D. Zautashvili is that in Russian and Georgian "the borrowing is a main source to fill the computer vocabulary." [14, 135], is related also to the Bulgarian vocabulary. We will review the most frequent used ways of borrowing of computer terms:

A. Direct Borrowing

They borrow the material form of the term and its meaning as well.

1) Transliteration: "The transliteration is fulfilled through transferring the text of one written system with the means of another written system helping with a definite accordance between the graphics of both systems, as it is not counted the one within the the original pronunciation of the term" [16, 275]: bg. антивирус [antivirus] – rus. антивирус [antivirus] < eng. Antivirus; bg. документ [dokument] – rus. документ [dokument] < eng. Document; bg. монитор [monitor] – rus. монитор [monitor] < eng. Monitor;

2) Transcription: This is a transfer of the sounds of the foreign term with the help of the native alphabet. Examples for transmitting of the English sounds with the Bulgarian and Russian letters with computer terms are: bg. байт [bayt] — rus. байт [bayt] < eng. Byte; bg. файл [fayl] — rus. файл [fayl] < eng. File; bg. интерфейс [interfeys] — rus. интерфейс [interfeys] < eng. Interface; bg. драйвър [drayvar] — rus. драйвер [drayver] < eng. Driver.

B. Indirect Borrowing

The indirect borrowing are in the language — recipient through calking.

1) Calks: They take only the meaning. The calk is "a word or an expression, modified by a sample of words according or of expressions of a foreign language by a literal translation of their content parts with corresponding words or morphems in the native language" [10, 338]. This is done by copying of the morphologic structure or copying the sense of the foreign terms, mostly English terms and their expression into native terms. The calks are 3 types:

a) Lexical (word forming) calks: They can be formed as a complex word, as "this way, on one side the unity of semi in their concepts is underlined. On the other side, it supports the authentic sound of the term" [15] (bg. видеоигри [videoigri] — rus. видеоигры [videoigry] < eng. Video Games; bg. уебдизайн [uebdizayn] — rus. вэб-дизайн [veb-dizayn] < eng. Web Design; bg. видеодиск [videodisk] (a disk-magnetic, optical and etc.), which contains a record of video images with or without a synchronized video recording) [12, 44]; bg. видеозапис [videozapis] (fixing the video and sound signal in an electronic way of the information holder) [12, 44]; bg. компактдиск [kompaktdisk] (a type of an optical disk, for storing a digits information) [12, 143]) or as a word combination or "in this way the concept word combining is disintegrated on the contented semi and each of them receives a is sign — a separated word, which are left combined in a unit nomination" [15] (bg. контролен панел [kontrolen panel] — rus. контрол панель [kontrol panel'] < eng. Control Panel).

b) Semantic calks: one of the meanings of the term is borrowed and in a result there is a new lexical-semantic variant of the same term: bg. клавиатура [klaviatura] — rus. клавиатура [klaviatura] < eng. Keyboard; bg. ползвател [polzvatel] – rus. пользватель [pol'zvatel'] < eng. User; bg. папка [papka] — rus. папка [papka] < eng. Folder; bg. гост [gost] - rus. гость [gost'] < eng. Guest.

c) Hybrid naming or semi calks: They take the content only within a partially borrowed form, combining foreign and native morphemes: bg. база данни [baza danni] — rus. база данных [baza dannykh] < eng. Data Base; bg. диалогов прозорец [dialogov prozorets] — rus. диалоговое окно [dialogovoye okno] < eng. Dialogue Box; Bulgarian and Russian borrow and abbreviations: bg. SIM карта [karta] — rus. SIM карта [karta] < eng. SIM Card; bg. AVI файл [fayl] — rus. AVI файл [fayl] < eng. AVI File; bg. IP адрес [adres] — rus. IP адрес [adres] < eng. IP Address; bg. MP3 плеър [plear] — rus. MP3 плеер [pleyer] < eng. MP3 Player.

VI. The Borrowing as per Their Grade of Absortion

Despite the totally absorbed borrowing from the English, in the area of computer and information technologies in Bulgarian and Russian there often encountered barbarisms and partially absorbed borrowing.

A. Barbarisms

The barbarisms are related to the least absorbed type of occupied vocabulary. They are usually used for achieving the styling effect.

A barbarism is "a Word, borrowed by a foreign language or expression, which is formed on a foreign model, unusual for the current language; a denizen" [22, 164]. They are borrowed in the type which they exist in, mostly in English and are written in Latin [9]:

- bg.: "Each Mp3 must be listened to very carefully";

- bg.: "The RAM is written — DDR400".

Zautashvili notes, that in the modern Russian language there are often used reproduced frequencies of barbarisms [14, 137]: Web, WWW, World Wide Web, Internet, IBM, DOS, UNIX, Windows, CD, cache, BIOS, BBS, LCD, PC, RAM, UPS, Pentium, log on, log off.

B. Partially Absorbed Borrowing

- Bg. уеб [ueb] — rus. вэб [veb] — eng. Web; bg. файл [fayl] — rus. файл [fayl] – eng. File.

VII. Conclusion

"The computer and information technologies are developed very fast. The theme for borrowing of terms of English in the term system in Bulgarian and Russian is as of an extreme importance, because the computer and information technologies become an environment for an active international cooperation. This explains the tendency for creating an international vocabulary. The modern English terms "include a great quantity of vocabulary elements with a foreign origin" [14, 116]. All of this leads to the conclusion of the international character of the terms in the sphere of the computer and information technologies.

We are agreeing with the opinion of R. Stoyanova that "until there are contacts between the different nations the

process of the vocabulary exchange will continue. More important the function of the international terms will be or of the international terms as a means of an international communication as a "conceptual field" for an international cooperation" [21].

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