# Lexicon-Grammar Classifications. Or Better: to Get Rid of Anguish

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#### Abstract

The main perspective adopted in this paper is a (maybe subjective) clarification of some of Zellig Harris' and Maurice Gross' themes. Here, we pose and try to answer fundamental questions applying a line of reasoning based on sentence and distributional equivalence classes. These questions seem to us connecting the different phases of Harris' observations: from the strict distributionalism period to the transformationalism one, and to the one of operators and grammars. Starting from the research on nominal and adjectival operators, we propose a different interpretation of some classes of unary and binary operators.

**Keywords**: equivalence; value; equivalence class; maximum expansion; completives; causative constructions.

# 1. Use of classification properties

The research program called "Lexicon-Grammar of Italian Language" (from now on LGIL) was inspired by Maurice Gross' *Méthodes en syntaxe* (1975). In the last twenty years, as for taxonomic analysis and description, it has focused on the following main topics: simple sentences and verbal operators; support-verb constructions and nominal operators; idioms and compound operators; compound forms; spoken language uses; applications of finite state automata theory; general and specialized frequency vocabularies.

In LGIL we may detect four main contributions: Elia-Martinelli-D'Agostino (1981) on completive, intransitive and transitive sentence forms; Elia (1984) on completive sentences; D'Agostino (1992) on transitive constructions; Vietri (2004) on a general reformulation. In all books, following Harris (1976) elementary operators were separated from non-elementary ones in order to achieve verb uses analysis and classifications.

D'Agostino (1992) shows how the following properties sequence is by itself a classification system: first, analysis of verb complements number and type; second, by means of a largest use of *Vsup* sentences, and with reference to sentences paraphrases typifying different verb entries, exact definition of the connections among all arguments selected by a given operator; third, use of specific distributional restrictions operating on complement noun forms and, generally speaking, closest analysis of noun distribution; fourth, eventual attribution of semantic roles to operator arguments.

If verified one by one and/or jointly (both in negative and in positive), these properties allow to define sentence form classes having verbal operators. From this perspective, the definition

of class is in many ways similar to the standard definition of "phoneme" as "bundle of relevant features".

#### 2. The limits of classifications

Two considerable limits come to light if we re-examine the already mentioned classification methods. The first one is the excessive attention paid to verb operators. The second one is the imprecise application of the so-called "maximum expansion principle".

In the first case, we are dealing with an explicit "verbocentrism", i.e. with an underrating of those noun components acting within predication mechanisms. Maybe for this reason, in Italian have been delayed the analyses on support verbs typology and classes, and also on support verbs equivalence classes. This limit has had repercussions also on the evaluation both of the so-called "compound and idiomatic forms" and of many other uses normally classified as "figurative" by Italian paper dictionaries; for instance, *scoppio d'ira* (outburst of rage), *scoppiare di salute* (to be glowing with health), *esplosione di gioia* (explosion of joy). Besides, this verbocentrism has produced an only tentative analysis of modal and aspectual operators, such as *continuare* (to continue), *iniziare* (to start), *finire* (to end).

On the contrary, in the second case, the application of the principle of maximum expansion has produced at times misrepresentations of the connections existing among classes of elementary operators (both transitive and intransitive), and also among these operators and some particular classes of completive and infinitive verbs.

Actually, the analysis procedure based on "equivalence classes" has been incompletely applied in both cases. This means that it has been incompletely applied also for sets of sentences linked by "systematic correlation" - i.e. transformationally connected - that is to say for sets of sentences connected by morphemic and paraphrastic invariance.

## 2.1. The notion of "equivalence class".

The term "equivalence" is used to designate the correlation existing among objects having the same "value". During the XX century, Linguistics has also associated the notion of "equivalence" to the one of "distribution" (equivalent distribution and complementary distribution). In particular, "value" has been the formal basis used to detect the notion of "phoneme", which is on of the greatest methodological and epistemological "discover" of XX century Linguistics.

In fact, the notion of "phoneme" makes disappear the limits imposed by psychologistic and substantialistic considerations, and lets prevail the pure "relational" or system aspect. The "commutation" test essentially detects members of the same class, i.e. having the same value, regardless of any evaluation about major or minor physical identity.

The distributionalism and subsequently transformationalism of Harris' approach to syntax is actually based on the same relational dimensions. Physical diversity or identity inside sequences produced by all possible sentence combinations are in fact not sufficient conditions to detect connections among different sentences and/or among the components of different sentences. For instance, the equivalent distribution of a relative sentence and of an adjective suggests that these items have the same "value", disregard of any evaluation on concrete diversity. A same symmetrical consideration may suit to sequences which behind an outward formal identity show main structural differences. In this sense, as for syntactic analysis, an "equivalence class" will include sets of sentences being one a variant of the other, and having

the same value; and transformations will just be the variation mechanisms leading from one sentence to the other, and vice versa.

# 2.2. The principle of "maximum expansion".

This principle comes from the works made on French by Boons-Guillet-Leclère (1976) and Guillet-Leclère (1992). It has constantly been applied also to Italian Lexicon-Grammar classifications, even if it has never been explicitly formalized. It is based on a correct intuition about predicate semantic field, which includes all the fundamental variables linked to such a function. Hence, while defining a lexical entry, it is necessary to start from these variables. Together with the principle of maximum expansion, the notion of "substructure" has often been used. As a matter of fact, especially with transitive and intransitive sentence forms, it helped solving many classification problems.

# 3. The case of completive sentences and causative constructions

A case in point for our argument is represented by a specific class of completive verbs having the structure Ch F V N (That S V N). This class is described in Elia (1984) and (1984a). It is very complex, quantitatively large, and characterized by two fundamental properties: the non-restricted feature of subject positions, which may accept an Nhum but also a completive; and the presence of several constructions with  $si\ V$  (to V oneself) for which the term "autonomous pronominals" has been used.

Verbal operators of this class such as *angosciare* (to distress), *rattristare* (to sadden), *rallegrare* (to gladden), *intristire* (to blight) form a subset of relevant examples which may support our analysis. These verbs all make part of the so-called "psychological semantic domain", and have a morpho-phonological correlation with non-verbal forms as *angoscia* (anguish), *angosciato* (anguished), *allegria* (cheerfulness), *allegro* (cheerful), *tristezza* (sadness), *triste* (sad), *intristito* (blighted). Also, they are connected to autonomous pronominal forms as *angosciarsi* (to torment oneself), *rattristarsi* (to sadden oneself), *rallegrarsi* (to gladden oneself), *intristirsi* (to blight oneself). This subset of verbs may be defined by the following sentences:

- 1. *Che tu sia partito ha intristito Sofia* (The fact that you left blighted Sofia)
- 2. Sofia si è intristita del fatto che tu sei partito (Sofia blighted herself because of your leaving)
- 3. *Sofia è intristita del fatto che tu sei partito* (Sofia is blighted by the fact that you left)
- 4. Sofia è triste del fatto che tu sei partito (Sofia is sad because of your leaving)
- 5. Sofia ha tristezza per il fatto che tu sei partito (Sofia feels sadness because of your leaving)
- 6. *Che tu sia partito è triste per Sofia* (The fact that you left is sad to Sofia)

Many entries of this class are also characterized by particular suffixes, as the *-izz* suffixation of causative denominals and deadjectivals: *americanizzare* (to Americanize), *barbarizzare* (to barbarize), *colpevolizzare* (to blame), *democratizzare* (to democratize). This let us suppose that many of these heterogenic entries may not have a classic completive in subject position falling inside the class of operators on n and F(S), of the O(no) harrisian kind:

Ch F V a N	N V Ch F a N	N V Prep Ch F
Giocare piace a Sofia (Sofia likes palying)	Sofia racconta che Serena è partita a Ugo (Sofia tells Ugo that Serena left)	Sofia dubita che partirà (Sofia doesn't think she will leave)

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Another particular feature is the non-restricted character of subject position, which has a not-obligatory "active" and "intentional" semantic role. This is true both with a  $Ch\ F$  (That S) and with a phrase not originated by a sentence:

Sofia rallegra il nonno (Sofia cheers her grandfather)

Causative constructions, which according to Harris' typology belong to the class of operators on two sentences (Ooo), are mainly derived by the subsequent addition of an argument "external" to the first level operator. So, the sentence:

Che tu sia venuto ha incoraggiato Maria (The fact that you came encouraged Maria)

must be analyzed on the basis of two different sentences such as:

Maria ha coraggio (Maria has courage). Tu sei venuto (You came)

the combination of which produces the following sentences:

che tu sia venuto ha fatto (sì) che Maria abbia coraggio (the fact that you come encouraged Maria)

che tu sia venuto ha dato coraggio a Maria (the fact that you came gave courage to Maria)

The "external" character of the causative argument is proved by the obligatory co-reference between *coraggio* (courage) and *Maria*, which produces the unacceptability of sentences as:

\*che tu sia venuto ha dato il coraggio (tuo + di Eva + ecc.) a Maria (\*the fact that you came gave (your + Eve's + and so on) courage to Maria)

# 3.1. O(oo) operators

Harris (1976) and (1982) give many examples of "causative" or "non-associative operators", which are severed from other "associative" operators as "and". In the first essay, together with the verb "to cause" we also find uses of "to entail" and "to underscore". The "non-associative" feature comes from the non-permutability of operators argument sentences. This is opposite to what happens with associative operators. This characteristics is typical of subordinates dimension, and contrasts with coordination<sup>1</sup>, as shown in the following tables:

coordination	hypothetical subordination	causative relation
Sofia è allegra e spensierata (Sofia is cheerful and blithe)  ≡ Sofia è spensierata e allegra (Sofia si blithe and cheerful)	se Sofia è allegra il nonno è contento (if Sofia is cheerful, the grandfather is happy) ≠ se il nonno è contento Sofia è allegra (if the grandfather is happy, Sofia is cheerful)	l'allegria di Sofia causa la contentezza del nonno (Sofia's cheerfulness causes grandfather's happyness) ≠ la contentezza del nonno causa l'allegria di Sofia (grandfather's happyness causes Sofia's cheerfulness)

Table 2

implicare (to entail)	sottolineare (ro underscore)
andare a Roma implica prendere il treno (going to	il tono della tua voce sottolinea il tuo malumore (the
Rome entails taking the train) ≠ prendere il treno	tone of your voice underscores your bad mood) $\neq$ ?* $l$

<sup>&</sup>lt;sup>1</sup> By means of the term "coordination" we refer to those combinations of sentences the order of which is not conditioned by any pragmatic or logic link. Logic and/or pragmatic links operates in sentences as *bussano alla porta e Max apre* (someone knocks on the door and Max opens)  $\neq$  *Max apre e bussano alla porta* (Max opens and someone knocks on the door); *Max mangia e ingrassa* (Max eats and fattens)  $\neq$  *Max ingrassa e mangia* (Max fattens and eats).

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implica andare a Roma (taking the train entail going to Rome)

tuo malumore sottolinea il tono della tua voce (?\*your bad mood underscores the tone of your voice)

#### Table 3

Harris also suggests that some cases of Ono may be originated by deletion, starting from an O(00):

John causò il ritorno di Frank (John caused Frank's return). John causò che Frank tornasse (John caused Frank's return)

For instance, the second Italian sentence has only apparently a completive structure, which is falsely analogue to:

John suggeri che Frank tornasse (John suggested that Frank came back)

In Harris (1982), the same operators are defined "second order operators" of "binary kind". This definition is also applied to prepositions such as "by".

# 3.2. The operator *angoscia* (anguish)

A good example for our thesis is the lexical micro-class formed by *angoscia* (anguish) *angosciare* (to distress) *angosciarsi* (to torment oneself) *angosciato* (anguished) *angoscioso* (distressing) *angosciante* (distressing) *angosciosamente* (distressingly). For it, an careless use of maximum expansion principle could not account for the transformational relations which evidently connect all the different forms, and would prevent us from locating the maximum expansion of the "first rate" operator. In particular, we could not connect the sentences to nominal and adjectival operators, and also these last to those having an intrinsic pronominal verbal operator, and to all completive constructions. On the contrary, if we even only apparently investigate in the direction opposite to the one of maximum expansion, we notice that the starting sentence from which it is possible to reconstruct the equivalence class has, as it were, a "minimum expansion". In this sense, for sentence equivalence classes, we have the following pattern:

elementary operator O(n) [angoscia (to distress) angosciato (anguished) angosciarsi (to torment oneself)]	
nominal/adjectival sentence	verbal sentence with an intransitive verb
Num <sub>x</sub> ha (l')angoscia (Nhum has anguish); Num <sub>x</sub> è in angoscia (Nhum is in anguish); Num <sub>x</sub> è angosciato (Nhum is anguished)	Num <sub>x</sub> si angoscia (Nhum torments himself)

#### Table 4

# addition of one more argument formed by the distributional equivalents (Nhum $\pm$ S)

 $(Num_y + F_y)$  fa che  $Num_x$  abbia (l')angoscia ((Nhum\_y + S\_y) causes that Nhum\_x has anguish);  $(Num_y + F_y)$  fa che  $Num_x$  sia in angoscia ((Nhum\_y + S\_y) causes that Nhum\_x is in anguish);  $(Num_y + F_y)$  fa che  $Num_x$  sia angosciato ((Nhum\_y + S\_y) causes that Nhum\_x is anguished);  $(Num_y + F_y)$  fa che  $Num_x$  si angosci ((Nhum\_y + S\_y) causes that Nhum\_x torments himself);  $(Num_y + F_y)$  fa avere angoscia a  $Num_x$  ((Nhum\_y + S\_y) makes Nhum\_x feel anguish);  $(Num_y + F_y)$  fa (?essere + stare)  $Num_x$  in angoscia ((Nhum\_y + S\_y) causes Nhum\_x to be in anguish);  $(Num_y + F_y)$  fa (essere + stare)  $Num_x$  angosciato ((Nhum\_y + S\_y) causes Nhum\_x to be anguished);  $(Num_y + F_y)$  fa angosciare  $Num_x$  ((Nhum\_y + S\_y) makes Nhum\_x distress)

#### Table 5

#### insertion of the causative operator O(00) of the causa/causare (cause/to cause) type

 $(Num_y + F_y)$  è la causa del fatto che  $Num_x$  abbia (l')angoscia ((Nhum<sub>y</sub> + S<sub>y</sub>) is the cause to the fact that Nhum<sub>x</sub> has anguish);  $(Num_y + F_y)$  è la causa del fatto che  $Num_x$  sia in angoscia ((Nhum<sub>y</sub> + S<sub>y</sub>) is the cause to the fact that Nhum<sub>x</sub> is anguish);  $(Num_y + F_y)$  è la causa del fatto che  $Num_x$  sia angosciato ((Nhum<sub>y</sub> + S<sub>y</sub>) is the cause to the fact that Nhum<sub>x</sub> is anguished);  $(Num_y + F_y)$  è la causa del fatto che  $Num_x$  si angosci ((Nhum<sub>y</sub> + S<sub>y</sub>) is the cause to the fact that Nhum<sub>x</sub>

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torments himself); ( $Num_y + F_y$ ) causa il fatto che  $Num_x$  abbia (l')angoscia (( $Nhum_y + S_y$ ) causes the fact that  $Nhum_x$  has anguish); ( $Num_y + F_y$ ) causa il fatto che  $Num_x$  sia in angoscia (( $Nhum_y + S_y$ ) causes the fact that  $Nhum_x$  is in anguish); ( $Num_y + F_y$ ) causa il fatto che  $Num_x$  sia angosciato (( $Nhum_y + S_y$ ) causes the fact that  $Nhum_x$  is anguished); ( $Num_y + F_y$ ) causa il fatto che  $Num_x$  si angosci (( $Nhum_y + S_y$ ) causes the fact that  $Nhum_x$  torments himself)

#### Table 6

completive construction
$(Num_y + F_y)$ angoscia $Num_x$ ((Nhum <sub>y</sub> + S <sub>y</sub> ) distresses Nhum <sub>x</sub> )

#### Table 7

which may be associated to the two adjectival constructions:

 $(Num_v + F_v)$  è angoscioso per  $Num_x$  ((Nhum<sub>v</sub> + S<sub>v</sub>) is distressing to Nhum<sub>x</sub>);

 $(Num_v + F_v)$  è angosciante per  $Num_x$  ((Nhum<sub>v</sub> + S<sub>v</sub>) is distressing to Nhum<sub>x</sub>)

The argument having a "causative" interpretation may also assume the form of a prepositional complement placed to the right of the sequence:

## constructions having a second complement

 $Num_x ha$  (l')angoscia (a causa di + per + ecc.) ( $Num_y + F_y$ ) (Nhum<sub>x</sub> feels anguish because of (Nhum<sub>y</sub> + F<sub>y</sub>));  $Num_x \dot{e}$  in angoscia (a causa di + per + ecc.) ( $Num_y + F_y$ ) (Nhum<sub>x</sub> is in anguish because of (Nhum<sub>y</sub> + F<sub>y</sub>));  $Num_x \dot{e}$  angosciato (a causa di + per + ecc.) ( $Num_y + F_y$ ) (Nhum<sub>x</sub> is anguished because of (Nhum<sub>y</sub> + F<sub>y</sub>));  $Num_x si$  angoscia (a causa di + per + ecc.) ( $Num_y + F_y$ ) (Nhum<sub>x</sub> torments himself because of (Nhum<sub>y</sub> + F<sub>y</sub>))

#### Table 8

This analysis shows that sentences with *angosciare* (to distress) have not a completive character. Also, it tends to clarify the connection among verbal, nominal and adjectival operators. Besides, are recalled the equivalences established by the supports *essere* (to be), *essere in* (to be in) and *avere* (to have):

avere (patire + soffrire + tenere + sentire + provare + ecc.) angoscia (to feel (to suffer from) anguish); essere in (patire di + soffrire di + stare in + ecc.) angoscia (to be in anguish); essere ((stare + comportarsi in modo + avere un comportamento + mostrarsi + and so on) (angosciato + angoscioso + angosciante)) (to be (anguished + distressing))

Also, it is possible to record analogue equivalence classes of support verbs based on the causative operator *causa* (cause):

essere (rappresentare + costituire + ecc.) causa (to be cause of)

as well as the same distributional equivalents of this nominal operator:

((essere + rappresentare + costituire + ecc.) causa (motivo + ragione + occasione + stimolo + and so on)) (to be (cause of + the reason to + the occasion to + the impulse to)

Finally, we may observe that there are several equivalents for the verbal operator *causare* (to cause): *dare* (to give), *suscitare* (to give rise to), *creare* (to create), *provocare* (to provoke), *alimentare* (to bloster), *stimolare* (to stimulate), *sviluppare* (to develop), *sollecitare* (to urge to). Particularly, if we take into consideration the connection existing between *dare/ricevere* (to give/to receive), we may once again record the typical relation of the "convertible" constructions, as shown in the following table:

unary operators dare/ricevere (to give/to receive) Onnn ("dative constructions")	binary operators dare/ricevere (to give/to receive) Ooo ("causative constructions")
$N_x$ dà un libro a $N_y$ =: Sofia dà un libro a Eva ( $N_x$ gives a	$N_x$ dà angoscia a $N_y$ =: Max dà angoscia a Eva ( $N_x$ gives

book to N <sub>y</sub> =: Sofia gives a book to Eva);	anguish to N <sub>y</sub> =: Max gives anguish to Eva);
	$N_y$ riceve angoscia da $N_x$ =: Eva riceve angoscia da Max ( $N_y$ receives anguish from $N_x$ =: Eva receives anguish from Max)

Table 9

There is also an equivalence between *ricevere/avere* (to receive/to have):

 $N_y$  ha angoscia da  $N_x \equiv Eva$  ha angoscia da Max ( $N_y$  has anguish from  $N_x \equiv Eva$  has anguish from Max)

# 3.2.1. The causative subject

The subjects of the causative constructions may always be interpreted both as "intentional" and as "non-intentional", being a sub-interpretation of the pair "active/non-active". For languages such ash Italian, considering the metonymic connection between the garment and the young salesgirl wearing it, the *jolie-minijupe* which in an old example embellished Maurice Gross' shop window is a proof of the fact that causative subjects always incorporate this possible double interpretation. In the example, was Maurice copying with intentional coquetry or accidental allusion? As for the specific case of the micro-class we are here analyzing, the non-intentional and non-active character of the argument added by the insertion of the second order operator *causare* (to cause) is by definition connected to the very nature of anguish, which is the sentiment of nothingness<sup>2</sup>.

# 3.3. *Liberarsi dall'angoscia* (to get rid of anguish)

If we collect the argumentations discussed so far, we can analyze also sentences which normally are tagged as "figurative" by paper dictionaries. This is the case of *liberarsi* (to get rid of) in sentences as:

*Max si è liberato dall'angoscia* (Max got rid of anguish)

Actually, the gloss of this verb in a dictionary such the De Mauro (2000), which may be consulted at <a href="http://www.demauroparavia.it/63437">http://www.demauroparavia.it/63437</a>, also includes supposed figurative examples such as liberarsi delle proprie paure (to get rid of one's fears), liberarsi di un complesso (to get rid of a complex), and liberarsi da una colpa (to get rid of a fault). Even if it has been extensively employed by Lexicography, and partly also by Linguistic Analysis, "figurative use" is certainly one of those metalinguistic categories which Maurice Gross in his last and unfortunately conclusive work defined as "deprived of formal reproducibility". Hence, being a surrogate of the analysis, very often it has been a tool used to hide the limits of a given investigation. But if we reject the hypothesis that given subsets of sentences are by themselves non analyzable and interpretable only on the basis of a generic reference to an eventual rhetorical figure (be it assumed or presumed), we can explicit the constituency connections existing inside the subsets. As for the specific case, if we use the procedure based on equivalence classes, the possible interpretative pattern is the following one:

<sup>&</sup>lt;sup>2</sup> With reference to this, with Galimberti (2005) it will be sufficient for us to call to mind Sigmund Freud's definition, for whom anguish "possiede un carattere di indeterminatezza e di mancanza di oggetto" (has an indeterminate and lacking of object character) (Hemmung, Symptom und Angst, 1926, Italian translation Inibizione, sintomo e angoscia).

Max ha ((l'angoscia + un peso + un (sentimento di) colpa)) ((Max has anguish) + (Max feels (a burden + guilty + a guilty feeling))	
application of Oasp =: non più (no more)	application of the equivalence class <i>non avere più</i> (to have no more)
Max ha ((l'angoscia + un peso + un (sentimento di) colpa)) e ciò non è più ((Max has anguish) + (Max feels (a burden + guilty + a guilty feeling) and this is no more);	Max ha perduto ((l'angoscia + un peso + un (sentimento di) colpa)) ((Max has lost his (anguish + burden + guilt + guilty feeling)); Max è uscito da ((l'angoscia + un peso + un (sentimento di) colpa)) ((Max has come out from (anguish + a heavy situation + guilt + a guilty feeling));
Max non ha più ((l'angoscia + un peso + un (sentimento di) colpa)) ((Max has no more anguish) + (Max feels no more (a burden + guilty + a guilty feeling))	(((Max si è liberato (di + da) ((l'angoscia + un peso + un (sentimento di) colpa))) (Max got rid of (anguish + a burden + guilt + a guilty feeling)

for which we may observe that *perdere* (to lose), *uscire da* (to come out from), *liberarsi di/da* (to get rid of) only are support verbs aspectually characterized as negative extensions of *avere* (to have).

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