PRECISION AGRICULTURE: TERMINOLOGICAL ISSUES

AGRICULTURA DE PRECIZIE: PROBLEME TERMINOLOGICE

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Abstract. *The purpose of this study is to show in what measure language dictionaries can be of help in better understanding GPS terminology. This study is part of a wider project of studying specialized languages belonging to different agronomic subjects. The type of approach is lexicographical. The study of GPS terminology is at its beginnings, as GPS technology itself has only recently emerged as scientific branch. The limits of the research are those caused by the absence of linguistic tools specific to the field of GPS. The practical implications of the study are dictated by the purpose of the study itself. The originality of the paper lies in the fact that this is the first time that someone approaches the problem of the English of Precision agriculture in general and that of GPS technology in particular within the study of ESP in Romania.*

Rezumat. *Scopul acestui studiu este să arate în ce măsură pot ajuta dicționarele de limbă la o mai bună înțelegere a terminologiei GPS. Acest studiu face parte dintr-un proiect mai amplu de studiere a limbajelor de specialitate din diferitele discipline agronomice. Tipul de abordare este lexicografică. Stadiul realizărilor în domeniu este incipient, deoarece însăşi tehnologia GPS este la începuturile sale. Limitele cercetării sunt cele cauzate de absența unor instrumente lingvistice specifice domeniului GPS. Implicațiile practice ale cercetării sunt dictate de însuşi scopul studiului. Originalitatea lucrării constă în faptul că este abordată pentru prima oară problema lexicului englez propriu agriculturii de precizie în general şi al tehnologiei GPS în special în predarea LES în România*

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Key words: *Precision Agriculture, teaching ESP, specialised terminology, GPS terminology*.
Cuvinte-cheie: *Agricultura de precizie, predarea LES, terminologie specializată, terminologia GPS*.

INTRODUCTION

Gaining a general introduction to Precision Agriculture and to underlying philosophy as a main objective in learning about it asks, among others, for gaining a general understanding of the Global Positioning System terminology. But how difficult could this be? Are language dictionaries of any help in approaching this special terminology or do we need special linguistic tools to do it? Our expertise as teachers of English for Special Purposes says that things are rather blurred in this area, as it has always happened when new scientific or technical branches immerged, i.e. that there must be a small number of terms belonging to the general vocabulary, and a very large one belonging only to the GPS terminology.

MATERIAL AND METHOD

To test this hypothesis, we have picked up the shortest inventory (42 entries) of the kind we could find on the Internet and checked the GPS terminology in both Ryan Larsen's **GPS Terminology. Glossary and Terminology** [Larsen, 2006] and **Webster's Encyclopedic Unabridged Dictionary of the English Language** [Webster, 1994].

RESULTS AND DISCUSSION

We thus found out the following:

- only 2 (5%) of the terms have the same meaning (though put in different words) in both inventories: ***celestial navigation*** 'Navigating by use of traditional methods having to do with observations of stars, the sun, and moon.' [Larsen, 2006] – 'navigation by means of observations made of the apparent position of heavenly bodies. Also called *astronavigation, cello-navigation.* [1935-1940]' [Webster, 1994]; ***LCD*** '**L**iquid **C**rystal **D**isplay. A type of screen commonly found in small electronic devices' [Larsen, 2006] – 'liquid-crystal display: a method of displaying readings continuously, as on digital watches, portable computers, and calculators, using a liquid-crystal film, sealed between glass plates, that changes its optical properties when a voltage is applied' [Webster, 1994];

- 5 (12%) terms appearing with the same meaning (though put in different words) in both inventories, retain in Larsen's **Glossary** only one of the several meanings in the **Webster**: ***altimeter*** 'A device that measures barometric pressure to calculate altitude.' [Larsen, 2006] – '1. *a sensitive aneroid barometer that is graduated and calibrated, used chiefly in aircraft for finding distance above sea level, terrain, or some other reference point by a comparison of air pressures*. 2. any device used for the same purpose that operates by some other means, as by radio waves. [1820-1830; ALTI- + -METER]' [Webster, 1994]; ***frequency*** 'The rate at which a cycle is repeated. Measurements based on low frequency signals are less accurate than those based on high frequencies. Low frequency signals can, however, travel greater distances.' [Larsen, 2006] – '1. the state or fact of being frequent; frequent occurrence. 2. rate of occurrence. 3. *Physics*. **a**. the number of periods or regularly occurring events of any given kind in unit of time, usually in one second. **b**. *the number of cycles or completed alternations per unit time of a wave or oscillation*. 4. *Math.* The number of times a value recurs in a unit change of the independent variable of a given function. 5. *Statistics*. the number of items occurring in a given category. [1545-1555; < L *frequentia* 'assembly, multitude, crowd'. See FREQUENT, -CY' [Webster, 1994]; ***latitude*** 'Polar coordinates used in geographic coordinate systems. The angular distance from the Earth's equatorial plane. Latitude ranges from $+90^0$ at the north pole to -90^0 at the south pole.' [Larsen, 2006] – '1. *Geog.* **a**. *the angular distance north or south from the equator of a point on the earth's surface, measured on the meridian of the point*. **b**. a place or region as marked by this distance. 2. freedom from narrow restrictions; freedom of action, opinion, etc. 3. *Astron.* **a**. See ***celestial latitude***. **b**. See ***galactic latitude***. 4. *Photog*. The ability of an emulsion to record the brightness values of a subject in their true proportion to one another, expressed as the ratio of the amount of brightness in the darkest possible value to the amount of brightness in the brightest. [1350-1400; ME < L *lātitūdō* 'breadth']' [Webster, 1994]; ***longitude*** 'Polar coordinates used in geographic coordinate systems. The angular distance from the adopted reference point located in Greenwich, England. Latitude ranges from 180^0 west of Greenwich to 180^0 east of Greenwich.' [Larsen, 2006] – '1. *Geog*. *angular distance east or west on the earth's surface, measured by the angle contained between the meridian of a particular place and some prime meridian, as that of Greenwich, England, and expressed either in degrees or by some corresponding difference in time*. 2. *Astron*. **a**. See ***celestial longitude***. **b**. See ***galactic longitude***. [1350-1400; ME < L *longitūdō* 'length'. See LONGI- , -TUDE]' [Webster, 1994]; ***satellites*** (?) 'A body, natural or manmade, that orbits a planet. The term is commonly used to describe manmade objects that orbit the Earth.' [Larsen, 2006] – '1. *Astron. a natural body that revolves around a planet; a moon*. 2. a country under the domination or influence of another. 3. something as a branch office or an off-campus facility of a university, that depends on, accompanies, or serves something else. 4. an attendant or follower of another person, often subservient or obsequious in manner. 5. *a device*

designed to be launched into orbit around the earth, another planet, the sun, etc. [1540-1550; < L *satellite-* 'attendant, member of bodyguard or retinue']' [Webster, 1994];

- 1 (2%) term has partially the same meaning in both inventories: ***transducer*** 'A device which transmits sounds pulses and listens for echoes.' [Larsen, 2006] – 'a device that receives a signal in the form of one type of energy and converts it to a signal in another form. [1920-1925; < L *trānsdūc(ere)* 'to transfer' + -ER]' [Webster, 1994];

- 5 (12%) terms have rather different meanings in the two inventories: ***basemap*** 'A map or GIS that is pre-loaded in a GPS receiver.' [Larsen, 2006] - ***base map*** 'an outline map of an area to which specific information is added for any of various purposes' [Webster, 1994]; ***cache*** 'A small container hidden at a particular location by a geocacher.' [Larsen, 2006] – '1. a hidden place, especially one in the ground, for ammunition, food, treasures, etc. 2. anything so hidden. 3. *Alaska and Northern Canada*, a small shed elevated on poles above the reach of animals and used for storing food, equipment, etc. [1585-1595; < F *cacher* ' to hide' < VL **coācticāre* 'to stow away, to pack together']' [Webster, 1994]; ***route*** 'A series of points that allows one to navigate from one location to another.' [Larsen, 2006] – '1. a course, way, or road for passage or travel. 2. a customary or regular line of passage or travel. 3. a specific itinerary, round, or number of stops regularly visited by a person in the performance of his or her work or duty. [1175-1225; ME: 'way, course' < OF < L *rupta (via)* 'broken (road)']' [Webster, 1994]; ***sounder*** 'A device that determines water depth by measuring sound echoes through water.' [Larsen, 2006] – ***sounder***^{2} 'a person or thing that sounds depth, as of water. [1565-1575; SOUND^{3} 'to measure or try the depth of (water, a deep hole, etc.) by letting down a lead of plummet at the end of a line, or by some equivalent means' + -ER^{1}]' [Webster, 1994]; ***waypoint*** 'A geographic coordinate that is stored in a GPS receiver or computer.' [Larsen, 2006] – ***way point*** '1. a place or point between major points on a route. [1875-1880; *Amer.*]' [Webster, 1994];

- 29 (69%) terms only appear in Larsen's **Glossary**: ***12-channel*** 'A GPS that can track a maximum of 12 GPS satellites at any one time.' [Larsen, 2006]; ***automatic routing*** 'A feature commonly found in high-end automotive GPS receivers. Automatic routing is the process by which a GIS calculates an optimal driving route between two locations.' [Larsen, 2006]; ***bluechart*** 'Garmin's most detailed mapping system. Bluechart data can be loaded on compatible GPS receivers and includes detailed nautical chart information.' [Larsen, 2006]; ***chartplotters*** (?) 'Marine GPS receiver that features detailed mapping capabilities.' [Larsen, 2006]; ***DGPS*** '**D**ifferential **G**lobal **P**ositioning **S**ystem. A method of improving the accuracy of GPS positions by receiving 'differential' signals that are used to improve observed GPS ranges.' [Larsen, 2006]; ***differential y-corrected*** (!!!) '(see DGPS)' [Larsen, 2006]; ***electronic compass*** 'A compass that outputs a digital heading. Used in GPS receiver to calculate a heading without satellites or when not moving.' [Larsen, 2006]; ***etrex*** 'A series of GPS receivers manufactured by Garmin. Etrex receivers are small, highly portable and intended for outdoor use.' [Larsen, 2006]; ***fishfinder*** 'A sounder that uses sonar technology to locate fish.' [Larsen, 2006]; ***fixed mount*** 'A GPS receiver that is permanently or semi-permanently mounted on a vehicle (usually a boat).' [Larsen, 2006]; ***FRS*** '**F**amily **S**ervice **R**adio **B**and. A public radio band that consists of 14 separate channels.' [Larsen, 2006]; ***geocaching*** 'An emerging sport based on GPS positions. Geocachers share the locations of caches which can be found by other participants with GPS receivers.' [Larsen, 2006]; ***geographic coordinates*** (?) 'A polar coordinate system used to determine positions on the globe. Geographic positions are typically given in terms of latitude and longitude.' [Larsen, 2006]; ***geographic information system*** 'A database system that is used to reference information based on real-world locations.' [Larsen, 2006]; ***GPS engine*** 'An algorithm used to calculate geographic coordinates from GPS satellite observations.' [Larsen, 2006]; ***GPS receiver*** 'An electronic device used to measure

ranges to GPS satellites and determine geographic coordinates.' [Larsen, 2006]; ***IPX7 waterproof standard*** 'A standard indicating that a device can be submerged 1 meter for up to 30 minutes.' [Larsen, 2006]; ***MapSource*** 'A detailed mapping programme that can load map information into a Garmin GPS receiver. The MapSource software includes functionality to backup personal waypoints and routes.' [Larsen, 2006]; ***nautical charts*** (?) 'A series of detailed maps for the purpose of aiding safe marine navigation.' [Larsen, 2006]; ***NMEA*** 'A U.S. standards committee that defines data protocols used in GPS receivers. NMEA standard protocols allow the GPS receivers to communicate with other equipment or software.' [Larsen, 2006]; ***position reporting*** 'A system used in Rino GPS receivers whereby one receiver can report its position to another receiver.' [Larsen, 2006]; ***Rino*** '**R**adio **I**ntegrated with **N**avigation for the **O**utdoors. Rino GPS receivers, made by Garmin, are robust outdoor receivers with the ability to communicate with each other by radio.' [Larsen, 2006]; ***Selective Availability*** 'A process that made GPS positioning less accurate for non-military GPS receivers. Selective Availability was removed on May 1, 2000.' [Larsen, 2006]; ***sound pulse*** 'A short burst of sound energy. Sound pulses are used in sonar devices, which can interpret the pulse's echo.' [Larsen, 2006]; ***squelch code*** 'A code entered into public band radio devices that is used to eliminate undesirable radio traffic.' [Larsen, 2006]; ***TracBack*** 'The proprietary Garmin feature that converts a track log and converts it into a route to guide you back to a starting position.' [Larsen, 2006]; ***tracklog*** 'A series of points recorded in a GPS receiver as the user moves. Often called a breadcrumb trail.' [Larsen, 2006]; ***Voice Enabled*** 'An automotive GPS unit with the capability of transmitting route directions by voice.' [Larsen, 2006]; ***WAAS*** 'Acronym for **W**ide **A**rea **A**ugmentation **S**ystem. A system of satellites and ground stations that provide GPS signal corrections for better position accuracy' [Larsen, 2006].

Firstly, there is no consistency in presenting acronyms: see ***DGPS***, on one hand, and ***FRS*** (misspelled, as it should have been ***FRSB***, from **F**amily **R**adio **S**ervice **B**and) or ***NMEA*** (he should have supplied the whole name for the acronym, i.e. **N**ational **M**arine **E**lectronics **A**ssociation), on the other hand. Then there are also misspelled words, such as ***differential y-corrected*** (it should have been ***differentially-corrected***).

Secondly, the **Webster Comprehensive Dictionary** supplies more detailed and technical explanations (it is a comprehensive dictionary!). In addition, it also supplies figurative meanings, dates concerning the time the different terms appeared, etymons, synonyms, etc.

Thirdly, Garmin Ltd., the company that sponsored the site, is omnipresent, as if everybody should know what this is and as if it were the only company of the kind.

CONCLUSIONS

The large share of terms (67%, i.e. two thirds) not appearing in the most popular English language dictionary emphasizes the necessity of developing specialized GPS dictionaries that really help students, scholars, and specialists in Precision agriculture willing to study or extend PA.

LITERATURE

***http://www.studentcomputers.co.uk/garmin/gps-product-review/gps-terminology.htm [Larsen, 2006].
***Webster Comprehensive Dictionary. Encyclopedic Edition. 1995. 2 Volumes. Chicago: J. G. Ferguson Publishing Company [Webster, 1994].