The Verisimilitude of the Romanian Informatics Language

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Résumé: L'évolution des connaissances et de la société génère de nouvelles réalités qui, n'ayant pas leur propre terminologie lors de leur formation, doivent être verbalisées. L'informatique est, à l'échelle mondiale, le domaine référentiel qui connaît le succès le plus rapide et qui revendique de plus en plus de ressources linguistiques. Pour illustrer la relation entre langue et réalité, notre ouvrage analyse non seulement la manière dont le langage informatique transmet des informations surtout à travers les publications qui le popularisent et l'Internet, mais aussi la façon dont le locuteur se situe face à la connaissance linguistique et encyclopédique de l'interlocuteur.

Mots-clés: réalité, communication, langage informatique, terminologie informatique, syncrétisme sémiotique.

The progress of knowledge and of the society gives birth to new realities which do not need to be verbalized, as they do not benefit from their own terminology. Informatics is, at a global level, the referential field which meets the most rapid success and which is calling for more and more linguistic resources. To illustrate the relationship between language and reality, the present paper is going to analyse both the way in which the Romanian informatics language communicates information, especially by means of the popularizing publications or the Internet, and the

way in which the producer, during the communication process, takes into account the receiver's linguistic and encyclopedic knowledge.

To begin with, the emergence of new realities in science and technology makes it necessary to find new names and this provides evidence to the bond between language and reality. Language solves these shortcomings by creating a new word out of already existing ones within the language itself, or by borrowing the term from a foreign language (either the origin language of the verbalization of the new discoveries, or from another foreign language), or it can modify the meaning of its older words. When it comes to the Romanian language of Informatics, one must go back to the English language first, and than to Romanian, because it is English which has spread and conceptualized the knowledge of the information technology science. Romanian owes almost everything to English because the specificity of the informatics vocabulary resides in a plethora of new borrowings from English, along with the loan translations (or calques).

As far as borrowings are concerned, in most of the cases they have been "necessary"[1], since, on the one hand, at the time Romanian did not have the necessary terminology to name the newly established field of science and technology and, on the other hand, English imposed itself both in writing and in speech on a worldwide scale. Of great importance is also the overwhelming influence of English upon the mass-media communication. All the "necessary" borrowed elements are, in their turn, *denotative*, a category which consists of those specialised terms which do not have Romanian equivalents, given the fact that they designate recently constituted realities. These include examples such as *hard, soft, site, a scana* (*<to scan*), *drive, lap-top, bafer/ buffer,a loga* (*<to log*), *a customiza* (*to customize*), *pseudocod*, *a*

[1] See the distinction between "necessary" ("împrumuturi necesare") and "luxury" ("împrumuturi de lux") borrowings, made by Adriana Stoichitoiu-Ichim, in *Vocabularul limbii române actuale. Dinamica, influente, creativitate*, Editura All, Bucuresti, 2001, pp. 85-96.

restarta (<*to restart*), *a boota* (<*to boot*), *browser, server, cip* (<*chip*), *clic/click, apgreid/upgrade, banner, bit, bold, clipboard, controller, compilator, processor* (<*processor*), *driver, e-mail, gigabit, hipertext/hypertext, input, internet, modem,* etc. Some of the borrowings can also have a *stylistic* value, which secure the expressiveness of the language, even though these words are unproductive in the informatics language. Words such as *a virusa, a chatui, a clicai, a heckari, a naviga, a salva, a captura* are common occurrences, mainly in popularizing texts or in e-mails. Very many of the words which form the informatics vocabulary in Romanian are verbal Anglicisms. Two types stand alone: those which do not have Romanian counterparts, therefore, they are "necessary", and those which entered the language even though they were unnecessary (as it is the case with the verb *a printa* (<*to print*), which doubles the already existing Romanian verbs *a lista* or *a imprima*).

Apart from the one-word terms, the informatics terminology makes extensive use of the *syntagms*. As a result, a word like *server* can be very productive from this point of view, entering a great number of combinations: *server modem*(<*modem server*), *server fax*(<*fax server*), *server postal* (<*mail server*), *server de comunicatie* (<*communication server*), *server de fisiere* (<*file server*), *server de mesaje* (<*news server*), *server de tiparire* (<*print server*), *server initial* (<*home server*), *server Web* (<*Web browser*), *aplicatie pentru server* (<*server-based application*), *aplicatie de tip server* (<*server application*), *arhitectura de tip client/server* (<*client/server architecture*), *server de nume CSO* (<*CSO name server*), etc.[2] The structure of these combinations can consist of either both pre-existent words in Romanian and new borrowings (*fonturi contur* (<*outline fonts*), *fonturi de baza* (<*base font*), *arbore hardware* (<*hardware tree*), *fisier sistem* (<*system file*), *formatare logica* (<*logical formatting*), *font descarcabil* (<*downloadable font*), *font temporar* (<*temporary font*),

[2] See the glossary compiled by Radu-Nicolae Trif in *Influenta limbii engleze asupra limbii române în terminologia informaticii,* Academia Româna, Bucuresti, 2006.

familie de fonturi (<*font family*), *înlocuirea fontului* (<*font substitution*), *netezirea fontului* (<*font smoothing*), *scanner color* (<*color scanner*), *scanner manual* (<*hand-held scanner*), *limbaj de scripturi* (<*script language*), *program spooler de tiparire* (<*print spooler*), *calculator notebook* (<*notebook computeri), modem de buzunar* (<*pocket modem*), etc), or of borrowings only (*server modem* (<*modem server*), *server Web* (<*Web browser*), *reinitializare hardware* (<*hardware reset*), *font de plotter* (<*plotter font*), *soft return* (<*soft return*), *procesor upgrade* (<*upgrade processor*), *procesor back-end* (<*back-end processor*), *print spooler* (<*print spooler*), *tableta digitizoare* (<*digitizing tablet*), *controller cache* (<*controller cache*), *controller de dischete* (<*floppy disk controller*), *buffere de tastare* (<*keystroke buffer,* etc.).

Clipping words are also very common in the vocabulary of informatics, both in English and Romanian. The first, the second or both elements of the compound word can be shortened: *freenet, webzine, alt key, autotrace, compusex, cyberspace, cybersex, e-mail, e-cash, e-language, e-world, technofear, bit, cyborg, computex, infomercial, internet, intertainment, telnet, transceiver, orgware.* The most common clipping types are *aphaeresis* (*warez, morphing*), *apocope* (*demo, op, Mac*), and *ellipsis* (*double-digit, zip*). The *acronyms* (*FORTRAN <**For**mula **Tran**slation, modem <**mod**ulator/**dem**odulator, PROLOG <**PRO**gramming in **LOG**ic, HIMEM <**Hi**gh **Mem**ory*) and the *sigles* (*EDP <**e**lectronic **d**ata **p**rocess, RAM <**r**andom **a**ccess **m**emory, bps <**b**its **p**er **s**econd, AE <**A**bsolute **E**rror, ACE <**A**dvanced **C**omputer **E**nvironment, AHPL <**A H**ardware **P**rogrammning **L**anguage, ANDF <**A**pplication **N**eutral **D**istribution **F**ormat, HMD <**h**ead-**m**ounted **d**isplay* etc.) are the most numerous abbreviations. In their turn, the sigles are more widespread than the acronyms. Some other times, the abbreviations are a combination of the two: *NetBIOS <**Net**work **B**asic **I**nput/**O**utput **S**ystem, REPROM <**Re**-**p**rrogrammable **R**ead **O**nly **M**emory, SPARC <**S**un **P**arallel **Arc**hitecture, ARCnet < **A**ttached **R**esource **C**omputer **Net**work* and others.

The rest of the words and syntagmatic constructions are a result of loan translation, so that most of the new terms in the Romanian informatics language represent different types of linguistic calque: lexical structural calques, semantic calques, phraseological or grammatical calques. The most frequent ones are the semantic and the phraseological calques.

The combinations which contain *lexical structural calques* (terms whose form copies the English one) are not numerous. They mostly contain partial structural calques, in which a part of the word is translated and the other one is borrowed: *tasta cu auto**repetare*** (<*autorepeat key*), *platforma de **conectivitate*** (<*connectivity platform*), *standard de **interfata*** (<*interface standard*), *font **monospatial*** (<*monospaced font*), *sursa de alimentare **neîntreruptibila*** (<*uninterruptible power supply*), *aplicatie **netranzactionala*** (<*non-transactional application*), ***etapa de predecodificare*** (<*pre-decode stage*), *super**autostrada** informationala* (<*information superhighway*), *ferestre supra**puse*** (<*overlaid windows*) and others.

The grammatical (syntactic or morphologic) calques are quite rare in the informatics terminology, but where they are possible, participial and prescriptive-imperative structures are mimicked: *banda **formatata*** (<*formatted tape*), *fisiere **intersectate*** (<*cross-linked files*), *limbaj **structurat** de interogare* (<*structured query language*), *memorie **intercalata*** (<*interleaved memory*), *mod **protejat*** (<*protected mode*), *program **integrat*** (<*integrated program*), ***taie si lipeste*** (<*cut and paste*), ***cauta si înlocuieste*** (<*search and replace*), etc. Of all the loan translation types, the *phraseological calque*, be it total or partial, is the most fruitful one in the informatics language: *acces aleatoriu* (<*random access*), *actualizare a fisierului* (<*file updating*), *adaptor video* (<*video adapter*), *adresa patru plus unu* (<*four-plus-one address*), *aliniere a etichetelor* (<*label alignment*), *arhitectura punct-la-punct* (<*peer-to-peer architecture*), *bit pe secunda* (<*bit per second*), *blocare a unui fisier* (<*file locking*), *calculator notebook* (<*notebook computer*), *cautare înapoi* (<*backward search*), *cifra binara* (<*binary digit*), *diagrama circulara dubla*

(<*paired pie graph*), *emularea unui terminal* (<*terminal emulation*), *fonturi interne* (<*built-in fonts*), *format numeric fix* (<*fixed numeric format*), *functie in-line* (<*in-line function*), *imprimanta laser color* (<*color laser printer*), *piraterie soft* (<*software piracy*), *planificarea round-robin* (<*round-robin scheduling*), *retea LAN fara sloturi* (<*zero-slot LAN*), *retea multiserver* (<*multiserver network*), etc.

By means of semantic loan translation, Romanian words which are normally used in the everyday language or in other specialized languages, following the English pattern, achieve a new, technical meaning, characteristic of the informatics domain, in our case. The *semantic calques* provide a very fertile ground for the construction of the informatics syntagms in Romanian: *magistrala de* ***adresa*** (<*address bus*), *meniul de control al* ***aplicatiei*** (<*application control meniu*), *convertor* ***analogic***-*digital* (<*analog-to-digital converter*), *definirea unui* ***bloc*** (<*block definition*), ***caractere*** *pe secunda* (<*characters per second*), *indicator de* ***celula*** (<*cell pointer*), *arbore de* ***director*** (<*directory tree*), *utilitar de comprimare a* ***fisierelor*** (<*file compression utility*), *comanda* ***înglobata*** *de formatare* (<*embedded formatting command*), or *program rezident în* ***memorie*** (<*memory-resident program*).

A defining way in which the Romanian informatics language keeps up with the progress of civilization is represented by the changes of meaning through metaphoric transfer. The history of scientific and technological discoveries witnesses the surfacing of the metaphor, out of the need to supply for the destitution of a language at a certain moment. *The extensions of meaning* that words undergo at a semantic level radically differentiate the informatics language from other specialized languages. According to Stoichitoiu-Ichim, “the extensions of meaning occur at a paradigmatic level, by the change of the referential field, while maintaining the semantic nucleus and the omission of some peripheral semes present in the definition found in English dictionaries. At a syntagmatic level, the contextual-stylistic restrictions

associated with the initial meaning are removed."[3] This definition indicates an essential aspect of metaphorization, namely, the *metaphorical abstraction*, a logic and linguistic mechanism which makes the metaphoric transfer possible, and which consists in eliminating or, better said, in ignoring a number of attributes which the metaphorised term conjures up in our minds in the case of its normal use.[4] This implies a double operation of elimination: firstly, as a result of the analysis of the common and differentiating attributes, the mind of the receiver must ignore all the differentiations which could cancel the closeness and, eventually, the overlapping of the two terms, and afterwards to execute the same operation with the similar characteristics, solely keeping that which is necessary in order to make the metaphorical transfer.

In view of that, in informatics, by giving the name *virus* to the computer programme which reproduces itself by attaching itself to other programmes and executing parasitical and destructive operations, all the conceptual traits are eliminated ("inframicrobian germ, pathogen agent, invisible to the ordinary microscope, which reproduces solely within living cells, causing a range of infectious diseases; inframicrobe, (p. ext.) the toxin of the microbe[5]), with the exception of that of "invisible, destructive agent". By using the same principle, the informatics term *fereastra*, which translates the English *window,* is an example of a word which has undergone re-metaphorisation in Romanian. Out of all the semes of this word[6], both in English, and in Romanian,

[3] Our translation of the original: „[...] extinderile de sens se realizeaza în plan paradigmatic, prin schimbarea domeniului de referinta, cu pastrarea nucleului semantic si neglijarea unor seme periferice prezente în definitia din dictionarele englezesti. În plan sintagmatic, sînt înlaturate restrictiile contextual-stilistice asociate sensului initial.", in Stoichitoiu-Ichim, *op.cit.*, pp. 85-96.

[4] Cf. Paul Ricoeur, *Metafora vie*, Editura Univers, Bucuresti, 1984, p.171.

[5] Cf. *NDULR*.

[6] For a detailed description of the types of semes which operate within the scientific and technical sememe, see Paul Miclau, "Dimensiunea semantica a limbajelor specializate", in I. Coteanu, Lucia Wald (ed.), *Semantica si Semiotica*, Editura Stiintifica, Bucuresti, 1981.

the metaphorised term from informatics only keeps these attributes: ”rectangular frame” (on the computer screen), “which allows for the viewing of” information (a document, a spread sheet, a picture or an application). Similarly, let us consider the word *vrajitor* /*wizard*, used in informatics to name an interactive assistance utility[7]. Apart from the meaning of “person who casts spells, who deals in witchcraft”[8], in English, the word currently also means “a person who is savvy in a particular field”, a characteristic justified by the word’s etymology itself (<wise+-ard[9]). The metaphoric transfer was made at the level of this last attribute, the others being omitted. However, in Romanian, the word *vrajitor* does not have this trait, which leads to its demetaphorisation (in relation to the English *wizard*), compensated, nonetheless, through the phenomenon of re-metaphorisation, executed at the level of the attribute “which casts spells”. As it can be noted from the examples given above, the etymological roots of the adaptations indicate their undergoing a process of metaphorisation, but their metaphoric nature is not evident unless the etymology of these words is examined.

The phenomenon of extensions of meaning is called upon by Rodica Zafiu[10], which talks about the “metaphorical extension” generated by the mutual influence between the specialised language and the common language. The specialised language, the informatics one, in this case, adopts words from the everyday language, whose meaning is expanded through metaphor. The metaphoric word can be adopted as it is from English –in which case, in Romanian, it is demetaphorised, becoming denotative (*mouse*, *bullet*, *bridge*, *banner*, *bowl*, *chat room*, *daemon*, *daisy chain*, *finger*, *firewall*, *ghosting*, *grabber*, *notebook*, *patch*, *ragged*, *screen saver*, *shortcut*, *thread*, *web*, *wizard* etc.), or it can

[7] Cf. *NODE*: „a help feature of a software package that automates complex tasks by asking the user a series of easy-to-answer questions”.

[8] Cf. *NDULR*.

[9] Cf. *NODE*.

[10] See Rodica Zafiu, *Diversitate stilistica în româna actuala*, Editura Universitatii din Bucuresti, 2001.

be mimicked semantically, by having its metaphoric route retraced, through the process of re-metaphorisation: *fereastra* (<*window*), *gazda* (<*host*), *harta* (<*map*), *virus* (<*virus*), *radacina* (<*root*), *meniu* (<*menu*), *pachet* (<*pack*), *poarta* (<*gate*), *a salva* (<*to save*), *a naviga* (<*to surf*), *a vizita* (<*to* visit), *a virusa* (<*to virus*), *a apela* (<*to call*), *a arhiva* (<*to archive*), *biblioteca* (<*library*), *bucla* (<*loop*), *cascada* (<*cascade*), *a exporta* (<*to export*), *icoana* (<*icon*), *miez* (<*core*), *oaspete* (<*guest*), *a rula* (<*to run*), *vrajitor* (<*wizard*). Very frequently, however, English adaptations circulate together with their translated terms (*wizard/vrajitor*, *folder/director/dosar*, *input/intrare* etc.). Where Romanian has borrowed metaphorical terms from English, in most cases, it has borrowed the metaphoric meaning alone, and not the literal one as well.

By assuming the theory of the mathematical metaphor, elaborated by Solomon Marcus[11], Roventa-Frumusani[12] distinguishes between the *linguistic* and *graphic* scientific metaphor, each of them possibly being *interior* and *exterior*, according to the referential fields the notions which experience this transfer of meaning belong to. Thus, in the case of exterior metaphors, the transfer is either from the common language to the specialised language, or from a specialized language to the ordinary language. Conversely, interior metaphors rely on an exchange which occurs within the same field of reference. As the above examples prove, informatics language takes full advantage of the exterior linguistic metaphor, heavily using the vocabulary of the everyday language.

All the words discussed above are examples of metaphoric extension at a conceptual level, which Roventa-Frumusani calls *nominal metaphor* (with a denominative function). This can be both *exterior inter-referential*, as well as *interior inter-referential.* Within the *exterior inter-referential metaphor*, apart from the

[11] In Solomon Marcus, *Poetica matematica*, Editura Academiei Republicii Socialiste România, Bucuresti, 1970, pp. 95-98.

[12] Daniela Roventa-Frumusani, *Semiotica discursului stiintific*, Editura Stiintifica, Bucuresti, 1995, pp. 66-70.

metaphorisation of words from the ordinary language, the phenomenon of adapting a specialised term in another filed of science (for example, the phrase *unitate sintactica* (<*syntatctic entity*), specific to logic and the field of linguistics, enters the informatics language of programming, indicating groups of characters which build the programming algorithms' sequences of operations; the word *functie* (<*function*), pertaining to linguistic, logic, mathematics and chemistry, in programming languages indicates a "procedure which has a name, is memorised and returns a value,"[13]; *gramatica* (<*grammar*), from linguistics, is used in informatics to indicate a group of rules used to describe the structure of the correct positions in a programming language; *geometrie* (<*geometry*), a mathematical term, indicates in informatics "the physical structure of the hard-disk's surface, which contains the total number of tracks, the number of sectors, the number of tracks per inch and the location of the parking zone"[14]; *variabila* (<*variable*), a logic and mathematical term, denotes within programming languages a memory zone whose content can be modified during the execution of a programme; similarly, the mathematical and logics term *algoritm (algorithm)* can be found in informatics language). The examples identified above offer the right to state that logic, mathematics and linguistics offer the most productive specialised languages for building the informatics vocabulary through the operation of inter-referential metaphorical extension.

As informatics is a fairly recently established scientific practice, the informatics language knows less cases of metaphoric transfer which have occurred within itself, in which case we may refer to the *interior nominal* or *inter-referential metaphor*. The case of the word *magistrala* can be offered, which suffers a double phenomenon of metaphorisation, through the initial transfer from the common language (meaning "a main route for

[13] Cf. Radu-Nicolae Trif, *Influenta limbii engleze asupra limbii române în terminologia informaticii*, Academia Româna, Bucuresti, 2006.
[14] *Ibidem*.

vehicular, train, etc. communication[15].) to the informatics language, where it updates the meaning to "internal electronic route through which information is transmitted from one part of the computer to another", through the semantic mimicking of the English informatics term *bus*[16]. Within the same informatics field, in Romanian, the term undergoes a second procedure of metaphorisation, which causes it to indicate, according to the definition of *MDN*, a "group of communication lanes for the transmission of information from different sources to one or more receivers" or, according to the more accessible definition given by Radu-Nicolae Trif, "a means of communication of high speed and capacity, created for the transfer of data from distances of hundreds of thousands of kilometers, within a network which covers a wide area (WAN), such as the Internet"[17], this time translating and doubling the English term *backbone.* Consequently, in Romanian, the double metaphorisation of the word *magistrala* exemplifies both the exterior inter-referential metaphor, as well as the interior inter-referential metaphor. That is not the case with the source language of informatics, namely, English, where, in order to indicate two different notions, the metaphor has, as a source, two different words from the ordinary language. Only the case of the exterior inter-referential metaphor can be discussed here, regarding both the word *bus* ("coach" in ordinary language), and *backbone* („spinal column" – fig.) "basic element, fundament" in common English). Another word which illustrates the nominal inter-referential metaphor is the word *ramura* (< engl. *branch*), which is used in informatics to name, firstly, a sector of a root directory, representing, in its turn, a directory and any other subdirectories which it could contain, so that, later on, to have its meaning extended within programming as well, where *ramura* (<*branch*) refers to any change in the

[15] Cf. *NDULR*.

[16] Cf. *NODE*: "Computing: a distinct set of conductors carrying data and control signals within a computer system, to which pieces of equipment may be connected in parallel".

[17] Trif, *op. cit.*, p. 63.

normal sequence of a programme's steps, a change which can be conditioned or unconditioned. This time, in the case of the corresponding English term *branch*, after the metaphoric extension has first occurred at the level of the ordinary language, the nominal inter-referential metaphor can be noted as well.

As we have pointed out at the beginning of the paper, an important aspect which supports the relationship between language and reality is the rapport between the producer and the receiver.[18] In order for the communication to be possible, the producer has to bear in mind the receiver's background knowledge and to structure his discourse accordingly. Consequently, the distribution and the combination of styles (verbal, symbolic and mixed) have to be consistent with the competence of the different categories of the public (specialists, students, the general public).

In view of this, the informatics texts can be categorized in three categories: *specialized texts* (whose target readers are the informaticians), *didactic texts* (for students) and *popularizing texts* (addressed to the general public). They are all characterized by a semiotic syncretism, where a plurality of languages (verbal, sign, symbolic language) interferes. What varies is the frequency of the abstract concepts and the complexity of conceptualization. The popularising text is mainly figurative, the didactic one mainly diagrammatic, whereas the specialised one is mainly metaphorical and symbolical.

The *specialized discourse* is built up by means of cognitive, hypothetical and deductive operations, often of a polemic nature, and this is why the intended receiver is the specialist in that particular field, the "insider" that possesses the same knowledge as the one being communicated. In contrast, the *didactic discourse*, mainly descriptive and definitional, aims at creating a clearly demarcated image, which secures the information. Finally, the popularizing discourse relies on the non-linguistic systems of

[18] See Ioan Oprea, *Elemente de filozofia limbii*, Institutul European, Iasi, 2006, pp. 251-258.

signs in order to spread the information to the general public. Thus, both the didactic and the popularizing discourse address an "outsider", whose only task is to accumulate knowledge, without checking and developing the subject at issue, as it happens in the case of the specialist.

The non-linguistic semiotic systems function differently in the three discourse types. Whether in the didactic and in the popularizing discourse, especially, the non-linguistic sings explain and double the verbal information, alleviating the understanding and the internalization of the conveyed knowledge, in the specialized discourse they render the information non-redundantly.

The iconic signs, apart from facilitating communication, satisfy the text's need for economy, ensuring thus the synthetic stocking of the data. In the didactic and popularizing discourse, the gradual conceptualization must be doubled by an iconic gradation, which, in its turn, has to be accompanied by an explicit verbalization (such as title, commentaries, etc.). The image with the highest degree of iconicity is the photography, which in science is purely denotative, literally reproducing the elements of the real world. In the popularizing and didactic texts, the image complements the verbal text. In other cases, mainly in the vulgarizing publications, the image is completed by another iconic sign which is subsequently verbally explained.

The informatics language is defined by this semiotic syncretism, as it is the space of interference of the verbal, visual and symbolic language. The more heterogeneous the expression of a text, the more homogeneous its content, and this is what makes the text acceptable and the communication possible.

Since the information technology and the virtual world have entered the most diverse areas of our life and of the society, we can argue that the informatics language provides the medium for mass-media coverage. In addition, the rapid spread of the Internet makes it possible for an enormous number of users (specialists, students or common people) worldwide to have access to a colos-

sal amount of information from all reference fields. Consequently, informatics definitely facilitates communication.

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