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Computational Analysis on a Corpus of Political Satire Articles:

A Theoretical and Experimental Study

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Summary

Introduction

Despite countless efforts in research and a well-structured academic ground, we are still far away from an overall understanding – both on a biological and theoretical level – of the faculty of the human language in something comparable to what the concept of *Unified Field Theory* truly represents in physics, with the fields being the different language dimensions in the matter of linguistic studies. To avoid considering the actual state of this issue it would mean refusing to see the elephant in the room, the fatal consequence being that you turn the most brilliant scientific contributions into meaningless work. While addressing the final assignment of my university career as a student, I always kept in mind what has been aforementioned, so that I gave primary importance to the attempt of synthesizing within an homogeneous framework the different views on the selected subject of my work, comparing insights from Theoretical linguistics (pragmatic, semiotic and cognitive linguistics), Sociolinguistics and Computational linguistics. The aim of this master thesis is to gain a deeper understanding of the functioning of satire in written texts – in this specific case, political satire articles – of longer length than simple sentences, in order to apply this knowledge to future computational tasks. In the first chapter I will attempt to define satire, particularly bringing into focus the specific features of this genre, analysing the relation with the already proposed humour theories and their linguistic entailments, so that a line can be drawn under the grey area of definitions of humour genres at least for what does concern the use of satire. I will try to overcome the conceptual discrepancies and lack of descriptions regarding what satire is and the way in which satiric meanings are conveyed and processed by virtue of linguistic productions by using feature analysis on exemplifying texts, references to notions contained in (Grice, 1989) and to suggestions from later philosophical work of (Wittgenstein, 1953) . The second chapter of the thesis will look towards the pros and cons of the computational approaches used until now for the resolution of different tasks related to the automatic processing of humorous texts such as: word sense disambiguation, , sentiment analysis, textual data mining, text clustering and etcetera. The purpose is to outline the best computational practises and try to understand if it is possible to utilise them, using the proper rearrangements, for more complex natural language processing (hereafter referred to as NLP) tasks on long satiric text, in a way that can yield meaningful results. By saying "more complex NLP tasks" I am either referring to tasks involving more than one amongst those previously mentioned (when they are not alternatives to each other for the type of exploited strategy) or quite the same tasks of the one cited above, but applied on datasets composed of longer texts. The third chapter will be dedicated to the detailed description of the applicative part of the thesis and its outcomes: beginning with a corpus built for the purpose and composed of 112 political satire articles – for a total of 28,991 tokens – written by the Italian journalists Maria Novella Oppo and Michele Serra, a human tagging activity has been carried out using a reduced (and modified with new criteria where needed) version of the Appraisal Framework (Martin & White, 2005). The goal of this part of the applicative study was to properly identify and tag only the part of a written text (i.e. different representation of the same lexeme as well as entire clauses) having evaluative worth, following the hypothesis that the satirical connotation of linguistic written productions lies within those parts of the text where the author delivers his/her opinions. The second step of the applicative study consisted in a typological classification of the voices contained within the lexicons (one for each author), which had been generated automatically collecting all the tagged items. The classification has been carried out using three linguistic traits – namely *idiomatic*, *metaphorical* and *none* – in order to assign a feature to each of the entries, related to the author's type of use for a specific item or sequence. The third and final step of the applicative study consisted in the automatic tagging of twenty new texts (ten for each) by the same authors. This step was performed using a parser of which Professor Rodolfo Delmonte wrote the code, and using the already collected data. At the end of the last chapter, the reader can find the presentation of the collected data – presented in concise graphs – as well as pondered interpretations and comments on eventual improvements for future research. Concluding the introduction, it seems appropriate to give a precise elucidation regarding the methodology I have used while assessing some of the theoretical issues related to humour, specifically regarding satire and the subgenre of political satire. The subject, in its high complexity, combined with the different perspectives outlined by the theories (of which those with a purely linguistic approach represent only a small portion), has quickly proven to be a fragmented panorama, especially if we add to those theories the sum of all the single conceptual definitions used so far in related literature. To better shape future computational research, and try to capture the essential core of the mechanism underlying a mental process – namely the understanding and conveying of satiric meanings – is an activity that surely could be pursued by virtue of scientific approach. However, it is important to not forget that, with what concerns cognition, multiple layers of analysis are involved and not all of them could undergo the same scientific rigor. Epistemologically speaking, trying to describe political satire articles solely from a formal point of view is tantamount to judging a specific measure of the artistic peculiarity of a Flemish painting simply by looking at the shapes and colours on the canvas. There will always be something beyond our grasp and either we take this into account while analysing and developing further hypotheses or we are doomed to surrender to the intrinsic elusive dimension of cognitive phenomena. In order to deal with this problematic condition I found great benefit in using the *introspective method* as shaped in (Tesnière, 1959, p. 37 - 39). In his argument about the lack of *marquant*[1] in syntactic representations, the French linguist drew to the conclusion that reaching a deeper understanding of syntax is impossible, since the formal analysis can capture only the surface elements of the communication, syntactic units that are unable to express the full meaning of a sentence. While we can consider this argument outdated – given that generative [see (May, 1985, 1993); (Cinque & Rizzi, 2010),] and dependency [see (Debusmann, 2005); (Mel'čuk, 1981, 1988); (Hudson, 2010)] grammar theories have overstepped this issue with different strategies of representation, having the ability to capture some fundamental entailment relationships and/or semantic functions – the core of what Tesnière argued is still valid if applied to formal explanations in Text Linguistics. Because of the involved semantic and pragmatic preconditions/entailments, which remain largely evasive to any attempt of formalization, relying introspectively on my personal linguistic competence proved a useful tool of analysis when alternative explanations or conceptual discrepancies were debatable. Nonetheless, using the introspective method is a double-edged sword; the risk lies in the possibility of becoming blind to the analytic evidence that exists beyond the sight of the human analyser, who by definition is an individual with limited knowledge. To avoid any kind of troublesome situation while adopting the introspective method, I always compared the discussed topics with the related literature, so as to balance different formulations of the same principles

[1] Namely a connection occurring between surface linguistic units and bearing enough semantic information so that it is possible to understand the meaning from the syntactic representation of a statement alone. The solution proposed by Tèsniere is to use a *marquant zéro* for those cases where there is no explicit sign of this connection.

(where founded) and in order to avoid any personal misconception or misinterpretation of the discrepancies. Furthermore, I tried to use this kind of method sparingly and used a cautious approach so to avoid Russel’s inductivist chicken paradox, following the belief that there is a subtle difference in using a method (whether introspective or not) as a tool of investigation and using it as a dogmatic procedure.

Chapter 1 – Framing Satire

Before entering the discussion of how modern theories of humour described the satiric genre, it would be useful to present briefly the cultural roots of satire, for it is only by looking at the historic perspective – which is to say to the different uses and subjects of this kind of literature – that we are capable of identifying the most explicit features related to the genre. To avoid discussing the Satyr plays, in which despite the name there was no satiric message conveyed but only a mix of tragic and comic elements, the first recognized appearance of satire in literature can be found inside the plays of Aristophanes (c. 446 – c. 386 BC), where the plots were often related to politics, with the desecration of both moral and social institutions playing a central role in his poetry. The importance of this preliminary stage lies on the parallel presence in the narrative space of comic and absurd characteristics tied to the satirical communicative intent. Aside from this important Greek author, it is only with Latin literature – on a time frame whichspans from Ennius (c. 239 – c. 169 BC) to Juvenal (c.55 – c. 138 AD) - that we find a first real codification of the genre. The pure comic element is lessened to make room for a wide variation in styles and themes, but always with a precise moral intent and most of the times through poetic compositions. This feature is depicted perfectly by the etymology of the term *satire*, which draws its origin from the Latin "satura lanx": a votive offering consisting of various fruits, such as were offered at harvest festivals and to Ceres. The genre, after the fall of the Western Roman Empire and through to the end of the 19th century, rather than be systematically developed around canonical shifts of style/themes – underwent a sort of assimilation process, where singular features who characterized the previous stage became part of the rhetorical devices used for text of other genres or even other forms of literature. Knowing this, the incisiveness of Goliardic poetry becomes clearer, as well as the way Dante Alighieri in his Divine Comedy, without being strictly satiric, often does succeed in his critic moral intent by virtue of using linguistic register variation[2]; The same can be said of the clear thematic criticism against bad habits and ignorance that takes place in Boccaccio's novellas; or again, the subtle but essential presence of several satiric remarks in many plays by Shakespeare, Goldoni and Molière; It is worthy to also note the caustic perspectives offered by philosophers and writers such as Erasmus, Voltaire, Swift, Schopenhauer and Nietzsche. The list of authors could go on *ad infinitum*, but for the sake of brevity it should be noted that, apart for the Satire written by (Ariosto 1517-25) and (Alfieri 1786-97) – which probably are the only compositions (that can be considered to be operating inside the boundaries of satiric poetry in terms of renovation and classic resemblance to the Latin genre – for the opuses situated between the end of the classic era and the beginning of contemporary culture, when harsh judgement towards people or situations is involved, we should think of satire as a least common denominator rather than a specific literary genre[3]. In the 20th century, even if does not seem possible to find a precise collocation for satire between the written literatures, satirical meanings have been conveyed with increasing success by means of new media platforms. Amongst the consequences tied to the transformation in experiencing the fruition of culture, triggered by the status shift of means of information from aristocratic/bourgeois media into mass media, a major change was represented by the use of daily newspaper or periodic magazines as a preferred source of gaining knowledge. Although the arrival of television and radio permanently altered the

[2] For a more detailed disquisition on the subject, see: Cian. V. *Una satira dantesca prima di Dante*, Roma: Direzione della Nuova Antologia, selected from: Nuova Antologia, 1º marzo 1900.
[3] Included in this link is a deeper excursus on the Satiric genre up until the 20th century: http://www.parodos.it/letteratura/satira.htm

way we experience and transmit our knowledge of the world, the social way in which communication happened, that eventually ended up with relying more on visual/hearing modalities and less so on textual ones, took many decades to achieve a radical breakthrough. Then would not be hazardous to say that, during the time when newspaper and journal had been the most widespread mass media, the satiric genre benefited from this environment and – despite the fact that linguistic rhetoric devices related to satire were totally merged in different written production, so that we cannot consider them as purely satiric – the satiric genre revived as *journalistic satire*. Even if there is not strict philological correlation between journalistic satire and the origins of this genre, the ability for this subcategorization to assume a prominent role over the years (for both quality and quantity of the texts) among other written humorous productions holding preachy intent – which can be identified only partially as satiric – gives occasion to postulate the subset as an independent genre. This statement seems well founded if we consider the peculiarity related to journalistic satire: standardization of formal patterns and repetition of topics can be found as constants, as far as stylistic variation in register and selected themes from author to author. The assumption that the journalistic satire is considerable as a rebound of the Latin genre, comes from this recognized homogeneous feature which, in order to not mislead the aforementioned assertion, is not equal to say that they are perfectly overlapping – and they are not indeed for length, audience, expressed social values and etc. – and yet let us to hypothesize that there is a phylogenetic correlation between them (although very much loosened over the centuries) that is much more representative of the occurring relationship between Latin satire with other text typologies, less prototypical because of their lack of homogeneity, that of course does not reduce their cultural value but simply put them in a lesser condition of being systematically analysed. It following this postulate that chosen texts to perform these experiments on were satire articles, since they were the only suitable candidates for building a corpus, conveying satirical messages through texts of medium length by means of repeated rhetorical devices, but still allowing enough variations in order to capture as many meaningful connections as possible between the text itself and its pragmatics and semantics features. The relationship between the constants of the journalistic satire and the variables tied to the personal style of the writer surely plays a key role in perspective and this subject is discussed in greater length in the third chapter. Finally, from the closing 4 decades of the 20^{th} up until the 21^{th} century, with the digital revolution advent – changing again the modality in which we communicate and retrieve information – the creation and spreading of satirical messages has been transformed again. Among the radical trends that took place, initially via the computer and later on mobile devices, the intensive use of social networks nowadays seems to be the main one, and the related potentiality of networks such as Facebook, Twitter, Instagram et similia – improving the velocity of circulation for information and setting communication from singular/bimodal (books, radio, newspaper, tv, cinema) into multimodal – necessarily reduced the use of mainly written media for many purposes, and satire is no exception. Even if it continues to exist as an independent literary genre, the journalistic satire in newspaper often is substituted by daily strips and moreover, the satire placed on journals – either as written articles or daily strips – nowadays is less preferred if compared to new form of expressing satiric messages. The most diffuse creative way in which criticism against society/institutions/individual is conveyed in the digital era is microblogging on social networks. Since this is an overexposed process, the quantity of satirical production has increased while the quality of these productions has steadily declined. To cope with this imbalance, so that quality of criticism could still be conveyed, the origin of the modern

Jester proved to be a brilliant solution such as in Dario Fo theorization of theatre, where the joker essentially is an actor in strong opposition with the political establishment and the self-righteous moral during his performances on stage. Although this conceptualization of a performer with clear satiric features was born in the early sixties, and through the years it has been embodied by stand-up comedian, it is only in conjunction with the digitalization of the society that this role has taken a central cultural role. Again, in the actual scenario the features of written satire seem to be ripped apart, but the circumstance of a renewed dramatic dimension – such as the one featured in the pre-Latin stage with Aristohpane's plays – leads us to positive expectations about a rebound for the satiric genre as a written literary genre. The fact that many monologues performed by satiric comedians are actually composed by – or with the help of – exquisite writers, cannot be underestimated and it is only a matter of time before that stand-up comedy will lose this qualitative prominence, as the majority of comedians more often prefer to be less socially involved in their performances and the audience seems to be satisfied with that. Then, with social networks not being capable to represent properly satiric messages on a complex and valuable artistic level, and with newspapers going through their final era as a means of sharing information, we could live to see a revival of Latin-styled satire. Please notice that for the sole purpose of providing a better exposition on the subject, I will use examples from articles written for printed newspaper and from online satiric websites, since typically many of the latter are penned by journalists or writers.

1.1 Written Satire and its relation within modern theories of humour

Humour is one of the most characterizing human qualities. The capability to trace or build fun aspects of the world is a feature studied since the beginning of western philosophy and, although we previously claimed that satire is not always bound with facetious messages, to underestimate the dry humour within this kind of literature would mean to lose for the most part one of the fundamental peculiarities of the genre. It was the French poet Jean de Santeuil who said "*castigat ridendo mores*" and and he hit the point spot on. For this reason a disquisition on both social and individual – which is to say cognitive – aspects of satire cannot take place without looking at the formal theorizations on how humour is processed. Furthermore, a reason valuable enough to slightly change the nucleus of the theoretic analysis from satire to humour in general is represented by the necessity to define more precisely the differences that occour between satire and other ways to use language as a humoristic tool. Where theories of humour formalized assumptions by virtue of fundamental postulates, these concepts will be discussed to find out if they are still valid when applied on satiric texts, and in which cases they need to be simply revised or totally rejected. For other theories, where a synthetic argument cannot be expressed because of the lack of assertions, there will simply be the consideration of what is stated in order to see if the depicted aspects about humour are descriptive enough even for the satiric genre.

1.2 Three main presumptions: superiority, relief, incongruity

The field of research on humour is divided traditionally into three main domains, into which several studies refer in order to ground their assumptions or simply to disprove the theoretical consequences of the domains themselves, trying to develop new hypotheses. It will be useful for the following dissertation to introduce quickly these presumptive categories, namely the superiority presumption, relief presumption and incongruity presumption:

- **Superiority presumption**: this concept is probably the oldest supposition about humour due to the fact that mention of this is found within the "socratic irony" [4] notion. The core of this presumption is that humour is always bound to a critic attitude towards people or situations in order to make fun of the targets. For this reason people feel superior and react by enjoying this degradation, laughing at the misfortune or at the degradation itself. As stated by (Gruner, 1997), who reformulated this presumption in his theory, in humorous events it is always possible to find: a) a winner and a loser; b) incongruity of the situation; c) a surprise element.
- **Relief presumption**: the theorization of humour as a mechanism of relief derives from a psychoanalytical point of view, where the act of processing fun aspects of reality is seen as healthy for both the brain and body. The departure point for this kind of conceptualization of humour is contained in (Freud, 1905). According to the Austrian neurologist, by laughing we can release tension and physic energy that we continuously gather during our everyday life and for who we do not have any use. This physic energy is built anytime we need to suppress negative feelings in our psyche and every time we release this energy, by virtue of jokes related to taboos and cultural values induced by society (namely when we go ahead of the mental censorship mechanism) we experience laughter and a psychological benefit is reached.

[4] According to http://www.collinsdictionary.com, "a means by which the pretended ignorance of a skilful questioner leads the person answering to expose his own ignorance"

- **Incongruity presumption**: Theories connected to the incongruity presumption are mostly cognitive-based and related to concepts highlighted in (Koestler, 1964). The focus of theorization under this presumption is that in humorous texts, or broadly speaking in any humorous situation, there is an opposition between two alternative dimensions. The nature of this incongruence has been largely discussed and the two dimensions hypothetically involved have always been named differently by scholars. For this reason in the related literature these opposite plans are classified as “scripts”, “frames”, “isotopies”, “schemas”. Despite the different labelling for the dimensions, the researchers following the incongruity presumption agree on the fact that – in order for a text to be processed as humorous – in addition to the opposition feature, the dimensions have to share a common part, so that it is possible a shift from one dimension to another. Since this shift represents a sort of resolution mechanism, which triggers the humorous reaction, it would be better to refer at this postulate as **incongruity-resolution presumption**.

As stated by (Krikmann, 2006), *“most of the humour theories ever proposed are actually mixed theories, and many contemporary researchers believe that humour in its totality is too huge and multiform a phenomenon to be incorporated into a single integrated theory”*, and for this reason the theories that will be discussed have one or more aspects related to the three aforementioned presumptions. At this point of the disquisition it would be useful to compare the fundamental presumptions about humour with satire, in order to see what is the most suitable postulate to describe the generic features of the partially humorous satiric genre. Since the intent of satire is mostly concerned with criticizing moral habits and/or politicians, it would seem natural to deem the superiority presumption as essential for the genre; without any doubt the degradation of the target is a basic mechanism in order to build the ironic effect. Even though the overall adherence with the superiority presumption, the reformulation by (Gruner, 1997) does not seem to completely fit the peculiarity of satiric text conveying humorous meanings. It would be clearer to stress this inadequacy looking at real examples of satiric texts; the following is an excerpt from one of the *Amaca*[5] written by Michele Serra:

«*Insomma: possiamo dire che a Firenze e a Roma il servizio dei taxi meriterebbe qualche ritocco? Possiamo dirlo. Ma con circospezione, con cautela, possibilmente con qualche perifrasi. Perché la categoria è piuttosto suscettibile. Diciamo così: ci vorrebbe un taxi in più. Due al massimo. Ma non tutti e due insieme: uno quest'anno, uno il prossimo.*»

The criticism aimed toward the lobby of taxi drivers is palpable and the subtle humour of this snippet of text is quite clear: the degradation of the target is expressed asserting a deficiency of the service first, and then pretending to solve the problem with a submissive complaining attitude because of the aggressiveness of taxi drivers. If the superiority presumption is totally confirmed looking at this example, the surprise element considered as fundamental by (Gruner, 1997), if taken as a rigorous criterion on the structural level, does not seems to be valid for the development of satiric discourse when humour is involved. Here again an example[6] from the *Amaca* series by Serra:

«*Ci mancava il Ponte sullo Stretto, evocato da Matteo Renzi nel libro "Donne d'Italia" (?), la strenna 2015 di Bruno Vespa. Lo faremo — dice il premier — però soltanto dopo che abbiamo sistemato un sacco di cose che si devono sistemare; tipo il dissesto idrogeologico e la viabilità ordinaria in Sicilia; dunque mai, pensa il lettore con un sospiro di sollievo.*»

[5] Are named *Amaca* the series of daily articles composed by Michele Serra and published on the newspaper *Repubblica*. Usually the targets are politicians, bad social habits and in general every trending current event. This excerpt comes from the article from Semptember 24, 2015, available at this link: http://ricerca.repubblica.it/repubblica/archivio/repubblica/2015/09/24/lamaca34.html

[6] This excerpt comes from the article of November 07 2015, available at this link: http://ricerca.repubblica.it/repubblica/archivio/repubblica/2015/11/07/-lamaca32.html

The final punch line does not involve a surprise element at all since the author is implying that, either the readers already know about the urgency of other problems in Sicily if compared to the Strait of Messina Bridge, or if they are not informed enough, is the author himself that explicitly gives the required information. In this case, the humorous satire lies in the supposed hypocrisy of a statement made by the Italian prime minister summarizing and slightly changing the original declarations made by Matteo Renzi; whether or not we find this passage amusing is mainly a matter of what moral position we assume. Although the superiority presumption does not involve a structural element carrying the surprise effect for the set-up of satiric discourse, stretching the conception of the postulate could represent a legitimate way to include the structural devices – such as figures of speech - used to convey satire towards targets. Here is a brief example of a spoof article named *"Nigel Farage: I am popular and handsome"*[7] from *The Daily Mash*, a British satirical website, created and supervised by both actual and former journalists:

«THE UKIP leader has confirmed he remains popular with white working-class voters and attractive to women. After UKIP's latest abject failure in the Oldham West by-election, Nigel Farage insisted much of the electorate was so in awe of him they fainted before they could cast their votes. He said: "Women have difficulty voting for UKIP because it is such a nakedly sexual act and would break their marriage vows, which I would not encourage. "And men, for whom I am a golden god, are afraid of seeming like craven acolytes lest their pathetic offering of a vote displeases me."»

Thanks to metaphors, similes and others figure of speech, the author assigns an original denotation to the UKIP leader and to his electoral collapse. Since this element of originality is something predominantly bound to the writing style of the author, possible readers can find this sort of denotation as very amusing, which is to hypothetically say the more *surprising* in style, the more hilarious a satirical article will be perceived by the audience.

[7]Article published on December 4, 2015 and available at this link: http://www.thedailymash.co.uk/politics/politics-headlines/nigel-farage-i-am-popular-and-handsome-20151204104457

To contemplate the element of surprise adding a dimension of originality in style for what concerns long texts, it would prove useful enough not only in order to explain the use of specific rhetorical figures, but also to assess the introduction of unusual and non-familiar elements inside a text. The following is an excerpt[8], again, from the Amaca series of article by Serra:

«*Nel frattempo, gli sviluppi potrebbero essere un hashtag di rappresaglia di Grillo, #salvinicomerenzi. Seguita da una sagace intromissione di Renzi, #salvinicomegrillo oppure, a scelta, #grillocomesalvini. Da non escludere un quarto incomodo che per accreditare la sua leadership concepisca l'hashtag #renzicomegrillocomesalvini, nelle varie sistemazioni (rgs, rsg, grs, gsr, srg, sgr), in modo da liquidare il quadro politico quasi per intero. A causa della estrema frantumazione del paesaggio partitico italiano, e della conseguente proliferazione dei leader, anche volendo tenere conto solamente dei segretari di partito non è possibile, invece, riuscire a contenere nei 140 fatidici caratteri l'hashtag #salvinicomegrillocomerenzicomevendolacomealfanocomemeloni eccetera.*»

Here the unfamiliar element is represented by the use of the hash character as a real hashtag, which is a type of metadata tag utilised on social networks in order to collect and to find specific thematic contents. Paying attentiont at the lenght of the invented lexical item "*#salvinicomegrillocomerenzicomevendolacomealfanocomemeloni*", we are able to understand how style incisiveness could play a fundamental role in witty satire, heavily influencing the structure of a text and appearing as an element of surprise to the reader, who being positively baffled is led to enjoy the reading. The discussion on the incongruence (and its resolution) condition as essential for Gruner's theory of humour will take place a little further on, since Gruner's incongruence condition is essentially an attempt to merge the incongruity presumption into his theory. As far as the relief presumption is concerned, the undeniable importance of satire as a way to represent the paradoxes and tragedies of society and the hypocrisy of politics, surely play a helpful role. By means of the satiric

[8] Article published on September 9, 2015 and available at this link: http://ricerca.repubblica.it/repubblica/archivio/repubblica/2015/09/20/lamaca28.html

discourse, the audience can benefit from new insights on those aspects or events of the world that, without the facetious presentation, would have been usually disregarded, due to their serious, or even thorny, subjects. Here is an exemplifying excerpt from a spoof article[9] from a website called *The Onion*, one of the most followed American online satiric journals:

«Shaking his head at all the new recruitment and indoctrination methods used by his younger counterparts nowadays, al-Qaeda member Khalid Al-Muthanna, 42, wistfully recalled to reporters Monday a time when radicalization was performed face-to-face rather than over the internet. "Back when I first got into jihad, we used to take the time to bring recruits to a real training camp and work with them one-on-one to instill a virulent fanaticism and bloodlust toward the West—now, it's all done on message boards and chat rooms. Where's the satisfaction in that?"»

While pretending to report the false complaint of an al-Qaeda member for the new recruitment methods of the Daesh group, the author (unknown) succeeds at his intent that is to let the readers know the importance of social networks in connecting the religious fanatics. It should be noted that, despite cases of fake articles taken for true news reports by press, frequent readers of *The Onion* are completely aware of the ironic intent of the articles, and even casual readers have all the necessary clues, both textual and extra-textual, in order to understand the satiric editorial line of the web journal. Since the relief presumption is something that could not be analysed in a meaningful way in terms of refutability of the assertion, and having said that the importance of the alleviation power of satirical texts is bound to the capability of dealing with difficult themes, we will restrict the reasoning on this postulate saying that a possible origin of this feature lies in the roots of the ancient Greek drama. Many studies have outlined how the tragic plays were experienced by the citizens of the polis as a real social rite, where the mythological

[9] December 7, 2015. Vol. 51 Issue 49: "*Al-Qaeda Member Wistfully Recalls Time When Radicalization Done Face-To-Face Rather Than Online*". Available at this link: http://www.theonion.com/article/al-qaeda-member-wistfully-recalls-time-when-radica-51995

narrations were shaped so as to propose point of views either on issues regarding the community, or to discuss moral dilemmas. We have already mentioned the proto-phase of the satiric genre, which was represented by Aristophanes's plays; the sacrilegious works by the Hellenic poet seem to be the natural progression of this fundamental quality of the ancient Greek theatre, a feature that even Aristotle recognized in his *Poetics* when he spoke about the cathartic power of the tragedy. We find a modern account for the relief presumption in (Minsky, 1981), stretching the original Freud assumption, which was not capable of describing nonsense humour or familiar jokes. The following is an example of a nonsense joke:

«Driving down a road Santa sees a sign that says, "Watch for Fallen Rocks." A few kilometres later, he sees some rocks at the side of the road, so he stops and picks them up. When he gets to the next town, he carries the rocks into the Highway Maintenance office and puts them on the counter. "Here are your fallen rocks," he says to the man behind the counter. "Now where is my watch?"»

According to Minsky, when we find ourselves in front of nonsense humour, first we are concerned in processing the expressed meanings in pursuance of a logical sense for the message; then, when our subconscious detects the twisted logic surpassing the cognitive censors, we experience amusement. This redefinition of the cognitive censorship mechanism – a mind process able to detect and delete faulty logic, which is to say any kind of reasoning that could be dangerous for us to think – is the key of Minsky's idea of humour. By virtue of these cognitive censors, similarly to others mental activity able to learn and improve, we can recognize patterns that we have encountered in the past, and for this reason already known jokes are experienced as less funny, according to the American cognitive scientist. Since this account is an attempt to explain a local processing of a linguistic production – "local" here meaning only humorous productions – it would be useful to look at more recent research in the cognitive pragmatics field, so that we can focus further on this issue and understand if the account proposed by Minsky is harmonic with the actual scientific evidence. (Bambini & al. 2011) tried to deconstruct the cognitive metaphor processing through functional magnetic resonance imaging and the result is the first (possible) model of how we mentally recognize figurative language text. Differently from what Minsky suggested, it seems that several brain networks (in both hemispheres) are involved for the recognition task. In (Manunta, 2015) we find a synthetic explanation of this system of brain networks for the processing of metaphors: the frontal areas are responsible together with the angular gyrus for the integration of the linguistic production with knowledge of the world; the prefrontal cortex and the anterior cingulate cortex are in charge of a filter mechanism for enhancing internal and external contextual feedbacks; whereas the superior temporal sulcus supports the recognition of conversational entailments on a pragmatic level and further helps the processing task of linguistic production on a deeper semantic level. Discussing the neuronal process behind the recognition of figurative language it is not a secondary issue since in satiric discourses the use of figure of speech is a basic technique: (Simpson, 2003) in his fifth chapter, titled *"Ways of doing satire"* explicitly speaks of a **metonymic and metaphoric satirical method;** the aforementioned spoof article *"Nigel Farage: I am popular and handsome"*, represents a clear example of this. The mental censorship strategy proposed by Minsky does not seem to fit the modern evidence, since it is only a partial explanation of a process that further studies have shown to be more complex, involving several neuronal connections with different functions. Recognizing the actual weakness of Minsky's theory of humour, it would be disingenuous to completely reject some of the theoretical intuition contained in his account, since the anterior cingulate cortex is actually a filter mechanism that – when not involved in tasks related to language – is in charge of detecting potentially dangerous (or it would be better to say incongruous) aspects of reality. For what is related to the incongruity presumption we need to broaden the postulate in order to fit the humorous intent within satirical texts. The conception of an opposition between two conceptual plans as necessary for the triggering of humorous production represents the central core of many theories, amongst which the first speculative contribution was proposed by (Raskin, Semantic Mechanisms of Humor, 1985), further revised by (Attardo & Raskin, 1991), (Attardo, 1994) and (Attardo, 1997) as a general theory of verbal humour(GTVH). In his last revision, Attardo proposed that humour is compositionally formed of six parameters, called **knowledge resources**, namely:

1. **Language**(LA): the inventory of linguistic components chosen to build the actual text of the humorous production. In simple words the concrete linguistic production, both in written form (graphemes) or oral (phonemes).
2. **Narrative strategy**(NS): the set of strategies used in order to convey the plot of the humorous production (e.g.: A&Q; riddle; joke etc.).
3. **Target**(TA)**:** the object of the humorous text. Usually is an individual or a member of a group (like in ethnic jokes).
4. **Situation**(SI): the set of contextual elements used for a specific joke (e.g. time/space scenario, characters etc.).
5. **Logical mechanism**(LA): the mechanism that brings together the two opposite scripts/dimensions inside a humorous production.
6. **Script opposition**(SO): the alternative conceptual dimensions involved in humour and considered as fundamental for the build-up of the humorous effect.

The knowledge resources could either be grouped into two functional sets: a content-oriented set (SO, TA, SI) and a tool-oriented set (LM, NS, LA), or ordered following the linear hierarchy proposed, with the least important level being the LA knowledge resource, and the SO being the most importan. Between these two kinds of groups, Attardo leans on the ladder sequence of knowledge resources, since in his opinion this linear order should serve as a measurement tool for the "psychological differentiation" of humorous texts. If we apply this hierarchy for the analysis of a simple joke like:

"I used to be a banker but I lost interest"

we could safely use the knowledge resources in order to categorize the text; in this case the decomposition would be:

1. Language(LA): I used to be a banker but I lost interest
2. Narrative strategy(NS): pun
3. Target(TA): bankers
4. Situation(SI): former banker speaking
5. Logical mechanism(LA): polysemy of the punchline word
6. Script opposition(SO): interest in working/financial interest

While short linguistic productions and their features could be captured properly with the hierarchy designed by Attardo, the same linear order does not seem to be representative enough for texts of greater length. In the examples of satiric articles cited until now, a precise recognition of the first three knowledge (LA, NS, TA) resources could be carried out without great effort, but it would not be the same for the last three features (SI, LA, SO). How should we explain the Situation resource of a satiric text where several events, entities and persons are mentioned? Would they share the same importance for the set-up of the resource or should it be introduced a grading scale for situational elements less important than others? Is it possible to precisely locate two opposite conceptual dimension, sharing a common part in order to allow a cognitive shift, as primarily theorized? What if two or more script oppositions are found? These licit doubts lead us to think that it would be difficult to extract the specific logic mechanism for satiric discourses. (Ruch *& al.*, 1993) tested on a population of 534 subjects the effectiveness of the knowledge resources hierarchy in order to test the "psychological differentiation" power expected by Attardo. The results of the experiment underlined a different hierarchy for the knowledge resources and Rusch consequently proposed that the content/oriented subdivision was more representative. The possible reason why the hierarchy proposed is not is that effective it could be either a wrong modelling of the order by the authors, or a lack of definition for the logical mechanism resource, which could be more complex with respect to the vague definition proposed by Attardo and Raskin. Not even the revision in (Attardo, 1997) for the script opposition and the logical mechanism resources, equalised respectively as **incongruity** and **resolution** of the incogruity within a humorous text, proved to be sufficient in order to cope with the weakness of the theory when applied on texts longer than a simple sentence. (Ruch, 1993) proposed the LA knowledge resource from the GTVH and this recommendation is shared both by (Davies, 2004) – which points out the uselessness of pursuing a complete taxonomy of the LM, as attempted in (Attardo *et al.*, 2002) – and (Brône & Feyaerts, 2003) whose proposal is to include inside the GTVH an account for non-prototypical linguistics production with humorous intent. Again, even if the GTVH does not represent an overall explanation of humour, the **incongruity-resolution** presumption cannot be rejected completely, since it is true that the humorous mechanism lies on the presence of multiple conceptual dimensions. The difference is that these dimensions, instead of being the core of the mechanism responsible for the triggering of humour – as proposed until now – seem to be more part of a composite process, namely a comparative phase where an online sign substitution happens. Whether this substitution is realized by virtue of syntactic, phonetic or figurative devices, the shift of meanings is not a unique cognitive process and the pragmatic variables of **familiarity**, **accessibility** and **contextual elements** play a fundamental role in humour production/recognition. (Weiland, Bambini, & Schumacher, 2014) underlined how a first mandatory step of future theories aiming to explain the processing of figurative language should be the processing of literal meaning since the lexical items proved to be the first resource accessed, even for cases of polyrematic expression recognition: multi-word expressions – when they are not stored inside the long term memory and thus accessed directly – are previously deconstructed and assessed in a literal way, and then processed as a whole expression. Differently from polyrematic expressions, rhetorical figures in their phonetic/graphic representation usually are not stored inside our long-term memory *per se*, which is to say that they do not act like lexical items. Since the kind of reasoning behind figurative ways of expressing meanings is something bound to our rational thinking, the familiarity with mental schemes and specific ways to convey meanings is essential to process non-literal meaning. When we hear a sentence like *"Maryjane is an angel"*, a mental standardized scheme [A is B] is what allows us to deconstruct and process the meaning of the phrase. Recursively applying this scheme anytime we find an equal linguistic production is more economic than simply memorizing the metaphor itself, and the same happens with other cases of figurative meanings. For similes, the logic slightly changes, since it is not $[A\ \boldsymbol{is}\ B\ ]$but $[A\ \boldsymbol{is\ like}\ B]$. The example contained in Aristotle's Poetic "Old age is the sunset of life" is one of the simplest examples of metaphoric analogy of the type $[A : B = C : D]$[10], and helps us to understand how often figurative language it is not of the type [A is/like B], since more complicated parallelisms are often expressed: a sentence like "Il cielo piange" does involve the transfer

[10] In this specific case [old age : life = sunset : day]

of property of the kind [A does B(that is property of C)], which is to say that it is textually implied [A is C]. While accessibility and familiarity of non-literal production are features that take place on the phonetic/graphic text representation level, and are bound to linguistic and conceptual knowledge[11], contextual elements are extra-textual and several layers of condition and entailments are involved. In satiric discourses, assuming that our linguistic competence is complete, to understand the meanings we first need to recall the encyclopaedic knowledge of the world, and then we have to process information such as the specific domain knowledge and the communicative intent of the speaker. The following is an excerpt from an article written by Marco Travaglio and published[12] on *Dagospia*, an Italian online press review:

«Il malvezzo proseguì nella Seconda Repubblica dove - a parte B. che sistemò la prole in azienda per dedicarsi alla promozione artistico-culturale delle sue squinzie fra Rai e Parlamento - fu tutto un susseguirsi di politici finiti nei guai per l' esuberanza dei marmocchi: Renzo Bossi detto Trota, Giulio Napolitano, Geronimo La Russa e poi gli eredi della Moratti, di Mastella, di Di Pietro, della Cancellieri, di Scajola, della Fornero, di Lupi, di De Luca e ora anche di Mattarella (il figlio Bernardo è capufficio legislativo e badante della ministra Madia). Senza dimenticare il cognato di Fini, la moglie di Matacena e il fratello di De Magistris.»

To understand this piece the reader should be able to detect several references to specific events and or individual that are not explicitly expressed: e.g. when the author affirms "*a parte B.*", where the reference here is to Silvio Berlusconi. Since in the entire text of the article there is no mention of Berlusconi's full name, the author is assuming that the reader is already accustomed with this expression, which is neither a strictly linguistic nor a conceptual knowledge. Even if the reader is aware of the reference, which is to say that he

[11] For a deeper treatise on linguistic, conceptual and encyclopaedic knowledge and their interconnections, see (Kiefer, 1990)

[12] Available at the following link: http://www.dagospia.com/rubrica-3/politica/travaglio-campo-pap-boschi-pier-luigi-che-manda-vacca-banca-115663.htm. The article, entitled "I babboccioni" it has been originally published in the newspaper "Il fatto quotidiano" on 24/12/2015.

already has, in his background knowledge of the world, of the notion “Silvio Berlusconi” and the notion “nicknames of Silvio Berlusconi”, to capture the irony in the following line “*che sistemò la prole in azienda per dedicarsi alla promozione artistico-culturale delle sue squinzie*” the encyclopaedic knowledge is not enough; the reader still needs to know for some specific domain knowledge of political events of the last few years. From a pragmatic point of view there is no difference between general encyclopaedic knowledge and specific domain knowledge, but to consider these two levels as cognitively equal is misleading, since a more abstract notion can be evoked as a stand-alone concept, while specific domain knowledge requires the knowledge of causal events, features, and aspects tied to this stand-alone concept. Written satire often is realized as denotation of specific knowledge domain, that is to say that the departure point of satiric discourse is usually a unique feature/event/individual that is used as a pretext to express criticism on the wider social context. If we remind ourselves the fact that satiric texts presuppose an intensive use of figurative language, recalling the aforementioned variable of familiarity, accessibility and contextual information, the communicative intent of satiric written productions does assume a strategic importance and in the next subsection there will be a detailed analysis of this linguistic aspect. Squaring the circle for what concerns the incongruity-resolution presumption, even assuming the basic postulate of *mental frames* involved for the resolution of a non-congruous scenario, the complexity of the cognitive process and the relevance of pragmatic variables involved, does not confirm the hypothesis of a bi-dimensional incongruity for longer text. Even the resolution step does not seem to be fundamental, because at the basis of the satiric discourse the set-up of the different elements suggests that the real intent is **to show (or to play on) rather than to solve the incongruity**. For this reason, it would be better to consider the third presumption as a mandatory presence of non-congruous, paradoxical, or even absurd descriptions of chosen topics.

1.3 The *force* of Satire: satiric texts as particular speech acts

To outline the peculiarity of satiric texts, similarly to what we have done for the formal theory of humour, we need to look at the intricacies related to the description of the pragmatic rules and features valid for humorous exchanges. This is not a vacuous analytic exercise: drawing the essential prerequisites for a successful humorous exchange correspond to understanding the core of particular linguistic phenomena that share one or more features with the satiric genre. Despite the fact that it is simple to misconceive humorous productions as mostly *conversational* – implying that the pragmatic dimension is more relevant for oral rather than written productions – we can argue that even written texts have to follow specific pragmatic patterns and rules in order to be considered as humorous. As with any type of linguistic production, a speech act occurs between two subjects and then it is always possible to consider the exchange as a communicative event, even when the subjects are not sharing the same direct space/time context. Furthermore, a conversational exchange can occur even when there is no a substantial reciprocity of the subjects, which is to say when the sender and the receiver maintain their roles without (or only slightly) changing conversational position. Adopting this concept, the written article of a satiric journalist is equal to a conversational exchange, a speech act occurring between the writer and a collective subject, which is the audience. Notice that it is possible that readers can express their appreciation or disappointment by means of different actions, amongst which direct verbal productions represent a possibility, e.g. addressing positive or negative comments to the writer and thus producing a sort of non-actual conversational contribution. Anyway, this last scenario is not a fundamental feature of this specific kind of conversational exchange. The validity of written texts as real and effective speech act does appear in all its clarity if we look at both the philosophical background and revisions of the *speech act theory* (Austin, 1962). Within his account, Austin proposed that a speech act is formed by three potentially simultaneous layers; since the definitions of these three layers are not unique in the wide related literature, for the sake of brevity and clarity I report here the one used in (Levinson, 1983):

1. **Locutionary act**: *the utterance of a sentence with determinate sense and reference.*
2. **Illocutionary act**: *the making of a statement, offer, promise, etc. in uttering a sentence, by virtue of the conventional force associated with it.*
3. **Perlocutionary act**: *the bringing about of effects on the audience by means of uttering the sentence, such effects being special to the circumstances of utterance.*

Still, in (Levinson, 1983) it is said that Austin considered the *Locutionary* and the *Perlocutionary* type as detachable from a speech acts, and eventually the debate on this theory spent great effort only on the analysis of the *Illocutionary* act. A major contribution in this sense was given by (Searle, 1969) and his later works, amongst which in (Searle, 1975) there is a taxonomy of the illocutionary speech acts (assertives/directives/commisives/expressives/declarations). Surely satiric text have an expressive force bound to them, but to consider the textual peculiarity of satiric productions as merely an expression of meanings by virtue of figurative language would mean to underestimate the crucial social relevance of the satiric genre. The intent of satire within a linguistic production is not only constituted by a humorous altered presentation of a specific argument, but there is still the will of the author to persuade the audience of some expressed or implicit moral value, which is to say that satiric texts are situated between illocutionary and performative acts, representing a sort of *performative writing*[13]. The theoretic accounts expressed by Austin and Searle have been largely discussed and the descriptive power of their notions is still an argument in academic debate; while not disconfirming the validity of their pragmatic conceptions, it appears obvious that in order to describe the satiric genre we need to look at specific contributions, specifically devised for the purpose of integrating humorous exchanges within a pragmatic framework. A substantial attempt is suggested by (Dascal, 1985) where – enlarging the conception regarding the possible indirectness of linguistic productions – a partition of humorous speech acts is proposed as a three level system, namely:

1. **Sentence meaning**: the meanings of an expression.
2. **Utterance meaning**: the meanings of an expression taking into account the context of production and the references.
3. **Speaker's meaning**: the intention to express those words in that determinate context, using those specific references.

This kind of repartition is influenced mostly by the three speech acts proposed by Austin, but the interesting innovation here is the implicit importance of the receiver for a successful outcome of the speech act, which is to say that the choices made by the sender are shaped in a manner that tries to engage the receiver. When a meaning is conveyed indirectly, **the receiver has to participate in the reconstruction of the utterance** to an extent that is weighted in relation to the context of the linguistic production (e.g. the

[13] For a definition of *performative writing,* see the related entry in: Warren, J. (2009). Performative writing. In S. Littlejohn, & K. Foss (Eds.), *Encyclopedia of communication theory.* (pp. 744-746). Thousand Oaks, CA: SAGE Publications, Inc. doi: http://dx.doi.org/10.4135/9781412959384.n280. For further readings see: Lynn Miller & Pelias Ronald Eds. (2011) *The Green Window: Proceedings of the Giant City Conference on Performative Writing*, Southern Illinois Press.

participation of the receiver in a nonsense pun is not the same as the involvement in a Q&A joke or in a funny riddle etc.). While Dascal's account helps us to recognize the pragmatic importance of the *silent participant* in a conversational exchange, this theoretic attempt fails to capture the salience of longer texts, since at the basis of this proposal major prominence is given to the textual dimension, when compared to non-textual elements. The following is an excerpt from Maria Novella Oppo's series of articles named *Fronte del video*[14]*;* in this piece[15] the author criticizes the slogan used by Matteo Renzi at the time that he was running for the leadership of his party:

«*In effetti «Adesso» non è un motivo per votare, come non lo sarebbe dopodomani o giovedì prossimo. Se lo hanno consigliato a Renzi i famosi maghi della comunicazione, devono essere gli stessi (ormai molto vecchi) che alcuni decenni fa partorirono gli slogan: «Il Pci è vecchio», «La Dc ha vent'anni», a causa dei quali il partito cattolico perse un sacco di voti. E «Adesso»? Speriamo che Renzi non accusi di combine anche la signora in giallo*»

Apart from the adjective *famosi* – which should be intended indirectly as *infamous/notorious* rather than *famous/renowned* – there is no trace of indirect meanings, since the author does wants to say exactly what is expressed, in a way that involves using metaphors (*maghi della comunicazione*; *partorirono gli slogan*; etc.), cultural references (*la signora in giallo*) but without antiphrastic expressions. This evidence is useful to stress the importance of the semantic/pragmatic knowledge in order to catch the humorous message. It should be noted that the excerpt is just a small portion of the entire text, which is to say that in the longer text several references and figures of speech are (possibly) present, contributing to the construction of the overall satiric effect. Even if this feature

[14] This discontinued series of articles by Oppo appeared on the newspaper *L'Unità* and usually targeted politicians and televised media.

[15] The article titled "*Lo slogan di Renzi bocciato dalla «Signora in giallo»"*, was published on 27 November, 2012. Available at this link: http://cerca.unita.it/ARCHIVE/xml/2490000/2485071.xml?key=+Maria+Novella+Oppo&first=311&orderby=1&f=fir

does appear undeniable in humorous texts longer than a simple sentence, it is not uncommon that the retrieval of semantic/pragmatic knowledge is still with jokes and puns for a successful communicative exchange. Comparing two of the countless *Blub Jokes* we can better appreciate what it is just aforementioned:

a) *A: How many consultants does it take to change a light bulb?*
   Q: I'll have an estimate for you a week from Monday

b) *A: How many Thatcherites does it take to change a lightbulb?*
   Q: None. It's up to the private sector to provide the finance for it.

In *a)* the world *consultant* carries the exact amount of information needed in order to understand the answer and, even if we are not familiar with the concept of consultancy, we are capable of getting the joke and the implication of the answer, which is to say that consultants fall into the category of "procrastinators". Differently, in *b)* the word *Thatcherites* implies only a relation to Margaret Thatcher and this is already the first level of knowledge of the world we need to retrieve; furthermore, if we are not familiar with Thatcher's economic policy it is unlikely that we would be able to understand the joke. Aware a single piece of evidence cannot provide an extensive rejection of the exposed accounts, it is unquestionable that the proposed explanations do not give enough credit to pragmatics as a primary tool for strategy related to recognition and production of humour. While the aim of this thesis is not the reconfiguration of pragmatic theories of humour, their theoretic weaknesses are related to the attempt of a better understanding of the satiric genre, since the latter does share (and is differentiated by) a number of textual and non-textual features in relation to humorous and figurative linguistic productions. At this point we can confirm that by lingering around traditional – both formal and pragmatic – explanations of humour, it would be more than difficult to capture the peculiarity of the satiric genre. Nonetheless, some academic insights seem to prefigure alternative ways to address humour, and thus satire as well. (Veale, 2004) suggests that theoretic explanation of humour should be less concerned about the logic mechanisms or the formalization of the intrinsic incongruence, for they should be more focussed on *"a social logic that allows a theory to ground the interpretation in the specific concerns and prejudice of the listener as a social agent"*; that is to say that – as is true for other more recognized speech acts – even humorous and similar linguistic production should be analysed in terms of the *illocutionary force* they have and the modality in which this force is successfully conveyed in two-sided cooperative social acts.

1.4 The *game* of Satire: descriptive weakness of cooperative principle and its theoretic derivations

Recognizing to speech acts falling into the boundaries of the satiric genre a specific illocutionary force, leads us to look closely at the cooperative principle (Grice, 1989) in relation to humorous texts. From the basic assumption – that in its first formulation in (Grice, 1975) states: *"Make your contribution such as it is required, at the stage at which it occurs, by the accepted purpose or direction of the talk exchange in which you are engaged"* – we can derive four *conversational maxims*, namely:

- **Maxim of Quality**: Be truthful
    - Do not say what you believe to be false.
    - Do not say that for which you lack adequate evidence.
- **Maxim of Quantity**:
    - Make your contribution as informative as required.
    - Do not make your contribution more informative than is required.
- **Maxim of Relation**: Be relevant.

- **Maxim of Manner**: Be perspicuous
    - Avoid obscurity of expression.
    - Avoid ambiguity.
    - Be brief (avoid unnecessary prolixity).
    - Be orderly.

The cooperative principle and the derived maxims were designed for the purpose of describing the standard behaviours of speakers during normal conversational exchanges. It should be noted that Gricean Maxims are not valid for all the possible types of conversation – Grice himself suggested the possibility of violating/flouting his own cooperative principle – and by blindly applying these conversational rules we are not capable of capturing the peculiarity of satiric texts, since – similarly to what happens for humorous texts – one or more maxims are violated systematically. Surely there is a specific responsibility that can be ascribed to authors for the intended violations, and (Attardo, 1993) is right when he affirms that narrators are constantly culpable of violating the Cooperative Principle (CP), whether or not the violations are expressed directly in terms of the speaker's awareness. Attardo's conception is consistent with the theorization in (Raskin, Semantic Mechanisms of Humor, 1985) and (Raskin, 1992), where humorous linguistic productions are assumed to be as a type of *non bona fide communication*: a hierarchy of cooperative principles is established with the central one being the original Cooperative Principle; a specific humour CP is conceived that can either expand the original principle or justify eventual violations in case of specific humorous intents. While this account helps us to stress the importance of specific aspects in relation to the peculiarity of humorous conversational exchanges – namely, the author's responsibility and superficiality of the original CP – too much importance is still given to an alleged and purely abstract pragmatic mechanism responsible for the production/recognition of humour, a (supposed) cognitive shift performed by the receiver from the general CP to the specific humour CP. This notion is related strictly to the basic assumption of GTVH, which tries to explain humour as a phenomenon based on conceptual incongruence between mental frames, and thus considering this supposed contrastive nature as a natural explanation even for the pragmatic dimension of humour. Because of the complexity and variety of humorous productions, such a generalized pragmatics conceptualization does not appear to be appropriate and indeed it is not suitable at all for the pragmatic denotation of the satiric genre. Eventually we will see that the proposed hierarchy is not valid, for the reader has to be fully aware of the satiric nature of the text before reading – or at least have expectations after they have read the title and/or initial lines – and thus we need to consider for a single cooperative principle as operating. Without a previous recognition of the satiric peculiarity of a text, and whether the receiver is capable of capturing some of the single strategies (metaphors, irony, sarcasm, idiomatic language, etc) used to organize the text, it would be impossible to capture the satirical intent pervading the whole text. As stated in the previous paragraph, even if the receiver of a satiric message does not perform linguistic input during the conversational exchange, its role is not restricted to a simple passive decoding activity, since an active partaking is necessary for the exact recognition and appreciation of the conveyed information. The listener/reader activity cannot be considered as an accessory element of the communication, and although we can assume this notion is obvious even for normal linguistic exchanges, the absence of a complete – and largely accepted by the linguistic academic field – pragmatic model of communication, is a clear indication of the necessity for further detailed study aimed towards a more inclusive explanation of the receiver role. Since satiric messages are usually directed to a structured audience – which is to say that this kind of texts are created specifically for the purpose to meet beliefs and values of particular groups – the set of linguistic features in satiric texts are devised in order to enable the active participation of receivers for the organization and reconstruction of meanings. The following is an excerpt from an article[16] published on *Lercio*, a satiric website of fictional news, where the author is mocking the rhetoric of the Italian political leader Matteo Salvini, who holds a strong position against the immigration waves and the reception of refugees:

«Tornano in auge anche le profezie della compianta Oriana Fallaci, che già anni fa ammoniva sul pericolo delle nascite incontrollate. La sua famosa frase "Non tutti i nati sono terroristi, ma tutti i terroristi sono nati" sta spopolando in rete e il sindaco di Borbotto, ridente cittadina del trevigiano, l'avrebbe fatta stampare su un grosso cartellone da appendere sulla facciata del palazzo comunale.»

In this piece, aside from the aforementioned use of idiomatic language ("*tornano in auge"; "sta spopolando";* etc), the writer reports a false quote («*"Non tutti i nati sono terroristi, ma tutti i terroristi sono nati"»*) by Oriana Fallaci, based on a sentence[17] contained in one of the books of the deceased Italian journalist. Similarly for what we have seen previously in the bulb jokes comparison, one or more levels of knowledge are required for the success of the conversational exchange, since the reader not only has to know about the current immigration situation, Salvini's ideas about this situation and a sentence credited to Fallaci, but additionally a modulation of this very specific knowledge is operated by the author and thus needs to be recognized by the reader. The satiric and amusing effect of the text is reached only if the reader is capable of correctly retrieving all the implied information, and

[16] Article titled *"Potenziali terroristi tra i neonati". Salvini invoca il blocco degli uteri",* published on 21/11/2015; available at this link: http://www.lercio.it/potenziali-terroristi-tra-i-neonati-salvini-invoca-il-blocco-degli-uteri/

[17] The book is "Oriana Fallaci intervista se stessa – L'apocalisse" and the precise quote, originally from Abdel Rahman al Rashed, referenced here is, "Anche se non tutti i musulmani sono terroristi, la gran parte dei terroristi sono musulmani."

thus processing this modulation of stored knowledge. This *active reconstruction of meaning* happens not only in fictional news instances but also in more traditional satiric commentary articles. Looking at a sentence the first mentioned excerpt[18] from Michele Serra's articles, this reconstruction activity appears clearly:

«*Ci mancava il Ponte sullo Stretto, evocato da Matteo Renzi nel libro "Donne d'Italia" (?), la strenna 2015 di Bruno Vespa.*»

Through the uncommon use of a question mark, the author wants to express his feeling of puzzlement towards a weird situation, and it is up to the reader to infer this implicit emotion, reconstructing superficial syntactic information, namely the peculiar use of a question mark in a non-interrogative sentence. Again, we find further proof of the importance of this meaning reconstruction activity inside an excerpt from a Maria Novella Oppo's article[19]:

«*Torture di cui, si pensa, Torquemada Di Pietro deve aver tremendamente abusato nel periodo di tangentopoli nonostante che, subito dopo, Berlusconi gli abbia inutilmente proposto di diventare ministro in un suo governo*»

In this sentence, the writer wants to stress the inconsistent behaviour of Berlusconi, and to do this the author outlines Berlusconi's negative opinion on the conduct of the ex public prosecutor, Antonio Di Pietro, using a combination of the idiomatic lemma *Torquemada*[20] with the last name of the former magistrate. Either the reader already knows this lemma, and thus is capable of connecting the altered lexical form *Torquemada Di Pietro* with the world knowledge reference suggested by the word *tangentopoli*[21]*,* or is bound to search

[18] See note number 6

[19] The article, titled "Il cavaliere Berlusconi e quel «trio sciagura» evocato in tv" was published on 6 January, 2013.

[20] From the online De Mauro's dictionary: "[CO] chi usa metodi repressivi particolarmente duri e spietati contro ogni forma di dissenso e di protesta".

[21] From the online De Mauro's dictionary: "[CO] nel linguaggio giornalistico, il corrotto sistema economico e di potere instauratosi in Italia nel corso degli anni Ottanta, fondato sulla richiesta e sul versamento di tangenti; lo scandalo e le relative inchieste che ne sono derivate".

for the meaning definition to gain a successful comprehension of the meaning. In light of this meaning reconstruction activity, the satiric text type appears as a linguistic Jigsaw puzzle, with the pieces to assemble it being figures of speech, idiomatic forms, syntactic variations and word knowledge. Comparing satiric texts as a language game is helpful in order to underline the *social dimension* of these kinds of linguistic exchanges. The conceptualization of speech acts as language games is a philosophical concept developed by (Wittgenstein, 1953). Overturning his previous idea, Wittgenstein conceived the denotational power of language no more as the only possible speech act, theorizing that the meaning of linguistic productions is defined mainly by the way in which we use language. An exemplifying type of linguistic game is expressed in the second aphorism of the *Philosophical investigations*, where:

«*The language is meant to serve for communication between a builder A and an assistant B. A is building with building-stones: there are blocks, pillars, slabs and beams. B has to pass the stones, in the order in which A needs them. For this purpose they use a language consisting of the words "block", "pillar" "slab", "beam". A calls them out; — B brings the stone which he has learnt to bring at such-and-such a call. Conceive this as a complete primitive language.*»

In relation to satire we can affirm that the genre is a specific game where the *builder* role is played by the sender/writer, who builds the communication by passing the building-stones to the reader/assistant, who could either have full, partial or no instructions at all as to how he must place the blocks. In case the assistant/receiver does not have any instruction, he has to guess how to place the blocks using his personal resources. The game is successful only if

a) The two participants, for the most part, share the framework of knowledge involved in the communication/building;

b) The sender/builder wants to build the communication/building with the intent being to assert something about the framework of knowledge;
c) The assistant/receiver wants to build the communication/building with the intent to pay attention to what the sender/receiver has to say;
d) The assistant/receiver has enough resources to face the possibility of placing blocks without given instructions.

1.5 The *place* of Satire: positioning satire in relation with humour, irony and sarcasm.

The previous discussion around formal and pragmatic theorizations of humour and their connections with the development and recognition of satiric discourse, allows us to outline in the conclusive paragraph of this chapter the specific linguistic features of written satire. The investigation of the exact boundaries of this genre is mandatory, since the peculiarity of satiric discourse is often the result of authorial choices applied not only in relation to invariable characteristics of the genre, but still by means of other humorous text typologies. The first main distinction we need to establish in order to scrutinize the extension of satire is the one between satiric discourses and humour itself, which is to say we need to ask what kind of relationship occurs between these two linguistic phenomena. Is satire a type of humour? (Simpson, 2003), following Ziv's taxonomy of humour functions in (Ziv, 1988), is correct when he states that of the five possible functions[22], satire represents a synthetic discourse where the **aggressive**, **social**, and **intellectual** ones are carried out simultaneously. Balancing differently these three humorous functions, the author is

[22] The remaining two functions are **defensive** and **sexual**

capable of assigning various connotations to its textual productions, and adopting this notion we can accept even those texts as satirical where harsh humourism is missing, because of the lessened aggressive function. Eventually we can consider satire as a complex humorous discourse, thus considering satiric text as a subordinate type within the set of humour phenomena. This relationship of hyponymy forces use to ask what the position of satire is in in relation to other humour typologies. For the sake of brevity – and because it would be impossible to analyse the countless ways in which humour is concretely produced – we need to consider only those kinds of texts that could be possibly confused with satiric discourse, leaving aside other humorous productions such as jokes, puns et similia. Two potential ambiguous categories are **ironic texts** and **sarcastic texts**. While we cannot expand the range of this paragraph to include the academic debate around specific definition and taxonomies of non-literal linguistic productions, we can assert that irony is widely defined as a **use of language where what is said is different to what is meant**. This notion of **incongruence** has already been discussed, as it is the basic assumption of both Attardo’s GTVH and Dascal’s pragmatic model of humour; summarizing the related evidences in the previous section, we have already seen how this incongruence feature cannot be considered as the epicentre of satiric discourse. Therefore, to deepen the analysis of satire in relation to irony, we should consider what kind of logic realizations the latter could have and, furthermore, if the logic behind the functioning of irony is a contemplated instrument within the range of tools used to develop satiric texts. Let’s examine this particular context:

C: On the bed, John is reading a book and Mary is sleeping. The weather is stormy. Mary wakes up and while she is moving towards the windows to see outside, she asks to John “What's the weather like?” As soon as Mary is looking outside, John replies.

Assuming that John wants to communicate the meaning of the sentence S “The weather is stormy” and hypothesizing various reformulation of S as possible replies, we can derive different outcomes, namely:

- L **Literal reply**: **“**It’s stormy outside”. L **is equivalent to** S.
- NL **Non literal reply**: “It’s raining cats and dogs”. NL **is figuratively equivalent** to S
- **Ironic replies**:
    - I^{i}:“It’s sunny and seventeen degrees”. I^{i} **is the opposite** of S
    - I^{ii}: “It’s a bit drizzly”. I^{ii} **is a reduction** of S
    - I^{iii} “Don’t go near the window! It’s Katrina’s second coming!””. I^{iii} **is an exaggeration** of S

Frome these few examples we can understand how irony is not only conveyed by means of verbally displaying absolute oppositions, such as in $\mathbf{I^{i}}$, but also assigning different degrees of incongruence, as in $\mathbf{I^{ii}}$ and $\mathbf{I^{iii}}$. Notice that it is even possible to use non literal language and cultural/idiomatic references in combination with absolute oppositions ($\mathbf{I^{i}}$) or incongruence graduations ($\mathbf{I^{iii}}$) as possible strategies to express humour. The above formalization is not exhaustive enough to display the numerous ways in which irony could be realized, but just in referring to this basic taxonomy we can examine to what extent basic ironic realizations are involved inside the satire genre. The following excerpts from articles by Michele Serra represents ironic passages of the kind that have been previously outlined:

«Si capisce, gli scrittori sono belle fighe, capricciose e suscettibili.»[23]

[23] Article published on November 25, 2015; availble at this link: http://ricerca.repubblica.it/repubblica/archivio/repubblica/2015/11/25/-lamaca32.html

In this passage the author (negatively referring to writers, but looking at the context of the entire article, which is a satiric piece about the editorial monopoly of Berlusconi's family and their problems to play on with the moral integrity of writers – which prefer to leave rather than to stay and work with them – the sentence appears as a case of irony where what is asserted is the opposite of what is meant. A use of the ironic reduction effect between sentence meanings is contained in the following passage, where in the first part the author reports a quote by the Prefect of Rome, while in the second sentence there is the ironic reduction of the first assertion:

«*"Roma è in piedi da duemila anni". Per la verità, del tutto in piedi no*»[24]

A case of exaggeration ironic effect – split again in two sentences – is contained in this excerpt:

«*No, Verdini non è il mostro di Lochness, come dice Matteo Renzi. È molto peggio, politicamente parlando.»*[25]

While these passages show how **irony is successfully located inside satiric text**, they still prove that the genre – in order to enable the ironic effect within specific portion of text – is textually structured on a level that is superior with respect to simple sentences , and in a manner that contemplate others specific types of non literal language use of the kind that we have seen through this chapter (namely the figurative and the idiomatic). This is the reason we have referred to satire up until now as a **discursive** type of text. The last but most important ambiguity we need to solve is between satire and sarcasm, which is generally considered as **a type of irony** that aims to mock or make fun of a specific target.

[24] Article published on October 13, 2015, availble at this link: http://ricerca.repubblica.it/repubblica/archivio/repubblica/2015/10/13/lamaca28.html
[25] Article published on October 4 2015, available at this link: http://ricerca.repubblica.it/repubblica/archivio/repubblica/2015/10/04/lamaca30.html

The list of linguistic realizations of sarcasm is long and, as for the previous consideration about humour and irony, several layers of analysis are involved. Even then, a complete exploration of this issue would pointlessly move the focus of this chapter from the boundaries of satire towards the set of alternative definitions of sarcasm and its (existing or not, in relation to different scholars opinions) relationship with irony. Since here we are more interested in understanding what the shared features are and what really differentiates the specific genre of satire from sarcasm, traditional classifications will be left out in favour of more pondered explanations, following the rationale used throughout the whole chapter. Differently from general irony, where the intent of the sender is **to have fun with the receiver** by virtue of the **mystification** of specific targets, sarcasm is a specific type of irony where the intent of the sender is **to polemicize and/or to make fun of the receiver** by **assigning to him specific characteristics**. The clash of meanings could be either verbally expressed or concealed, but then conveyed with the help of non-textual clues, such as vocal intonation, facial expressions, etc. Here are two examples where the sarcastic intent relies almost entirely on the verbal expression:

1. *«I'm trying to imagine you with a personality.»*
2. *«I'm glad to see you're not letting your education get in the way of your ignorance.»*

The ironic incongruence in 1 is **fictional**, since the speaker it is not really trying to imagine the receiver at all, but it is just asserting indirectly that he has no personality. In 2 the incongruence is a **feature opposition** (educated/ignorant) assignment. Below is an example[26]from an internet meme, where the sarcastic effect is conveyed using the

[26] Definition from Wikipedia: "An Internet meme (/ˈmiːm/ MEEM) is an activity, concept, catchphrase or piece of media which spreads, often as mimicry, from person to person via the Internet. A meme is "an idea, behavior, or style that spreads from person to person within a culture".An Internet meme may take the form of an image, hyperlink, video, picture, website, or hashtag.

opposition between what is said – which is a feature assignment (you are hilarious) – and the non-congruous facial expression that evokes the opposite feeling (you are not funny at all).

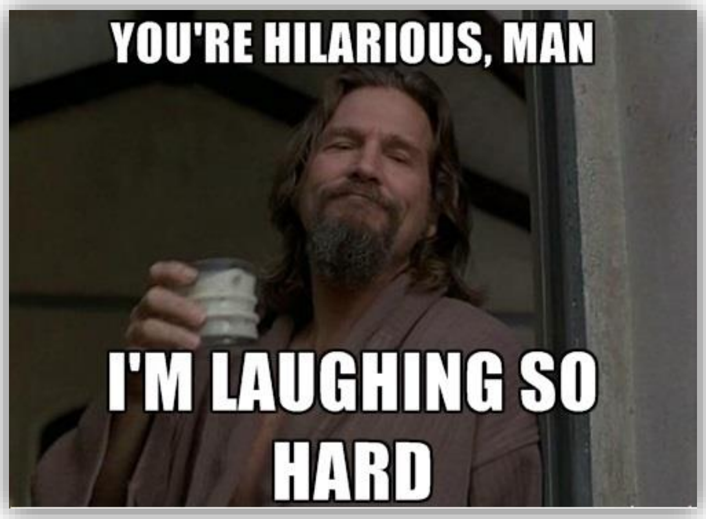

Figure 1 – An example of a sarcastic meme where the facial expression plays a fundamental role suggesting the sarcastic meaning of the message.

While the fictional/feature opposition[27] realizations are present within satiric texts, the range of non verbal clues for sarcasm is not findable due to the written nature of satire. To overcome with the lack of pragmatic clues, satiric discourse presents substitutive verbal hints, such as the use of punctuation, as is done in the following excerpt from Michele Serra and Maria Novella Oppo articles:

«*Pare che chiamare un taxi a Firenze, ieri, fosse impossibile a causa di un malizioso* ***"guasto"*** *dei call-center*» [28]

«*Ci mancava il Ponte sullo Stretto, evocato da Matteo Renzi nel libro "Donne d'Italia"* ***(?)****, la strenna 2015 di Bruno Vespa.*»[29]

[27] An example of fictional incongruence is contained in this excerpt from an article (see note 8) by Michele Serra: «*Un recente studio della Normale di Pisa calcola in quasi tremila le battute necessarie per indicare i nomi di tutti i leader.*». With the fake presentation of the results of a research study, the author wants to outline the extreme division within the Italian political panorama. An example of feature opposition is contained in the passage (see note 26) already used for the explanation of gradation of irony, namely: «*No, Verdini non è il mostro di Lochness, come dice Matteo Renzi. È molto peggio, politicamente parlando*.» In the initial part of the passage, the author seems to assign a positive feature (Verdini is not the Loch Ness monster), while in the last part of the passage Serra states the exact opposite (Verdini is worse than the Loch Ness monster).
[28] See note 5.
[29] See note 6

«(Berlusconi)…*non ha vergogna di farsi vedere in giro con una* **«***fidanzata***»** *che ha solo 50 anni meno di lui*»[30]

At this point, beyond similar or substitutive sarcasm realizations, we could understand easily that the ambiguity between satire and sarcasm is related to the fact that both types of text have a predetermined target to tease. Additionaly, we need to consider how the target and the linguistic receiver of sarcastic texts, while normally are coincident, sometimes could be separated subjects, as for what happens normally in satire. A clear example of sarcastic description of a third party is within *Julius Caesar* by Shakespeare, when Mark Antony speaks in front of the roman crowd, defining Brutus, who betrayed and murdered Caesar, as an "*honourable man*". In this famous example, the anaphoric repetition of the adjective in a discours-like structure is used to belittle the target. While the discursive development of sarcasm is not frequent, it still represents a possibility within the range of its potential realizations, thus placing sarcasm near enough to satire in a position that could easily cause confusion between the two. Nevertheless, discursive realizations of sarcasm usually are not ironic (the Mark Antony speech indeed is not) and thus this confusion is probably related only to those specific genres (such as satire, parody or pamphlet,) in which sarcasm is used as a stylistic choice amongst the possible strategies to criticise the target. The indirect demonstration if this is the use of sarcasm in genres that have other purposes rather than criticism (such as in Tragedy, Novels etc.), where the confusion between this stylistic choice and the genre is not present at all. Eventually we can consider sarcasm as a set of textual strategies for the realization of concise texts; some of these strategies could be used to develop portions of complex texts that fall within the

[30] Article titled «Berlusconi fa notizia perché è l'uomo che morde il cane». Date: 14 12 2014, available at this link:http://cerca.unita.it/ARCHIVE/xml/2495000/2490641.xml?key=Maria+Novella+Oppo+Fronte+Del+Video&first=121&orderby=0&f=fir

boundaries of a specific genre. Concluding the first chapter, in the form of a Venn diagram a visual presentation is presented of the possible position of the satiric genre in relation to the other contemplated set of linguistic phenomena, namely humour, irony and sarcasm.

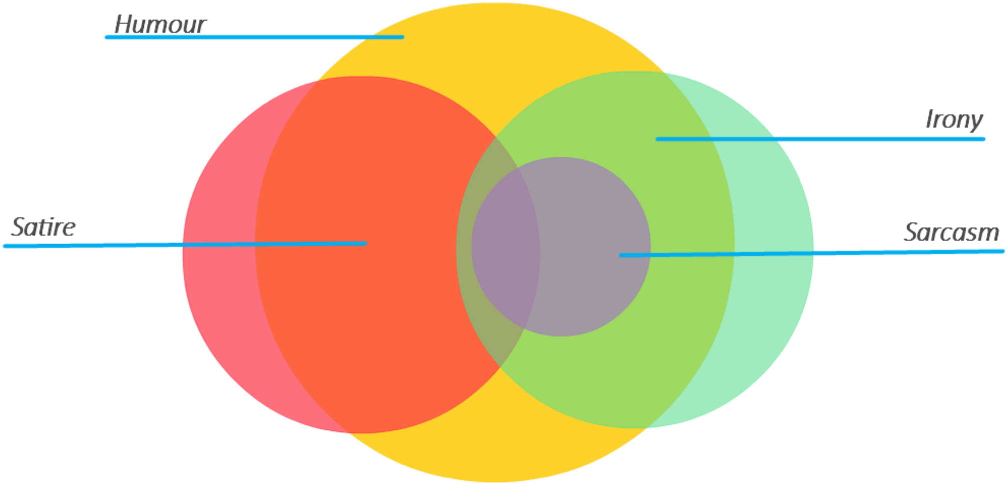

Figure 2 – Possible positioning of Satire in relation with the other genres considered up until now

Within the irony set, sarcasm shares a portion of its set with that of satire. The satire and irony sets are almost completely overlapped by the humour superset, in order to explain linguistic uses of both phenomena without humorous intents. Eventually, as stated before, even sarcasm (or rather specific ways to realize sarcasm) can be used without humorous intentions, but for the sake of simplicity the diagram does not consider further intersection with other uses of language.

Chapter 2 – Matching Satire

The aim of this chapter is to investigate the state of the art concerning computational methods used to automatically detect humorous texts, in order to understand what the best practices are and to what extent it is possible to use them for the detection of satiric texts. There are two main reasons why the focus of this second part of the thesis is not concentrated specifically on automatic methods for the identification of satire: the substantial lack of research in the academic field concerning this specific task, and the need to look for particular techniques used by scholars in order to deal with those local linguistic features of humorous texts whose presence has been found even in satiric texts . Aside from a pure academic interest, a potential useful applications of automatic satire detection is the mechanical classification of texts and the deep parsing of their textual features. In the first case, to have a tool that is capable of disambiguating the degree of affinity of a long text amongst a set of given genres, could prove to be a helpful instrument for the separation between true informative journalistic pieces and spoof articles, which are usually intentionally structured as real news. Instances of satiric texts taken as serious works are repeatedly uploaded on the internet and it is not uncommon for newspaper editorial staff teams to mistake fictional news as truthful stories. The automatic recognition of textual features could instead prove to be a valid tool to understand the characteristics of a text from a quantitative point of view, and further to help writers to detect potential plagiarism and non-incisive use of satiric language. Moving from possible applications of detection algorithms, as far as automatic text-generation is concerned, potential generative tools would not be substantive enough to substitute the human quality to create satiric messages, despite the fact that several automatic generation systems have been already tested for the production of texts longer than simple sentences for other genres. This is because, even though this specific field of research is active and is carried out with significant efforts by many scholar, the length of the texts – not only of satiric texts but of all kinds of genres – implies levels of complexity that the actual computational knowledge is not capable of overcoming, producing linguistic outputs not sufficiently natural in order to be interchanged with real texts, and for this reason humorous text-generation algorithms are not contemplated in the following dissertation. Remembering what has been stated in the first chapter in relation to the importance of the pragmatic dimension involved in written satire, to build systems capable of analysing complex input, we cannot rely only on the basic syntactic information of the sentences within a satiric text, since we need to know for further information about the way in which sections of the text are linked; furthermore, there is the need for external resources that could aid in the retrieval of world knowledge implied within satiric texts and the way in which this knowledge is superficially represented. Consequently, a list of major computational resources that could be used for the purpose of the automatic recognition of satire is presented before entering into the analysis of the computational techniques. Assessments upon the potentiality of these instruments to enhance further computational analysis of complex texts are furnished, without forgetting to mention the possible solution for weaknesses that could invalidate the scientific attempts of detecting written satire. The dissertation around the computational methods will outline the potential analytic features that could be used in order to detect satiric texts. For this purpose, various experiments that aimed to automatically detect irony/sarcasm/satire are considered in relation to their automatic learning set-up and the related features. When needed we will put effort towards the resolution of superficial theoretical misconceptions found within the papers, mostly due to the confusion that occurs between irony, sarcasm and satire.

2.1 Representing knowledge: semantic/lexical resources for satire detection related tasks

The resources presented in this paragraph have different functions and their exposition in this section does not mean that they should be used all together or without proper rearrangements, either because these assets could be alternatives to each other or because the range of natural languages they feature is often limited to a small set of idioms. However, their presentation is meant to show the potential benefit that they could bring, when run through possible stages of a detection algorithms, in resolving of different problems related to the idiomatic/figurative use of language and the extraction of information from texts.

2.1.1 ResearchCyc

ResearchCyc (released freely under a *ResearchCyc license*) is a reduced version of the platform Cyc[31], an artificial intelligence project started by Douglas Lenat and now developed by the Cycorp Inc. The whole system, which is written by using Lisp programming language and CycL (an internal ontology language with a syntax similar to Lisp), aims to integrate an inference engine with a world ontology stored in a knowledge base composed of more than 500.000 concepts, in order to derive answers from the ontology itself, performing human-like reasoning through logical deduction by using inferential rules (such as modus ponens and modus tollens) and universal/existential quantification. The

[31]Url link of the project: http://www.cyc.com/

knowledge base is organized into hierarchized microtheories, group of concepts and facts belonging to a particular knowledge domain. The ontology is composed not only of specific concept definitions and common sense ideas, but contemplates even basic logic rules of the kind $[(if\ \forall x \in X\ and\ X \subset Y) \rightarrow x \in Y]$ – which is the same as saying "*every fish is an animal*" – and rules that imply the transfer of determined property between elements of interrelated sets; an example of this kind of logic rule contained within the ontology is: $\{[fish\ are\ living\ creatures]\ and\ [living\ creatures\ eventually\ die]\ then\ [fish\ eventually\ die]\}$.

Additionally, the academic interest in using the ontology within ResearchCyc is that the knowledge base can be increased with new entries and several of the already present items (69.000 entries under the knowledge base released within OpenCyc, but probably more for the ontology of ResearchCyc) are *owl:sameAs*[32] links that points to other semantic datasets such as: *Wordnet*, *DBpedia, UMBEL*, *Wikicompany, CIA World Factbook*, *RDF About SEC company identifiers*, *RDF About states and counties,* and *FOAF*. It would be interesting to

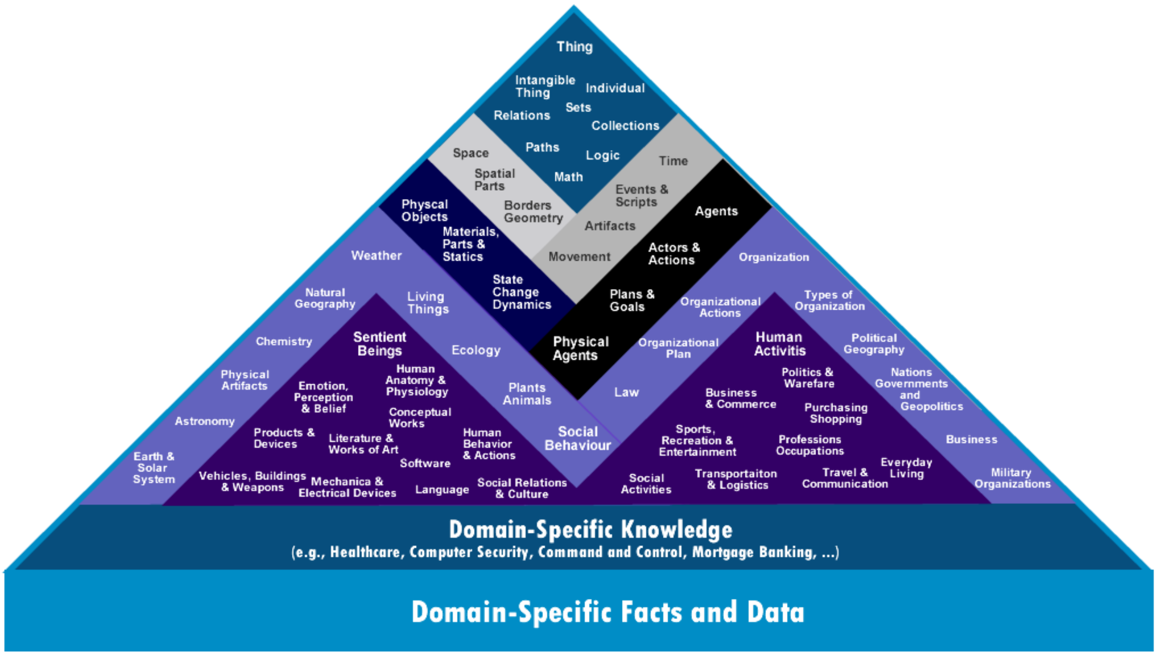

Figure 3 – A schematic representation of the hierarchized architecture of the Cyc ontology. The image is taken from the Cyc website (see note 31)

32 A formalism of the Ontology Web Language that indicates the equivalence between two URI (Uniform Resource Identifier) references.

investigate to what degree the platform is capable of recognizing textual entailments and solve both external and internal references to entities within satiric texts, thereby increasing the strength of the inference engine as well as the number of concept and relational rules within the knowledge base. For a further explanation on *Cyc* see (Matuszek *et al.*, 2006). The only – but substantial – weakness that is actually tied to the system is that it only features the English language; the obvious but fundamental truth that for every word there is a concept but natural languages do not have words for every concept, should be an imperative to consider including different languages as an opportunity to raise the total number of concepts that the knowledge base contains. On this subject (Pohl & Wróbel, 2014) demonstrated through virtue of a simple experiment that, for specific tasks, the retrieval of cross-linguistic data could empower the classification of texts into the Cyc ontology.

2.1.2 Princeton WordNet and its spin-offs

WordNet is a lexical database project for the English language, started by George Armitage Miller in the Cognitive Science Laboratory of Princeton University in 1985. The architecture of the database was designed with the purpose to be consistent with the (at that time) prominent psycholinguistics theories about the functioning of human memory and the retrieval of stored lexical information. The main hypothesis was that the amount of time required to retrieve knowledge related to a lexical items is directly related to the number of conceptual hierarchies that the speaker has to cross in order to grab the required information; following this idea, the WordNet database is structured as a complex series of interrelated tree structures. Parts of speech (specifically nouns, verbs, adjectives and adverbs, but not prepositions, determiners or other function words) that are near-synonym are collected into synonym sets called *synsets*, so that each set contains one or more lemmas, which represent a specific sense of a specific word. The synsets are linked by way of lexical relations (mostly valid for nouns and verbs) such as hypernym, hyponym, terms coordination, meronym, holonym inference and troponym[33], and this linkage method is the reason why we should consider the project more as a semantic network rather than a simple lexical database. In this way, basic recognition of idiomatic and metaphorical verb usage is possible: for instance the expression "my computer died" could be disambiguated because of the presence of the sense "to die" amongst the synsets belonging to the verb "to break". Even though this is an appreciable feature of the network, the way in which WordNet deals with figurative use of language still suffers from the lack of enough links able to capture others verb relationships and complex non-literal denotations. (Fellbaum, 1998) recognized this problem and proposed a remarkable solution to overcome with this issue: in order to transform the semantic network in a knowledge base, more relational information should be extracted from microcontext (namely the definition and the related few examples) provided for the lexical entries. Translating the knowledge contained within the gloss for the first sense of the noun *pilot* – which is "*a person qualified to guide ships through difficult waters going into or going out of a harbour*" – into a more abstract network representation we will eventually have more information at our disposal. Figure 4 is a visual representation from (Fellbaum, 1998) of the notions that it is possible to extract from the *pilot* definition. Despite the fact that local network relationships within microcontexts could be more informative, enabling the representation of the link between

[33] This semantic relation category has been propoes in (Fellbaum & Miller, 1990) and is defined as the presence of "a manner" relation between two lexemes, (e.g: *to shout* is a troponym of *to talk*).

nouns and verbs, *per se* does not represent a solution powerful enough to detect figurative use of language. To correctly parse a sentence like *"The EU president is guiding the European vessel towards an unsafe harbour"* we need inferential rules that are capable of drawing a possible associative parallelism between items of the same syntactic category but belonging to different synsets and thus having different microcontext.

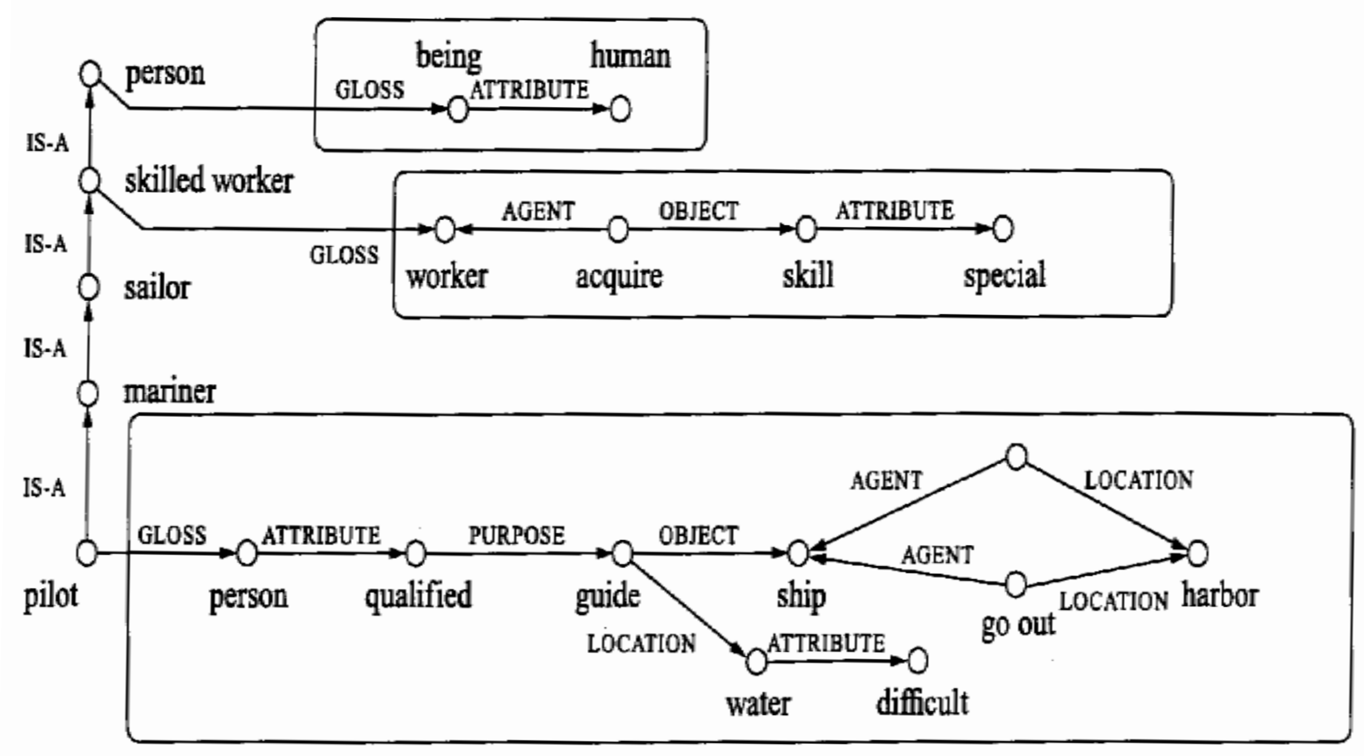

Figure 4 – Visualization of the relationships between the sysents contained within the gloss of the word "pilot". In the example "The EU president is guiding the European vessel towards an unsafe harbour" the potential inadequacy of this potential informative representation is due to the lack of a direct hypernym relations between the sysents of "EU_president" and "Pilot", so that [EU_president is a pilot] could be processed as legit.

Additionaly, Fellbaum proposed a set of inference rules capable of associating two synsets by virtue of binary combination chains of semantic relationships, but oddly enough, no rules are furnished for the connection of verbs with nouns. A possible solution for the detection of figurative language using WordNet could be the development of an external heuristics inference engine applied in combination with an online parser in order to draw hypothetical relationships between information contained in external sentences and notions within the internal microcontexts. Even if further psycholinguistic research showed that the *semantic distance hypothesis* alone is not sufficient for a complete explanation of the semantic organization of our mental lexicon – since many variables (both endogenous and exogenous) are involved and contribute to both the formation of the abstract categories that contain the stored lexical information and the way in which this information is linked – the WordNet database has proven to be a powerful tool for several recognition tasks such as word sense disambiguation, information retrieval, automatic text classification and automatic text summarization. The academic interest around this semantic/lexical database – the most recently updated versions of which are the 2.1 version for Windows and 3.0 version for UNIX-like operating systems – led the scientific community to develop spin-offs of the original project, either for aiming to build semantic networks of other languages or to combine the Princeton WordNet with external assets, so that now the scientific community can benefit from different instruments; amongst these tools, the main are:

- **EuroWordNet**: a joint enterprise comprised of the University of Amsterdam, The Fundacion Universidad Empresa (Madrid and Barcelona) and the Institute for Computational Linguistics «A. Zampolli», with the goal to build a multilingual database containing WordNets for some European languages (Dutch, Italian, Spanish, German, French, Czech and Estonian), linked by using of an Inter-lingual index that allows the shift between similar words in different idioms. This method could prove to be useful for the extraction of information that is directly expressed in their original form without any kind of further rephrasing, such as it happens in several "Hitler jokes". Let us look at this specific joke:

  «"Hitler walks into the meeting room and turns to his trusted staff."I want you to organise the execution of 10,000 Jews and one kitten." Everyone looks around the table and, after a long silence, Goering pipes up. "Mein Führer, why do you want to

kill a kitten?" Hitler smiles and turns to the rest of the table. "You see, no one cares about the Jews".»

In this joke the use of "mein Fuhrer" is not rephrased[34] in English and thus processing this portion of text using Princeton WordNet alone would be not productive enough in order to grab that specific portion of text, whereas assessing a possible automatic recognition of the joke using EuroWordNet would produce a correct detection of the noun phrase. The inter-lingual index also provides for a shared ontology composed of 63 semantic distinctions for the highest hierarchic levels of the stored knowledge. The EuroWordNet project was completed in 1999, but further institutions and research groups continued in developing WordNets for new languages and potentially these new semantic networks could find their place within the cooperative framework of the **Global WordNet Association[35]**, which aims to standardize, mantain and link WordNets for every language in the world.

- **MultiWordNet[36]**: a bilingual database project currently still active and developed by The Human Language Technology group within the Bruno Kessler Foundation. The aim of the project is to align the Italian WordNet with the Princeton WordNet (in its 1.6 version) by building a strict correlation between the Italian and the English synsets. The peculiarity of this tool is that the implemented hierarchy is able to represent the linguistic idiosyncrasies between the two languages, thus showing lexical gaps and different terms denotations. Given that denotative language is a basic linguistic device of satiric discourse, stressing the fact that authors put great

[34] The explanation about why the noun phrase within the joke is not expressed in English is simple: "mein Fuhrer" has already become a sort of idiomatic sentence, so it has to be said in its original form.
[35] Additional information on the Global WordNet Association available at this link: http://globalwordnet.org/
[36] The resource is licensed under a Creative Commons Attribution 3.0 Unported License. Is possible to browse an online version (with six more languages aligned with English) and find details information at this link: http://multiwordnet.fbk.eu/english/home.php

efforts even into the choice of single specific words, the MultiWordNet asset could be a helpful tool for deepening the analysis when it comes to comparing texts from the two featured languages, trying to assess the exact meanings of a source as precise as possible. For instance: in the following excerpt from an article[37] by the journalist Elia Fiorillo, speaking about Silvio Berlusconi, he writes:

"Il fanciullino che e' in lui a volte prende il sopravvento sul navigato manager"

As stated in (Bentivogli & Pianta, 2000) the equivalent word in English for "fanciullino" is "child" but the latter is missing of the specific denotative power of the Italian term. By virtue of the software design devised for MultiWordNet, we have the concrete possibility to detect these lexical differences, understanding the semantic distance between words and further enhancing the analysis of possible nuances within the texts.

- **WordNet++[38]**: developed at the University of Amsterdam by (Steuten, Dehne, & P. van de Riet, 2000), this spin-off combined the Princeton WordNet with Color-X[39], which is a method that performs event and object modelling representation by means of a formal specification language based on Dik's Functional Grammar theory (Dik, 1989). In this way, WordNet++ is capable of containing more types of relationships compared to the ones expressed by the synsets of the original WordNet. The added notions – using subsets of words and relationships within WordNet – are organized into domain-specific knowledge, instantiated by hand and partly extracted automatically through the use of inference rules capable of

[37] Article titled "Il ritorno di Berlusconi e… i ringraziamenti dovuti" published on the website http://www.malitalia.it/ on July 15, 2012.

[38] Actually WordNet++ is no longer available for download from its developers.

[39] Conceptual Linguistically based Object-oriented Representation Language for Information and Communication Systems

detecting candidate words, looking at the knowledge already stored within the domains. The instrument conceived by Steuten *et al.* – while is not directly relevant for applications aimed to detect satire – is interesting because it allows us to check for internal consistency of the gathered concepts within the domains and shows the wide potential of modelling languages in transforming information into structured knowledge.

2.1.3 Framenet

The Framenet project[40] – developed at the International Computer Science Institute in Berkeley, California – aims to produce an electronic resource based on the Frame Semantics Theory, mostly developed by Charles J. Fillmore and summarized in (Fillmore, Lowe, & Baker, 1997). The basic idea is that it is possible to draw semantic frames, labelling with specific tags the lexical items[41] of a sentence, by identifying at least three elements: **a)** the actions or states associated with the verb**; b)** the participants of a situation; **c)** the semantic roles of the participants. In doing so, we are able to obtain a schematic representation that describes events or phenomena. This representation always has core and non-core elements, as in the example of the [*Commerce-goods-transfer*] frame where the core elements are [*Seller, Buyer, Goods, Money*] and the non-core elements are [*Place, Purpose*, etc]. Without further entering into the numerous formal options that can be used for tailoring the semantic frames (such as diathesis alterations, subcategorization, etc) the most remarkable characteristic of Framenet – its database contains 12.000 lexical items,

[40] Framenet data are licensed under a Creative Commons Attribution 3.0 Unported License. More information about the project are available at this link: https://framenet.icsi.berkeley.edu/fndrupal/

[41] As stated in (Ruppenhofer *et al.*, 2006): “A lexical unit (LU) is a pairing of a word with a meaning. Typically, each sense of a polysemous word belongs to a different semantic frame”.

1.000 semantic frames and more than 170.000 exemplifying sentences – is the relationship system between frames, composed of seven types of link[42], namely:

- **Inheritance**: corresponding to the ***IS A*** relationship contained in several ontologies, this is the most robust link between frames within Framenet, since it establishes that any core/non-core element that belongs to the superior frame is strictly bound to a corresponding element in the inferior frame. E.g. the [*Revenge*] frame inherits from the [*Rewards_and_punishments*] frame the frame elements.
- **Perspective_on**: this link is used when the inferior frame is the characterization of a more neutral frame. E.g. the [*Get_a_job*] and [*Hiring*] frames, which represent different perspectives of the same scenario, namely the [*Begin_employement*] frame.
- **Subframe**: this relationship represents a semantic frame as part of a more general and complex scenario, expressing a particular stage or event of the superior frame. E.g. [*Arrest*], [*Arraignment*], [*Trial*], [*Sentencing*] and [*Appeal*] are all subframes of the [*Criminal_process*] frame.
- **Precedes**: this determines the sequence of events and conditions expressed by subframes of a more complex scenario, as in the [*Criminal_process*] frame where the subframes are connected between them, specifying their order and the fact that they share the same frame elements.
- **Causative_of**/**Inchoative_of**: this kind of link describes the non-inheritance connections occurring between causative/inchoative events and the stative events bound to them. E.g. The *[Cause_change_of_scalar_position]* frame is linked to the

[42]All the examples referring to the Framenet relationship system are took from (Ruppenhofer & al., 2006).

[Position_on_a_scale] frame by virtue of a *causative_of* relation, whereas the [*Change_of_scalar_position*] frame is bound to the *[Position_on_a_scale]* frame with an *inchoative_of* link.

- **Using**: this link describes the non-inheritance relationship between frames that generally refer to one or more abstract frames. E.g. the [*Judgment communication*] frame uses the generic [*Judgment*] and [*Communication*] frames without inheriting all their frame elements.
- **See_also**: this relation is useful when similar frames need to be compared or differentiated accurately. E.g. by comparing representative elements of the [*Scrutiny*] and [*Seeking*] scenario with a *See_also*, it is possible to more precisely define the two frames, thereby leaving no further room for potentially mistaking them.

The relevance of this computational asset for the detection of satiric text lies on the fact that – using automatic semantic role labelling and the types of frame-to-frame relationships featured within Framenet – is possible to conceive the construction of automatic methods capable to process idiomatic and metaphoric language, associating frames to multiword expressions and figurative sequences in order to explicate their real meaning. An approach of this kind is shown in (Burchardt *et al.*,2009) study on the semantic analysis of German using Framenet, where the authors hypothesize the potentiality of the semantic frames – devised for the English language – to be applied cross-linguistically. Whereas the assumption of (Burchardt *et al.*,2009) needs to be confirmed with more empirical data, because the possible discrepancies rely only on the superficial realizations of the concepts – namely on the lexical items – their approach seems to be less problematic if compared to cross-linguistic methods based upon ontologies and knowledge bases, where the presence of semantic gaps is mostly tied to the static organizational architecture of the concepts.

2.1.4 BabelNet

BabelNet is a project conducted within the Multilingual Joint Word Sense Disambiguation starting grant, headed by Roberto Navigli at the Linguistic Computing Laboratory of the Sapienza University of Rome. Awarded in 2015 with the META prize[43], the project is a large-scale multilingual semantic network and ontology, builded by automatically integrating several lexicographic and encyclopedic online sources[44], representing both the concepts and named entities contained in the external datasets with a graph-based model. Moreover, by covering 272 languages, BabelNet is capable of overcoming lexical gaps inherited from the knowledge sources and then further integrating its lexical entries by using a statistical machine translation method. The ontology architecture is organized into set called *Babel synsets* that are connected using for the most part the hyperlinks from the different language versions of Wikipedia, and additionaly using the synsets relationships from Princeton WordNet. In figure 5 there is a schematic example of a Babel synset from (Navigli & Ponzetto, 2012). Due to the huge amount of semantic relationship data can be collected this way, to select only the relevant connections ruling out noise information, an

[43] This prize is awarded to outstanding products or services supporting the European Multilingual Information Society

[44] BabelNet actually combines knowledge from: Princeton Wordnet 3.0, Open Multilingual WordNet, Wikipedia, OmegaWiki, Wikitionary, Wikidata, Wikiquote, VerbNet, Microsoft Terminology, GeoNames, WoNeF, ImageNet. The last version of the network is released under Creative Common Attribution-NonCommercial-ShareAlike 3.0 Unported license. More information about BabelNet available at the following link: http://babelnet.org/

additional step is processed: the strenght of the relationships found in the external resources is assessed using a relatedness measure based on Dice's coefficient.

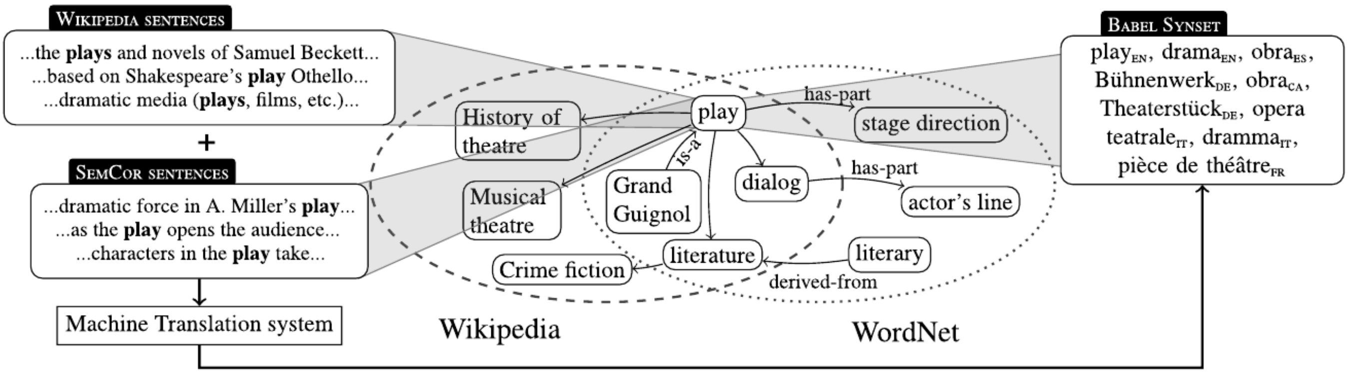

Figure 5 - Schematic representation of the Babel synset for the world "play". Notions are collected from both Wikipedia and WordNet. Combining the information from the SemCor corpus with all the lexemes found within the different language versions of Wikipedia is possible to process the detection of the lexical gaps.

Despite BabelNet mostly being used for entity linking and word sense disambiguation tasks because the stored knowledge is kept continuously updated, the relevant aspect of this asset in relation to the automatic detection of satire surely is the multilingual encyclopaedic dictionary, which is encoded using the *Lemon* Resource Definition Framework and accesible via SPARQL Protocol and RDF Query Language endpoint. Furthermore, it would be interesting to experiment if the method used by (Navigli & Ponzetto, 2012) in order to assess whether the semantic relatedness between the linked notions – when properly rearranged and combined with formal semantic representations of the kind suggested in (*Steuten, et al*., 2000) – could prove to be useful even for the evaluation of figurative use of language.

2.2 Automatic detection of Satire: seeking methodological elements.

The aim of this paragraph is to analyse the experimental methods used in the computational field for the automatic detection of humorous texts. Assessing the efficiency of the different computational techniques could prove to be useful for the identification of the fundamental elements necessary to handle the various problems raised by more complex and specific forms of humorous productions such as satiric texts. While we will not deeply scrutinize the experiments and their related results, the attention will be more focused on the set-up of the algorithms and their basic features, speaking on the theoretical backgrounds behind the devised methods and further recalling concepts expressed in the previous sections in order to suggest possible future research. The different computational approaches are presented in subparagraphs dedicated to different text features, so that in any section the potentiality of the various investigational strategies is better assessed, comparing similar experiments and integrating them with notions from selected papers within the related academic literature. Similarly to what it has been stated before with regard to the computational resources, since the methods analysed are often alternatives or specifically task-oriented, the raised observations upon the experiments are not meant to be considered as drawing a unified methodology of the automatic detection of humorous texts, but rather they should be seen as departure points intended to stimulate future research on the topic. Obviously, for what concerns the ironic and sarcastic recognition experiments, in the following sections we have only mentioned the experimental attempts that can be somehow tied to linguistic aspects belonging to the satiric genre.

2.2.1 Delve into the surface of morpho-syntactic information

At this point of the dissertation we should be able to understand that for the detection of any forms of humour we cannot rely only on the superficial realizations of the meanings, and yet the syntactic organization of humorous sentences proved to be a worthwhile source of information. When (Sarmento *et al.*, 2009) attempted to automatically create a Portoguese reference corpus for political opinion mining in user-generated content[45], they ended up needing to disambiguate the instances of false positive content within the positive set of the collected opinions, since 35% of the results labeled as "positive" were infact ironic and thus negative comments. For this reason, the same research group studied a solution proposed in (Carvalho *et al.*, 2009), where eight syntactic patterns are proposed as possible clues fort the detection of irony in user-generated contents.

Pattern:	Match:	
Diminutive forms	(4-Gram+ NE**Dim** | NE**Dim** 4-Gram+)	
Demonstrative determiners	**Dem** NE 4-Gram+	
Interjections	**Itj***pos* (dem adj-*pos*)* NE (?|!|...)	
Verb pronoun: **tu**	NE (**tu**)* ser2*s*[46] 4-Gram+	
Adjectival crosscontrucion	(Dem|Art) (**Adj-***pos*|**Adj-***neut*)[47] de NE	
Punctuation	4-Gram+ **(!!|!?|?!)**	
Quotation marks	**"**(Adj-*pos*|N-*pos*){1,2}**"**	
Laughter expressions	(LOL|AH|EMO+)	

Table 1 - Patterns in (Carvalho et al.,2009) for the automatic detection of irony in user-generated contents

Because of the theoretical background that they adopt – referring to the concept of irony as «*the specific case where a word or expression with prior positive polarity is figuratively used for expressing a negative opinion*» – and since the research group was focused on the

[45] We quote this work not only to outline the succesive experiment conducted by the same research group, but also because the investigation of user-generated comments on political facts has a sociolinguistic value and confirms indirectly that, in those cases when satire is conveyed by means of articles published online, it is intended to be seen as a real speech act.
[46] Some patterns are language-dependent, as is the case with the *verb pronoun* pattern where the second person singular "tu" can be embedded within the verb "ser" (Portuguese for "to be")
[47] **pos**= positive; *neut* = neutral

recognition of false positive sentences involving named-entity (NE), we can easily say that the kind of irony that they tried to automatically detect was more specifically sarcasm rather than general irony. Most of the eight patterns have a specific polarity costraint which is represented by a window of four words (4-Gram+) with the mandatory presence of a positive word – that could either be an adjecive or a noun – in a position adjacent to the named-entity. Using these patterns in combination with both a named-entity and a sentiment lexicon specifically devised for the purpose, the authors tested the effectiveness of the pattersn by matching potential ironic sentences within a set of 250.000 users's comment, for a total of almost one milion sentences. Subsequently, the scholars labeled the data collected for each pattern that matched at least 100 sentences as *ironic*, *non ironic*, *undecided* or *ambigous*. The experiments showed that the most productive patterns were *Interjections*, *Punctuation*, *Quotation mark* and *Laughter expressions*. Below is a table containing the labeled results for each set of sentences matched by the above patterns.

patterns	ironic	not ironic	undecided	ambiguous
interjections	44.88 %	13.39 %	40.94 %	0.79 %
punctuation	45.71 %	27.53%	26.75 %	0.00 %
quotation marks	68.29 %	21.95 %	2.73 %	7.03 %
laughter expressions	85.40 %	0.55 %	11.13 %	2.92 %

Table 2 – Results for patterns with more than 100 sentences. (Carvalho et al.,2009)

Quotation marks and especially laughter expressions achieved the highest percentange in the correct recognition of ironic user generated contents. As for quotation marks, as we have already seen in the paragraph 1.5, their usage (together with others punctuation signs) represents a valid strategy even in satiric texts, althoug not necessarily with the costraint suggested within the related pattern. However, it should be noted that the range of possibilites that writers have while using question marks is not only limited to ironic effects and that in satiric texts, apart from inverted commas, unusual employment of punctuation is truly limited as there is the necessity of organizing a complex textual structure. Laughter expressions, because of their specific use as lexical units of the internet slang, have a very marginal position amongst the strategies that writers can use for the expressions of humorous messages, but this can change in relation to the specific author's writing style. In any case, we should clarify the results: the average length of the users comments is about four sentences, but the patterns covered only 1832 sentences (0.18%) of the total data processed, and since we are not informed about the average length of only the matched sentences, we cannot evaluate if the patterns are producing the shown results becuause of the possible brevity of the comments. This information would have been useful in order to understand if the relative trend shown by the productive patterns is valid even for more complex forms of texts. However, the author did not claimed that the productive patterns are to be considered as clues of verbal irony for others kinds of texts and they further recognized the eccesive strenght of the applied costraints as responsible for the insufficient coverage of the dataset. We can eventually confirm that by assuming a less static definition of irony – and consequently shaping the patterns with lessened costraints – the coverage of the data would have been performed better. These considerations lead us to ask to what degree the syntactic patterns are representative of sequences used in discursive types of texts for the expression of ironic meanings. Looking at the less productive patterns amongst the four that clustered more than 100 sentences, namely the *interjections*, we have the first strong piece of evidence of the legitimacy of the others patterns (when stretched) as possible indicators of irony. With regard to the design of the experiment, the interjections pattern $Itjpos\ (dem\ adj - pos) * NE\ (?\,|\,!\,|\ldots)$ used by (Carvalho *et al.*, 2009) was confined to match only positive interjections such as "Bravo", "Viva" or "Parabéns" in co-ocurrence with a NE. When trying to understand the use of interjections in more complextexts it would be useful to look at the following examples from Maria Novella Oppo's articles:

I. *«L'ex ministro Renato Brunetta e il vicedirettore de Il Giornale, Nicola Porro, sotto l'alto patrocinio di Bruno Vespa, hanno raccontato in tv la fine dell'ultimo* ***(speriamo!)*** *governo Berlusconi»*[48]

II. «*…come il solito casino dei leghisti, con gli striscioni che esaltavano la galera, in memoria del vecchio caro cappio. Proprio loro che si sono dimostrati altrettanto meritevoli di galera dei tangentisti di una volta e capaci di chiedere il rimborso anche per le caramelle.* ***Ma pazienza:*** *attendiamo con ansia che deputati e senatori leghisti siano dimezzati dal voto degli italiani*»[49]

III. «***Peccato*** *che, a contraddire il coro degli elogi più servili sia venuto il parere iconoclastico delle ingrate olgettine, che, parlando tra di loro liberamente, senza sapere di essere intercettate, irridevano il «culo flaccido» del vecchio cavaliere.»*[50]

IV. «***Povero Berlusconi****, costretto ogni giorno a inventarsi una sparata a freddo per occupare le aperture dei tg.*»[51]

In **I** and **II** the interjections are ironically used without a precise sentiment polarity and their meanings are not intended to be sarcastic. In **I** the author really hopes that Berlusconi will not become prime minister again and the same happens in **II**, where the feeling of patience is sincere, since the journalist is genuinely hopeful about the fact that in the near future the number of representatives in the Lega Nord party will be severely diminished. Still in **II** we can notice that the humoristic use of interjections is possible even without explicitly

[48] Article titled «*Zombi in Val Padana Pdl e Lega di nuovo insieme*». Published on January 9, 2013. Available at the following link: http://cerca.unita.it/ARCHIVE/xml/2500000/2498523.xml?key=Maria+Novella+Oppo+Maria+Novella+Oppo&first=281&orderby=1&f=fir

[49] Article titled «*Parlamento, il diritto di sperare che Scilipoti non ci sarà più*». Published on December 23, 2012. Available at this link: http://cerca.unita.it/ARCHIVE/xml/2495000/2493162.xml?key=M.N.Oppo&first=1&orderby=1&f=fir

[50] Article titled «*Se Silvio Berlusconi è troppo bello per vincere*». Published on January 11, 2013. Available at the following link: http://cerca.unita.it/ARCHIVE/xml/2500000/2499460.xml?key=Fronte+Del+Video+Maria+Novella+Oppo&first=221&orderby=0&f=fir

[51] Article titled «*Le promesse sono esaurite*». Published on March 10, 2010. Available at this link: http://www.unita.it/rubriche/oppo/le-promesse-sono-esaurite-1.14237

mentioning a named-entity. However, in **III** and **IV** there is verbal irony but not of the kind that (Carvalho *et al.*, 2009) hypothesized, because the interjections are used to display negative feelings, but the intended meaning is the exact opposite: in **III** the author is not actually displeased by Berlusconi being ridiculed and the same is true in **IV**, where Oppo is not sorry for Berlusconi but instead she criticizes him for his continuous statements. This kind of verbal humour working *a contrariis* is a feature considered (from a quantitative point of view) only recently in academic literature, and we find in fact reference of it in (Bosco, Patti, & Bolioli, 2015) whose propose the conception of irony as a *polarity reverser* in ironic tweets. While this notion is strictly related to the incongruity presumption – and we have already seen that this principle is fundamental, but not solely responsible for the expression of irony –, the polarity reverser proposal seems to be a satisfactory explanation of verbal irony even for longer texts. Acknowledging this latest notion, and because in this section of the thesis we are more interested in comprehending whether static sequences of words (in our case Italian sequences) can effectively match ironic portions of texts, in the further argumentation we will not consider adjectives or nouns with positive polarity constraint, even if we are aware that verbal irony and sarcasm are often expressed exploiting positive meanings rather than negatives ones. Of course, later on we will further discuss the importance of non-syntactic information. For the same motivation just explained, moving towards the others four language-oriented patterns, which means that they are devised in order to match specific Portuguese constructions, we will not discuss them in terms of morpho-syntactic variance in comparison with other languages. Lastly, it is worth noting that, even if in **II** it is suggested that we can possibly find ironic sequences without overt mention of named-entities, we will maintain the presence of the NE as a constraint because we want to evaluate to what extent part of speech (PoS) orders should be flexible while matching irony. The need for a constant element not only prevents the analysis from falling into a mere combinatorial list of possible orders, but it is also justified by the fact that in satiric discourse famous figures are often targeted. In whatever manner, the display of Italian morph-syntactic patterns should be intended as a theoretic attempt to look towards problems and facets of syntactic organizations within a selected portion of ironic texts and not as a real parsing grammar proposal. For what is related to the *Verb pronoun pattern,* we can easily hypothesize that, in order to convey ironic meanings, a similar use of the second-person singular "tu/ti/te" with the verb "essere" is possible even in Italian. However, this pattern is naturally more representative of Twitter-like texts rather than those of discourse-like texts, because of the possibility for Twitter users to directly address a target profile on the social network. Specifically looking to satiric texts instead, since the targets are usually not coincident with the receiver of a satiric discourse, it is more probable that the targeted entities are mentioned using the third-person singular, and if any particular mention is made with a second-singular person, it could either be a quote or a specific narrative strategy[52]. In relation to the diminutive forms pattern, it would be convenient to not only produce an inventory of the possible forms applying the affixation forms of the Italian morphologic system (comprehending even the augmentative forms to) a named-entity lexicon, but an additional step should be the addition within the NE lexicon of all those modified words used to mention particular named-entities. For instance: a satiric author, using morphologic suffixes, can refer to Silvio Berlusconi as "Silvietto"[53],

[52] An example of a narrative strategy enhancing the use of the second-person singular is the invention of a dialogue between two politicans like in this article from the satiric website diecimilame.me titled "Una profonda sintonia". Article available at this link: http://diecimila.me/2014/01/22/una-profonda-sintonia/
[53] Instances of satiric use of diminutives like "Silvietto" and "Matteino" are found in this article by Davood Abbasi, titled "*Da Berlusconi a Renzi: la tradizione dei premier italiani di "scodinzolare" in Israele*". Published on July 23, 2015 and available at this link: http://italian.irib.ir/analisi/commenti/item/194552-da-berlusconi-a-renzi-la-tradizione-dei-premier-italiani-di-scodinzolare-in-israele.

"Silviaccio"[54] o "Silvione"[55], and then we would be able to capture the sequence using a pattern like "$prefix * (NE^{\text{infix*}}) suffix *$", but it is not rare that Berlusconi is mentioned using the lexical items "Berlusca", "signor B" or even only the letter "B", like in the following example from an article[56] by Maria Novella Oppo:

V. *«Invece, tra noi fan di Giuliano Ferrara prevale lo sconforto per la fase moscia che il grande giornalista attraversa dopo il crollo di* ***B****»*

These words should be considered in the NE lexicon as well as the real NE entries, both because they already represent altered versions of a NE entry, and even because they could undergo new affixation formation. At first glance, similarly to the proposed Portuguese demonstrative pattern, in Italian we can hypothesize a *demonstrative* pattern such as "$Dem\ NE$", since it is possible to look at demonstratives as clues of ironic sequences, like in the following examples:

VI. «***Quel Fini*** *chiede Perdono e Marcia su Bolzano.*»[57]

Furthermore, before the NE is it even possible to find a determiner with the same mocking function instead of a demonstrative, and then we have "$(Dem|Det)\ NE$", as in:

VII. «*Prof. Monti, con tutto il rispetto, la preghiamo di non fare* ***il Silvio***»[58]

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[54] Example of satiric use of a pejorative suffix is found in this article, available at this link: http://www.iltempo.it/politica/2005/11/14/con-silviaccio-benigni-paga-le-tasse-al-4-5-1.1073214; titled "*Con Silviaccio Benigni paga le tasse al 4,5%*". Article written by the online staff of iltempo.it and published on November 14, 2005.

[55] Instance of satiric use of an augmetative suffix is found in the following article, available at this link: http://www.newspedia.it/berlusconi-inarrestabile-o-arrestabile-silvio-stai-sereno/. Article written by the online staff of newspedia.it and titled "*Berlusconi inarrestabile, o arrestabile? Silvio, stai sereno*!", published on April 29, 2014.

[56] This excerpt comes from an article titled "*Castelli abbandona Santoro, panico nel Paese*". Published on January 27, 2012 and available at this link: http://www.unita.it/rubriche/oppo/castelli-abbandona-santoro-panico-nel-paese-1.376162

[57] This is the title of an article by Bruno Gravagnuolo on the newspaper "l'Unità". Published on October 2, 2002. Resource available at the following link: http://cerca.unita.it/ARCHIVE/xml/60000/58716.xml?key=+Bruno+Gravagnuolo&first=1361&orderby=0&f=fir

[58] This excerpt comes from an article, titled «*Silvio Monti*» by Roberto Penna. Published on February 2, 2012 and available at this link: http://conservatori-liberali.ilcannocchiale.it/?TAG=pensioni

For this reason it is more convenient to consider the hypothesized sequence as a *dem|det pattern*. Extending the perspective, we find both demonstratives and articles in **more complex sequences** of the kind “$(Dem|Art)\ NE\ adj\ *$”, such as in:

VIII. «*VROOM! VROOM! DE MAGISTRIS COME* ***UN BERLUSCONI QUALSIASI****: “MACCHINA DEL FANGO!”*»[59]

IX. «*Rai,* ***il Gasparri furioso*** *attacca Renzi: “Figlio di massone, sei un imbecille”*»[60]

X. «*In caso contrario,* ***quel Berlusconi ridimensionato e terreo in volto****, accompagnato da avvocati ormai nevrastenici, avrebbe la sua rivincita* »[61]

The examples **VI** and **VIII**, where none positive adjective or noun is found within the 4gram+ window hypothesized by (Carvalho et al.2009), confirms that using such a constraint for the pattern is not a convenient parsing strategy. Furthermore, a *dem|det pattern* can be found even in **conjunction or within idiomatic/metaphoric use of language** as shown in **VIII**, were the sequence is used to build a simile, and **IX**, where there is a clear reference to the title of the Ariosto’s poem “L’Orlando furioso”. The first issue with this pattern is the possible prenominal position of adjectives, since the fact that in cases where a demonstrative is at the beginning of the sequence, between the prenominal adjective and the NE, there is a need for an articulated preposition like “*del|di”*. When trying to invert the position of the adjectives in **VIII** and **X** we would have a clear example of this problem:

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[59] This is the title of a post on the website www.Dagospia.com. Published on June 9, 2013 and available at this link: http://www.dagospia.com/rubrica-3/politica/vroom-vroom-de-magistris-come-berlusconi-qualsiasi-macchina-57307.htm

[60] This is the title of an article from the F.Q.’s blog. Published on February 22, 2015 and available at this link: http://www.ilfattoquotidiano.it/2015/02/22/rai-maurizio-gasparri-contro-matteo-renzi-figlio-massone-imbecille/1446969/

[61] This excerpt comes from an article from the newspaper “l’Unità”, titled «*Giustizia oltre il Cav*» by Luigi Manconi. Published on January 28, 2012 and available at this link: http://www.unita.it/commenti/luigimanconi/giustizia-oltre-il-cav-1.376434

A. *VROOM! VROOM! DE MAGISTRIS COME* ***UN QUALSIASI BERLUSCONI***[62]*: "MACCHINA DEL FANGO!"*

B. *In caso contrario,* ***quell ridimensionato e terreo in volto Berlusconi*****, accompagnato da avvocati ormai nevrastenici, avrebbe la sua rivincita*

C. *In caso contrario,* ***quell ridimensionato e terreo in volto del Berlusconi,*** *accompagnato da avvocati ormai nevrastenici, avrebbe la sua rivincita*

The order in B is near the grammatical correctness limit, since it represents a very marked sequence that could sound non-fluent for many listeners. Placing a preposition between the adjectives and the NE as in C, helps to solve this issue, but then we should add the possible presence of a prepositional element to the hypothesized *dem/det pattern*. The next step then is to check if this possible prepositional element could conflicts with sequences having a determiner rather than a demonstrative at the beginning of the sentence. Surfing amongst user-generated contents, we have found instances of both types of sequences:

XI. «***quel genio del Trota***[63]»[64]

[62] The position of the adjectives in Italian can denote different nuances of meaning but we will not discuss the semantic differences for the already explained interest around the informativeness of syntactic orders. For a more detailed disquisition on the position of qualifying adjectives in Italian see: http://www.accademiadellacrusca.it/it/lingua-italiana/consulenza-linguistica/domande-risposte/posizione-dellaggettivo-qualificativo-italia

[63] The nickname "Trota" is Renzo Bossi's moniker and it has been given to him by his father Umberto Bossi (founder and ex-leader of the Lega Nord party) during an interview.

[64] Is possible to find this sequence in several users-generated comments and private blogs posts and for this reason we report here the link of the google SERP for the keyword query "quel genio del Trota": https://www.google.it/search?q=%22quel+genio+del*%22&ie=utf-8&oe=utf-8&gws_rd=cr&ei=OLKXVuTYOsXTmwHts7rgCQ#q=%22quel+genio+del+trota%22.

XII. «*Che tornino in politica, anche **il genio del trota**[65]! Che ricevano Pensioni elevate! E non paghino alcuna multa! Liberi subito!!! NON E' SUCCESSO NIENTE!* »[66]

Finally, we can hypothesize a *dem/det pattern* with two associated orders capable of detecting the kind of structure represented within the example: "$(Dem|Art)\ NE\ adj* / (Dem|Art)\ adj*\ (del|di)*\ NE$". Within this hypothetic pattern falls the similar adjectival cross-constructional sequence proposed by (Carvalho et al., 2009), hence there is no evident reason to discuss it. Looking more carefully at **XI** and **XII**, we can notice a particularity: the named-entity is mentioned using a nickname. The use of monikers is a well-established practice of many societies; within Italy, the origins[67] of this current habit are documented since the late medieval period. Originally applied to distinguish a person amongst their homonyms by virtue of specific individual (or parental) characteristic, nicknames still became a tool to convey humour towards the targeted entities. In satiric texts is very easy to find monikers referring to personal characteristic of famous targets, like in many of Berlusconi's nicknames:

XIII. «*Processo Mediaset: il **Cavaliere** in fuga dal mondo cinico e baro*»[68]

XIV. «*Dal cilindro esce il **Caimano** e Monti può fare il suo gioco*»[69]

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[65] The type of syntactic structure with the article instead of the determiner, even if it is not completely grammatical does not represent a marked order because seems to be accepted by many speakers/writers. The following link is the google serp associated to the keyword query "il genio del trota": https://www.google.it/search?q=%22il+genio+del+trota%22&ie=utf-8&oe=utf-8&gws_rd=cr&ei=dDiZVpmoDonwaLfdkagK#q=%22il+genio+del+trota%22&filter=0

[66] This is a comment by the user NickNameNick to an article published on Corriere.it at the following link: http://www.corriere.it/dilatua/Primo_Piano/Politica/2012/04/05/95da7dca-7ef9-11e1-a959-e67ffe640cb1_3/bossi-consiglio-lega-belsito_full.shtml

[67] For a general disquisition on the argument see: http://www.treccani.it/enciclopedia/soprannomi_%28Enciclopedia_dell'Italiano%29/

[68] This is the title on an article published on July 30, 2013 by Alessandro Robecchi on ilfattoquotidiano.it. Resource available at this link: http://www.ilfattoquotidiano.it/2013/07/30/processo-mediaset-il-cavaliere-in-fuga-dal-mondo-cinico-e-baro/671505/

[69] This is the title of an article published on December 9, 2012 by Daniela Gaudenzi on ilfattoquotidiano.it. Resource available at the following link: http://www.ilfattoquotidiano.it/2012/12/09/dal-cilindro-esce-caimano-e-monti-puo-fare-suo-gioco/440218/

XV. «*Bossi resuscita il **Berluskaiser**: "E' come Mussolini"*»[70]

The nicknames in **XIII** refers to the ex-honorific title that Berlusconi had. **XIV** refers to the title of the Nanni Moretti's movie *Il Caimano*, where is suggested the idea of Berlusconi as an opportunist and voracious predator. It is worth mentioning the nickname in **XIII** because it is an example of a lexical compound – generated in order to express ironically a negative judgement – using a combination of a NE with another word, in this case "kaiser". It is even possible to form these kinds of lexical compounds by combining two named-entities. Below are two examples of this kind of monikers from Maria Novella Oppo's articles:

XVI. «*In più, ci si domanda come farà il Movimento5 stelle a osservare la par condicio senza partecipare ai dibattiti tv, come impone **Yosif Vissarionovic Grillo**.*»[71]

XVII. «*Torture di cui, si pensa, **Torquemada Di Pietro** deve aver tremendamente abusato nel periodo di tangentopoli* »[72]

Drawing some conclusion from the patterns analysis, we can say that:

- While designing the possible matching word orders, patterns flexibility is recommended. This feature needs to carefully considered, looking for rich evidence of data in order to avoid scarce coverage of meaningful syntactic information or disagreement between sequences. However, it would be more convenient to use syntactic information from an already analysed corpus, trying to list all the possible PoS sequences and possibly ruling out noisy patterns, rather than drawing the sequences from the scratch.

[70] This is the title of an article published on March 3, 2012 by Matteo Pandini on liberoquotidiano.it and available at this link: http://www.liberoquotidiano.it/news/politica/949591/Bossi-resuscita-il-Berluskaiser--.html

[71] Article titled «*Il Pdl dice al Festival di Sanremo «Fatti più in là»*». Published on December 13, 2012. Available at the following link: http://cerca.unita.it/ARCHIVE/xml/2495000/2490263.xml?key=+Maria+Novella+Oppo&first=301&orderby=1&f=fir&dbt=arc

[72] See note 19

- New lexical items can be generated from the reinterpretation of named-entities and idiomatic forms, which usually represents static elements, and this adds a further complexity to their automatic recognition. This consideration confirms (and in relation to the named entities specifically, even broaden) what it has already been stated about this specific aspect of irony in (Mihalcea & Strapparava, 2006). Some of the ontologies have previously mentioned that it could be useful in order to address this issue.
- Figurative/idiomatic language and cultural references in general are notably present even in small portion of text. Superficial representation of these linguistic phenomena goes beyond this and the simple assignment of sentiment polarity to a single part of speech could not be representative of this uses of language. Again, it could be worth using an information-model of the kind mentioned in the first part of this chapter to try to solve this issue.

In conclusion, whether we are trying to capture only verbal irony or generic humorous productions, the manual design of syntactic patterns does not provide for an account descriptive enough of those superficial sequences where irony is contained. Nonetheless, looking for syntactic organizations of ironic portions of texts is not a useless academic exercise, since the study of humour phenomena needs to be carried out in relation to specific language-oriented structures; thus, an inventory of the most frequent sequences used for the transmission of different kind of irony could be a useful tool. For this purpose, a first extensive attempt of assigning superficial information to ironic texts has been made by (Gianti *et al.*, 2012), while trying to build an Italian corpus annotated for sentiment analysis. The authors, using the format of the Turin University Treebank (hereafter referred to as TUT) (Bosco *et al.*, 2000), provided morphological and syntactic annotation of the analysed texts; these information can be useful for further research, where a fine-grained extraction of basic recurring patterns is needed.

2.2.2 Polar explorations: potentiality and limits of sentiment analysis

The conclusions of the previous subparagraphs, together with the concepts shown in the first chapter, confirm the nature of humour and irony-related texts as multidimensional. The presence of different layers is especially marked in satire, and this pronounced multidimensionality is one of the main reason why satiric texts are structurally complex: to express critic humour towards famous targets and hot topics by means of figures of speech and idiomatic language, writers need to elaborate their thoughts in a structured way. Experimenting with the effectiveness of higher-level clues capable of underlining textual complexity is a possible way to address automatic detection of satire. Since many of the conveyed meanings in satire are related to the authors' intention of ridiculing human targets or hot topics through judgemental writing, it is reasonable to think that those kind of ironic meanings are possibly linked to writers' emotive conditions, and for this reason humour research has been carried out using sentiment analysis and opinion mining techniques. In order to conduct different experiments, (Gianti *et al.*, 2012) used about 1,550 tweets from the subgroup TW-NEWS of the Senti-TUT[73] corpus. Apart from the TUT format used for the morpho-syntactic analysis – which has been produced by means of the

[73] The Senti-Tut corpus is composed collecting tweets from Twitter, and is organized in two subgroups: one group, called TW-NEWS is around three thousands of tweets published from October 16, 2011 to February 3, 2012, which is the period after that the Italian prime minister (at that time) Mario Monti announced his Cabinet; the second group, called TW-SPINO, is composed of more than one thousand tweets extracted from Spinoza's Twitter profile, and comprehends tweets published from July 2009 to February 2012.

computational tools of TULE[74] – the tweets within the corpus are labelled on a sentence-level, assigning them sentiment tags such as the ones in the following table:

Sentiment Tag	Meaning
POS	positive
NEG	negative
HUM	ironic
NONE	objective(none of the above)
MIXED	POS&NEG both

Table 3 – The sentiment tags applied in Senti–TUT corpus (Gianti et al., 2012)

Testing a Confusion Matrix scheme, which is useful to assess potential misclassifications between different classes of a dataset, the authors tried to evaluate the possible lexical overlapping between the textual items related to each sentiment tag: the evidence shows a meaningful relationship between the set of texts labelled as ironic and the negative ones. While this seems to confirm the *polarity reverser* function of irony cited in (Bosco, Patti, & Bolioli, 2015), in the same paper one of the experiment conducted by the three scholars confirms the previous evidence and states further interesting indications. On a set of 723 ironic tweets from the subgroup of TW-News, the author provided a new re-labelling of the selected texts using the remaining sentiment tags (POS/NEG/NONE/MIXED) and compared the classification results with the outcomes of an automatic classifier[75] that applied the same four sentiment tags. Due to the fact that the automatic classifier was not aware of the presence of irony within the texts, using the results with the data labelled by the human annotators (which are naturally aware of the presence of irony), the authors were capable

[74] Turin University Linguistic Environment (TULE, http://www.tule.di.unito.it/, (Lesmo, 2007) and (Lesmo, 2009))

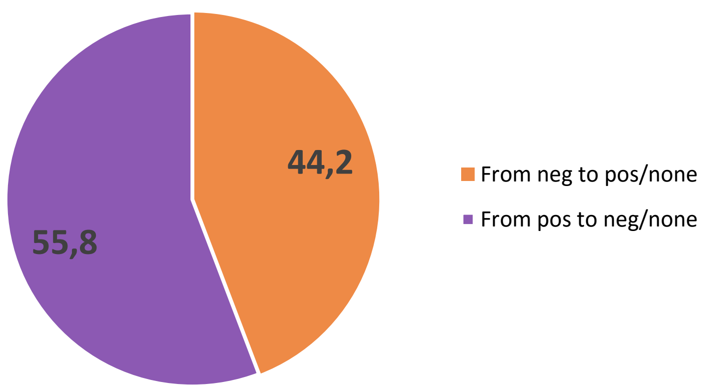
[75] For the automatic classification the authors employed the Blogmeter classifier, which uses a compositional rule-based approach together with a sentiment lexicon.

of understanding the polarity variations of the ironic tweets automatically labelled as POS(143) or NEG(208). The experimental results are shown below.

		Blogmeter class.	Human class.
Full reversal 37.3%	33.6%	From POS	to NEG
	3.7%	From NEG	to POS
Attenuation 62.7%	40.5%	From NEG	to NONE
	22.2%	From POS	to NONE

Table 4 – Polarity variation for 351 out of 723 ironic tweets from the Senti-TUT corpus (Bosco, Patti, & Bolioli, 2015)

The majority of the 351 tweets showed an attenuation of the related polarity, whereas a full reversal involved less than 40% of the considered texts. Two interesting aspects of the results are that full polarity reversals are almost always from POS(itive) to NEG(ative), and that 40.5% of the attenuated reversals are from NEG(ative) to NONE. As is shown in the graph below, summing in turn the full and attenuated reversals from POS to NEG/NONE and from NEG to POS/NONE, we can see that – even if the 55.8% of the ironic tweets represents positive texts conveying negative/mitigated sentiments – there is a significant 44.2% of the analysed tweets where the reversal happens starting from statements that are apparently negative. A possible reason behind this data distribution is the intrinsic



Graph 1 - Sum of full and attenatued polarity reversals for POS and NEG tweets pragmatic nature of the analysed texts. Namely, adopting firmer differentiation between specific genres of ironic texts, we could likely observe various sub-distributions, as the results of a preliminary study about irony and sarcasm on Twitter in (Wang, 2013) showed. Nevertheless, focussing the blurred boundaries of the various forms of irony is not easy, and in the first chapter, while trying to establish some key features concerning long satiric texts, we have witnessed a clear sign of the intricacy of this task. A complete account of the various textual possibilities for the expression of humour/irony/irony-like messages has yet to come and this can only emerge from manifold research. For this purpose, the benefit of studying irony and related text-typologies with sentiment analysis techniques is not only limited to the detection of particular morpho-syntactic patterns or to the training of classification algorithms, but is mainly important for the psycholinguistics and cognitive evidence that ca be extracted from this research approach. For this purpose, various lexical resources have been developed where words are associated with emotive orientations, such as *SentiWordNet*[76] or *SenticNet*[77]. However, while collecting information by means of sentiment analysis is undoubtedly useful in order to address the future research – and from the published results we have a grounded evidence about the fact that we should even look for negative constructions, as suggested already in (Mihalcea & Strapparava, 2006) – until the appearance of a definite framework of irony (or more appropriately, of *ironies*), we should remember that only lying on such techniques does not lead to results that are descriptive enough of the analysed items. In addition, for what is related to satire and already outlined in (Gibbs & Colston, 2007), if we consider that the academic research approaches rarely pointed towards the analysis of irony in longer texts, we can understand

[76] More information about this resource are available at this link: http://sentic.net/
[77] More information about this resource are available at this link : http://sentiwordnet.isti.cnr.it/

how the necessity of weighing the strategies of detection still represents a mandatory step to take.

2.2.3 Figurative language: ways of figuring it out

More than once in this thesis we have stressed the importance of figurative language as one of the most notable features within satiric texts. In the first part of the second chapter we have already seen some profitable ways of representing non-literal meanings by virtue of information modelling, but different automatic methods for the detection of figurative meanings have been proposed and since they are not based on semantic representation of knowledge, in this subparagraph we will look at some recently published papers, to check for viable solutions or useful resources to reuse even for the automatic detection of satiric texts. The first selected work is (Birke & Sarkar, 2007), where an active machine learning approach is used to build an annotated corpus of literal and non-literal uses of verbs. In doing this, they took advantage of an existing similarity-based word-sense disambiguation method, thus reducing the task to the recognition between the possible literal or non-literal meaning, considering them as two different senses of the same word. An example of this kind of verb in Italian could be "distruggere", since is possible to use it either in a literal or in a figurative way, as in the sentences below:

- Literal use: *Ieri Roberto ha distrutto la sua auto*.
- Non-literal use: *Ieri Roberto ha distrutto la concorrenza*.

The devised algorithm basically calculates measures of similarities between sentences of a target set (containing the word to disambiguate), and sentences contained in one of the two feedback sets, one of which consists of literal use examples of the target word and the other one instead containing example of non-literal use. As stated by the scholar «*two sentences are similar if they contain similar words and two words are similar if they are contained in similar sentences*». The literal feedback set was built collecting texts from the *Wall Street Journal* newswire, while for the nonliteral feedback set the authors used expressions from different sources such as the *Wayne Magnuson English Idioms Sayings & Slang* and *George Lakoff's Conceptual Metaphor List*[78]. However, both feedback sets contained noise data and to overcome this issue the author used an automatic clean-up method devised in one of their previous paper. Further, all the sentences of the target set were human annotated (as literal or non-literal) in order to evaluate the accuracy of the algorithm. Without entering into the details of the three experiments carried out by the authors – whose were more interested in evaluating different attempts of semi-supervised machine learning, so as to understand which one was less human-demanding – the remarkable aspect of this research is the use of a hard-clustering approach. Looking at the promising experimental results – which, far from being extraordinary show an F-score of 64.9% for the classification of several sentences containing 25 selected verbs – it would be interesting to assess the efficacy of a less narrow method, such as the fuzzy-clustering analysis. Remembering the specific pragmatic nature of ironic texts – where it is not so rare that the expressed meanings exploit more than one figurative strategy – using the fuzzy-clustering approach could prove to be useful for those instances where the analysed items seem to belong to more than one set of data. In this way, testing the improvements of different algorithms, we could reach a deeper comprehension of the boundaries between sets, further evaluating for possible shared linguistic features between the observed items.

[78]The list of metaphor is available at the following link: http://www.lang.osaka-u.ac.jp/~sugimoto/MasterMetaphorList/metaphors/

In this regard, evidence of the utility of higher linguistic features for processing figurative texts is found in (Turney *et al.*, 2011), where different experiments are conducted using a logistic regression algorithm furnished with abstractness ratings of the analysed words. The suggestion about the centrality of abstractness in figurative language clearly comes from (Lakoff & Johnson, 1980), where the metaphor is conceived as a transitional method that transfers knowledge from a concrete to an abstract domain. The values of abstractness in (Turney *et al.*, 2011) are extracted through latent semantic analysis in the following way. In a vector space model, the initial values of the vectors (each of which represents a word together with 10.000 collocations collected from the *Wumpus*[79] search engine) are first derived from word-frequencies in a large corpus of texts. Then, 20 concrete words and 20 abstract words are automatically extracted from the *MRC Psycholinguistic Database Machine Usable Dictionary*[80] and added to the vector space model to serve as paradigm for the vectors. Finally, the cosine of the angles between the target vector and the paradigmatic vectors is calculated; the value of abstractness of a word corresponds to the sum of the cosines for the 20 concrete words minus the sum of the cosines for the 20 abstract words. Even if their algorithm for the verb recognition test performed better compared to the results in (Birke & Sarkar, 2007), the authors recognized that a machine learning approach trained to assess only the abstractness of a word does not provide any useful information on the semantic entailments of the observed items, and a constraint-based model is needed for a more powerful recognition of metaphoric language. This means that the research needs to be shaped in a way that, while allowing the use of flexible analytic strategies, still encompasses constraining linguistic features. Two kind of

[79](Büttcher and Clarke, 2005). The resource is available at this link: http://www.wumpus-search.org/download.html
[80] (Coltheart, 1981). The resource is available online at this link: http://ota.oucs.ox.ac.uk/headers/1054.xml

constraints that could empower the recognition task have already been presented in previous sections of this chapter – namely syntactic patterns and sentiment polarity – but a number of different higher textual features could be considered as suitable candidates for improving the automatic detection of figurative language. Looking at the method devised in (Hernandez Farias *et al.*,2015) for the resolution of the eleventh task (Sentiment Analysis of Figurative Language in Twitter) at SemEval 2015, we could see how – besides various lexical resources provided with sentiment information – the scholars used eight structural features that is possible to find within tweets, namely:

1) ***lengthWords***: length of tweets in amount of words
2) ***lenghtChar***: length of a tweet as the number of characters that composes the textual message
3) ***punctuations marks***: frequency of commas, semicolons, colons, exclamation and ques question marks
4) ***Part of speech***: the frequency of some Part of Speech categories as nouns, adverbs, and adjectives
5) ***upperFreq***: the frequency of upper case letters in each tweet
6) ***urlFreq***: frequency or presence of URL
7) ***emotPosFreq***: the amount of emoticons used in order to express some kind of positive emotion
8) ***emotNegFreq***: the amount of emoticons used in order to express some kind of negative emotion

Notice that, since these structural features are designed to match figurative language in a specific textual format such as tweets on Twitter (hence, they do not represent suitable features when applied on longer texts), we have mentioned of the above components only to consider what kind of linguistic clues we should lean on when it comes to recognizing metaphors and the like in satiric articles. **5)** and **6)** are twitter-related features, so there is no reason to discuss them here. **1)** and **2)** instead suggest that looking for quantitative information about the textual organization could prove useful. In the case of satiric texts, we should consider the number of paragraphs and sentences an article is composed of. In relation to **3)**, we have already discussed the use of punctuation marks in satire and, because the level of structural complexity of this kind of texts is high, substantial presence of colon and semicolon can possibly signal the elaborateness of satiric articles. A concrete example of research that make use of quantitative information on the **1)** and **3)** type of feature is the semi-supervised recognition attempt of detecting sarcasm within tweets and Amazon reviews by (Davidov, Tsur, & Rappoport, 2010). Specifically looking at the Amazon reviews dataset, which is composed of 66000 comments with an average length of 953 characters – alongside various patterns aimed to automatically detect sequences of products/authors/companies/book names plus content words – the authors decided to include the following punctuation-based features: sentence length in words, number of "!", number of "?", number of quotes, and number of capitalized/all capitals words in the sentence. Training a k-nearest neighbour algorithm the researchers performed various 5-fold cross validation tests and, using the patterns and the punctuation-based features together, they achieved a consistent F-score of 80%. As for **4)**, counting the number of PoS patterns that can trigger figure of speech – rather than counting PoS singularly – could represent a very informative solution. A simple instance of such a pattern could be the juxtaposition of three adjectives in pre/postnominal position, but the list can include sequences matching adverbs/conjunctions followed by noun phrases with embedded relative clause, affixation of named-entities, etc. Notice that this kind of information has already been considered as potentially predictive not only of figurative language but also of irony, as in (Reyes & Rosso, 2011) where – together with sentiment and psychological words profiling – recurrent PoS N-grams (and N-grams in general) were collected for the recognition of ironic user-generated reviews on Amazon. Using three different classifying methods, namely a Naïve Bayes classifier, a support vector machine and a decision tree, (Reyes & Rosso, 2011) found out that PoS n-grams from three up to five were highly informative for detecting verbal irony within 3,163 users' reviews. However, achieving a solid average F-result of 73% while using the three classifiers for their experiment, to better assess the predictive potentiality of morphosyntactic templates for satiric texts analysis, it would have been useful to know the text-length of the Amazon reviews, since they can vary from a few words to complex paragraphs. Extracting the rationale from **7)** and **8)**, we can count the number of positive and negative PoS within an article in order to understand how much of it is objective or subjective. For this purpose, similarly to what has been done in (Özdemir & Bergler, 2015) for the resolution of the eleventh task at SemEval2015, we could draw benefit from broadening the kind of sentiment-oriented information related to words, so as to have different degrees occurring between the negative and positive pole. Sentiment gradation could be performed through soft-clustering techniques, therefore considering lexical items as belonging or not to a fuzzy set, which is defined as "*a class of objects with a continuum of grades of membership*" (Zadeh, 1965). Notice that it is conceivable to perform natural language processing even without adopting proper fuzzy-clustering techniques, as proposed in (Hüllermeier, 2011). Nevertheless, an evaluation of the descriptive potentiality of a pure fuzzy-logic approach for the resolution of NLP tasks it surely would be though provoking in terms of a possible advancement of the computational research field. Still, in (Özdemir & Bergler, 2015) we find traces of higher textual clues such as *negation* and *modality* of the analysed items. Without discussing the formal steps used by the scholars – since their explanation would take up to much space only to outline the pipeline system that has been used for the task resolution – it is suffice to say that these extra-propositional features could potentially be used even for the detection of satire, since very often authors shape their opinion by skilfully playing on propositional aspects of their texts, such as sentence evidentiality, certainty, factuality, etc. A useful excursus of how modality and negation have been shaped within the computational field is contained in (Morante & Sporleder, 2012).

2.2.3 Satire detection attempts: better luck next time!

Concluding the second chapter, we look at the few experiments devised specifically for the detection of satiric texts. The first meaningful attempt is found in (Burfoot & Baldwin, 2009). On a corpus[81] of 4,000 newswire documents and 233 satire news articles the author tried to filter the satiric texts from the real journalistic pieces. using a support vector trained with three lexical features and one semantic trait. The lexical featured considered were the headlines of the articles, profanity and slang. While the last two features are considerably less contained in true articles, for what is related to the headlines – even if it is true that the majority of reader is capable of disambiguating the truthfulness of a text just by reading the title of an article, and thus representing that this kind of information could be useful even for the automatic detection task – this feature should be well pondered because even true articles are featured with biased titles, which often show ambiguity and/or a sensational phrase, such as in the following example:

«*Renzi finge di aver vinto e i compagni lo inchiodano*»[82]

[81] Of course, in order to perform the experiment the corpus was split in a training and a test set with the following proportions. Training set: 2505 true art / 133 false art. Test set: 1495 true art /100 false art.
[82] Article written by Elisa Calessi, published on liberoquotidiano.it on November 25, 2014. Available at this link: http://www.liberoquotidiano.it/news/politica/11725696/Renzi-finge-di-aver-vinto-e.html

Leaving aside the lexical features, the real productive aspect of this study is the semantic aspect of *validity* of a document as shaped by the authors, whose method – using their words – "identifies[83] the named entities in a given document and queries the web for the conjunction of those entities". The basic assumption behind the concept of text-validity is that in true articles, the mention of real named-entities are more frequent, so looking in how many documents a same named-entity form is contained could help to isolate fake forms because of their low frequency, thus considering them as clues of satire. Weighting the features and combining them (first separately and then together) with Binary feature weights (BIN) first and then with Bi-normal separation feature scaling (BNS), the best result was achieved by the combination of BNS + validity feature, with a F-score of 79,8%. Remembering what has been said in paragraph 2.2.1 about the possibility that new lexical items can be generated from the reformulation of named-entities (and idiomatic forms), it would be interesting to assess the effectiveness of the *validity* feature on a larger corpus. Furthermore, we have a preliminary confirmation about the possible benefit that the *validity* feature could bring to the classification tasks looking at (Owais, Nafis, & Khanna, 2015), where the scholar carried out a very similar attempt to separate satirical texts from real articles as in (Burfoot & Baldwin, 2009), even using their same targeted lexical features, but without any kind of semantic trait. Then the three scholars also tried different weighted classifications using frequency values associated to the lexical items and, while the combination of SVM with BNS proved to be the most efficient with an F-score of 83%, the performance scored needs to be severely lessened due to the small size of the analysed documents. Lastly, the authors themselves admit the inadequacy of analysis based only on

[83] To perform the identification the method uses the Stanford Named Entity Recognizer (Finkel et al., 2005). Further information about this resource at the following link: http://nlp.stanford.edu/software/CRF-NER.shtml

lexical features. A different approach is proposed in (Tsonkov & Koychev, 2015) where the authors tried to detect automatically – on a corpus of 3000 English user-generated opinions – if these were ironic, sarcastic or satiric, without really differentiating between the three genres and thus adopting a flattened generalization of such texts typologies. The author do not make any difference between these linguistic phenomena, since in their opinion users' humorous productions on social networks do not show any substantial difference between them. We will not discuss this theoretical account (even if several doubts could be raised) since the textual features of user-generated contents represents a total different subject of discussion from the one we have tried to assess in the first chapter. Because of theoretical presumption, in order to detect one of the three linguistic use mentioned above, the scholars devised 9 heuristic rules divided into 5 language dependent and 4 language independent rules. Below is a table summarizing these rules:

Rule	*Description*	*Template*
i	Contains at least 3 positive or 3 negative words (only positive and negative words not combined).	[+word] AND [+word] AND [+word] OR [-word] AND[-word] AND [-word]
ii	Contains a positive word and a negative word	+word and –word
iii	Detection of opposite meaning words from a containing list	[word1] and [word2]
iv	Contains a positive word and a negative emoticon.	[+word] and [-emoticon]
v	Gap between common and rare words from a list	Common – Rare
vi	Contains at least two of exclamation/question mark or	([!] or[?] or […]) AND ([!] or [?] or […])
vii	Using at least three consecutive adjectives	ADJ and ADJ and ADJ
viii	Using a word in capital letters	[WORD]
ix	Contains "" or ''	[''] OR [""]

It is easy to understand that in this approach a rule corresponds to a morph-syntactic pattern with embedded sentiment orientations. The first three rules, together with the seventh, could be simply reused even for detection of satire in longer texts because they represent basic rhetorical figures. Instead, in relation to rules **iv** and **viii**, we have already seen that they are useless because they represents textual features of the users' online writing style. The sixth and ninth rules could be reused as well, but we should remember what we have already said previously about punctuation marks clues, namely that we need to weight them wisely and that we should consider those punctuation marks that are used to chisel the textual complexity as more informative. As for the fifth rule, we will say that its descriptiveness power would be more useful for stylometric analysis rather than for detection tasks. The results obtained using these nine heuristic rules while detecting a contents as ironic/sarcastic/satiric confirm the flattened hypothesis of the author since the accuracy values are quite the same. Additionally, in order to improve the efficiency of the heuristic approach, the scholars trained three classifiers (Naive Bayes, K-NN and SVM) with five features described in the following table:

Feature	*Description*
x(1)	Number of words containing positive sentiment and negative sentiment
xi(2)	Number of emoticons, punctuation signs and links
xii(3)	Number of adjectives and length of the opinion
xiii(4)	Intensity score
xiv(5)	Frequency (gap between common and rare words).

Again, what it has been just said for the fifth heuristic rule is valid for the fifth feature (xiv), and for the second (xi) feature – ruling out the emoticons and the links – what has been asserted for the sixth and ninth heuristic rules is also valid. The first (x) and the third (xiii) features instead go in the way described in the previous chapter while assessing the linguistic features in (Hernandez Farias *et al.*, 2015), hence they are viable features for the detection of satire in long articles. By means of the fourth feature (xiii)– using a segment of the supervised framework developed by (Dipankar & Bandyopadhyay, 2011), where positive/negative intensifiers were assigned three types of values, namely *low*, *medium* and *high* – the authors extracted the overall intensity score of a text summing the relative intensity scores of adverbs and adjectives within a user-generated comments. This kind of value is useful since it allows a more precise interpretation of the collected sentiment-oriented data and surely represents a simple alternative to strengthen the analysis rather than using non-discrete values. The five dimensional space composed of the above features, in conjunction with the SVM classifier, scored the best accuracy result (81%) in detecting the texts as belonging to one of the three considered text-typologies. Even if some heuristic rules and features surely represent interesting aspects of the research conducted by (Tsonkov & Koychev, 2015), we are forced to very carefully consider the positive accuracy result scored by the SVM classifier, as we do not have any information on the average length of the analysed texts, and we do not have any clear explanations about the incidence of the single features on the classifier. The last selected paper we will discuss here is (Barbieri, Ronzano, & Saggion, 2015), where different mono/cross-linguistic classification experiments are performed in order to automatically detect satirical tweets. The languages considered are Spanish, Italian and English. The researchers handle this problem as a binary classification task and, because of the multilingual approach, the seven devised linguistic features are all language-independent; each feature represents a group where various sub-features are contained. Below is a brief description of the features groups as depicted within the mentioned paper:

- **Word-based**: this is a group of features containing *lemma* (lemmas of the tweet), *bigrams* (a combination of two lemmas in a sequence) and *skip 1/2/3 gram*.
- **Frequency**: from different monolinguistic corpora, the authors retrieve 16 features for each word of a tweet, amongst which the most informative are *rarest word frequency* (frequency of the least common word included in the tweet), *frequency mean* (the arithmetic average of the frequency of all the words in the tweet) and *frequency gap* (the difference between the two previous features).
- **Ambiguity**: from Princeton WordNet the researcher retrieve 15 features for each word in a tweet, amongst which the most informative features are the *maximum number of synsets* associated to a single word, the *mean synset number* of all the words, and the *synset gap*, which is the difference between the two previous features.
- **Part of Speech**: there are eight features in this group and each correspond to the number of occurrences of *verbs*, *nouns*, *adjectives*, *adverbs*, *interjections*, *determiners*, *pronouns*, and *appositions*.
- **Synonyms**: for each word in a tweet, frequency values are retrieved from WordNet. They then computed *the greatest and the lowest number of synonyms with frequency higher than the one present in the tweet*, *the mean number of synonyms with frequency greater/lower than the frequency of the related word present in the tweet*, *the greatest/lowest number of synonyms* and *the mean number of synonyms of the words with frequency greater/lower than the one present in the Tweet*.

- **Sentiments**: from three sentiment lexicons the researcher retrieve the *number of positive/negative words*, the *sum of the intensities of the positive/negative scores of words*, the *mean of positive/negative score of words*, the *greatest positive/negative score*, the *gap between the greatest positive/negative score and the positive/negative mean*. Moreover the authors first count, then measure the ratio of the words with polarity not equal to zero, to detect subjectivity of the tweet.
- **Characters**: each feature of this group correspond to the count in a tweet specific punctuation mark, including: *".", "!", "?", "$", "%", "&", "+", "-", "="*. The researcher even compute the numbers of *uppercase and lowercase characters*, and the *length of the tweet*.

The experimental results for the single language experiments all scored an F-score of at least 0.8, with a remarkable 84.2% for the five-cross fold validation test on the Italian monolingual classification on tweets from two real newspapers (*Corriere della Sera* and *Repubblica*) and contents from two satirical Twitter profiles (*Lercio* and *Spinoza*). Since the number of the features considered is very high the authors tried to evaluate which were more informative, the most productive features for the Italian test (ruling out those that are related specifically to match characteristic of the tweet text-typology) are: the *number of verbs*, the *number of synsets associated to a verb* and the *frequency usage of a verb*. As the authors said in their conclusive considerations, verbs in Italian satire seem to have a fundamental role, at least related to short texts. Concluding this chapter, stressing the opportunity to enlarge the research field of the computational investigations on satire, we will say that it would be interesting to assess the descriptive power of these final features together with the other distinctive traits outlined in the previous subparagraphs, possibly in a coherent framework of research that aims to detect satirical messages within complex texts.

Chapter 3 – Computing Satire

The third chapter is dedicated to the detailed description of the practical study conducted on the satiric genre, namely the annotation of one hundred and twelve satiric texts and the automatic tagging experiment on twenty political satire articles. There are various reason why we carried out an applicative investigation on the subject, but the most important has been the awareness that a pure theoretical study of the satiric genre – even if carried out extensively and with full dedication – would have not represented a complete work, since only through an hands-on evaluation of the specific textual typology we would have been able to understand particular aspects of this multifaceted subject. Of course, from this applicative contribution we will not extract final solutions or extraordinary claims, as we are more interested in stressing the textual complexity of long satiric articles, providing a solid baseline through the notational work and the preliminary experimentation. Consequently, the displayed results should be considered as initial evidence at disposal of the academic community for future research while computing satire, possibly finding further results. Furthermore, we will point out some of the central issues of this text-typology, in the hope that better focussing those structural elements that allow authors to build an entangled system of meanings, could help the scholars in their attempts to draw a sharp taxonomy, capable of capturing not only the essential distinctiveness of these peculiar written productions in relation with other humorous texts, but also grabbing the difference between humorous and non-humorous satiric texts. In order to investigate the satiric genre, the correct selection of the texts on which perform the analysis appeared to be very soon as a matter of fundamental importance. As stated at the beginning of the first chapter, the choice fell naturally on political satiric articles because of three main characteristics of these texts, namely for their: length, wide availability and pragmatic *force*. As (Gibbs & Colston, 2007) rightly reported, little humour research has been done on long texts, hence the very first general prerequisite that we tried to satisfy while selecting the documents was choosing written productions composed of more than one paragraph. Since pieces of satiric journalism usually are composite linguistic productions, thus holding more than one textual section, they represented adequate items for the analysis. The second concern was the selection of articles from sources that displayed a significant availability of the same kind of texts, both because we needed to collect enough data in order to draw meaningful assertions from a statistic point of view, and also because we wanted the theoretic and practical evidence to be found within a homogeneous series of written productions. The widespread presence of political satire articles in Italian newspapers by this time is a regular editorial choice, and this represented a favourable condition for the retrieval of several texts, while simultaneously ensuring the necessary guarantee that the selected articles were consistent in terms of style. In relation to the pragmatic force, without repeating what it has already been said in the section §1.3 on the pragmatic nature of satiric articles, we will say here that they are different from short satiric texts, and for this reason we have not considered shorter satiric productions. While in the latter primary importance is given to the comic outcome of the message – let us think of satiric tweets or fake newswire articles, where the comedic element is always emphasized – in political satire articles, together with the comic element, a circumstantiated connotation upon people and/or events is always provided. In simple words, differently from satiric journalism, short satiric texts (due to their concise nature) show a substantial lessening of the critical element, which is an original (and most important) feature of the satiric genre from its very beginning. The selected articles used for the annotation and the experiment come from two sources that we have already cited in several previous examples within the first and second chapter. Seventy-four articles come from Michele Serra's series titled *Amaca*, published daily on the newspaper *La Repubblica*; usually the targeted subjects are politicians, bad social habits and in general every trending current event. A further fifty-nine article come from Maria Novella Oppo's series titled *Fronte del video*, published daily on the newspaper *L'Unità*; the targeted subjects are usually politicians and televised political talk shows. The human annotation has been carried out on these 112 texts using a reduced (and modified with new criteria, where needed) version of the Appraisal Framework (Martin & White, 2005); see the next two sections for a precise description of both the framework and the specific criteria devised for the texts annotation. Following the annotation activity, a typological classification has been produced for all the voices contained in the automatically collected lexicons (one for each author) composed of the annotated items/sections. The classification has been carried out using three linguistic traits – namely idiomatic, metaphorical and none – and it has been done in order to assign a feature to all the entries which is related to the kind of use the author chose for a specific item/sequence. Lastly, on the twenty held-out articles, ten for each of the two authors, we performed the experiment that consisted in gradual attempts to automatically tag the evaluative textual items. All the automatic steps have been performed using Prolog scripts written by the thesis supervisor Professor Rodolfo Delmonte; see the paragraph 3.2 for further details on the algorithm and on the provided outputs. The experimental results in the form of graphs and tabs (§3.3) and conclusive considerations (§3.4) close the body of this master thesis.

3.1 Annotating political satiric articles

3.1.1 The Appraisal framework

At this point we should be familiar with the concept of satiric texts as written linguistic production where witty criticism is presented as a series of interconnected meanings, shaped by virtue of different strategies, with the intent of either radically change or reinforce a particular perspective on topical events and/or people. This means that several connotative messages are contained within the articles and thus we are forced to consider this aspect if we want to suggest techniques capable of automatically detect satire in long texts. For this reason, the manual labelling activity has been carried out using a reduced version of the Appraisal theory, which represent an extension of the Systemic Functional Grammar of (Halliday, 1994) and, as can be read on the dedicated website[84], "*emerged over a period of almost two decades as a result of work conducted by a group of researchers primarily based in Australia*". For the purposes of the manual annotation we have referred specifically to (Martin & White, 2005), which contains a complete account of the theory. The Appraisal framework primarily aims to outline the interpersonal dimension of the communication, providing a classification by which is possible to pinpoint both evaluative sequences within texts and information about the positioning of the speaker/writer in relation to the evaluated targets. The main advantage of using the taxonomy devised within the theory is that we can possibly automatically assess the subjectivity/objectivity of a given texts; this analytic feature is surely useful while studying newspaper articles, where biased opinion are often introduced in an underhand manner. Furthermore, it should be

[84] In addition to the reference already provided, here is the website dedicated to the Appraisal framework: http://www.languageofevaluation.info/appraisal/

noted that the Appraisal framework has already been used for both theoretical and experimental studies on long texts, and this led us to consider this account as an adequate analytical tool. Examples of research conducted on long texts are:

- (Pascual & Unger, 2010), whose research used the Appraisal framework to investigate how non-native English scholars writes grant proposals in the disciplines of chemistry and physics and what position they assume in relation to other researchers and theorists within the mandatory sections of this text typology.
- (Read & Carrol, 2012), where a methodologic account is proposed for annotating English book reviews as a first step in an ongoing study of approaches for the automatic analysis of evaluating expressions.
- (Hall & Sheyholislami, 2013), who conducted a survey on rater variability and scoring criteria, therefore illustrating the value of the Appraisal theory for the study of writing assessment through the analysis of the evaluative nature of rater comments while judging second language writing proficiency.
- (Taboada & Grieve, 2004), whose research used the Appraisal hierarchy in order to assess what kind of improvement the taxonomy brought while distinguishing different types of subjective texts on a corpus of semantic-oriented products and services reviews.
- (Fletcher & Patrick, 2005), where a series of experiments on movie reviews were conducted so as to understand which taxonomic units of the Appraisal hierarchy better supported the task of sentiment classification.

- (Khoo, Nourbakhsh, & Na, 2012), whose applied the Appraisal taxonomy for the analysis of a sample of political news articles, with the purpose to assess its utility for deepened manual/automatic sentiment analysis.

Below is a synthetic scheme of the Appraisal taxonomy:

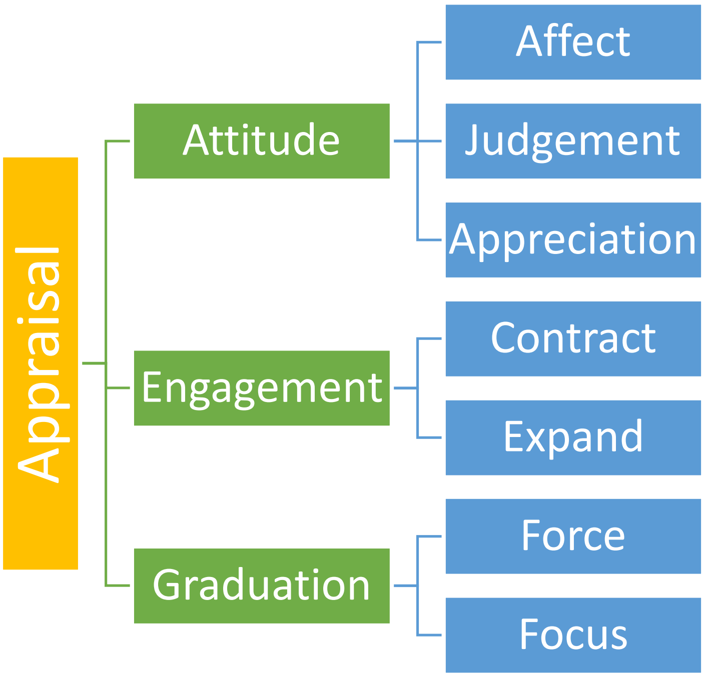


Figure 6 – Concise schematization of the Appraisal framework taxonomy

Within the theory three subsystem operate simultaneously, namely *engagement, attitude* and *graduation*, and any of this subsystem contains a number of sub-features – which we do not report here for lack of space[85] – describing a specific characterization of the dominating subsystem. The Engagement subsystem describes the linguistic strategies by which writers construe their opinions and the resources used to adopt stances towards the opinions of other people. The Graduation subsystem is the set of resources used by authors in order to modify the strength of their opinions. The attitude subsystem describes the

[85] For a complete schematization of the taxonomy see (Read & Carrol, 2012)

author's feelings as they are conveyed within the text, and it is articulated into three main semantic regions with their relative positive/negative polarity, namely:

- **Affect**: describes proper feelings and any emotional reaction within the text aimed towards human behaviour/process and phenomena.
- **Judgement**: considers the ethical evaluation on people and their behaviours.
- **Appreciation**: represent any aesthetic evaluation of things, both man-made and natural phenomena.

For the purposes of the practical study on the satiric genre, we have adopted the Attitude subsystem alone as described above, that is to say without using any of the features belonging to the affect, judgement and appreciation sub-categories. The choice to rule-out the others two subsystem (Engagement and Graduation) and the features of the three sub-categories of the Attitude subsystem, was made mainly to maintain the notational work on a manageable level, and also because we were more interested in a coarse quantitative substantiation of the authors' opinions within the analysed texts, rather than conducting a fine-grained analysis about their construction or graduation. In other words, we wanted to assess how descriptive a plain recognition of evaluative sequences is without further detailed information. Additional information about how we have used the Attitude subsystem are provided in the paragraph 3.1.3.

3.1.2 XML format: article structure and the tag <apprsl>

The notational work on the texts has been accomplished using the Extensible Markup Language due to its flexibility and because of the possibility to use specifically devised tags.

In order to properly label and parse the evaluative items/sequences, a preliminary work in terms of pinpointing paragraphs and sentences has been performed on the articles. Following there is an empty XML template that shows how the article structures have been represented:

```
<?xml version="1.0" encoding="ISO-8859-1"?>
 <text>
     <p>
          <s>
          some text
          </s>
     </p>
 </text>
```

The first line of the code corresponds to the header of the XML file and signals its Document Type Definition; the tag **<text>** signals the beginning of the written content and together with its closing tag **</texts>,** contains the whole text of an article; the initial and closing tags **<p></p>** serve to mark a paragraph, whereas **<s></s>** are used to mark a sentence.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<text>
     <p>
          <s>
          Le primarie in atto hanno contribuito al miglioramento
          della tv in diversi modi.
          </s>
          <s>
          Anzitutto, come è stato già scritto da molti (e
          contestato da alcuni), nella forma del confronto a
          cinque tra candidati del centrosinistra, hanno
          costituito una proposta alternative ai talk show con
          uso di rissa.
          </s>
          <s>
          In secondo luogo, hanno rinnovato anche il cast di vari
          programmi, con la immissione nei dibattiti di qualche
          bella faccia nuova, come la veneta Puppato, che
          purtroppo è l'unica donna di sinistra ad ambire al
          premierato.
          </s>
     </p>
     …
</text>
```

Above we have an example of an XML structure filled with a paragraph from an article by Maria Novella Oppo: as we can see from the excerpt, the text tag contains one paragraph and the latter contains three sentences. Of course, this structure is hierarchical – which means that we cannot find the tags **<text></text>** within a paragraph, and the same is valid for the tags **<p></p>,** since they cannot be found within a sentence. Whenever the published article displayed its own text format, we limited ourselves to a simple transposition of the original structure. However, every time the article was published as a unique block of text, we structured the article content, first identifying the sentences and then grouping them in relation to their meaning: when a sentence was strictly related to one or more of the following/previous propositions, they were clustered together within the same paragraph. Focussing on the annotation of the evaluative sequences instead, every time we found an evaluative word (or sequence of words) within a political satire article, we delimited the item/sequence within the tags **<apprsl></apprsl>.** Subsequently, following the general indications mentioned above provided by (Martin & White, 2005), we assigned one of the three subcategories – *attitude*, *judgement* or *appreciation* – as attribute of the tag **<apprsl>**, also providing the positive/negative sentiment orientation as value of the attribute. Please notice that we have substituted the name of the *affect* subcategory with the title of the subsystem *attitude.* However, the attribute *attitude* in our work is equivalent to the subcategory *affect*. As a result, we had six possible ways to identify evaluative sequences within the articles through the tag **<apprsl>**, namely:

```
<apprsl attitude="positive">happy</apprsl>
<apprsl attitude="negative">sad</apprsl>

<apprsl judgement="positive">wise</apprsl>

<apprsl judgement="negative">fool</apprsl>

<apprsl appreciation="positive">cool</apprsl>
```

`<apprsl appreciation="negative">gross</apprsl>`

3.1.3 Devised criteria

Since the text-typology that we tried to annotate showed a number of complex linguistic features, and because no previous work was found on labelling long satiric texts through the Appraisal Framework, we had to address the annotation task using brand-new criteria specifically designed for the purpose of isolating as many evaluative items/sequences as possible. The criteria, in relation to their most relevant linguistic aspect, are grouped in one of the following set of notational principles, namely the lexical, semantic or syntactic set.

Lexical criteria: these notational principles mostly correspond to the indications contained in (Martin & White, 2005):

- Whenever an item implicitly or explicitly indicates or presumes an emotive reaction, a mood or a feeling related to the author or to others subjects mentioned by the author, use the tag <apprsl> with the **attitude** attribute and its relative polarity.
  - `…i tanti che sono<apprsl attitude="negative">delusi</apprsl>dal PDL…`
  - `…al ritorno in pista, anzi in campo di Berlusconi ed<apprsl attitude="positive">esultavano</apprsl>per la rinuncia alle primarie del Pdl, diventate inutili, se c'è lui…`

- Whenever an item indicates or presumes a judgement on people, groups or actions related implicitly/explicitly to people or groups, use the tag <apprsl> with the **judgement** attribute and its relative polarity.

- E, benché la televisione abbia usato poco questi<apprsl judgement="positive">**talenti**</apprsl>…
- …l'<apprsl judgement="negative">**estremista**</apprsl>è Berlusconi.

❖ Whenever an item indicates or presumes an evaluation on abstract entities, natural phenomena, artificial processes or man-made things, use the tag <apprsl> with the **appreciation** attribute and its relative polarity.

- La tv è<apprsl appreciation="negative">**diabolica**</apprsl>…
- …all'evento<apprsl appreciation="positive">**storico**</apprsl>della fondazione del Mir.

❖ The polarity orientation assignment is based on the literal meanings of the evaluative item.

- Come è emerso da una<apprsl appreciation="positive">**illuminante**</apprsl>conversazione (…) tra lo stesso Belsito e un'altra amministratrice leghista…
- Un uomo di cui(…)Riccardo Jacona su Raitre ci ha raccontato la<apprsl appreciation="positive">**fulminante**</apprsl>carriera, costruita attraverso l' abuso di soldi pubblici

❖ In case of doubtful polarity orientation, it is allowed to assign the polarity looking at the previous or current phrasal context where the evaluative item appears.

- negli ultimi tempi aveva offerto a Mariangela la possibilità di interpretare, lei<apprsl judgement="negative">**così milanese**</apprsl>, il ruolo di Filumena Marturano.

- La diaspora di autori in fuga dalla fusione rizzol-mondadoriana si profila<apprsl appreciation="negative">**notevole**</apprsl>anche in termini di fatturato.

As we have seen in the last two examples, it was not always possible to determine a precise polarity orientation for a lexical item; therefore, there was the need to consider the phrasal context in order to capture properly the polarity value of the appraisal. Furthermore the phrasal contexts often served not only as clue for the polarity assignation, but they themselves contained evaluative sequences and thus we had to annotate chains of lexical items as single evaluative units. This aspect reflects the discursive nature of long satiric texts, so a number of semantic and syntactic criteria were needed so as to enhance the notational analysis.

Semantic criteria:

❖ Anytime one or more verb/noun modifiers are found, when they do not represent meaningful evaluation by themselves, they are annotated together with the part of speech that they contribute to modify.

- …quella**<apprsl judgement="negative">doppia fronte</apprsl>**gli serve per la**<apprsl appreciation="negative">doppia contabilità</apprsl>**…
- E, benché la televisione abbia**<apprsl appreciation="negative">usato poco</apprsl>**questi talenti…
- Nonostante l'appoggio di**<apprsl judgement="negative">certi cosiddetti opinionisti</apprsl>**…

❖ Any instance of evaluation conveyed by means of a multiword expression, is annotated as a single appraisal unit.

- …subito dopo<apprsl appreciation="positive">**specchio della verità**</apprsl>e del dolore di un uomo…
- …Maurizio Crozza, che ogni settimana<apprsl judgement="positive">**regge il confronto ravvicinato**</apprsl>…
- …insediato da ragazzini spagnoli molto più giovani di lui ingordi di vittorie e<apprsl judgement="positive">**con riflessi di saetta**</apprsl>…

❖ Any instance of evaluation conveyed by means of rhetorical or figurative language, is annotated as a single appraisal unit. When possible the evaluations are embedded so as to include appraisal units into bigger evaluative unit, in order to fully capture figures of speech such as oxymora, apagoges, rhetorical questions, interjections and the like.

- Fa parte dell'<apprsl appreciation="negative">**archeologia politica**</apprsl>del Paese…
- …e<apprsl appreciation="negative">**mercato delle**<apprsl appreciation="negative">**vacche berlusconiane**</apprsl></apprsl>
- …con parole d'ordine<apprsl appreciation="positive"><apprsl appreciation="negative">**vecchie**</apprsl>**ma sempre buone**</apprsl>
- Ora,<apprsl judgement="positive">**anche un**<apprsl judgement="negative">**marziano**</apprsl>**appena caduto sulla Terra capirebbe**</apprsl>…
- Ora<apprsl judgement="negative">**porta spesso il cappello**<apprsl appreciation="negative">**alla Al Capone**</apprsl></apprsl>…
- Qualcosa come il "chi lo dice sa di esserlo" (o anche "chi lo dice lo è cento volte più di me") che regola le liti ai giardinetti intorno ai sette-otto anni di età.<apprsl judgement="negative">**Ma si rileggono?**</apprsl>

Syntactic Criteria:

- Without exceeding the length of the proposition, it is allowed to annotate phrases as single appraisal unit up until a clause-level, whenever they express opinions or evaluations. Additionally, for those cases where complex phrasal structures were found, we limited ourselves to the annotation of the most evaluative part within the overall sequence, so as to avoid overproduction of long annotation.
  - Tra le donne, c'è poi Alessandra Mussolini, che figurarsi,**<apprsl judgement="negative">col cognome che ha</apprsl>**, è la più simpatica.
  - E se non vi piacciono**<apprsl judgement="negative">quelli che promettono cento euro a famiglia</apprsl>**votate Bersani.
  - …sempre secondo le versioni prefettizie, è anche l'**<apprsl appreciation="negative">unica città al mondo in cui i lacrimogeni non rispondono alla legge di gravità</apprsl>e<apprsl appreciation="negative">salgono e scendono come vogliono</apprsl>**
  - <apprsl judgement="**negative**">**Tutti berluscloni con vent'anni di ritardo**</apprsl>…

Again, when possible, the clauses have been de-structured so that through embedding we were able to capture the evaluation on a clause-level in greater detail.

  - come la veneta Puppato, che purtroppo è l'<apprsl appreciation="**negative**">**unica donna di sinistra ad**<apprsl judgement="**positive**">**ambire**</apprsl>**al premierato**</apprsl>
  - C'era la Meloni<apprsl judgement="**negative**">**in assetto da**<apprsl judgement="**negative**">**vamp quirite**</apprsl></apprsl>

- It is allowed to annotate evaluative sequences on a clause level even beyond the punctuation marks limits. However, these annotations were very rare.
    - carriera, costruita attraverso l’ abuso di soldi pubblici**<apprsl judgement="negative">per conto proprio e in conto terzi (e quarti</apprsl>**perché non si trattava solo dellafamily bossiana)

- In case of dyad/triad of items, whenever they share the same attribute and the same polarity orientation, they are annotated as single evaluative units.
    - Un paese**<apprsl judgement="positive">cattolico e latino</apprsl>**…
    - …il mito**<apprsl appreciation="positive">laborioso e moderno</apprsl>**della Milano (un tempo) industriale oggi<apprsl appreciation="**negative**">**terziaria, bocconiana e finanziaria</apprsl>**.
    - …il bacio coniugale tra due poliziotti in uniforme (…) assomiglia, piuttosto, alle foto**<apprsl appreciation="positive">composte e accoratissime</apprsl>**di fidanzati e sposidi una volta.
    - Meno una collettività è impaurita, più è**<apprsl judgement="positive">salda, tollerante e civile</apprsl>**.
    - gli<apprsl judgement="**negative**">**invadenti, bellicosi, intolleranti**</apprsl>ortodossi che tanti problemi creano…

- In case of more than three items in a row that share the same attribute and the same polarity orientation, they were annotated separately.
    - Niente**<apprsl judgement="negative">di stravagante</apprsl>,<apprsl judgement="negative">di colorato</apprsl>,<apprsl judgement="negative">di deviante</apprsl>,<apprsl judgement="negative">di bizzarro</apprsl>,<apprsl**

```
judgement="negative">di provocatorio</apprsl>,<apprsl
judgement="negative">di sconveniente</apprsl>
```

Of course, in the previous examples we have outlined only the annotation that were relevant to the criterion in discussion. The following is an excerpt of an annotated text – comprehending both the tags used to delineate the article structure and the <apprsl> – from an article by Michele Serra.

```
<?xml version="1.0" encoding="ISO-8859-1"?>
<text>
      <p>
            <s>
            Pare che chiamare un taxi a Firenze, ieri, fosse<apprsl
            appreciation="negative">impossibile</apprsl>a causa di
            un<apprsl appreciation="negative">malizioso
            "guasto"</apprsl> dei call-center forse provocato
            dall'annuncio di nuove licenze: cosa che fa<apprsl
            attitude="negative">inferocire</apprsl>i detentori di
            quelle vecchie.
            </s>
            <s>
            Ma posso assicurare che trovare un taxi a Firenze
            era<apprsl appreciation="negative">piuttosto
            difficile</apprsl>anche due settimane fa; e che le code a
            Santa Maria Novella, in attesa di un'auto pubblica,
            sono<apprsl appreciation="negative">quasi sempre molto
            lunghe</apprsl>: venticinque minuti lo scorso 12
            settembre, sabato.
            </s>
            <s>
            Quanto a Roma,<apprsl appreciation="negative">non bisogna
            essere Claudia Gerini<apprsl
            appreciation="negative">(presa a parolacce per un suo
            tweet<apprsl
            attitude="negative">esasperato</apprsl>)</apprsl>per
            sapere</apprsl>che a Termini la coda per i taxi è
            un<apprsl appreciation="negative">avventuroso
            bivacco</apprsl>, perché l'uso della transenna è
            una<apprsl appreciation="negative"><apprsl
            appreciation="negative">diavoleria moderna</apprsl>ancora
            non introdotta nella capitale d'Italia</apprsl>; che
            quando piove trovare un taxi è una<apprsl
            appreciation="negative">scommessa quasi sempre
            persa</apprsl>; che con qualche tassista spesso tocca
            spiegare la propria destinazione, e a volte giustificarla
            perché la destinazione stessa sembra<apprsl
            attitude="negative">indispettirlo</apprsl>
            </s>
            . . . . . . . . . . . . . . . . . . . . . . . . . . . . .
      </p>
</text>
```

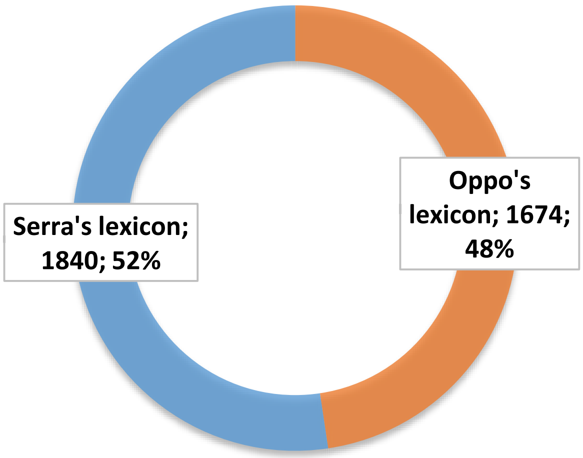
It should be noted that – despite the close attention to detail and the pursuit of a notational consistency while performing the annotation – a single person has performed the labelling work and therefore a various mistakes are possibly present within the corpus of the annotated articles.

3.2 Algorithm operations: lexicon extractions and automatic annotation experiment

As we have previously mentioned, by virtue of Prolog scripts written by Professor Rodolfo Delmonte, a number of automatic operations were performed on the annotated texts. In this paragraph we will specifically address the lexicon extractions and the automatic procedure used for the annotation experiment. However, it should be noted that various pieces of quantitative information were automatically collected out of the two operations mentioned above, so that for any annotated text we had the absolute values of the paragraphs, sentences, tokens, annotations, tokens/sentences, annotations/sentences, etc.

3.2.1 Automatically extracted lexicons

Once that the notational work on the 112 texts was completed we were able to automatically extract the lexicons of the evaluative items/sequences for each author from the annotated corpus. The total number of the lexical entries collected is 3,514. The items are distributed between the two lexicons as shown in the graph below:



Graph 2 – Distribution of the 3.514 collected entries amongst the two lexicons extracted automatically

The two lexicons are alphabetically ordered and each entry shows the relative attribute and polarity information, as we can see in the following ten entries from Oppo's lexicon:

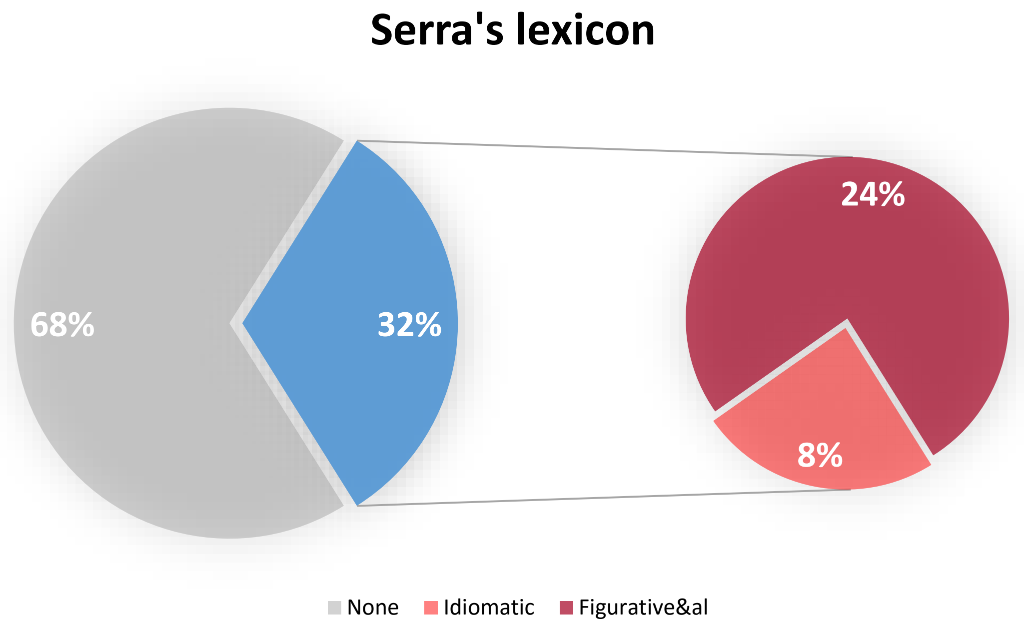
```
lx(di_provincia,appreciation_negative)
lx(di_quanto_fosse_come_combattente,judgement_negative)
lx(di_questi_tempi,appreciation_negative)
lx(di_solito_così_allegro,attitude_positive)
lx(di_teste_ne_ha_due,judgement_negative)
lx(di_tutte_le_risme_cartacee_e_televisive,judgement_negative)
lx(diabolica,appreciation_negative)
lx(diavoli_rossi,judgement_negative)
lx(dice_quello_che_vuole_dire,judgement_negative)
lx(diciamo_così,,appreciation_negative)
```

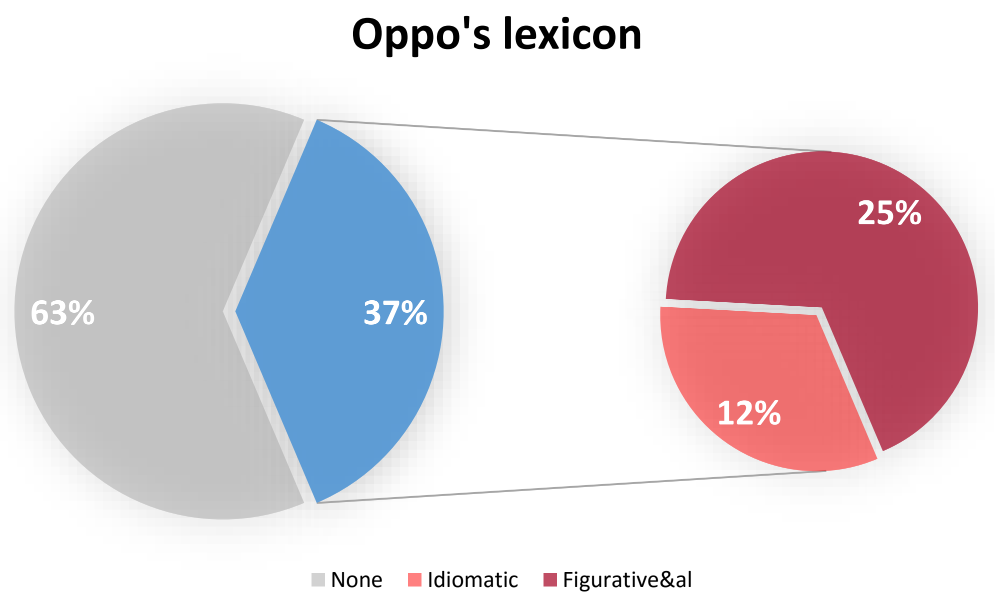
Because we wanted to superficially assess to what extent the authors adopted different types of linguistic strategies to convey the satiric meanings, we assigned a number indicating a different linguistic use for each entry within the lexicons, namely *none (0), idiomatic (1) or metaphoric, rhetoric and the like (2)*:

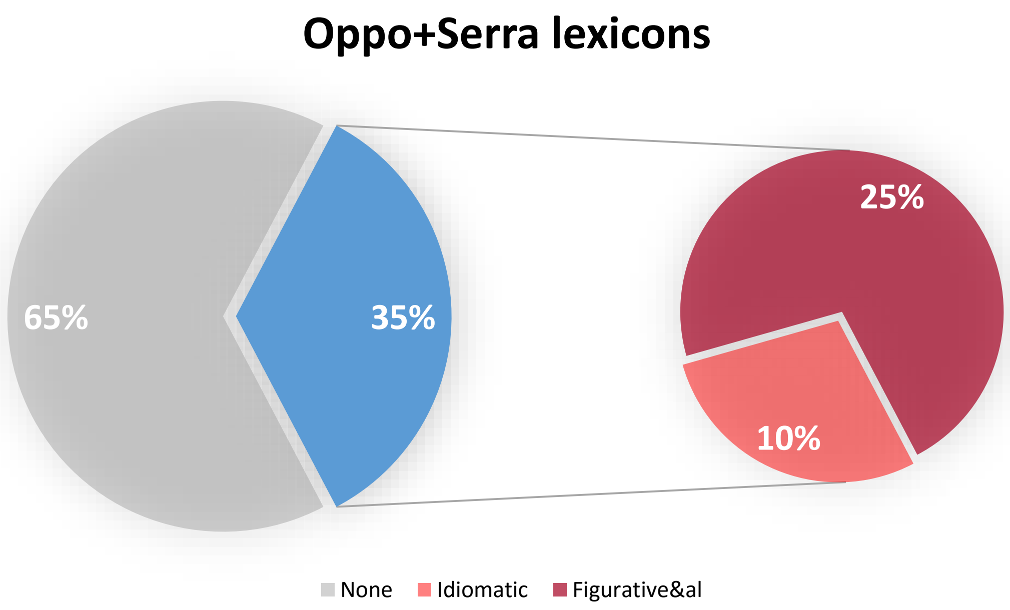
```
1 lx(di_provincia,appreciation_negative)
0 lx(di_quanto_fosse_come_combattente,judgement_negative)
1 lx(di_questi_tempi,appreciation_negative)
0 lx(di_solito_così_allegro,attitude_positive)
2 lx(di_teste_ne_ha_due,judgement_negative)
2 lx(di_tutte_le_risme_cartacee_e_televisive,judgement_negative)
2 lx(diabolica,appreciation_negative)
2 lx(diavoli_rossi,judgement_negative)
```

```
0 lx(dice_quello_che_vuole_dire,judgement_negative)
0 lx(diciamo_così,appreciation_negative)
```

From this typological classification we were able to derive an overall measure of the incidence of each linguistic use for the extracted lexicons.







The remarkable aspect is that the percentage of idiomatic/figurative language is near or little beyond one-third of the total entries. The different values of the linguistic uses are mostly due to stylistic differences between the two authors, but this 1/3 ratio is still valid when we sum the entries of both the extracted lexicons; it would be interesting to assess if this ratio is recurring even in other writers' articles and in fake satirical news[86].

3.2.2 Automatic annotation procedure

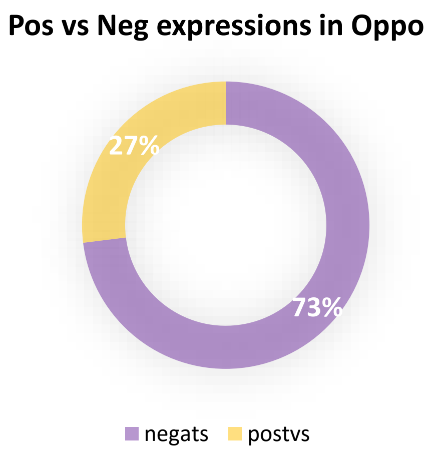
With the 3,514 lexical entries at our disposal, we carried out an automatic annotation experiment on twenty held-out satiric political articles by the same considered authors. We handled the task with a gradual approach: the featured algorithm performed three matching attempts in order to compare the sentences contained within the satiric articles with the lexical entries. The first match was performed by extracting the initial word from the input sentence and then trying to check the lexical entries while progressively increasing the length of the phrase up to a six-word sequence, using the words of the input

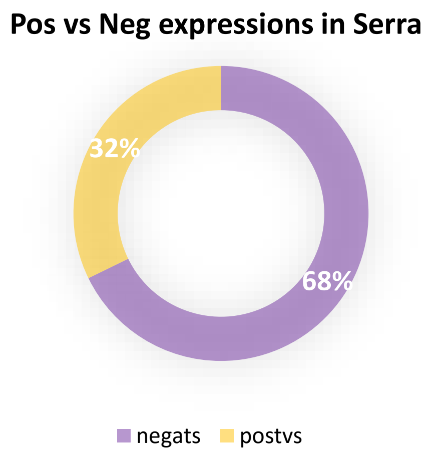
[86] as long as their length is comparable to those of the analysed satiric politic articles

sentence in the exact order in which they appeared within the phrasal context. Whenever the first matching attempt failed, the second match recursively looked for the best intersection of words up to a six-word sequence, but this time starting from the second word of the input sentence. If the matching attempt starting from the second word did not match any lexical entry, the algorithm tried to find a match starting from the third word of the input sentence, and so on. Lastly, the third matching attempt was equivalent to the second matching strategy, but this time the lexicon entries and the words within the input sentence were previously lemmatized to increase the number of the possible word matches, thus adding flexibility within the automatic annotation. In the next paragraph we will discuss the experimental results obtained using the above method.

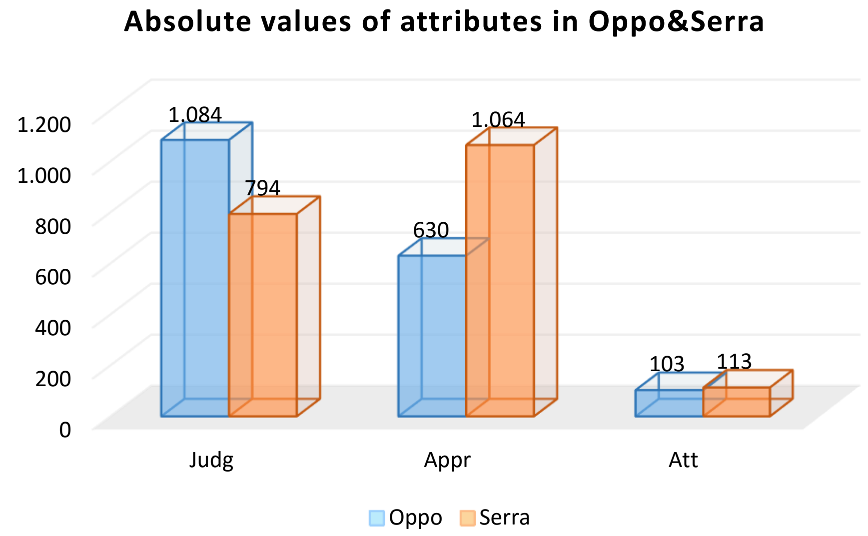
3.3 Manual and automatic annotation results

Within the set of the 112 labelled articles, the manual annotation identified 3,788 evaluative items/sequences. Even if we used 64 texts by Serra against only 48 articles by Oppo, the total number of the analysed tokens (28,991) is equally distributed between the two authors (Serra:14,641 against Oppo:14,350). At a first glance, we can observe the same tendency from both authors to use more negatives expressions rather than positive ones.

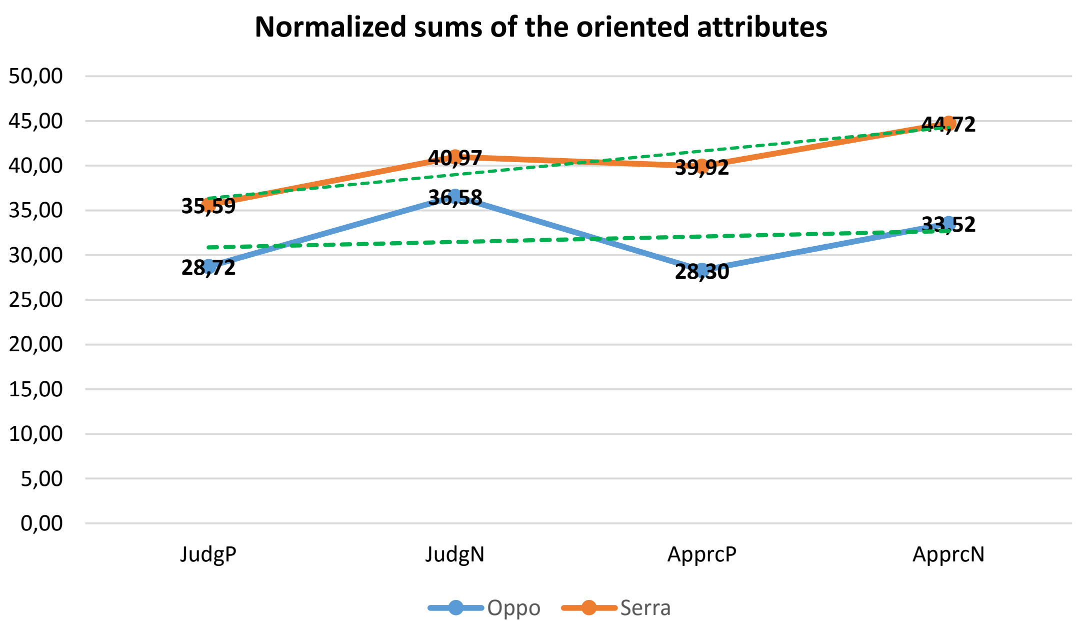




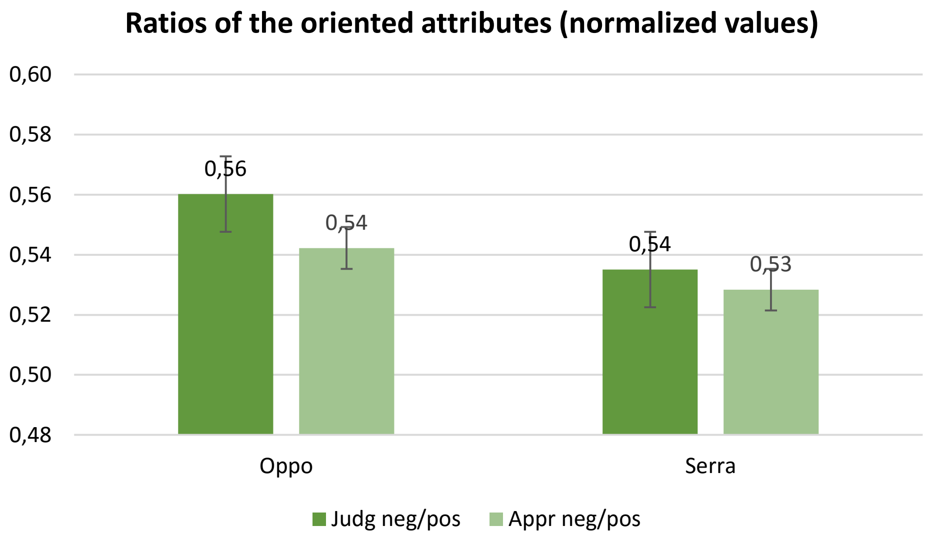
For what concerns the attributes, the authors show almost identical values for the attitude category, while with Oppo we have found far more judgements than appreciations, with Serra we found the opposite situation to be true.

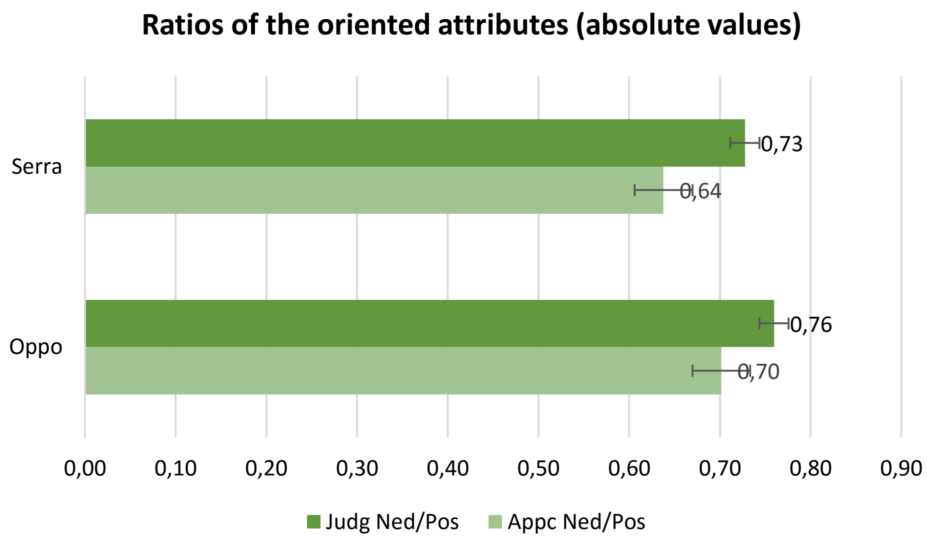


Looking at the gathered data this is the only appreciable difference that stands between the two writers. Considering the normalized sums for the judgement and the appreciation attributes in relation to their polarity values, the similarity between Oppo and Serra appears even more clearly when looking to the trend lines for each author.

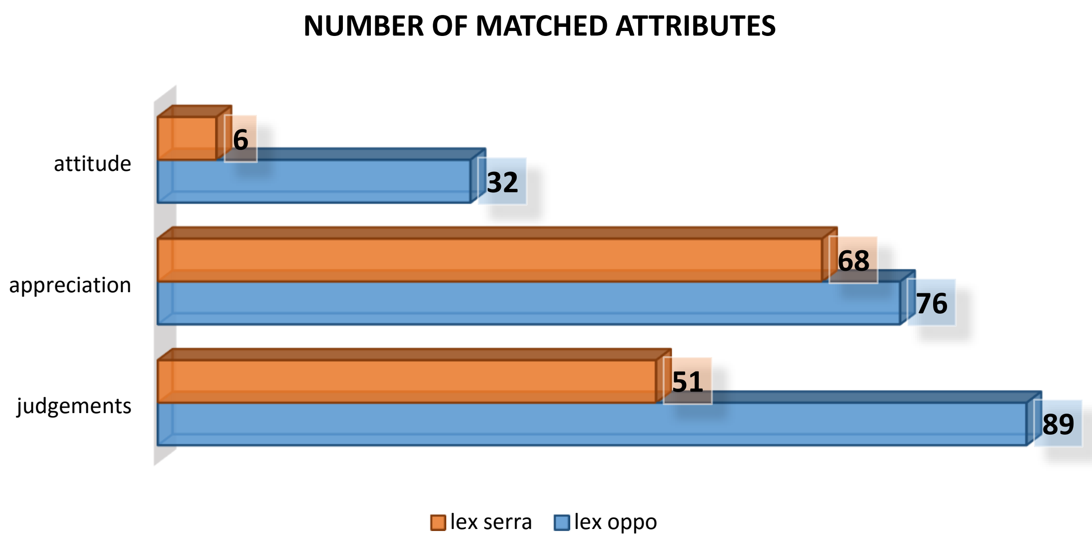


In this case the higher values of Serra against those of Oppo are justified by the major number of annotations found within the set of Serra's articles, thus we should not be misled by this superficial result. To confirm the discovered trend lines, we considered the ratios between the negative and positive use of the attributes as an additional indicator of the authors' tendency in utilising similar polarity orientations. The ratios were calculated (using both the normalized and the absolute values) as the quotient between the number of the negative uses of the attribute over the sum of the positive and negative uses of the attribute.

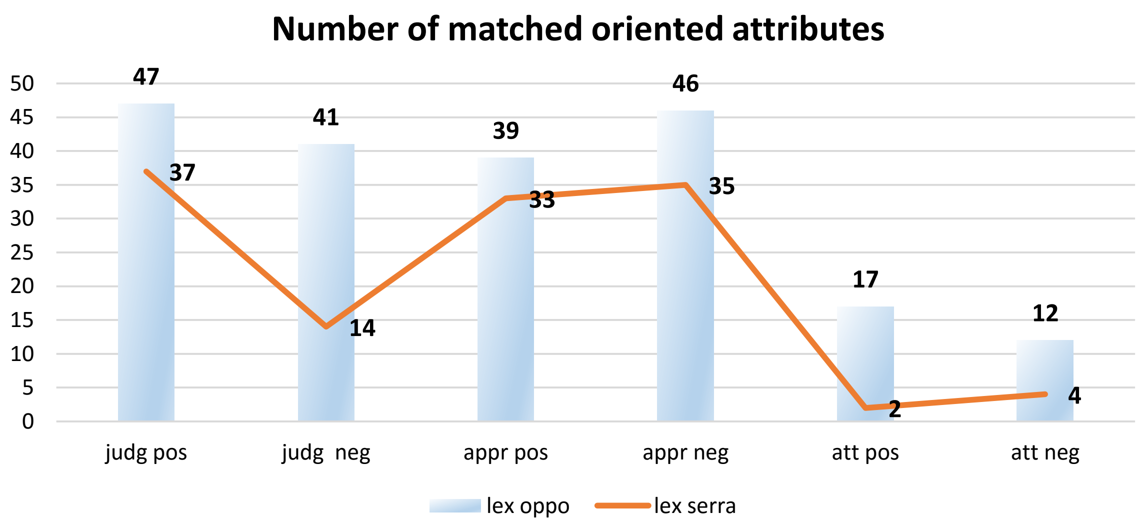




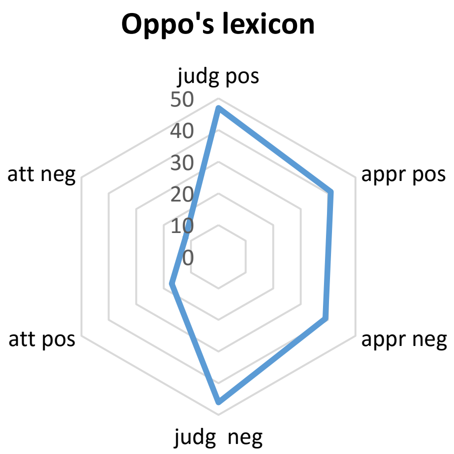
As we can see from the last two chart, the authors' behaviour not only is similar in relation to the general preference of using negative expressions, but also appears consistent even in terms of the negative emotive characterization of their judgments. Turning our attention to the automatic annotation experiment, we observed that Oppo's lexicon achieved a better score, capturing more evaluative items/sentences – especially for the judgment and the attitude attributes – compared to the results obtained while using Serra's lexicon.

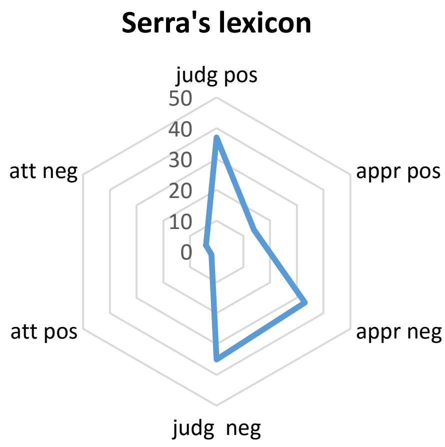


As exptected, the better performance of Oppo's lexicon is reflected even looking at the oriented attributes, as shown in the three graphs below.

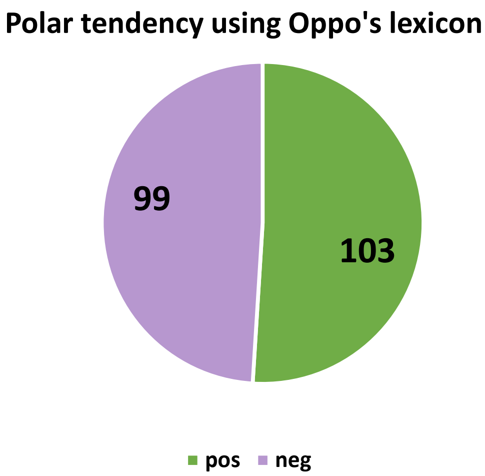


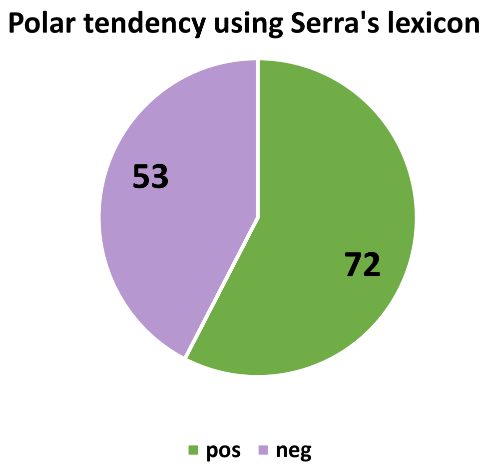
From the shown results we can make two observations. The first observation is that the lexicon containing the evaluative sequences automatically collected from Serra’s articles seems to perform a less harmonic annotation.





The second observation is that – apart from the appreciation attribute – due to the superior number of positive attributes matched using both lexicons, the authors’ tendency to use negative expressions more than positive ones does not appear as a clear evidence.





However, it should be noted that we performed the experiment using a naïve approach, which is to say that we have not compared the obtained results with the analysed texts searching for possible instances of false positive/negative attributions. Furthermore, we should consider these polar tendencies (as well as the previous results) as partial trends, since the amount of tokens within the analysed texts do not represent a sufficient population in order to draw meaningful conclusions. In the near future, we hope to deepen the analysis comparing the retrieved data with the twenty held-out texts by providing a human-annotation for the latter.

3.4 Conclusions

Throughout this thesis we have tried to address the satiric genre in both a pure theoretical and practical way. The uniqueness of satire led us to question the linguistic theories that aimed to explain the verbal conveyance of humorous meanings as a process based on recurrent aspects, such as the (phonetic or syntactic) ambiguity of the message, the psycholinguistic effect triggered by ironic texts, or the socio-pragmatic valence of taunting messages. Eventually we proved that all the mentioned theories represented partial descriptions when related to satire, since we cannot grab the core of this genre leaning on a single aspect, for we are forced to widen the spectrum of the explanatory account if we want to seize the linguistic peculiarity of satiric texts. We found it appropriate to suggest a new pragmatic view where the texts belonging to the satiric genre are conceived as "linguistic games", with few but specific rules to satisfy. Special attention was given to the comprehension of the fundamental textual features of satire, retrieved from the analysis of a number of different typologies of humorous texts, so that through the use of the outlined satiric features we were able to draw a basic differentiation between satire and others humorous written productions. In addition, we have looked to several computational approaches for the detection of humorous and/or related texts, in order to identify suitable techniques to use also for the automatic processing of satiric texts. Lastly, through the manual annotation activity and the automatic labelling experiment we had the opportunity to confirm some of the various remarks contained in the first and second chapter, namely the important presence of figurative and idiomatic language and the typical textual length and syntactic complexity of satiric texts. Speaking of the latter linguistic feature, using the reduced version of the Appraisal framework – enriched with new criteria specifically devised for the practical analysis – proved to be a useful tool for the completion of the manual annotation, yet we were not able to represent properly some of the evaluative sequences because of the high level of complexity of the textual structure. The main issue was represented by the cases of linguistic cohesion substantiated trough nominal anaphors. Let us see two examples from Oppo's articles:

a) *"Insomma, Berlusconi che partorisce un nuovo Berlusconi più vecchio e più brutto che pria.* ***Ne*** *parlavano in parecchi ridacchiando."*[87]

b) "*Non c'è niente visto in tv in questi giorni (neppure le misere gag di Berlusconi da Santoro), più incredibile di Casini, che va dappertutto a dire di essere il «nuovo». Non che* ***(Casini)*** *sia vecchio come Berlusconi, ma* ***(Casini)*** *è in politica da molto più tempo, praticamente da sempre. Fa parte* ***(Casini)*** *dell'archeologia politica del Paese più di tanti che sono più anziani di lui.*"[88]

In a) the pronominal particle "ne", within the sentence where it is contained, almost entirely represents the previous proposition and in this case we had no choice but to tag the whole phrase where the particle was. Solely tagging pronominal particles would have led to an inclusion of function words hardly manageable in our analysis. Additionaly, if we consider that the anaphora not always is elicited within a sentence, as it is clearly shown in

[87] Article titled "Sul piccolo schermo troppe metafore per colazione", published on December 6, 2012. Available at this link: http://cerca.unita.it/ARCHIVE/xml/2490000/2488061.xml?key=agora&first=181&orderby=1
[88] Article titled "Le elezioni e il «nuovo» Casini, più furbo che bello", published on January 15, 2013. Available at the following link: http://cerca.unita.it/ARCHIVE/xml/2505000/2500739.xml?key=Fronte+Del+Video+Maria+Novella+Oppo&first=221&orderby=0&funz=ph&f=fir

b), a further level of complexity is added to the representation of evaluative information tied to the anaphors. In any case, labelling entire sentences allowed us to capture these kinds of evaluative items, but in future research it would be convenient to find a different analytic tool beside the Appraisal framework to deal with anaphoric resolutions, since labelling long sentences surely led us to include noisy data within the lexicons. To this purpose, we can find useful indications in (Markert & Nissim, 2005) where, through a comparative analysis, the scholars assessed the performances of different algorithms while using different knowledge resources – namely WordNet, the British National Corpus (BNC) and a portion of the Web – for the nominal anaphora resolution task, stating that the web-based method outperformed (or scored comparable results) when compared to the methods featuring the WordNet and BNC ontologies. Because the web-based method did not need any post-processed information on the web pages or hand-modelling lexical knowledge, it would be interesting to evaluate if a similar strategy could be succesfully used to overcome the anaphora resolution problem within satiric texts for both manual and more complex automatic labelling activities. In conclusion, we hope that the academic efforts conveyed in this master thesis will prove to be a helpful contribution for future research on the subject.

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