A concise literature review on the Romanian multilingual dictionaries of biology and related sciences

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Abstract. This article is looking to provide a review and few observations on the Romanian multilingual dictionaries of biology and related sciences. This review focuses on the multilingual dictionaries or products published mainly in Romanian, consisting of more than two languages and having the Romanian language as source or target language.
Key Words: glossaries, terminology, database, language, topics.

Introduction. Multilingual dictionaries are useful tools that allow anyone to find information about terms and terminology in general that is expressed in any language from a specific or non-specific field of activity. This multilingual dictionaries reflects the cultural diversity, vital to the maintenance of scientific debates, languages are known to be strong elements of different cultural traditions. We require multilingual dictionaries or glossaries to better understand the terminology from different fields of research and development, terminology present in different cultures and different languages etc.

This literature review is important because reveals for the first time all the published work. This review will be useful to professors, researchers and students that will want to know what sources can be consulted and what topics can be accessed. The present review is addressed also to researchers who study a specific matter from a specific field of science. Regarding the literature we are trying to identify the main ideas with regards to the Romanian multilingual products. For the relevant literature we use a historical approach.

Our aim is practically to fill up a void and to ask some questions regarding past, present and future multilingual dictionaries, regarding the printed and some online versions also, we will express certain (personal) views, showing respect for the literature, focused and critical, we synthesize and evaluate information, identifying the main ideas, the main trends; we approach the literature with questions, our goal is to advance it.

There are some questions that are to be answered: Is there a need for more complete multilingual dictionaries or more "data"? Will the online versions of these dictionaries replace the printed versions? Are the online versions of dictionaries correct, complete and offer us the proper information? Is there a need or demand on the market for these multilingual products? This are only a few questions that remain to be answered in future studies, regarding the fact that this multilingual dictionaries/glossaries are necessary to students, scientists, professors and people in general.

This study reflects mainly the evolution of this multilingual products across time and to identify the main trends.

We can see that the online versions of some multilingual dictionaries are faster in providing us with information, but we do not know if the provided information is correct or complete. More often this information is a compiled data or translations of terms or combination of terms or words, expressions, short phrases etc.

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Basically, our aim is to write a short review regarding the Romanian multilingual dictionaries of biology and related sciences with regards to different fields like: botany, mycology, zoology, forestry, agriculture, genetics etc. and to briefly discuss the importance regarding the scientific terminology and the importance and usefulness of a specific product in general.

This is important because we can know which dictionaries are the most appropriate as a source of information for future studies in the biological sciences domain.

Our study is based on Hart (1998), Ridley (2012) and Galvan (2015) type of review. Regarding the lack of uniformity in the Romanian terminology used in some biological sciences, few aspects have been presented and published by Pricop & Pricop (2015). Regarding the topic concerning the multilingual dictionaries, some aspects have been published also, we mention the studies of Bursuc (2014, 2015), Pricop (2016), Pricop et al (2016), Mocanu (2016) and Zamfirescu (2017). We have to mention that Bursuc (2014, 2015) published few notable observations regarding the Romanian multilingual dictionaries, concerning mainly some problems linked to dictionary type, and the uniformity topic.

We will try to give some explanations regarding these dictionaries; at least an empiric evaluation will be done. We will try to predict where the development of multilingual products will go next. The references sections contains all this dictionaries (a practical checklist is provided).

The Romanian multilingual dictionaries are different in general and lack uniformity, these multilingual products were compiled and developed by experts and specialists from various fields, the inner shape of this dictionaries, text and terminology depend much of the scientific field, period of publication and aim of the authors etc. Many of this multilingual dictionaries lack the lexicographical approach.

In this paper we will discuss and make remarks on the Romania multilingual products/dictionaries in general.

Material and Method. In order to write this review about all the dictionaries mentioned in the text have been consulted and analyzed from public libraries and the internet (or in "pdf" format). A part of these multilingual dictionaries were purchased and are now in the personal library of the author.

Results and Discussion. In Romania there is no updated bibliography or critical study exclusively devoted for these multilingual dictionaries with the Romanian language as a main source or component. The multilingual dictionaries are titled in Romanian by many terms: "dicţionar multilingv", "poliglot", "plurilingv", "polilingv".

In Romania more than 50 multilingual dictionaries related to biology have been published since 1810 until the present time (see the references list), but only a few dictionaries are related to the field of zoology. The identified dictionaries were alphabetically, chronologically, thematically and linguistically systematized. Concerning the multilingual dictionaries published in Romania, as we can see, the produced literature contains a rather small contribution to the field of zoology, and in general the majority of these multilingual dictionaries are aiming different fields of biology, as: botany, forestry, ecology, mycology, medicine, food industry and other fields of science etc.

Despite the large mass of multilingual or polyglot products, some dictionaries have made careers (see botanical dictionary of Váczy Coloman - 1980), reviewed and appreciated by many specialists. In the references section are listed the multilingual dictionaries aiming the field of zoology, botany and few related fields, published by various specialists, we mention: Şincai (1810), Bariţ (1858), Panţu (1929), Ionescu & Sprangate (1936), Ivan & Doniţă (1971), Vaczy (1980), Crăciun et al (1988), Munteanu (1992, 1999, 2001), Niculescu et al (1986), Petrişor & Apostol (2000), Avram et al (2002), Vlad et al (2004), Silion et al (2005), Jelev et al (2007), Manoliu et al (2007) etc.

We have to take into account the historical context that lead to the production of this dictionaries or multilingual glossaries (or products), is well known the fact that

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scientific products linked to nature and biology are written in times of peace and prosperity. Regarding this multilingual products, at the beginning, in Romania, mainly the products linked to classical sciences have been developed (1810-1929), this is the start for the terminology required in different fields of biology and related sciences. We can discuss about two approaches regarding this matter, one of them is for the classical biological sciences and the other one is for the experimental biology like medicine, genetics, molecular biology etc. The published glossaries/dictionaries are from the most complex to the simplest-concise lists of synonyms (of terms or expressions), but useful at the time.

Regarding the terminology related to biology and natural sciences in general etc., in case if our object of study is related to the experimental biology or experimental sciences (ex. genetics, molecular biology, biochemistry) we will have to search for the newest data, the newest multilingual product or dictionary that will help us in the translation process; in general the newest terms are the most appropriate (this is because of the rapid advances and evolution of experimental biology), for classical biology almost all the dictionaries are approachable and useful, at least a part of them.

Concerning the development of multilingual products we see the trend of the online versions, this is because the online versions of any glossaries are very easy to access and to search for terms and expressions, but we cannot be certain that this online multilingual dictionaries are correct, errors can occur or other problems can appear also etc. From this area we give only a few examples of online glossaries or sources that can be used for translations: www.reverso.net, www.wordreference.com, www.langtolang.com etc.

In science, at world level there are many schools that are trying to implement a specific terminology of study for a specific field depending on the direction of research and development. In science, the accepted and the most often used terminology is the main one that is used in upper scientific journals or the most popular ("the best journals regarding the Impact Factor" or "high end" scientific journals), that terminology is the one that will be utilized in future studies – is the one in trend (terminology utilized in the present time). At a hypothetical and also practical level, in your research if you are not using the right terminology specific to the specialized journals or some specific authors, your paper is in risk to be rejected due to this cause only, regardless to the fact that your paper is original and the data from your research brings novelty in that specific field of science. But in this time there is a lack of uniformity regarding the terminology in general; at least the terminology used in the experimental sciences is more dynamic.

There are many "schools" of research and development in different universities and research centers from different countries that are trying to impose their terminology, a specific terminology in sciences in general for specific fields of research; each school has the tendency to utilize a slightly different terminology for a specific field of research that is the one in trend etc., in the experimental biology the terminology is changing, is dynamic depending of the advances in science and technology. Is known that there is no uniformity at the terminological level in general (Pricop & Pricop 2015).

These multilingual dictionaries of biology and related sciences are published in dependence to the research and development trends, depending on the main trends: (1) the classical biology trend - a descriptive science in order to collect and explain the data from nature, ex. in order to gather knowledge regarding the natural diversity of different life forms as plants, animals etc. and (2) the experimental biology trend (an increasingly growing science) in order to observe and explain processes in some cases with an applied and more practical tendency.

In many cases, this glossaries or multilingual products are developed and published as a response for the internal need of the scientific community and for the general public but also at the will of the authors, as a result of the advances from science, this are done to explain and describe the terminology used in specific fields of science.

In this literature review, the publications and authors are discussed and organized chronologically.

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Regarding this topic, we can distinguish a few historically important periods, as so we grouped this multilingual dictionaries of biology and related sciences accordingly with this periods, ex: the first period - a period of beginning, of start for the Romanian multilingual products that was before the year 1900; a second period - after 1900 including the world wars until the end of World War II; a third period - after World War II, until the Romanian Revolution from 1989; a fourth period - after 1989 until 2000 and a fifth period or the last period, that is the latest period - after the year 2000 (a so called contemporary period, with contemporary authors).

Before 1900, it was a period of start for the development of the Romanian multilingual dictionaries/products, only a few multilingual dictionaries are recorded from this time, mainly from the field of natural sciences, botany and zoology, this being the main components of development for classical science in general.

In this period, the biological multilingual literature is mainly concentrated around the botanical topic (ex. plant names, use of plants, morphological terms, anatomical terms etc.), because this plants or plant products are a resource and can be used as food, for industries and the ethno-medicinal use is also important etc.

Regarding this multilingual dictionaries, in Romania all has started in 1810 with the publication of a small multilingual dictionary of natural sciences, a very simple dictionary but the first one: "Vocabularium pertinens ad tria regna naturae" developed by Şincai (1810), later this dictionary was reviewed, republished and discussed by Alexandru Borza (www.diacronia.ro); Borza's paper has a historical importance, although the dictionary published by Şincai (1810) is a simple list of species with the correspondent in a few other languages including the Romanian language and Latin; this product (Şincai's dictionary) is not used in the present time being rather outdated; at the time this was the first of this kind of glossaries and added an original contribution to natural sciences.

Regarding some names of plants utilized and collected from Romania we mention some earlier references of Kräutner (1793), Neustädter (1795) and Leonhard (1818).

In 1847 was published also a small vocabulary of plant names in several languages, including Romanian, Latin, German and Hungarian: "Vocabulariul de numele plantelor transilvane, românesc, latinesc (după sistema lui Linné, L.), nemţesc şi unguresc, in „Foaie pentru minte, inimă şi literatură" and is practically a simple list but one with a historical importance, this dictionary is not being used in the present time. Later, Bariţ (1858) republished a version of this dictionary: "Vocabulariu de numele plantelor transilvane, romanescu, latinescu (după sistema lui Linné, L.), nemţiescu şi ungurescu", this vocabulary is important from the historical point of view.

Hlibowicki (1890) published the index: „Benneunungen der in der Bukovina vorkommenden Pflanzel in lateinischer, deutscher, romänischer und ruthenischer Sprache", also a list of plant names historicaly important.

This botanical trend can be explained in fact because of the historical and socio-economic trends and needs; at that time, the medicinal plants being a source of natural health and material for everyday use etc., to search for new cures etc. Although there are more than 50 multilingual dictionaries in the reference list (dictionaries with the Romanian language as a main component or source), the majority are treating topics related to botany. A very small part of these multilingual dictionaries/glossaries are linked to topics as animal biology, zoology or related zoological sciences.

After 1900 there have been developed and published many multilingual products, that past century being rich and with high importance and value from a historical point of view but not only for this.

At the beginning of the 1900, Panţu (1906, 1929) published two editions of a dictionary entitled: "Plantele cunoscute de poporul român. Vocabular botanic cuprinzând numirile române, franceze, germane şi ştiinţifice", this is one of the most important and distinct work of this kind, Panţu's dictionary is not only a compilation but it is an original work containing new data regarding the Romanian plant names along with a scientific index, correspondents in other languages and a morphological descriptions of each plant species. Panţu (1906, 1929), continued the line proposed by Bariţ (1858) and Hlibowicki

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(1890) from the earlier century. In the field of forestry, has been developed and published in 1936 by Ionescu & Sprangate the first technical dictionary in this field: "Dicţionar tehnic silvic (român – francez – german – englez – italian – ungar – rus). Silvicultură, botanică, mecanică, vânătoare, zoologie, diverse", this dictionary of Ionescu & Sprangate (1936), although it is an old dictionary it has a historical importance and also importance, this was the start of the most technical specialized dictionaries; why forestry and not other field of industry?, because forestry was one of the main lines of our industry, regarding the fact that Romania was a country rich in forests and forest products.

After World War II there have been published many multilingual products that belongs to classical biology and later to experimental biology or experimental sciences. This period started the implementation of the experimental biology approach in many fields of science, as a consequence there have been published some specialized multilingual dictionaries also known as technical products.

In this period the demands for the scientists and for the public in general begin to change, the demand was on the productive sectors of the industry etc. This period was the most industrialized period of our country; technical multilingual products or technical dictionaries have been developed and published on a large scale.

After WW2 in Romania there have been published many dictionaries with a more and more practical approach aiming specific fields as plant protection, forestry, medicine, agronomy etc.; this period was probably the most prolific period for the Romanian Biology as a fundamental science, this era is marked by the publication of many "dictionaries", most of them influenced by the communist regime.

Szabó (1963) published a general technical dictionary that contains some terminological aspects linked to the biological sciences.

In the field of forestry, in 1965 appeared the dictionary: "Dicţionar forestier polyglot" in two volumes, a very useful and extensive dictionary for applied forestry, usable in the present time also, we also mention the dictionary: "Dicţionar cinegetic român, francez, german, englez" by Vasiliu et al (1965) a dictionary for the general public useful for an extent in the present time also.

In this period also, one of the most studied fields is the field of botany, taking into account the fact that plants have been economically important as a resource, a source of health and material etc., this botanical trend started earlier in time and continues with a series of specialized dictionaries: "Mic vocabular cu termenii de specialitate folosiţi în protecţia plantelor" published in 1961 to improve the plant protection department, this work is introductive, most probably not often utilized in present time but it is worth to be mentioned. Borza (1968) published the most complex and the most complete dictionary with regards to the Romanian plant names also known as the folk botanical nomenclature (or ethno-botanical names in general) collected from all regions of Romania.

This trend of applied scientific terminology had the aim to improve the knowledge for the productive sectors of the economy as agriculture and crop cultivation, this trend continues with the development and publication of many technical dictionaries, ex.: "Dicţionar agricol în opt limbi" developed by Pume et al (1970), a reference dictionary of in two volumes, used and also useful in present time. We mention the notable technical dictionaries of agronomy and horticulture: "Dicţionar poliglot de termeni de horticultură" published by Maliţa et al (1973) and the dictionary: "Dicţionar viti-vinicol în limba română, franceză, italiană, germană, engleză" published by Gorodea & Vraiculescu (1975) a reference work, most probably less utilized in present time; Petre et al (1984) continues this trend also and published a small introductive dictionary with terms for the field of agriculture.

Maliţa et al (1975) developed and published the dictionary: "Dicţionar poliglot de medicină veterinară" one of the most important glossary from this field; later Maliţa et al (1976) published the collective work: "Dicţionar poliglot de termeni de genetică" the first introductive dictionary of genetics for students and professors also.

In this period (after WW II), the field of botany, was the most proliferant field for inspiration and development of many studies; we mention below some useful botanical

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dictionaries developed after World War II: "Dicţionar geobotanic: român – englez – rus – german – francez" published by Doniţă & Doniţă (1971) a popular dictionary from two popular authors and also the introductive dictionary: "Dicţionar poliglot de termeni botanici" of Jula (1971), addressed to students etc. Răşenescu (coord.), (1977) published probably the first dictionary with a specific terminology for food industries.

In 1979 was released and published by the International Bee Research Association a complex dictionary of beekeeping. In the same year, Vîrlan (1979) published a well-organized dictionary of veterinary medicine: "Dicționar explicativ. Termeni de zootehnie și medicină veterinara".

Beside the above enumerated publications, we have to mention Váczy's botanical dictionary published in 1980: "Dicţionar botanic poliglot. Latină, română, engleză, germană, franceză, maghiară, rusă" a 1,117 pages monographic dictionary and probably the most cited and the most complete work of this kind linked to classical botany or fundamental sciences; we mention that the terminology of this glossary is very useful in the present time for the domain of classical botany; we mention that the terms/expressions from Váczy's botanical dictionary are Latin based and are almost universal. Váczy's dictionary is utilized in present time by students, professors and specialists etc. Vaczy's terminology helped to the development of the monographic work: Flora RPR/RSR (the most complete monograph from the field of botany of the Romanian vascular flora). This Latin based terminology from Váczy (1980) can be used not only for the field of botany but for the field of zoology and other natural sciences as well. Váczy's complex work is great for classical biology in general.

In the 80's an old trend revives, the trend of dictionaries based on medicinal plants, Tămaş (1983) published his work: "Dicţionar poliglot de plante medicinale. Pentru uzul studenţilor" an introductive work for students and beginners; later Tămaş (1999) republished a better version of this dictionary addressed to the general public also.

Niculescu et al (1986) published a useful dictionary for medicine and allied sciences: "Nomenclatura anatomică" a useful work for the present time also with regards to anatomy. Crăciun et al (1988) published an introductive multilingual dictionary of biology: "Dicţionar selectiv trilingv de biologie (pentru uzul studenţilor)", an introductive dictionary of biology for student use, most probably used in the present time also.

After the Romanian Revolution (from 1989) – in time (not immediately) we register a decrease in publications and a steadily downfall of the linguistic production in some fundamental sciences or classical sciences; the applied or experimental sciences are in trend now with the most practical approaches, with a few exceptions of course.

In this period, in Romania, the experimental biology trend had started to be of interest and more and more in vogue. This is due to the socioeconomic influences, it is in fact an adaptation in relation to the demands of applied sciences, scientists and multilingual products or dictionaries, this downfall was due to lack of centralization, lack of funding of some fundamental research directions, or lack of funding for specific classical areas of study in general like classical zoology etc.

From this period, we can observe more and more focused publications on specific targets/fields of economic importance for the time being like medicine, biotechnology, agronomy, forestry etc.

In the field of ornithology Munteanu (1992, 1999) published and republished a multilingual dictionary of bird species in general (one of the fewest multilingual dictionaries of classical zoology): "Dicţionar poliglot al speciilor de păsări din România", this is an introductive glossary for students, professors, bird lovers and experts also.

Remarkable ware a series of dictionaries from the field of mycology published by Manoliu & Bontea (1997): "Dicţionar fitopatologic în şase limbi. Micoze. Română, latină, franceză, engleză, germană, rusă" a useful work until the present time and later Manoliu & Barabaş in 1998 published also a dictionary: "Dicţionar micologic în şase limbi: română, latină, franceză, engleză, germană, rus" probably the most known and one of the most complete work from this field, a reference dictionary utilized in the present time by students and experts also. We mention also Stoian (coord.) (1995) introductive dictionary of forestry, for students and of course Stratan's et al (1997) work,

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probably the first Romanian biomedical dictionary: "Dicţionar biomedical latin – român – francez – rus" a very good dictionary for students and beginners.

Radu (1997-1999) released a dictionary of forestry: "Dicționar forestier poliglot".

On soil ecology we mention the fundamental multilingual dictionary: "Dicţionar de ştiinţa şi ecologia solului, Român, Francez Englez (Dictionary of Soil Science and Ecology, Romanian, French, English)" published by Lupașcu et al (1998), a very useful glossary for present time also. Mincu et al (1998) published a popular dictionary of medical terms and expression, later Chira (1999) released most probably the first introductive dictionary of cardiology. We mention here Nagy (1991) biomedical dictionary.

Odiaţiu et al (1999) published one of the first multilingual dictionaries of environment: "Tezaur multilingv al termenilor de mediu".

After the year 2000 (the contemporary period) the main published dictionaries ware very specific (with a few exception of course), this multilingual glossaries or multilingual products ware created by specialists from specific (very narrow) fields of science, this specific fields reflects the Romanian socio-economical context and reflects different trends and the level of development of different sciences like medicine or industry in general and experimental biology etc.

This era reflects the intended globalization that is leading to culture loss and tradition loss (in our country); this leads to loss off diversity, loss of identity for a more comfortable life style. In our case, regarding the multilingual products, the globalization is only in part "good", this resulted in the development of highly specific dictionaries, not only this but the information and the terminology in general is more and more available on the internet etc.

Both specific dictionaries on narrow fields of science and monographic ones have been published in this period, we mention:

Petrişor & Apostol (2000) that published a version of a dictionary concentrated on bird names and some related terminology "Dicţionar poliglot al păsărilor din România"; later Munteanu (2001) republished his dictionary: "Dicţionar poliglot al speciilor de păsări din România", we have to mention more exactly that this birds "Class Aves" is one of the most studied group of organisms from the animal kingdom if not the most studied, and so the need and presence of this kind of dictionary on the market was explainable, because of the gathered information and the presence of many studies and many experts. Also in the field of zoology but on the pathology side we mention the singular specialized glossary published in Romania: "Dicţionar explicativ fiziopatologic" published by Cazacu Porfirie et al (2005), a very useful in this field.

Ion (2000) published a technical dictionary: „Dictionar poliglot de zootehnie" a useful dictionary (that is practically a list of expressions) for specialists and students from the field of agronomy and veterinary medicine.

From the field of medicine, there are some remarkable multilingual dictionaries, we mention here the work of: Constantinescu et al (2004) and Rusu (2001, 2010).

Cherata & Pop (coord.) (2001) released a useful glossary wit expressions utilized for the environmental legislation.

Also in the field of zoology, Vlad et al (2004) published a dictionary on animal behavior and animal physiology: "Dicţionar de etologie şi fiziologie animală" an introductive vocabulary for students and professors.

Concerning the field of ecology (a complex science involving data and concepts from biology, geology, geography, chemistry etc.) we mention the dictionaries published by Avram et al (2002): "Dicţionar de ecologie aplicată" a very useful technical dictionary linked to Jelev et al (2007) "Dicționar explicativ pentru știință și tehnologie. Ecologie și protecţia mediului: român-englez-francez-german-rus" an important vocabulary that introduced to the Romanian experts and specialists new term and expressions used at the European level for different programs and conservation projects etc. Lazăr et al (2002) published also a dictionary of applied ecology: "Dicţionar de ecologie aplicată".

Butnaru et al (2002) at that time published a modern dictionary of genetics: "Dicţionar de genetică polyglot", this glossary being introductive, for students and teachers etc.

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Drăgan et al (2000, 2002a, 2002b, 2003) published a series of technical dictionaries related to the biological sciences. Bocskay et al (2003) published a complex dictionary of medical terms and expressions.

Dediu (coord.) (2010) published a monographic dictionary of ecology: "Tezaurul terminologic al ecologiei. Glosar etimologic român – rus – englez" a very rich grlossary in terms, expressions and phrases etc.

In the field of botany only a few introductive dictionaries have been published in this time by different authors: Bălteanu, (2002), Stana et al (2002) and Macovei (coord.) (2009), but this are only introductive glossaries, addressed to the general public and students.

Dincă et al (2004) published a modern glossary useful in the field of forestry: "Dicţionar forestier poliglot. Român – englez – francez – german. Englez – român. Francez – român. German – roman", dictionary for students and specialists related to forestry; Şelaru et al (1999) published his work: "Dictionar poliglot de vanatoare si pescuit", later Şelaru et al (2004) republished this dictionary but this time is dedicated especially to hunting and hunters: "Dicţionar poliglot de vânătoare" probably the most complex multilingual glossary in this field from the Romanian literature.

We mention also the introductive glossary: Magyar – francia – roman szotar" published by Kaban (2004), is useful because of the synonyms between the Hungarian and the Romanian Languages. Grozavu & Ludovic (2005) released a dictionary with a specific terminology for environment and earth sciences. Banu (2006) published a dictionary aiming the terminology related to food industries.

Related to agronomy more specific multilingual products have been developed as for plant pathology field, a concise and very easy to use glossary: "Bolile plantelor în latină, engleză, franceză, germană şi română" published by Silion et al (2005) and also Manoliu et al (2009) published a glossary on this topic: "Dicţionar de fitopatologie în şapte limbi – Micoze – română, latină, franceză, engleză, germană, rusă, maghiară" an useful dictionary dedicated to different specialists.

Lungu et al (2006) published the glossary: „Dictionar explicativ poliglot de anatomie patologica veterinara", that is in fact an introductive work for students and experts in the field of veterinary medicine.

In the field of biotechnology one complex dictionary was published by Manoliu et al (2002, and the second edition in 2007): "Dicţionar poliglot de biotehnologie: român, englez, rus, francez, finlandez" an important work addressed to specialists, students and professors also. Enache et al (2007) published a general technical dictionary for science.

For the field of agriculture and technology we have two dictionaries: Raţă et al (2004) published the remarkable work: "Apa şi agricultura: culegere de termeni tehnici în engleză, franceză, germană şi română" an introductive glossary and later published by Surdu & Surdu-Soreanu (2009): "Dicţionar poliglot de avicultură şi industria produselor avicole" a specific dictionary addressed to students and specialists. Alexandrov (2014) published the most modern botanical dictionary.

Conclusions. As a conclusion, we will try to predict where the research and development will go next: most probably the production will go to the online versions of dictionaries of course and to the monographs and also to the specializations – fragmentations, for specific fields of science etc. Introductive dictionaries for novices or students will be also in need. This production of glossaries or dictionaries is linked to the demand of the consumers (the specialists or the general public etc.). But in the present time we have limited access to the information on the online versions of these dictionaries and we cannot be certain if that translation is correct or complete. The most recent multilingual dictionaries are more and more specialized, more and more advanced, focusing on a specific, rather narrow fields. All multilingual products (old dictionaries) have been useful at their time, but times are changing. Not many dictionaries of zoology have been published; few of the published ones are from the field of ornithology.

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