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Frames of winespeak: Varieties among languages and linguistic contexts

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Abstract. This paper offers a preliminary investigation on the advantages of tagging and analyzing a trilingual, comparable corpus of oenological texts with frame semantics, in order to portray the complexity of verbal meanings and argument structures in this specialized domain. The overall aim of the analysis is the creation of a lexicographical tool designed for supporting users to write a specialized text in an L2. Therefore the descriptive efficacy of frames was tested with polysemous lexical units, such as the verb *make*, and its Italian and French equivalents (*fare* and *faire*). Results confirm that Frames warrant fine-grained semantic-syntactic analysis, which could be useful for non-native writers, provided that a specific user-friendly presentation of the data is offered. On the other hand, however, the frame inventory is still incomplete and prevents exhaustive analysis.

Keywords. Cross-linguistic analysis, English, Italian, frame semantics, FrameNet database, French, polysemous verbs, register, syntactic patterns, winespeak.

1. Introduction

This paper preliminarily investigates the pros and cons of using frame semantics for analyzing a trilingual corpus of winespeak. While the existing literature on the oenological language has focused mainly on the metaphors employed to describe wine characteristics (Lehrer 2009; Caballero 2009; Caballero & Suarez-Toste 2010), we pay attention to the verbal predicates used to speak about wine, especially the event designed by combinations of verbs and argument structure constructions.

The data collected from a trilingual specialized corpus of oenological texts are thus analyzed according to the Frame Semantics (Fillmore 1985), using the Frames already inventoried in the FrameNet database as a reference. This approach has already proved to be suited for the description of complex conceptual scenarios of visual perception verbs (e.g. Atkins 1994; Johnson & Lenci 2011), it is to be expected that it will be the same for the verbal predicates lexicalizing different aspects of wine tasting. Moreover, the semantics of frames is a promising linguistic ontology for cross-linguistic comparisons, and provides useful data for lexicographical projects.

In this paper, the descriptive efficacy of frames for polysemous lexical units has been tested, analyzing the verb make, and its Italian and French equivalents (fare and faire). This allows to evaluate whether the FrameNet descriptions represent an adequate cross-linguistic basis of comparison, and may provide significant data also for user-friendly lexicographical projects, such as an oenological dictionary supporting with text writing in an L2.

In the following pages, Section 1.1. provides a brief discussion of the research methodology and the instruments used for the data collection and analysis. Section 1.2. describes how Frame semantics helps with the analysis of verbal predicates and their argument structure. Section 2 briefly lists the frames identified for the three polysemous verbs considered (*make*, *faire*, and *fare*). Section 2.1. illustrates the three most frequent frames inventoried in the corpus (`Intentionally_create`, `Manufacturing`, and `Cause Change`). The last section summarizes the pros and cons of analyzing the oenological corpus collected using the frame semantics approach.

1.1. Corpus creation and data collection

The data are collected to compile a specialized comparable corpus of winespeak in English, Italian and French. The texts are wine reviews published in newspapers, magazines, blogs, or specialized sites selected from the Web (20 sites for each languages), and 100 English scientific papers dealing with the biochemistry of wine-making (oenology) and grape-growing (viticulture). The articles were collected from the Food Chemistry journal. Their inclusion will allow register comparisons between the scientific and non-scientific texts, such as an academic journal and reviews written by experts.

The total size of the corpus is 1,564,668 tokens, as it is shown at length in Tab. 1:

Type of Text	Word n
EN_journals	619,470
EN_reviews	382,249
IT_reviews	467,451
FR_reviews	95,497
Total	1,564,668

Table 1: Text types in the corpus

The French tokens are fewer than the other ones, since the French reviews collected were made up of shorter texts.

The corpus data are searched, manipulated and saved through the SketchEngine, the corpus tool designed mainly for lexicographical applications (Kilgarriff et al. 2004). After lemmatization, and part-of-speech tagging, we looked up the verb forms in terms of POS-tag.

Excluding the verbs lexicalizing 'to be' and 'to have', Fig. 1 below shows the ten most frequent verbs in the sub-corpora collected. It is remarkable that *make*, *faire*, and *fare* are similarly represented in the different language sub-corpora, since they are 4%-5% of the verbal items collected, even if in French *faire* is by far not the most frequent, while this is the case for the other languages considered. Moreover, *make* is the 19th most frequent verbal item in the Food Chemistry corpus (EN_F), representing only 1% of the sample, a significant indicator of the different register used in scientific texts, also proved by the kind of verbs most frequently used in this sub-corpus (e.g. *accord*, *report*, *observe*).

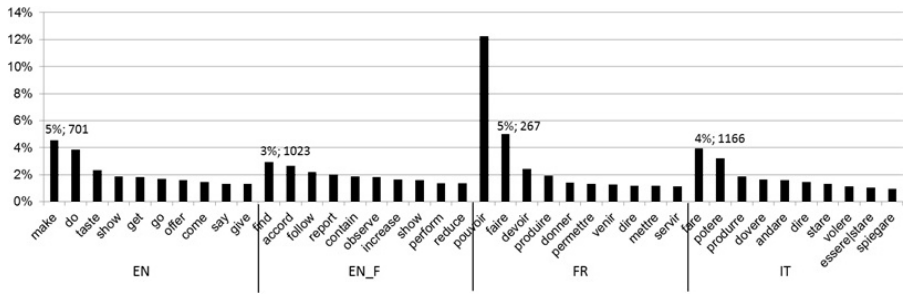


Figure 1: Verb types in the corpus

1.2. Theoretical framework

According to the semantic theory firstly proposed by Charles Fillmore in 1975, and developed with his collaborators ever since, knowledge is organized in frames, or conceptual structures that are stored in our semantic memory and represent "an inventory of schemata for structuring, classifying, and interpreting experiences" (Fillmore 1976: 25). Therefore, while contrasting the atomistic view that perception and knowledge consist in a process of abstraction form different single features, this semantic theory implies that knowledge units are complex aggregates of concepts including lexical meanings, patterns of beliefs, social practices, and pragmatic

information as well (Fillmore 1976). Starting from these assumptions, the aim of Frame Semantics is to investigate the lexicon of a language in terms of the frames evoked by the lexical units. For example, commercial activities may be portrayed by the `Commercial Transaction` frame, which consists of two `Transfer` actions involving different participants, or *frame elements*: the first action implies the presence of a BUYER who gives to the SELLER some MONEY, in the second a SELLER gives the BUYER the GOODS. This conceptual distinction is evident if we refer to English verbs like *pay* and *sell*, which portray the different actions needed in order to 'buy' something, lexicalizing the two sub-events of the `Commercial Transaction` frame.

The analysis of lexical entailments, and of other kinds of relationships between lexical units serves therefore to outline the frames, and to distinguish one from the others. In the previous example of the `Commercial Transaction`, two sub-events were necessary to portray the complexity of the activity considered, while the `Sending` frame, lexicalizing verbs like *mail*, *fax*, and *wire*, *inherits* its properties from `Transfer`, since it implies the manner in which the transfer is done and therefore evokes some additional features. Moreover, since frames are complex schemes that portray the mental image associated to a specific meaning, lexical items are never considered as isolates, but in relation to the elements that contribute to determine their semantic value. Syntactic properties are therefore paramount, they are investigated directly from corpus data alongside the different meanings they are associated with. The results of this investigations are collected in the online FrameNet database, which allows both lexical and semantic searches in the English lexicon, since users can look for both words or frames.

Despite the huge scientific production and the many lexical analyses carried out within this theoretical framework, two major shortcomings have been pointed out, since the strict bottom-up methodology used prevents the formulation of rules for both identifying and limiting the number of frames, therefore there's no «systematic analysis of a target lexicon», as Peter Hanks (2012: 57) remarks. Nevertheless this limitations haven't prevented FrameNet popularity, and different attempts have been made to extend the analysis to specialized domains (e.g. Venturi 2009; Dolbey 2006) too, using specific ontologies to elaborate on the existing frames, and adding new ones for the technical meanings.

Particularly interesting are the possibilities arising from the cross-linguistic comparisons offered by the FrameNets for other languages that are currently under construction (e.g. Burchardt et al. 2009; Subitras 2009). The main concerns of these projects however are almost the same as those dealing with the specialized domains, since new frames must be added in order to capture semantic differences and lexical gaps.

The aim of this paper is however different, since it shows how the fine-grained analysis of frame semantics can be applied cross-linguistically for comparing a trilingual specialized corpus of oenological texts. However, no addition to the existing frame inventory is proposed, but rather an illustration of their descriptive efficacy for polysemous lexical units, such as the verb *make*, and its Italian and French equivalents (*fare* and *faire*). This allows to evaluate whether the FrameNet descriptions represent an adequate cross-linguistic basis of comparison, and provide significant data also for more user-friendly lexicographical projects, such as an oenological dictionary supporting with text writing in an L2.

Actually verbs are often neglected by specialized dictionaries, while they are of the outmost importance for text writing, particularly in an L2. Under this respect, also the general meaning verbs are paramount (Araceli et al. 2011) and shouldn't be omitted even from the lemma inventory of a specialized dictionary, as long as this dictionary must provide assistance for text production.

In order to evaluate the degree of cross-linguistic comparability, a specific domain labeling was added to the Frames using descriptors for seven different oenological sectors, which were extracted from the Wikipedia page dedicated to Wine. The wine sector labeling includes: *wine production*, *wine tasting/evaluation*, *wine classification*, *wine selling (collecting)*, *wine uses*,

wine consumption, and *health effects* of wines. The different 'wine categories', as they will be called here, specify the meaning of verbs, synthetizing the value of their arguments. Consider the following examples, the first is classified as belonging to the wine tasting category, the second to wine uses, however the frame is the same for both (`Cause_change`):

(1) In short, Antinori *makes* oak and butter-notes desirable

(2) A blend of the local grape varieties […] it has an explosively fruity palate poised between tangy tropical fruit and citrus […] that *makes* it a very versatile food match.

There are, in fact, other frames that elaborate on the idea of a change of state (i.e. `Cause_change_of_consistency`, `Cause_change_of_phase`, `Cause_change_of_position_on_a_scale`, `Cause_change_of_strength`) but, as it is expected, they are lexicalized by different, more specific verbs (e.g. *thin*, *curl*, *melt*, *defrost*, *increase*).

The different wine categories serve to portray the semantics of generic frames which probably should be elaborated on more specifically. Therefore, the more varied is the distribution of the different wine categories within one frame, the more generic is the frame considered. This will provide quantitative data about the lack of cross-linguistic correspondences, due to the incompleteness of the current FrameNet description.

2. Data analysis

The corpus annotation for the three verbs considered (*make*, *faire*, and *fare*) allows to identify the following 49 frames, while for 5 occurrences no appropriate description was found, therefore they are signaled by the question mark in Tab.2:

?	Evaluative_comparison	Performers_and_roles
Arriving	Evidence	Possession
Awareness	Examination	Process_start
Becoming_visible	Experiencer_focus	Progress
Causation	Getting	Relative_time
Cause_change	Going_back_on_a_commitment	Representative
Cause_to_start	Hostile_encounter	Self_motion
Choosing	Inclusion	Stage_of_progress
Coming_to_be	Ingestion	Stimulus_focus
Commerce_sell	Intentionally_act	Subjective_influence
Compatibility	Intentionally_create	Success_or_failure
Cooking_creation	Judgment	Successful_action
Deserving	Leadership	Supporting
Differentiation	Manufacturing	Temporary_stay
Distinctiveness	Membership	Travel
Earnings_and_losses	Opinion	Trendiness
Education_teaching	Part_whole	

Table 2: Alphabetically ordered list of frames for *make*

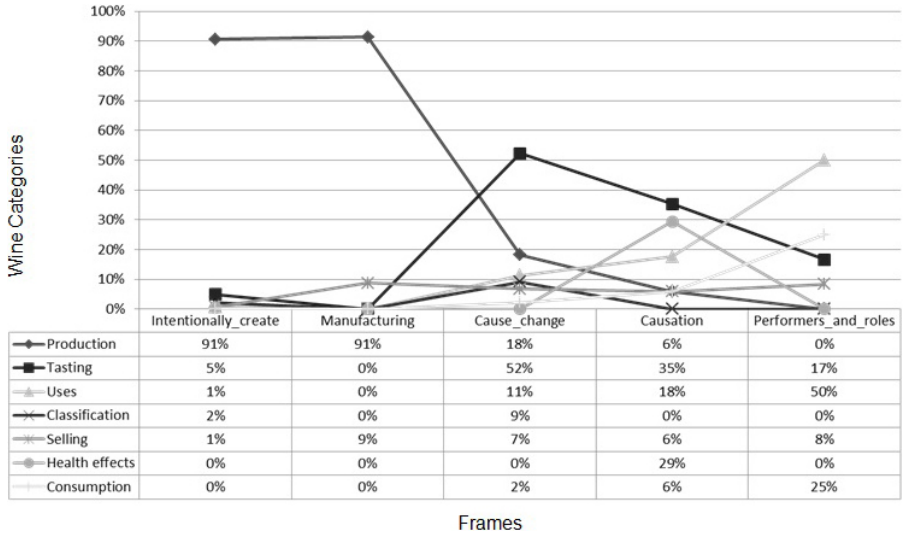
We list below the most frequent frames decreasingly ordered. The first is `Intentionally_create`, which lexicalizes the most frequent value of 'make', namely 'create', while 3% of the corpus refers to a `Manufacturing` process, which however is a quasi-synonym of the previous one. `Cause_change`, instead, evokes the concept of 'becoming', such as in (1) and (2). `Causation` refers to "the idea that some event is responsible for the occurrence of another event (or state)", while the `Performers_and_roles` frame captures the metaphoric occurrences in which wine is considered as a PERFORMER which plays a ROLE in a PERFORMANCE:

Frame	Frequency	%
Intentionally_create	625	71%
Cause_change	90	10%
Manufacturing	23	3%
Causation	17	2%
Performers_and_roles	12	1%

Table 3: Decreasing frequency of frames

2.1. Frames and Wine Categories intersections

In order to evaluate the descriptive efficacy of frames for the present oenological corpus, a comparison with the 'wine categories' is provided (see § 1.2.). Figure 2 shows the intersections between the frames and the wine categories, demonstrating the tendency of 'wine production' category to evoke the Intentionally_create and Manufacturing frames (91%). The chart also shows the polysemy of the Cause_change and Causation frames, which intersect almost all the wine categories considered, displaying a tendency to lexicalize more frequently tasting aspects (52% and 35% respectively):



	Intentionally_create	Manufacturing	Cause_change	Causation	Performers_and_roles
Production	91%	91%	18%	6%	0%
Tasting	5%	0%	52%	35%	17%
Uses	1%	0%	11%	18%	50%
Classification	2%	0%	9%	0%	0%
Selling	1%	9%	7%	6%	8%
Health effects	0%	0%	0%	29%	0%
Consumption	0%	0%	2%	6%	25%

Figure 2: Intersections of frames and wine categories

2.1.1. Intentionally_create, and Manufacturing frame and the Wine production category

The most typical meaning of *make*, namely to 'create' or 'produce' something, is captured by two different frames: Intentionally_create and Manufacturing.

Statistics shows that this meaning is typically used in the English non-scientific and scientific corpus.

Sub-corpora	Frequency	'make' in the sub-corpus	%
EN_F	103	328	31%
EN	400	701	57%
FR	15	267	6%
IT	45	1166	4%

Table 4: Intentionally_create frame and Production category

The Intentionally_create frame is evoked by a CREATOR which creates a new entity, the CREATED_ENTITY [CrEnt], possibly out of COMPONENTS [Cmpnt], as it is shown in the examples below (3a-b):

(3) a. [$_{CrEnt}$This wine is a naturally sweet wine] *MADE*^{Target} [$_{Cmpnt}$with Garnacha Tintorera grapes harvested and dehydrated in 2010 such as follows]

b. [$_{CrEnt}$Il soave è uno dei vini bianchi italiani più importanti e più conosciuti all'estero] *FATTO*^{Target} [$_{Cmpnt}$con uve da Garganega e Trebbiano di Soave.] CNI

c. […] [$_{Cmpnt}$le résultat d'un assemblage de 4 cépages avec lesquels] [on$_{Creator}$] *FAIT*^{Target} [$_{CrEnt}$le porto] […] CNI

The target predicate in (3a-b) is preceded by the core frame element denoting a CREATED_ENTITY, and they are followed by the non-core element instantiating the COMPONENTS from which the wine is made, unlike example (3c), in which the order of the two frame elements are reversed. Furthermore, examples (3a-b) do not include the core frame element referring to the CREATOR of the entity, which is clearly understood from the context; its absence is indicated by CNI (Constructional Null Instantiation).

The frame elements annotation (FEs) is completed with the syntactic pattern analysis, which allows to capture the distributional preferences of the verb. Tab. 5 below lists the syntactic patterns for the `Intentionally_create` frame and the wine production category considered:

Syntactic pattern	n.	%	Language and domain	Syntactic pattern	n.	%	Language and domain
direct object	134	34%	English	by-comp	6	8%	Food Chemistry
from-comp	59	18%	English	without-comp	6	8%	Food Chemistry
in-comp	35	13%	English	of-comp	7	9%	Food Chemistry
one argument	33	14%	English	direct object	4	5%	Food Chemistry
with-comp	23	11%	English	in-comp	3	4%	Food Chemistry
by-comp	19	10%	English	one argument	2	3%	Food Chemistry
of-comp	15	9%	English	at-comp	1	1%	Food Chemistry
dir.obj + from-comp	12	8%	English	dir.obj + from-comp	1	1%	Food Chemistry
dir.obj + with-comp	12	9%	English	direct object	4	14%	French
dir.obj + in-comp	10	8%	English	à [to]-comp	2	8%	French
dir.obj. + that-clause	9	8%	English	pour [for]-finite verb	2	11%	French
for-comp	7	6%	English	se#one argument	2	12%	French
non-finite verb-dir.obj	7	7%	English	à partir de [from]-comp	1	7%	French
all over-comp	2	2%	English	de [of]-comp	1	7%	French
as-comp	2	2%	English	du [from]-comp	1	7%	French
dir.obj + by-comp	2	2%	English	par [by]-comp	1	7%	French
on-comp	2	2%	English	direct object	17	49%	Italian
through-comp	2	2%	English	con [with]-comp	9	21%	Italian
to-non-finite verb	2	2%	English	di [of]-comp	3	7%	Italian
dir.obj + to-no-finite verb	2	2%	English	in [in]-comp	3	7%	Italian
around-comp	1	1%	English	si#-dir.obj	2	5%	Italian
at-comp	1	1%	English	si#con-comp	2	5%	Italian
chez-comp	1	1%	English	da [from]-comp	2	5%	Italian
dir.obj + for-comp	1	0%	English	per [for]-comp	2	5%	Italian
dir.obj + since-comp	1	0%	English	si#a-comp	1	2%	Italian
dir.obj + under-comp	1	0%	English	si#-one argument	1	2%	Italian
throughout-comp	1	0%	English	si#in-comp	1	2%	Italian
from-comp	61	85%	Food Chemistry	come [as]-comp	1	2%	Italian
with-comp	12	15%	Food Chemistry				

Table 5: Syntactic patterns in the Intentionally_create frame and the Wine production category

It is remarkable to notice that the most recurrent syntactic pattern in all the languages considered

is the transitive construction with a direct object, while in Food Chemistry it is the dynamic passive construction formed by *make* plus *from*, as in (4):

(4) The treatments compared to the control were wines *made from*: unheated juice (C1), unheated juice with AGP addition (T2), heated juice (C2) and heated juice with AGP addition (T1).

However, unlike English, in French and Italian there are pronominal verb constructions (i.e. *se faire* and *farsi*, respectively) which in Italian license both direct and direct arguments; see examples below:

(5) Août à fin Septembre et la fermentation *se fait* cépage par cépage.

(6) a. per molti di voi in Abruzzo non *si faceva vino* fino alla lettura di queste righe[...]
b. Il vino *si fa con il cervello*.

The `Manufacturing` frame, in which a PRODUCER [Man] produces a PRODUCT [Pro] from a RESOURCE for commercial purposes, such as in (7), has no attestations in Food Chemistry and in French, since in this language this particular meaning is lexicalized by the verb *produire*:

(7) a. While [$_{Man}$many producers] *MAKE*^{Target} [$_{Pro}$Recioto di Soave], [$_{Man}$they] *DO SO*^{Target} in small quantities. [$_{Pro}$ About 1400 hectoliters] *ARE MADE*^{Target} annually […]
b. [$_{Pro}$Di aglianico][$_{Man}$se][$_{Pro}$ne] *FANNO*^{Target} 2 milioni all'anno.

In both the examples, the target predicate licenses a core frame element PRODUCER which in (7a) is indicated by a person and in (7b) by the impersonal pronoun se 'it'. The PRODUCT in example (7a) is the wine, whereas in (7b) it is the grape.

2.1.2. The Cause Change Frame and the Tasting category

The `Cause_change` frame lexicalizes tasting aspects half the times. In such instances, 'make' is used to expresses the idea that something acquires a specific taste, since an AGENT or a CAUSE makes the ENTITY change in terms of its "category membership" (example 8a), or with reference to the value of the attribute considered (example 8b):

(8) a. [$_{Cause}$ The Eyrie Estate gives a wonderful combination of lean structure, and rich flavors] *MAKING*^{Target} [$_{Ent}$the wine] [$_{Final\_category}$ feel both refreshing, and compelling]. INI
b. [$_{Cause}$ the volcanic soils] *CAN MAKE*^{Target} [$_{Ent}$the wine] [$_{Final\_category}$ among Sicily's most instinctive]. INI

It could be useful to compare the previous examples from our wine corpus to one provided by the FrameNet Web site, in order to check their comparability:

(9) [$_{Agent}$Biologists at Fort Detrick's newest biodefense center] may be asked to *MAKE*$_{Target}$ [$_{Entity}$some of the world's deadliest microbes] [$_{Final_category}$even more dangerous than they already are]. [$_{Initial_category}$DNI]

In the wine speak corpus, no frame element AGENT was found, while the ENTITY is lexicalized also by a brand name (example 12) used as an epitome for the word 'wine', or by a tasting component (e.g. En. *the nose*, *the smell*; Fr. *notes florales*, *caractéristiques*; It. *i tannini*, *profumi*).

Statistics show that this meaning of *make* is more used in the English and French sub-corpora (see Tab. 6):

Sub-corpora	Frequency	'make' in the sub-corpus	%
EN_F	8	701	1%
EN	17	328	5%
FR	8	267	3%
IT	13	1166	1%

Table 6: Cause Change Frame and the Tasting category

From a syntactic point of view, the languages considered display different constructions, since in Italian and French there are also indirect arguments for this specific meaning of 'fare' and 'faire', while in English only direct constructions are displayed, and all the clauses are of the kind: *make the wine/it/this ... + adjective* (e. g. *sweet*, *palatable*, *pleasurable*, *refreshing*…). In two instances the adjective is replaced by a noun preceded by an article (10), and sometimes the subject is not the wine, but one of its components (11); in other instances wine components are instead the direct arguments of the verb (12).

(10) The LBV style of port is released when it's ready to drink, and this one has the purring power and chocolate-edged dark fruit *to make it a joy*

(11) Currently the youth shows as fumey *making the bouquet* almost medicinal

(12) In short, Antinori *makes oak and butter-notes desirable*;

Two unconvincing instances have been included within the inventory of lexical items that evoke this meaning, namely the phrasal verb *make for* which nevertheless is not completely portrayed by this frame both syntactically and semantically, since its meaning corresponds to 'conduce to', 'proceed or direct one's course toward':

(13) this well-priced Kiwi fizz layers some gently toasty flavours over a whistle-clean, lemon-and-fresh-apple palate, *making for* a far more pleasurable experience than most budget champagne.

(14) Medium acidity and all French oak barrels *make for* great balance;

On the contrary, in Italian and French the direct construction with the active verb form is less frequent, whereas different syntactic patterns are displayed. Firstly, the indirect construction introduced by the preposition 'of', which is 'di' in Italian and 'de'/'du' in French; the direct construction with the pronominal verb forms 'en faire'/'se faire' in French (*La salinité se fait discrète*), and 'farne'/'farsi' in Italian (*non fa della complessità la sua cagentaratteristica*), which is by far the most frequent pattern in this language. Tab. 7 below briefly reports on the different syntactic patterns found for French and Italian:

Syntactic pattern	n.	%	Frames and Wine Category intersection	Language and domain
adj	1	13%	`Cause Change` & Tasting category	French
#en + dir. obj.	1	13%	`Cause Change` & Tasting category	French
que [that]-clause	1	13%	`Cause Change` & Tasting category	French
#se + dir. obj.	2	25%	`Cause Change` & Tasting category	French
de/du [of]-comp + dir. obj.	2	25%	`Cause Change` & Tasting category	French
direct object	1	13%	`Cause Change` & Tasting category	French
adj	2	15%	`Cause Change` & Tasting category	Italian
di [of]-compound + dir. obj.	3	23%	`Cause Change` & Tasting category	Italian
ne# + dir. obj.	4	31%	`Cause Change` & Tasting category	Italian
si# + dir. obj.	4	31%	`Cause Change` & Tasting category	Italian

Table 7: Syntactic patterns in the Cause Change Frame and the Tasting category

3. Conclusions

The fine-grained analysis offered by the Frame Semantics approach has proved the kind of insights that it may offer in terms of a cross-linguistic comparison, namely the fact that, starting from a semantic basis of comparison, detailed similarities and differences in the surface syntactic structure may be highlighted. This kind of data could be extremely useful for text writing in an L2, and may lead to the creation of a writing assistant tool specialized in the oenological domain, provided that a user-friendly interface is created for the scope, with adequately understandable labels for the intended users, who must easily understand the meanings and contents of frames. This of course requires a specific future investigation.

However, many shortcomings have already been pointed out. Firstly, the still incomplete inventory of the frames provided, and the difficulty to identify them, since there are no general rules for discerning one frame from the others, except the careful inspection of those already inventoried in FrameNet. This search is particularly complex for polysemous words, such as the verbs analyzed so far, and for the idiomatic expressions. For example, during the annotation of this oenological corpus, it was difficult to select the frame for the Italian idiom 'far colpo' (Engl. 'to impress'), which eventually was considered as evoking the `Experiencer_obj` frame.[1]

Concluding, it must be underlined that the limited aim of analyzing the verbal items and their arguments in a small specialized corpus is a more affordable enterprise than the exhaustive description of the lexicon of one language (see Schmidt 2009), and this lexicological analysis can eventually be transformed in a user-friendly lexicographical tool, if data are stored in a consistently designed database.

4. Notes

[1] See Burchardt et al. (2009) for the treatment of metaphors and idioms in the German FrameNet.

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