

Methods of digital linguistics used in complex research of means expressing action iterativity (on the material of Spanish and English languages)

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Abstract — The article discusses how to use the methods of corpus linguistics to recreate the expression plan of iterativity. Thanks to digital search methods such as search for examples in the linguistic corpus it is easy to find necessary examples with the appropriate verbal form. The research is based on the material of Spanish and English languages, in which verbal and non-verbal means of realizing iterativity values are being compared. As for the verbal means, the examples may contain iterativity affixes, tense forms or verbal analytical constructions. As for the non-verbal means, the iterativity can be expressed by using some frequency adverbs. Besides, the digital search in electronic dictionaries is used with the intention of finding the equivalents of lexical means in different languages. For example, the data obtained by computer search methods reveal that most Spanish adverbs with the suffix *-mente* have English equivalents adverbs with the suffix *-ly*.

Keywords — digital means, linguistic corpus, iterativity, verbal means.

I. INTRODUCTION

The article discusses how to use the methods of corpus linguistics to recreate the expression plan of iterativity.

In explanatory dictionary, iterativity is defined as the repeatability of an action [13], and in Synonyms Dictionary it is defined as *iterativeness, frequency* [6]. Unlike a single action, multiple action can be repeated several times with a certain frequency. In Spanish linguistics repetition is translated as *repetición* or *iteración* (repeatability, iteration). The term *repetición* is of Latin origin and is defined as *acción y resultado de repetir o repetirse* [8], that is a repetition of an action or a result of repetition.

Spanish word *iteración* comes from Latin word *iteratio* and is defined as *acción o resultado de iterar o repetir*, that is a repetition of an action or a result of repetition. The words *repetición* and *iteración* are synonyms and can be used depending on the speech situation or context. In this regard the term *iterativity* can be translated as *acción repetida, acción frecuente o habitual*. In English linguistics *iterativity* is used to translate the term *repetition*, therefore *multiple action* is translated as repeated or habitual activity.

The expression plan includes non-verbal and verbal means of expressing iterativity. *Verbal means* of explicit context form the core of the aspectual field of iterativity, while *non-verbal means* form the periphery. The verbal synthetic means are affixes of iterativity, some tenses, analytical structures. Nonverbal expression means are adverbs and speech parts involved to express iterativity.

Non-verbal means are the nuclear means of realizing iterativity values. Indefinite iterativity implies a limited duration of a single action and an unlimited duration of the entire repetition process. Tenses can actualize one or another particular characteristic of iterativity. This is determined as a result of the interaction of Tenses' quantitative temporal-aspectual values of limited and unlimited duration with iterativity markers.

II. VERBAL MEANS

Digital search for morphological means. Search for verbal means of representing iterativity - affixes.

Digital search methods, in particular, the search for examples in the linguistic corpus, allows you to quickly select necessary examples with the appropriate verbal form. In particular, the search for the root and affix is defined as follows: the root is indicated by an asterisk * + affix.

In English and Spanish iterativity affixes can be found. In English actions repeatability can be expressed using affixes that are immediately after the root or other affix. The affixes serve to form new words and their forms.

In English there are following suffixes with the repeatability value:

1. *-le* (from Old English *-lian*): to twinkle (blink; shine, sparkle), to crackle (crackle) [(1)], [(2)].

(1) Twinkle, twinkle, little star / - Shine, shine, little star [10].

(2) The logs crackled in the fire / - Logs crackled on fire [10].

2. *-er* (from Old English *-er*): to blabber (chatting) [(3)].

(3) Eh, I've been blabbering on about my summer / -Oh, I'm still chatting about my summer [10].

In Spanish there are gerund suffixes *-ando*, *-iendo* used to convey a repeating action:

1. If the gerund is formed from a verb ending in *-ar*, then the suffix *-ando* is added to verbs' roots:

(4) Estoy hablando por teléfono / -I speak on the phone [10].

2. If the verb ends with *-er* or *-ir*, the suffix *-iendo* [(5)] is added to verbs' roots:

(5) La migración hacia países desarrollados siguió siendo elevada durante 1990-2005 / - During 1990-2005, migration to developed countries remained at a high level [11].

3. However it must be remembered that in Spanish three vowels cannot follow in a row while forming a gerund. Such verbs as *leer* (read) change affixes *-iendo* to *-yendo*:

(6) Estoy leyendo este documento- I am reading this document.

In English the repeatability of actions can be expressed using the prefix *-re*. For example: *He needs to rewrite his speech - he needs to rewrite his speech*. In Spanish, the prefix *-re* is also used: *No hace falta releer el primer acto / There is no need to re-read the first act*.

Digital electronic on-line dictionaries allow us to quickly find the necessary definitions. Consider the basic meaning of the *re-* prefix in English and Spanish.

In English electronic dictionary *www.dictionary.com* [15] the value of the prefix *re-* is transmitted as follows:

re-a prefix, occurring originally in loanwords from Latin, used with the meaning "again" or "again and again" to indicate repetition, or with the meaning "back" or "backward" to indicate withdrawal or backward motion: regenerate; refurbish; retype; retrace revert.

In Spanish the meaning of the *-re* prefix - is transmitted as follows by DRAE dictionary [12]:

El prefijo re- tiene varios significados, según el:

1. *pref. Significa 'repetición'. Reconstruir.*
2. *pref. Significa 'movimiento hacia atrás'. Refluir*
3. *pref. Denota 'intensificación'. Recargar etc.*

From the above definitions we can conclude that in Spanish the values of the *-re* prefix are completely the same. This prefix can be used to express repetition of verb action: *Comencé a releer uno de esos cuentos / I started to reread one of those stories*. However English verbs with the prefix *-re* don't always have equivalents in Spanish.

Using British National Corpus we identified and analyzed 54 English verbs with the prefix *-re*. According to the results of the analysis, correspondences of English and Spanish verbs with the prefix *-re* were found. In our article we give examples of two verbs [(8)], [(7)]:

1) *reactivate / reactivar / activate, restore*

(7) *Apreciamos también los esfuerzos que despliega para reactivar la Conferencia / We also appreciate your efforts to revitalize the Conference* [10].

2) *readvertise / volver a anunciar / post a new ad, re-post ads*

(8) *- volvemos a anunciar esta oferta de trabajo / We readvertise this post* [10].

Among these 54 English verbs only 4 verbs with the prefix *-re* do not have equivalents in Spanish.

Digital search methods such as *selected examples' volume from linguistic corpus* allows you to quickly identify functioning areas of verbs with the prefix *-re* in English and Spanish. It should be noted that they are quite common [(9)], [(10)]:

a) in political vocabulary: *re-elect President- reelegir el Presidente (re-elect the President), recount votes - recontar votos (re-count votes), rewrite speech - reescribir el discurso (rewrite speech):*

(9) *- Por qué los Estados Unidos no deben reelegir al Presidente Bush / Why America Should Not Re-elect President Bush* [10].

(10) *- Tienen que volver a contar alrededor de 50,000 votos / They need to recount around 50,000 votes* [10].

(11) *- Necesita rescribir en esta parte del discurso / You will need to rewrite this part of your speech* [10].

b) in official business vocabulary: *reschedule the interview - reprogramar la entrevista (reassign interview), reprint papers- reimprimir papeles (reprint documents), resend something- reinviar algo (forward, re-send something):*

(12) *- Vamos a reprogramar esta entrevista de trabajo / Let's reschedule this job interview* [9].

(13) *- Todos estos papeles se pueden reimprimir en cualquier momento / You can reprint these documents at any time* [10].

(14) *- ¿Podrías reenviarlo esta vez a mi correo? / Could you resend it to my e-mail this time?* [10].

c) in economic vocabulary: *re-export something- reexportar algo (re-export, re-export), re-employ-reempear (re-hire, reinstate at work):*

(15) *- Se exige una autorización de importación cuando las sociedades desean reexportar el oro / An import permit is required when companies intend to re-export gold* [10].

(16) *- Obligar al demandado a contratar al demandante o reempearle en su puesto de trabajo / Order that the respondent shall employ or re-employ the claimant* [10].

d) in technical terminology: *reequip something- reequipar algo (re-equip something): repaint - repintar (re-paint):*

(17) *- Le dije que es necesario reequipar la fábrica / I'm telling him: it's necessary to reequip the whole factory* [10].

(18) - Pensé que podía repintar la habitación / I thought we could repaint the walls of this room [10].

e) in computer vocabulary *restart-reiniciar* (*start over, restart, restart*), *reprint-reimprimir* (*reprint*):

(19) - Reinicie su computadora luego de hacer los cambios / Restart your computer after making the changes [10] ..

f) medical terminology: *reoperate* - *reintervenir* (*reoperate*), *reintubate* - *reintubar* (*re-intubate, re-intubation*):

(20) - El paciente fue reintervenido en enero de 2003 / The patient was re-operated in January 2003 [10] ..

(21) - Es necesario reintubar al paciente / It is necessary to re-intubate the patient [10].

g) legal terminology: *resume- reanudar, reopen-reabrir* (*resume, reopen*):

(22)- Está previsto que el juicio dure 18 meses y concluya a fines de 2008 y que se dicte sentencia a mediados de 2009. / It is expected to last for 18 months and to finish by the end of 2008, with a trial judgment by mid 2009.. [14].

Digital search in linguistic corpus of morphological means of expressing multiple actions – Tenses' forms. Using parallel corpus helps to find translation matches.

Using parallel linguistic corpus it is necessary to consider the peculiarities of the translation of Spanish Tenses. It is difficult to identify possible correspondences of grammatical structures of the source language and the translating language used to transmit multiple actions.

Multiple actions can be expressed using Tenses and can be expressed by Present, Past and Future Tenses. Consider Tenses used to express multiple actions in Spanish.

In Spanish to express multiple actions Simple present tense or Presente Simple are used. In English Present Simple is used to express multiple actions.

However, inversion is used in poetic texts - a rearrangement of words or phrases that violates the usual order of words or phrases. Examples of using frequency adverbs in combination with Present tense are presented.

(23) ... a veces me acuerdo suspirando del antiguo sufrir ("Rima LVI") [5].

(24) ... sometimes I feel a longing for my former suffering ... ("Poem LVI") [11].

Original and translated frequency adverbs indicate multiple actions. Adverbs *a veces, sometimes* are equivalents. In original and in translated texts multiple actions are expressed using Simple Present Tense of 1 person, singular. The phrase "*¡Ay !, a veces me acuerdo suspirando del antiguo sufrir*" can be interpreted as follows: the poet sometimes recalled with a sigh his previous suffering. In translated text made by Armand F. Baker, the expression "*feel a longing for*" means "*to have a strong desire*". It means that the poet wants to suffer and this distorts the meaning of original text.

(25) El caudillo toca por tres veces con el mango de su yatagán ("El caudillo de las manos rojas") [4].

(26) The Leader knocks on it three times with the hilt of his saber ("The leader with the red hands") [7].

In original text "*El caudillo de las manos rojas*" and in text translated by Armand F. Baker, multiple actions are expressed using verbs in Simple Present Tense, 3 person, singular *toca* (from *tocar* - *touch; touch*) and *knock* (*knock*). The translator used the verb *knock*, because when you hit the handle of a saber, a ringing sounds like a knock. The equivalent of *por tres veces* is the adverb *three times* (*three times, three times*).

(27) Siempre toca bien (Maese Pérez el organista) [4].

(28) He always plays well (Maestro Perez, the organist) [7].

In original text "*Maese Pérez el organista*" and in its translation, multiple actions are expressed using verbs in Present Tense, 3 person, singular *toca* (from *tocar*, in this case *to play a musical instrument*) and *plays* (from *to play*) Adverbs *siempre* and *always* are equivalents.

To express multiple actions and habits, Past Tense Pretérito Imperfecto is most often used in combination with frequency adverbs. When translating into English Past Simple or Past Continuous are used.

(29) El romero empezó a cantar con voz gangosa y con un aire monótono y plañidero un romance que siempre terminaba con el mismo estribillo. (La Promesa) [4].

(30) When this was done, with a nasal voice and with a sorrowful tone he began to sing a ballad whose verses always ended with the same refrain (The Promise) [7].

In «*La Promesa*» multiple actions are expressed using Past Tense (Pretérito Imperfecto), 3 person, singular (*terminaba* from *terminar* – *to end*).

Translating this text Armand F. Baker uses Past Simple (*ended* from *to end*). The adverbs *siempre, always* are equivalent as they mean "always."

(31) Pero su corazón latía cada vez con más violencia. (La Promesa) [4].

(32) But her heart kept beating even more rapidly (The Promise) [7].

In original text multiple actions are expressed by Past Tense (Pretérito Imperfecto), 3 person, singular (*latía* from *latir* - *to beat*). The translator uses Past Continuous (*kept beating*). However, the translation does not contain frequency adverb *cada vez*.

In order to express multiple actions in Future, Futuro Simple is used in combination with frequency adverbs.

(33) ... pero siempre ¡habrá poesía! (Rima IV) [4].

(34) ... but there will always be poetry! (Poem IV) [7].

In original text “*Rima IV*” and in text translated by Armand F. Baker, multiple actions are expressed using verbs in Future Tense *habrá* (from *haber* - *to have*) and *will be* (from *to be*). In both cases it means “*but there will always be poetry*”. The adverbs *siempre*, *always* are equivalent as they mean “*always*”.

When translating into Russian in order to express repeatability in the present, Present tense is used in combination with the adverbs of frequency:

(35) Siempre dice que no es más que un pobre organista de convento (Maese Pérez el organista) [4].

(36) Он *всегда* говорит, что он просто бедный органист из монастыря («Маэстро Перес. Органист») [7] / He always says that he is simply a poor organist from a monastery ("Maestro Perez. Organist").

In original and in translated texts predicates are expressed by Present Tense, 3 person, singular. Adverbs of frequency *siempre* and *always* indicate the repetition of action.

To express repeatability in the past Past Tense of Imperfect aspect is used in combination with frequency adverbs:

(37) Otras veces me parecía verla en un jardín (“Tres fechas”) [4] // Иногда мне казалось, что я видел ее в саду («Три даты») / Sometimes it seemed to me that I saw her in the garden (“Three Dates”)

The adverb *otras veces* is translated as *sometimes*. Therefore the adverbs *otras veces*. and *sometimes* equivalent. The verb *parecer* is translated by the verb *seemed*.

(38) Unas veces se sumergía en el agua (“El gnomo”) [4] / Иногда он погружался в воду. («Гном») / Sometimes it was immersed in water. (“Dwarf”)

In translated text third person’s form is used as well as singular pronoun *he*, since in the previous sentences it was *a gnome*. Adverbs *unas veces* and *sometimes* are equivalent.

To express future repeatability, Future tense of an imperfect form is used in combination with frequency adverbs . *cuantas veces voy a tocarle* (RIMA XV) [4].

(39) How many times will I be The phrase *cuantas veces* (how many times) indicates the repeated action. Touching you (Poem XV) [7]

Digital search in linguistic corpus of morphological means of expressing multiple actions - verbal analytical constructions.

Digital search methods such as the search for examples in the linguistic corpus allow you to quickly select the necessary examples with the appropriate verbal tense form. In particular the search for analytical construction is defined as follows: auxiliary verb + VERB (part of speech is indicated). An indication of a speech part allows to consider the compatibility of any verb in a given construction.

When translating from Spanish into English, the structure *used to + infinitive form* is used to transmit multiple actions in the past. In “English Grammar in Use” textbook is said the following: “Analytical structure *used to* expresses something used to happen regularly in the past but no longer happen” (something regularly happened in the past, but it doesn't happen anymore). In Spanish the structure *solia + infinitivo* is considered to be the equivalent to *used to + infinitive*. In some cases this phrase does not have a direct translation into Spanish and is translated by another verb. In Spanish Preterito Imperfecto past tense is used to transmit the repeating action in the past. Examples *used to + infinitive* are given below.

(40) ... aquellas horas en que los genios, volando alrededor de mi cuna, me narraban consejos maravillosos (“El caudillo de las manos rojas”) [4].

(41) ... those nameless and dreamlike hours when the little angels that were flying around my cradle *used to* tell me marvelous things (“The leader with the red hands”) [7].

The translator writes “*used to*” to convey multiple actions in the past that will never happen in the future. The poet laid in the cradle only in his early childhood and this will not happen again in his adulthood. In original text Becker used Preterito Imperfecto tense (*narraban* from *narrar* / *tell*)

(42) ... vuelve a llamarla por su nombre cien y cien veces (“El caudillo de las manos rojas”) [4].

(43) A hundred times he will call her by name. (“The Leader with Red Hands”)[7].

In Spanish the phrase *vuelve a + infinitive* is used to express action in the future tense. The adverb *cien y cien veces* (*hundreds of times*) indicates the repeated action

III. NON VERBAL MEANS

Digital search in linguistic corpus of lexical means to express iterativity - frequency adverbs.

In English frequency adverbs are used to convey multiple actions. These adverbs answer the question “*How often?*” They are divided into three groups:

- Simple: *always*, *never* etc.
- Derivatives formed by the suffix *-ly*: *usually*, *constantly* etc.
- Complex: *every day*, *three times a week*, etc.

The last subgroup contains frequency adverbs which are usually at the end of a sentence. Simple frequency adverbs are in the middle of a sentence, such as *always* is in the middle of a sentence [3].

Frequency adverbs are a special group of adverbs that explicate the repetition of the action indicating its frequency [2]. In Spanish they call *adverbios de frecuencia* and answer the question *¿Con qué frecuencia?* /

As mentioned earlier, all Spanish frequency adverbs are divided into three groups:

- Simple: *siempre* (always), *nunca* (never), etc.
 - (46) - Ella siempre pide una ensalada de jamón / She always orders ham salad.
 - Derivatives formed by the suffix - *mente*: *diariamente* (daily), *mensualmente* (monthly), *constantemente* - *constantemente*. etc.
- (47) - Los niños se burlan de ella constantemente / These children constantly tease her.
- Complex: *cada día* (every year), *cada semana* (every week), *por tres veces* (three times), *a veces* (sometimes, sometimes), etc.

In English they are called frequency adverbs, in Spanish - *adverbios de frecuencia*. This special group of adverbs, which are often confused with the time or temporal adverbs, which answer the questions:

When? - When? / Cuando ?:

(44) - Mi antiguo jefe me contactó ayer / My ex-boss contacted me yesterday.

How long?

(45) - How long / ¿cuánto tiempo? / Prostate cancer usually grows very slowly. - El cáncer de próstata suele crecer muy lentamente / Usually, prostate cancer develops very slowly.

While frequency adverbs answer the question *how often?* - *How often?* - ¿Con qué frecuencia?

The equivalent of English suffix - *ly* is Spanish suffix - *mente*. In Spanish for adjectives ending in a consonant, the suffix - *mente* joins the adverb: *comúnmente* (usually). *Son antidepresivos recetados comúnmente* / - These are commonly prescribed antidepressants.

Digital search in electronic dictionaries in order to find equivalents of lexical means in different languages.

In order to clarify whether all Spanish adverbs with ending - *mente* have equivalent English adverbs with suffix - *ly*, we analyzed popular electronic dictionaries and translators, such as <https://www.linguee.com> <https://context.reverso.net> and others.

Based on the data obtained by computer search methods, it can be concluded that most Spanish adverbs with the suffix - *mente* have English equivalents adverbs with the suffix - *ly*.

However some frequency adverbs aren't formed by suffixes. We divided frequency adverbs into two groups:

- adverbs of definite frequency.
- adverbs of indefinite frequency.

If we know exactly how often an action is performed, then we use adverbs of a definite frequency. Otherwise it is necessary to use adverbs of indefinite frequency. The first group includes adverbs according to the following constructions:

1. number + "times" + "a" + period of time: *I visit my grandparents two times a month/*
2. "every" + period of time: *My father reads newspapers every day/*
3. once / twice + "a" + period of time: *We go to church once a week. They write letters twice a week.*
4. "on" + day of the week: *They go to cinema on Sundays.* [3].

We found out synonymous constructions in Spanish:

1. number + "times" + "a" + period of time = número de veces + a + período de tiempo: *Visito a mis abuelos dos veces al mes / I visit my grandparents two times a month.*
2. "every" + period of time = "Cada" + período de tiempo: *Mi padre lee el periódico cada día / Dad reads newspapers every day.*
3. once / twice + "a" + period of time = una vez / dos veces + por + período de tiempo: *Vamos a la iglesia una vez por semana Escriben cartas dos veces por semana / We go to church once a week. They write letters twice a week*
4. "on" + day of the week = "Los" + nombre de día de semana: *Van al cine los domingos / On Sundays, they go to the movies.*

As for the place of frequency adverbs in a sentence, it should be noted that adverbs of definite frequency are usually at the end of a sentence.

(48) Elections are held twice a year / Las elecciones se celebran dos veces al año

Adverbs of indefinite frequency are in the middle of the sentence

(49) My son always wanted a pet / Mi hijo siempre quiso una mascota.

IV. RESULTS

A. Verbal means

Digital search for morphological means. Digital search methods such as search for examples in the linguistic corpus allows you to quickly select necessary examples with the appropriate verbal form. In particular the search for the root and an affix is defined as follows: the root is indicated by an asterisk * + affix.

Digital search methods such as search from selected examples volume allows you to quickly identify functioning areas of verbs with the prefix -*re* in English and Spanish

Digital search in linguistic corpus of morphological means of expressing multiple actions – Tenses. It is possible to use parallel corpus to find translation matches.

Using parallel linguistic corpus it is necessary to consider the peculiarities of the translation of Tenses. It is difficult to identify possible correspondences of grammatical structures used to transmit multiple actions.

Digital search in linguistic corpus of morphological means of expressing multiple actions - verbal analytical constructions. Digital search methods such as search for examples in the linguistic corpus allow you to quickly select necessary examples with the appropriate verbal form. Search for analytical constructions is defined as follows: auxiliary verb + VERB (part of speech is indicated). An indication of a speech part allows to consider the compatibility of any verb in a given construction.

B. Non verbal means

Digital search in the linguistic corpus of lexical means to express iterativity - frequency adverbs. Digital search in electronic dictionaries in order to find equivalent lexical means in different languages. In order to clarify whether all Spanish adverbs with - *mente* have equivalent English adverbs with the suffix - *ly*, we analyzed popular electronic dictionaries and translators, such as <https://www.linguee.com> <https://context.reverso.net> and others.

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