The Role of Metaphor in Technical Term-Formation

Hasmik Ghajoyan
National Polytechnic University of Armenia

Abstract

Nowadays metaphor is not considered to be a solely literary expressive means. The human mind is both rational and emotional. In terms we both think and act, it is fundamentally metaphorical in nature. Today this idea has gained so wide an acknowledgement that it can be the basis of the contemporary approach to metaphor study. The aim of this article is to analyze the role of terminological metaphor in one specialized field of language, in the process of technical term-formation. The focus is on the field of computing and the respective conclusion that metaphorical transfer is a key process in the formation of technical terms in electronics and information technologies.

Key words: metaphor, technical terms, terminological metaphor, conceptual metaphor, metaphorical transfer in computing.

> *"A metaphor is a kind of magical mental changing room – where one thing, for a moment, becomes another, and in that moment is seen in a whole new way forever."*
> (James Geary 2012)

Introduction

The study of metaphor dates back to Aristotle (1927:66) who studied metaphor as a literary device. According to him one of the first classifications of metaphor is to transfer the word changing the meaning from sort to form and from form to sort by analogy. Cicero (in Freidenberg 1996:218) treats metaphor as a way of formation of a meaning which does not exist in language, and the transfer of the meaning on similarity is made because of the absence of the corresponding concept of the word in language.

Modern life is rapidly developing constantly bringing us new ideas, inventions, devices which influence not only our lifestyle but also our language. Technical communication requires knowledge and understanding of some

technical processes, their components and applications. Thus, we need specific linguistic units and structures which can express conceptual categories. New conceptual structures are frequently described with elements already existing in language.

One of the ways of creating new language structures by means of the existing ones is the metaphorical use of language. By means of metaphor the structures from one conceptual domain are mapped to another, thus making it possible to understand one word by means of another. This process is especially relevant in the formation of terminological metaphors. Terminological metaphor is a new field of investigation which deals to a greater extent with conceptual metaphor.

Lakoff and Johnson (1980:5) as well as Black (1990:153-172) considered metaphor a source of reinforcement of lexical structure of the language. As stated by the authors, it is not possible to do without metaphor even in the language of science. According to them metaphors are part of our everyday life. Metaphors are not only used in language, but they are also used in our thought and actions. Our ordinary conceptual system, in terms we both think and act, is fundamentally metaphorical in nature. The metaphoric thought is a mechanism of thought that is constantly used for communication among people and to the comprehension of the world.

Conceptual metaphors operate in our thought (Lakoff 1993:203). This idea has gained such wide acknowledgement that it can be the basis of the contemporary approach to metaphor study. According to Lakoff and Johnson's traditional distinction, there are three major types of metaphor: conceptual metaphors, metaphorical expressions and image metaphors. The time of political, economic and technological changes have forced people to use powerful linguistic tools to express their thoughts, and the conceptual type of metaphor is considered to be a means to achieve this goal.

Metaphor as a Means of Technical Term-Formation

Metaphor as a language phenomenon is different from metaphor in artistic speech. Language metaphor is understood first of all as an element of the lexical system of language used by all native speakers as a ready-made means with a definite meaning. Scientific language is precise, strict and devoid of expressiveness and emotiveness. Thus, metaphor in scientific language differs from metaphor in common use. Language metaphor has its specific place in

terminology, especially in the sphere of electronics and information technologies. Texts concerning these fields are very rich in metaphors as the common words connected with important vital needs which have been created in the course of human activities are penetrating into the world of electronics and information technologies. Most of the terms in these fields are formed by means of narrowing of the meaning of the word and by metaphorical transfer, or metaphorical extension. Thus, for example, the electronic term *current* has been created by the metaphorical extension or comparison with *the current of water*, or *the current of air* on the basis of common characteristics of the concept of movement. Terms are classified according to their denominative peculiarities. If we consider *software* to be a human being, we will have the metaphorical image of being *intelligent, friendly*.

Considering the fact that language affects various spheres of human activity (including the activity in the field of electronics and information technologies) we classify metaphors into anthropological and non-anthropological ones. Anthropological metaphors reflect physical, moral and intellectual qualities, and social activities of the human being. Thus, for example some words denoting professions are used as technical terms in their metaphorical meaning. The word *actor* in common lexicon describes *someone who performs in a play, film,* etc. (this and other meanings presented in the article are taken from the dictionaries mentioned in the References), while as a technical term it means *an object-oriented language developed by the Whitewater Group, ltd.* The word *administrator* describes *someone whose job is connected with the management and organization of a company* whereas in its metaphorical meaning it denotes *a power user who controls everything in a web site*. The same can be said in reference to the word *agent*. It describes *a person or company that represents another person or company in business, in their legal problems*, while as a technical term it means *a program that performs a background task for a user and reports to the user when the task is done, or some expected event has taken place*. The names of the parts of the body, words showing relations become technical terms in their metaphorical meaning. Thus, for example the word *backbone* means *the row of a connected bones that go down the middle of your back* in its direct meaning, while as a technical term it is used *to describe cable segments that connect computers in a straight line*. *Child* means *baby, infant* in its direct meaning, whereas in its metaphorical meaning it shows *a process*

initiated by another process (the parent). Some other examples are illustrated in the table:

	Word	Direct Meaning	Metaphorical Meaning
1.	arm	one of the two long parts of your body between your shoulders and your hands	it is the long thin part of the machinery that looks and moves like an arm
2.	body	the physical structure of a person	in e-mail and Internet newsgroups the content of a message
3.	compiler	someone who collects different pieces of information or facts to be used in a book, report, etc.	a software program that converts computer programming language into machine language that the computer can interpret
4.	compile	to make a list, record using different pieces of information	to put a set of instructions into a computer in a form that you can understand and use
5.	deselect	to refuse to choose an existing Member of Parliament	to remove something from a list choices on a computer
6.	disarm	to reduce the size of your armed forces and the number of weapons	to transfer to the mode on duty
7.	face	the front part of the head from chin to the forehead	one side of a solid object
8.	family	a group of people who are related to each other	a series of hardware or software products that have some properties in common

9.	feed	to give food to a person or animal	to advance paper through a printer device
10.	finder	someone who finds something	the standard interface to the Macintosh. The Finder allows the user to view the contents of directories (folders); to move, copy, and delete files and launch applications.
11.	finger	to touch or handle something with your fingers	to obtain information on a user by means of the finger program
12.	fingerprint (v.)	to press someone's finger on ink and then press it on the paper in order to make a pattern of lines at the end of the finger	to scan a computer system to discover what operating system (OS) the computer is running
13.	fingerprint	a mark made by the pattern of lines at the end of a person's finger	information embedded or attached to a file or image to uniquely identify it
14.	handler	someone who trains an animal	a routine that manages a common and relatively simple condition or operation, such as error recovery or data movement
15.	handshake	the act of taking someone's right hand and shaking it	a series of signals acknowledging that communication or the transfer of information can take place between computers or other devices
16.	head	the top part of your body	the read/write mechanism in a disk or tape drive.

17.	inherit	to receive money, property from someone after they have died	to acquire the characteristics of another class, in object-oriented programming
18.	inheritance	money, property that you receive from someone who has died	the transfer of the characteristics of a class in object-oriented programming to other classes derived from it
19.	leader	the person who directs or controls a team	a row of dots, hyphens, or other such characters used to lead the eye across a printed page to related information
20.	orphan	a child whose parents are both dead	the first line of a paragraph printed alone at the bottom of a page or column of text, or the last line of a paragraph printed alone at the top of a page or column.
21.	populate	if an area is populated by a particular group of people, they live there	1. to put chips in the sockets of a circuit board. 2. to import prepared data into a database from a file using a software procedure rather than by having a human operator enter individual records
22.	push	to press a button	to send data or a program from a server to a client at the instigation of the server.
23.	thumbnail	the nail on your thumb	a miniature version of an image or electronic version of a page that is generally used to allow quick browsing through multiple images or pages

24.	widow	a woman whose husband has died and who has not married again	a last line of a paragraph, shorter than a full line, appearing at the top of a page

Non-anthropological metaphors reflect the reality surrounding the human being. These may be the names of animals, household goods, clothes, plants or trees, and abstract concepts. Metaphorical transfer is carried out from the names of animals to objects. Thus, for example the word *mouse* means *a small furry animal* in its direct meaning, while as a technical term it means *a common pointing device*. This device looked like a mouse with a tail, whereas the cursor on the computer screen is used to be called a *CAT*, so it was natural that the cat would chase the mouse. Another word *apple* means *a fruit that has a red, light green, yellow skin* in its direct meaning, while in its metaphorical meaning it is associated with *high end brand apple Mac computers, apple ipads, etc*. The word *cookie* is associated with *a flat, dry, sweet cake usually sold in packets*, whereas as a technical term it is *a block of data that a server returns to a client in response to a request from the client*. It is derived from *magic cookies* which refer to video games where the players had to gain *magic cookies* in order to advance. The name of the clothing *jacket* means *a short, light coat* while as a technical term it denotes *the outside covering of a cable or wire*. The word *bucket* as a household goods means *an open container with a handle* whereas in its metaphorical meaning it describes *a region of memory that is addressable as an entity and can be used as a receptacle to hold data*. Other examples of non-anthropological metaphors are demonstrated in the table.

	Word	**Direct Meaning**	**Metaphorical Meaning**
1.	anchor	a piece of heavy metal that is lowered to the bottom of the sea, lake, etc. to prevent a ship moving	a format code in a desktop publishing or word processing document that keeps an element in the document
2.	bird	a creature with wings and feathers that lay eggs and can fly	a satellite

3.	boot	a type of shoe that covers your whole foot and the lower part of your leg	the process of starting or resetting a computer
4.	boot (v.)	to kick someone or something hard	to start or reset a computer by turning the power on
5.	branch	a part of tree that grows outwards from the trunk	any connection between two items such as blocks in a flowchart or nodes in a network
6.	bridge	a structure built over a river, road, etc. that allows people or vehicles to cross from one side to the other	a device that connects networks using the same communication protocols so that information can be passed from one to the other
7.	briefcase	a case used for carrying papers or documents	a system folder in Windows 9x used for synchronizing files between two computers, usually between desktop and laptop computers
8.	bus	a large vehicle that people pay to travel on	a set of hardware lines (conductors) used for data transfer among the components of a computer system
9.	button	a small round flat object on your shirt, coat	a graphic element in a dialog box that, when activated, performs a specified function
10.	cell	the smallest part of a living thing that can exist independently	the intersection of a row and a column in a spreadsheet
11.	device	a plan or trick, especially for dishonest purpose	a generic term for a computer subsystem

12.	gate	a frame that you can open and close to get through	an electronic switch that is the elementary component of a digital circuit
13.	jar	a round glass container with a wide lid	a file name extension that identifies a compressed JAR (Java Archive) file
14.	jumper	a piece of clothing made of wool	a small plug or wire that can be connected between different points in an electronic circuit in order to alter an aspect of a hardware configuration
15.	plant	a living thing that has leaves and roots	the cables that connect all the computers in a local area network
16.	pine	a tall tree with long sharp leaves	one of the most commonly encountered programs for reading and composing e-mail on character-based UNIX systems
17.	pool	a small area of still water in a hollow place	the dynamic distributed area
18.	port	a place where ships stop	an interface through which data is transferred between a computer and other devices
19.	score	the number of points that each team or player has won in a game or competition	when referring to a spelling checker, a score is a number that indicates how much a replacement word differs from the original misspelled word
20.	seat	a place where you can seat	one workstation or computer, in the context of software licensing on a per-seat basis

21.	seed	a small hard object produced by plants	a starting value used in generating a sequence of random or pseudorandom numbers
22.	shell	a hard outer part that covers or protects a nut, egg, or seed and some types of animal	a piece of software, usually a separate program, that provides direct communication between the user and the operating system
23.	skyscraper	a very tall modern city building	one of several larger formats for online ads developed to replace traditional banner ads on the Internet
24.	sink	a large open container, especially in a kitchen	a device or part of a device that receives something from another device
25.	spider	a small creature with eight legs which makes networks of thread for catching insects	an automated program that searches the Internet for new Web documents and indexes their addresses and content-related information in a database
26.	turtle	an animal that has a soft body covered by a hard shell	a small on-screen shape, usually a triangle or a turtle shape, that acts as a drawing tool in graphics

Thus, the role of metaphor in technical term-formation is to demonstrate available information transfer which is based on cognitive mechanisms of human memory. The metaphorical terms connect new concepts with the ones which already exist in language, thereby providing maximum efficiency of interaction of common lexicon and technical terms. Terms created by metaphorical transfer are obviously brief, accurate, clear.

Conclusion

Having analyzed metaphorical terms used in electronics and information technologies we can conclude that these new terms are created from the words

existing in common lexicon by means of metaphorical transfer. Metaphorical transfer is considered to be a key process in the formation of technical terms in the mentioned spheres. The study shows that a lot of technical concepts have inanimate and inorganic properties, and the metaphors that are used to express these properties frequently become animate and organic. The understanding of unknown concepts by means of the known ones effects our cognitive thinking and creates a basis for new scientific observations and discoveries.

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Փոխաբերության դերը տեխնիկական տերմինների
ստեղծման գործընթացում

Սույն հոդվածում քննության են ենթարկվում փոխաբերությունն ու նրա դերը տեխնիկական տերմինների ստեղծման գործընթացում։ Տերմինները կարող են ունենալ փոխաբերական իմաստ՝ առարկաների, երևույթների, հատկանիշների, իրողությունների միջև առկա որևէ ներքին կամ արտաքին նմանության հիման վրա։ Դրանք կարող են լինել մարմնի մաս ցույց տվող բառեր, կենդանիների անուններ, կյանքի և շրջապատող երևույթների անվանումներ։ Փոխաբերականացման արդյունքում ձևավորված տեխնիկական տերմինները դառնում են տվյալ բնագավառի լիիրավ անդամ և լայն կիրառություն գտնում այդ բնագավառում։