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Preface to *Handbooks of Communication Science* series

This volume is part of the series *Handbooks of Communication Science*, published from 2012 onwards by de Gruyter Mouton. When our generation of scholars was in their undergraduate years, and one happened to be studying communication, a series like this one was hard to imagine. There was, in fact, such a dearth of basic and reference literature that trying to make one's way in communication studies as our generation did would be unimaginable to today's undergraduates in the field. In truth, there was simply nothing much to turn to when you needed to cast a first glance at the key objects in the field of communication. The situation in the United States was slightly different; nevertheless, it is only within the last generation that the basic literature has really proliferated there.

What one did when looking for an overview or just a quick reference was to turn to social science books in general, or to the handbooks or textbooks from the neighbouring disciplines such as psychology, sociology, political science, linguistics, and probably other fields. That situation has changed dramatically. There are more textbooks available on some subjects than even the most industrious undergraduate can read. The representative key multi-volume *International Encyclopedia of Communication* has now been available for some years. Overviews of subfields of communication exist in abundance. There is no longer a dearth for the curious undergraduate, who might nevertheless overlook the abundance of printed material and Google whatever he or she wants to know, to find a suitable Wikipedia entry within seconds.

'Overview literature' in an academic discipline serves to draw a balance. There has been a demand and a necessity to draw that balance in the field of communication and it is an indicator of the maturing of the discipline. Our project of a multi-volume series of *Handbooks of Communication Science* is a part of this coming-of-age movement of the field. It is certainly one of the largest endeavours of its kind within communication sciences, with almost two dozen volumes already planned. But it is also unique in its combination of several things.

The series is a major publishing venture which aims to offer a portrait of the current state of the art in the study of communication. But it seeks to do more than just assemble our knowledge of communication structures and processes; it seeks to *integrate* this knowledge. It does so by offering comprehensive articles in all the volumes instead of small entries in the style of an encyclopedia. An extensive index in each *Handbook* in the series, serves the encyclopedic task of find relevant specific pieces of information. There are already several handbooks in sub-disciplines of communication sciences such as political communication, methodology, organisational communication – but none so far has tried to comprehensively cover the discipline as a whole.

Peter R. R. White

5 Evaluative contents in verbal communication

Abstract: This chapter discusses recent scholarship concerned with the analysis of language interpreted as expressing evaluative meanings. It considers work undertaken within semantics, pragmatics, discourse analysis and corpus linguistics and makes special reference to recent developments within the computational linguistics field of "sentiment analysis". The chapter explores evaluative meaning making under two broad beadings: 1. attitudinal evaluations by which positive or negative assessments are conveyed and 2. evaluative positionings by which propositions are construed as more or less reliable, contentious or agreed upon. Under the first heading, the distinction between explicitly attitudinal (positive/negative) meaning making and implicitly attitudinal meaning making is discussed. Contributions to the understanding of implicit attitudinal meaning making provided by the corpus linguistic notions of "pattern grammar" and "semantic prosody" are explored, along with how computational sentiment analysis has and might deal with the challenge posed by such meanings. Under the second heading, there is a discussion of the various approaches to dealing with language by which authors take up different stances towards the propositions being advanced in the text. The "truth-functional" orientation of some scholars is contrasted with the dialogistic approach developed within the Appraisal framework of Martin and White (2005). The literature that explores the evaluative functionality of attribution is also considered, specifically that addressed to how it is possible for the authorial voice to favour or disfavour a proposition even when it has been "neutrally" attributed to an external source. Such language poses particular challenges for automated sentiment analysis.

Keywords: evaluation, stance, subjectivity, attitude, opinion, sentiment, appraisal, modality, evidentiality, engagement, hedging and boosting, attribution, sentiment analysis, opinion mining

1 Introduction

Given that the linguistics mainstream for most of its history has paid only occasional attention to evaluative meanings (see, for example Malrieu 1999: 1), it is perhaps paradoxical that today the analysis of evaluative meaning making has become a multi-million dollar industry – under the computational-linguistic rubric of "sentiment analysis". As students of the history of linguistics will be aware, for much of

the 20th century most of those linguists concerned with meaning focussed largely on issues of denotation and truth conditionality, with "denotation" understood as the "reference" of lexical items and as "those definitional features which are strictly necessary to the univocal identification of the referent" (Rigotti and Rocci 2006: 443). Evaluative meanings by which speaker/writer[1] attitudes and stances are expressed were typically characterised as "connotational" and, as such, seen as much less tractable in terms of systematic, principled analysis and as in some sense peripheral or secondary to the concerns of semantics. Thus for example, while denotational meaning is said to be a matter of "features which are strictly necessary to the ... identification of the referent", connotation is said to "correspond to supplementary features" (Rigotti and Rocci 2006: 443). One notable exception to the above has been the Systemic Functional Linguistics of Michael Halliday and his colleagues. In Halliday's linguistics, the interpersonal aspect of meaning making has always been seen as of equal importance to the referential (see, for example, Halliday 1994).

Now the tables have been turned somewhat, or at least something more like a balance established, as evaluative meaning has increasingly become the focus of scholarly attention by semanticists, discourse analysts and corpus linguists. Perhaps most noticeable has been the computational linguistic interest mentioned above, as information technology companies, from small internet start-ups to the trans-national corporations, invest millions in developing computer software for identifying and analysing the expression of evaluative meaning in text. The impetus for this comes, of course, from the exponential growth over the last decade in what is termed "social media" as billions of internet users turn to communicating with the world at large via do-it-yourself websites and weblogs. These legions of internet users opine, pass judgement and express their feelings about all manner of products, services, prominent people, cultural artefacts, political parties, news events and social issues. The IT companies offer software which will track, it is promised, all this online evaluative meaning making, providing reports on who and what is currently being praised or applauded, and who or what censured or criticised. Under the rubrics of "sentiment analysis" and "opinion mining" (see, for example, Pang and Lee 2008; Liu 2012), this software, with greater and lesser degrees of accuracy, automatically identifies attitudinal expressions, determines if they are positive or negative, assigns scales of attitudinal intensity and then maps trends in the nature of the attitudes being expressed towards particular evaluative targets across one, a few or very many texts.

The large number of companies offering such services – as many as 60 in the United States alone in 2012 according to Liu (2012: 3) – would seem to suggest that

1 While the observations advanced in this chapter generally apply both to speaking and writing, for convenience and because most of the examples of language discussed are from written texts, reference will only be made to the "writer".

these computational linguistic techniques are at least to some degree successful, at least accurate enough to satisfy the paying customers seeking information on how their new product, service or campaign is being viewed out there in the blogosphere. Some of the technologies are reportedly even sophisticated enough to automatically separate out "fabricated" positive reviews (termed "opinion spam") of hotels, newly released movies, electronic devices and so on from the genuine article (see Jindal and Liu 2008).

It seems, therefore, that the analysis of evaluative meaning making in text has very much come into its own, in both theoretical and applied contexts. It is timely then that this chapter reviews both earlier and more recent scholarship directed at providing definitions and recognition criteria for language which may be held to be "evaluative" and at exploring the socio-communicative and ultimately ideological functionality of these meanings. This scholarship is considered under two broad headings: 1. accounts of those attitudinal evaluations by which positive or negative assessments are conveyed and 2. accounts of those evaluative positionings by which propositions are construed as more or less reliable, contentious or agreed upon. Under the first heading, the distinction made between explicitly attitudinal (positive/negative) meaning making and implicitly attitudinal meaning making is discussed, with some close attention paid to the understanding of implicit attitudinal meaning making provided by the corpus-linguistic notions of "pattern grammar" and "semantic prosody". Under the second heading, there is a discussion of the various approaches to dealing with language by which authors take up different stances towards the propositions being advanced in the text. The "truth-functional" orientation of some scholars is contrasted with the dialogistic approach developed within the Appraisal framework of Martin and White (2005).

Throughout the chapter reference is made, where appropriate, to the recent work within computational sentiment analysis because it is interesting in its own right and because, by considering its accomplishments and the difficulties it faces, we can derive further useful insights into the nature of the linguistic mechanisms by which evaluative meanings are made.

2 Describing and defining the notion of evaluative expression

In the literature the term "evaluation" (along with the closely related terms "stance" and "subjectivity") is generally used to cover meanings which, while quite diverse in their communicative functionality, nevertheless all share the property of reflecting or revealing the writer's personal involvement in the meaning making. For example, in defining for their use the term "evaluation", Thompson and Hunston describe it as a "broad cover term" for those meanings which function to express "the speaker or writer's attitude or stance toward, viewpoint on or feel-

ings about entities or propositions that he or she is talking about" (2000: 5). They state that evaluative meanings can involve attitudes with respect to "certainty or obligation or desirability or any number of other sets of values". While there is some variation around the margins, virtually all the literature on evaluative language includes evaluative positioning with regards to 1. positivity/negativity (where the writer is presented as favourably or unfavourably disposed either to some experiential phenomenon or to some element of the text), 2. positioning as regards what is typically understood as the "epistemic" status of propositions (indications as to the degree of authorial investment in the proposition, assessments as to the proposition's warrantability or contentiousness) and 3. deontic positioning with respect to the writer's view of the need or necessity for some action or behaviour. Accordingly it is upon these particular evaluative functions that this chapter focuses since they can be presumed to be central to current scholarly concerns.

It is also important to note that, for at least some scholars, evaluation is not an intermittent or occasional effect in text but, instead, is omnipresent, with all utterances unavoidably involved in some form of evaluative positioning. Thus in his 1932 *Linguistique generale et linguistique francaise*, Bally divided sentence elements into "dictum" and "modum", with the former being the sentence's contents and the latter being the expression of the speaker/writer's subjective view of those contents (Bally 1965(35): 36). More recently, Hunston has stated, "Indeed, it may be said that subjectivity and ideological value permeate even the most objective of discourses. It can reasonably be argued that every text and every utterance is evaluative, so that the phenomenon itself disappears, to be replaced simply by "language" (Hunston 2011: 19). White takes a similar line when outlining a Bakhtinian framework for the analysis of authorial stance, arguing that all utterances involve positioning by the speaker/writer either with respect to prior utterances by other voices on the same subject or with respect to potential responses to what is being asserted. Thus he argues that even bare, categorical assertions (i.e. formulations without any overt hedging, intensification or other forms of qualification) involve a "stance of dialogic disengagement [which] is highly charged rhetorically. The bare assertion in this broad sense is "modal" – it represents a particular intersubjective stand" (White 2003: 265).

3 Attitudinal evaluation – conveying a positive or negative assessment

As indicated, a key function of language classified as "evaluative" is to convey a positive or negative view. This can either be a view of the experiential entities, happenings and states-of-affair referenced by the text or a view of propositions about these experiential phenomena. Both these attitudinal functions are exemplified in the following extract from an online reader's comment attached to an article

in the *Rolling Stone* magazine about firearm-control law reform in the United States. The comment's author is responding to an assertion by the article's author that the US government should implement laws to restrict gun ownership on the grounds that recent surveys have shown popular opinion to be overwhelmingly in support.

(1) Please stop repeating bad statistics. That whole "90 % of America wanted gun control" was simply made up BS, generated by biased polls run by gun control supporters like the NY Times Group. Reputable groups like Pew and Gallup find that increased gun control is supported by about 50 % of the country, and opposed by 50 %.

For the President to get on air and accuse the NRA of lying, while using these fabricated "statistics" underlines the hypocrisy behind the whole gun control position. The media also lied during this witch-hunt against legal firearms owners. Making up ridiculous "facts". [...]

This bizzaro-retro gun control dogma needs to be dumped into the trash bin of history. It's pointless and counterproductive (http://www.rollingstone.com/politics/news/gun-control-45-percent-of-the-senate-foils-90-percent-of-america-20130417).

3.1 Attitudinal "stability" ("prior polarity")

This extract contains a number instances of a type of attitudinal expression which the literature generally agrees are relatively straightforward analytically – lexical items which are felt to be largely stable in explicitly conveying positive or negative assessments. Thus, for example, Hunston and Sinclair state that adjectives which attribute evaluative qualities are "easily identified intuitively" (Hunston and Sinclair 2000: 83). This assumption that there are lexical items which have stable, explicitly attitudinal meanings across different texts and contexts also underlies much of the computational sentiment analysis work. Thus Wilson et al. (2005: 1). state:

> "A typical approach to sentiment analysis is to start with a lexicon of positive and negative words and phrases. In these lexicons, entries are tagged with their a priori prior polarity: out of context, does the word seem to evoke something positive or something negative. For example, *beautiful* has a positive prior polarity, and *horrid* has a negative prior polarity"

These purportedly stable, explicitly attitudinal terms may apply both to phenomena ("real world" entities, happenings and states-of-affairs) and to meta-phenomena (propositions about "real world" entities, happenings and states-of-affairs). Instances of this type of expression applying to phenomena in the above extract include "reputable" as a descriptor of "groups like Pew and Gallup", "biased" as descriptor of certain "polls", "witch-hunt" as a descriptor of the behaviour of the media and "hypocrisy" a descriptor of the behaviour of the "the whole gun control" lobby.

Instances of such stable, explicitly attitudinal expressions applying to meta-phenomenon include "bad" as a descriptor of certain "statistics" and "made up BS [bull shit]" as a descriptor of the quoted proposition "90% of America wanted gun control".

One obvious challenge for automated computational sentiment analysis systems which immediately presents itself is that of the range or comprehensiveness of the pre-compiled[2] dictionaries/lexica of attitudinal terms upon which, as indicated above, they rely. These lexica typically contain several thousand entries. For example, the WordNet-Affect subset of the Wordnet lexical knowledgebase (Strappavara and Valitutti 2004) includes 4,787 attitudinal items. Obviously the software can only identify expressions in texts as attitudinal where the word or words in question are present already in the reference lexicon and, accordingly, is likely to "overlook" rarer lexemes or those which are neologisms. Thus, for example, while it is likely that a significant proportion of the attitudinal terms contained in the above extract would be found in the precompiled lexica (for example, "bad", "biased", "hypocrisy") it is unlikely that "bizzaro-retro" would be included. Since the typical purpose of sentiment analysis systems is to determine the overall attitudinal orientation of texts, rather than to produce the delicate qualitative findings sought by discourse analysts, then a problem would only arise if the text (or texts) in question features a significant number of such rarer and hence previously unclassified attitudinal terms. In efforts to meet this potential challenge, some sentiment analysis systems apply mechanisms for automatically extending the range of the lexica of attitudinal terms which they employ, including, for example, algorithms which seek to identify "new" attitudinal terms by attending to expressions which, while not themselves attitudinal, typically occur in association with explicitly attitudinal items.

While this may at first glance appear to be an issue only for the computational linguist, further consideration reveals that there are interesting questions here as well for those whose concerns are with human rather than computational "understanding". It seems likely that many readers of the above extract would not previously have encountered the term "bizzaro-retro" (an enquiry using a popular internet search engine which indexes billions of World Wide Web pages found a few instances of "retro-bizzaro" but none of "bizzaro-retro"). Nevertheless it is likely that readers would interpret the meaning here as attitudinal and as negatively so. The meaning-making mechanisms here are of some interest. Firstly, of course, there is the recognition that "bizzaro-retro" is attitudinal (i.e. conveying a positive or negative assessment) as opposed, for example, to offering some non-attitudinal

2 These lexica have been compiled using both human annotation and computational data mining mechanisms. Predictably there is considerable discussion and debate about how best to construct such dictionaries of attitudinal meaning. See Devitt and Ahmad (2013) and Tabauda et al. (2011) for further discussion.

classification or description. Both co-text in general and specific grammatical arrangements are in play here. As the left-most pre-modifier in a complex nominal group, the term occurs in the slot very frequently occupied by attitudinal adjectives. In this role it pre-modifies the head noun "dogma", a term which is not only of itself frequently negative but which is subsequently described in this text as needing "to be put in the trash bin of history" and as "pointless and counter-productive". Additionally, there are the negative evaluations of the gun-control lobby which occurred earlier in the text. Accordingly it would be attitudinally incoherent for "bizzaro-retro", once recognised as attitudinal, to convey anything but a negative evaluation. Interestingly it is the influence of co-text which seems crucial here, rather than any inter-textually stable meanings which might be associated with the term itself or its two component parts ("bizzaro" and "retro"). This point will be taken up below.

3.2 Co-textual conditioning: attitudinal instability

This discussion of co-textual influences lead to another key aspect of attitudinal meaning making which is widely recognised in the literature: that many lexical items are not stable across contexts in terms of the attitudinal meanings they may convey. In this the literature can be said to be endorsing Firth's now widely quoted dictum that, "the complete meaning of a word is always contextual, and no study of meaning apart from a complete context can be taken seriously" (1935: 37). In some cases it is a matter of a lexical item being involved in attitudinal meaning making in some contexts and in non-attitudinal meaning making elsewhere. Thus, in the above extract, "fabricated", when applied to "statistics", conveys a negative attitude which is close in meaning to "dishonest" or "false". In other cases, the meaning conveyed by the word form is non-attitudinal, as the following extract from the Collins Wordbanks 550-million-word general corpus of English demonstrates.

(2) Holwerda said that the Cormorant's owners had brought in a load of specially **fabricated** alloy plates from a shipyard in Finland.

While such word forms, in context, usually provide no problems for human interpretation, they can, of course, present serious difficulties for automated systems. While the lexica accessed by these systems may contain information that such a term has multiple senses, and that one sense is attitudinal and the other not,[3] it

3 WordNet, for example, indicates that the verb fabricate has two senses: 1. "put together out of component parts" and 2. "make up something artificial or untrue". The lexicon of attitudinal terms might tag such a term as both "negative" and "neutral".

still remains for the system to determine which of these senses applies in a given context. Assistance can be rendered here via some of the insights arising from corpus linguistic studies, specifically insights into what Sinclair and Coulthard (1975: 125) term "latent patterning" , and more specifically what Stubbs has termed "semantic preference" (Stubbs 2001: 64). This is the phenomenon by which a node form collocates (co-occurs), not with one or two words but with a range of words which can be analysed as belonging to a semantic set. Where a node form co-occurs with more than one such semantic set, then this is evidence that two different meanings may be in play. Thus a key-word-in-context search[4] of the Collins Wordbanks corpus for *fabricated* reveals at least two such semantically "preferred" sets. By far the largest set includes words which act to name meta-phenomena, communicative processes or artefacts by which propositions are advanced. These include the following: *account, accusation, allegation, charges, claims, confessions, data, documents, evidence, excuses, information, magazine article, memories, memo, message, news story, quotes, portrayal, records, results, research* and *stories*. A smaller though nonetheless still large set includes words which reference the physical products of typically industrial manufacturing processes. These include: *aircraft parts, aluminium panels, axels, bolts, foam, foods, metal products, microchip* and *tubing*.

For these insights to be operationalized in automated systems, they would obviously need access to thesauri capable of providing information about this type of set membership, if they are to reliably classify terms such as *fabricated* as either attitudinal or non-attitudinal. The WordNet knowledgebase is one such thesaurus which, since it is organised as a multi-level hierarchy of increasingly general hypernyms, could in principle provide this type of information.

The variability of the meanings associated with such word form lends support, of course, to the proposition that it is not individual lexical items which convey meanings but rather word combinations in particular co-textual settings, the view which has been advanced, following Firth, by Sinclair (1991, 2004) and other corpus linguists. Under this view, it is not lexical items which act as expressions of attitudinal meaning but rather particular combinations of words and classes of words in particular co-textual environments.

It is noteworthy in this regard that it is common for sentiment analysis technologies to operate, not on single word items (termed "unigrams" in the literature), but rather on two or three word sequences (termed "bigrams" and "trigrams" in the literature). Thus, for example, an "unsupervised" sentiment analysis algorithm developed by Turney (2002) assigns attitudinal orientations not to single items, but to pairings of words in which the first word is either an adjective or an adverb and the second word a noun. While this obviously provides for only limited recognition

4 The search used parts-of-speech identifiers to search for the term as an adjective occurring before a noun.

that meaning making is co-textually contingent, it can nonetheless be seen as recognition of the notion that it is not individual word forms which make meanings.

In addition to cases such as that exemplified by "fabricated", where the word form can be involved in either attitudinal or non-attitudinal meanings, there are cases where a term may functional positively or negatively, according to the co-text. The term "retro", one element of the combination "bizarre-retro" from the above extract, exemplifies this case.

A search of the Collins Wordbanks corpus provides numerous examples where it contributes to a negative attitudinal evaluation. The following is one example.

(4) In Blur's respect for The Kinks, Elastica's fondness for art-punk, and Oasis's wide-eyed Beatles-worship, there was a clear sense of the arrival of a generation steeped in a new classicism – what came to be maligned as "**retro**".

Against this, Wordbanks also provides numerous examples of it being used positively.

(5) We could have a carnival queen competition in the village hall and they'd all wear bikinis and I could be the judge! It would be brilliant – all **retro** and very villagey and totally wonderful.

Such cases are, of course, further demonstration of the principle that meanings are made not by individual lexical items but word combinations, in given co-textual settings.

3.3 Co-textual conditioning of attitude: grammatical patterns and semantic prosodies

3.3.1 A grammar of evaluation

The corpus linguistics literature provides additional important insights into the mechanisms by which words in combination make attitudinal meanings. One key insight follows from the work of Sinclair, Francis, Hunston and their colleagues (see for example, Hunston and Francis 1999) on what they term "local grammars" or "pattern grammar". Hunston and Sinclair outline the key notion as follows.

> ... every sense of every word can be described in terms of the patterns it commonly occurs in; and secondly, that words which share a particular pattern typically also share a meaning. (Hunston and Sinclair 2000: 83)

From this follows the possibility that there are grammatical patterns which will typically or even uniquely be associated with words which convey evaluative meanings in general and, perhaps more specifically, with words which convey attitudinal evaluations (positive/negative assessments). In "A Local Grammar of Evaluation" Hunston and Sinclair set out a series of such patterns. For example, they

present the pattern consisting of "*it* + link-verb + **adjective** + clause" (e.g., "It was wonderful seeing you.') and propose that it is "a good "diagnostic" of evaluative adjectives, as all adjectives that occur in the pattern are evaluative" (Hunston and Sinclair 2000: 84). The meanings involved here include not only attitudinal values (positive/negative assessments) but other sub-types of evaluation: for example "It was obvious that the play was over."; "It was surprising to see her there."; "It was certain that they couldn't escape." In *Pattern Grammar*, Hunston and Francis (1999) identify patterns which are associated with a narrower range of evaluative meanings. Of particular relevance for our current concerns are those patterns which strongly associate with attitudinal meanings. For example, they discuss the pattern "*it* link-verb + **adjective** + *of* + noun + to-infinitive" (Hunston and Francis 1999: 104) and note that this pattern occurs only with adjectives which either indicate positive/negative attitudes ('It was courageous of him to speak out.") or assessments of typicality ("It was uncharacteristic of her to arrive so early.").

Such patterns are of obvious interest for computational linguists. They offer the prospect of the automatic identification of explicitly evaluative (and possibly attitudinal) terms in texts, without recourse to precompiled lexica of attitudinal meanings. For those concerned with human interpretations of meaning they are of interest in that they provide for further insights into how it is word combinations in context which make attitudinal meanings and not individual words. This point is demonstrated when we consider formulations such as "It was big of you to take the risk" (Hunston and Francis 1999: 105). The term *big* is typically used to convey assessments of relative size, not positive assessments of ethical standing, as is the meaning here. As Hunston and Francis observe, in the case of such patterns, it is not the word which makes the meaning but the grammar pattern in which it operates. It is the grammar pattern which is attitudinal, not the term *big*.

3.3.2 Semantic prosody

Somewhat similar is the phenomenon which, following Sinclair (1991) and Louw (1993), has been labelled "semantic prosody". Though the term itself and the communicative effects associated the phenomenon have been the subject of debate in the literature (see Hunston 2007 for a review), semantic prosody is generally understood as the phenomenon by which words which are not felt of themselves to be explicitly attitudinal do, nonetheless, have strong associations with either positive or negative meanings and which may, upon closer consideration, be analysed as conveying some attitudinal orientation. In the literature it is frequently observed that speakers do not identify such items as being attitudinal when introspectively considering them in isolation – i.e. out of any given textual context. One such term is *set in*, observed by Sinclair to be almost always used with "unpleasant states of affair" such as *decay*, *malaise* and *disillusionment* rather than with neutral

or positively viewed states of affairs (Sinclair 1987: 155). Thus we might well say "despair set in" (negative) but would be much less likely to say "hope set in" (positive) or "the new semester set in" (neutral). Tellingly, if we did say "the new semester set in" it would be collocationally unusual and likely to give rise to an interpretation that we were being ironic in some way or seeking to be negative about "the new semester" in a humorous or indirect manner. (For a full discussion of semantic prosody and irony see Louw 1993.) Other similar terms identified in the literature include *cause*, *happen*, *utterly* and *bent on*.

Such terms are significant for understandings of how attitudinal meanings are expressed in that they point, yet again, to the fact that it is via word combinations and not individual items that these meaning are made. They also point to a further important issue in the analysis of attitudinal meaning making, the widely noted point that texts can be highly attitudinal (i.e. activate positive or negative assessments) without recourse to explicit, more or less stable attitudinal terms of the various types discussed to this point. This issue is taken up in the next section.

3.4 Attitudinal implication and association

The literature is in general agreement that the analysis of evaluative meaning making is complicated by the fact that attitudinal meanings are often activated in texts via implication and association, rather than via the explicitly attitudinal lexical items of the type discussed above. Thus Hunston observes:

> Evaluative language presents difficulties in analysis because there is no set of language forms, either grammatical or lexical, that encompass the range of expressions of evaluation [...] In fact evaluation is frequently expressed cumulatively and implicitly. (Hunston 2011: 3)

Arguably the most thorough-going account of the mechanisms by which attitudinal meanings can be implicitly rather than explicitly conveyed is provided by the Appraisal framework developed by Martin, White and their colleagues (see, for example, Iedema et al. 1994, White 1998, White 2002, Martin 2000 and Martin and White 2005). In the Appraisal literature, the mechanisms for realising attitudinal meanings are divided into two broad types: "inscribed attitude" (via explicitly attitudinal lexis of the type discussed above) and "invoked attitude" (via implications and association). White offers the following as a good example of the invoked (implicit) sub type (White 2008: 17).

(6) George W. Bush delivered his inaugural speech as the United States President who collected 537,000 fewer votes than his opponent.
(*The Observer*, January 21, 2001 – leader page)

This utterance has to potential to activate negative assessments of the US presidential election processes and/or the Bush presidency, at least for those readers who

operate with certain expectations as to how elections should be decided in democracies such as the United States. These attitudinal assessments are "invoked" rather than "inscribed" in that they arise via processes of implicature, and not via explicit attitudinal assessment. There are no explicitly negative (or positive) terms in this utterance.

The Appraisal literature characterises utterances of the above type as "affording" attitudinal meanings on the basis that they involve only what might be termed "facts", at least in the sense that not only are they free of any explicitly attitudinal terms, they lack any explicit expression of other types of evaluative meaning: for example, there are no explicit evaluations of significance, degree, expectedness, and so forth. The Appraisal literature distinguishes formulations which, in this way, "afford" opportunities for attitudinal inferences from those which in some way "flag" such inferences, typically by means of intensifications and wordings which explicitly convey assessments of expectedness/unexpectedness. The following is an invented example, where "only" provides an assessment of unexpectedness and "extremely" an assessment of high degree.

(7) He only visits his extremely old and frail father once a year.

The potential of such attitudinal invocations to actually give rise to an attitudinal inference is conditioned, of course, by the presence or absence of other attitudinal pointers in the co-text and/or by the assumptions and values individual readers bring with them to the text.

Attitudinal meaning making via such "invoking" mechanisms poses, of course, serious challenges to automated sentiment analysis. With the meanings arising as a consequence of typically unstated assumptions and expectations, they are likely to be invisible to automated attitude identification routines, unless, of course, they have access to a sophisticated knowledgebase of relevant information about the norms and values which apply in the domain in which the text operates. The challenge posed to automated sentiment analysis by attitudinal implication (and in particular by "factual" assertions which, in context, imply attitudinal meanings) is widely recognized in the literature. For a discussion see Greene and Resnik (2008) or Zhang and Liu (2011).

3.5 Sub-classifying attitude

It is generally the case in the literature that attitudinal meanings are treated as one broad category not further analysed in terms of sub-types of attitude. Thus, for example, Conrad and Biber state, "Attitudinal stance adverbials also include a wide range of meanings, conveying attitudes, feelings, value judgements, or expectations; but it is more difficult to group these into sub-classes" (Conrad and Biber: 60). This is also typically the case in the computational work where "sentiment" is

classified broadly as any form of positivity or negativity (termed polarity or valence), without regard to whether the meaning might, for example, be further sub-classified as an opinion or an emotional response.

There are some departures in the literature from these trends which do need to be noted. By way of one example, Bednarek (2010), following Bednarek (2006), Lemke (1998) and Francis (1995), outlines a list of what she terms the twelve "parameters" of evaluation. The list includes four parameters which all involve assessments of positivity and negativity (what sentiment analysis would term "polarity") but which are not grouped together under a single heading: "Comprehensibility", "Emotivity", "Genuineness" and "Reliability" (Bednark 2010: 19).

The Appraisal framework of Martin and White and their colleagues provides another important departure from the above trend. Their work is noteworthy in offering a more delicate taxonomy of attitudinal meanings. They divide attitudinal meanings into three broad sub categories: 1. emotional reactions (labeled "Affect"), 2. assessments of human behavior and character by reference to ethics/morality and other systems of conventionalized or institutionalized norms (labeled "Judgement"), and 3. assessments of objects, artifacts, texts, states of affairs, and processes in terms of how they are assigned value socially (labeled "Appreciation"), i.e. in terms of their aesthetic qualities, their potential for harm or benefit, their social salience, and so on. These three higher level categories are then further divided into more delicate sub-categories. For example Judgement (assessments of human behaviour by reference to social norms) is sub-classified into those assessments which in involve breaches or upholding of ethical and legal values (termed values of "Social Sanction") and those which put at risk one's esteem in the community but which are not of an ethical or moral nature (assessments of psychological disposition, capacity and normality, termed "Social Esteem"). (See Martin & White 2005: 42–58.)

By means of a more articulated taxonomies of this type it becomes possible, of course, to provide for more delicate analyses of the nature of evaluation going on in texts. Thus, for example, White has developed an account of the different styles or "voices" of English-language journalism which relies on the distinction between Affect, Judgement and Appreciation and on some of the further sub-classifications within these categories (White 1998, Martin & White 2005). He was, for example, able to distinguish two styles of journalism on the basis of whether or not authors offered explicit assessments of Social Sanction. There have been numerous other studies of attitudinal arrangements in text which similarly relied on the more delicate taxonomy provided in the Appraisal literature. For a bibliography of this extensive literature see White 2012b)

More delicate, articulated taxonomies of positive and negative meanings obviously have the potential to provide for more nuanced sentiment-analysis findings if it were possible for them to be implemented computationally. They pose addition challenges, of course, for the computational linguist in that terms need not only to

be identified as attitudinal (positive or negative) but must also be assigned, in a given co-textual setting, to the appropriate attitudinal sub-class. Despite these challenges, there has already been some consideration of the Appraisal framework's taxonomy in sentiment analysis work – for example Whitelaw et al. (2005) and Bloom and Argamon (2010).

4 Dialogic engagement with attitudinal values

In this section we turn to the second key concern of this chapter: the mechanisms which are "evaluative" in the sense that they are the means by which authors may adopt different stances vis-à-vis the attitudinal propositions which have been discussed above. We are dealing here with formulations which have variously been dealt with under such headings as a meta-discourse[5] (for example "The facts of the matter are that the media is lying."), evidentiality[6] and epistemic modality[7] ("Obviously/Probably/Possibly/Arguably/I think/I doubt/It seems that the media is lying.") and attribution ("He has demonstrated/stated/claimed that the media is lying.").

By such formulations speakers/writers indicate greater or lesser degrees of personal investment in the proposition and mark it as more or as less contentious or agreed. Such formulations are of obvious relevance for those working on sentiment analysis given their concerns with tracking not only what attitudes are being expressed online but also the intensity of those attitudes and the conviction with which they are expressed.

There is a long standing tradition in mainstream Western linguistics to deal with such formulations by reference to notions of speaker/writer certainty, knowledge or commitment to the "truth value" of the proposition. For example, writing about evidentiality, Chafe states: "What gives coherence to the set under consideration is that everything dealt with under this broad interpretation of evidentiality involves attitudes to knowledge" (Chafe 1986: 262). And similarly:

> People are aware, though not necessarily consciously aware, that some things they know are surer bets for being truer than others, that not all knowledge is equally reliable. Thus one way in which knowledge may be qualified is with an expression indicating the speaker's assessment of its degree of reliability. (Chafe 1986: 264)

> Likewise, Palmer groups together evidentiality and epistemic modality under the heading of "propositional modality" and characterises these as "concerned with the speaker's attitude to the truth-value or factual status of the proposition". (1986: 8)

5 See Crismore (1989).
6 See for example, Chafe and Nichols (1986).
7 See for example, Lyons 1977; Palmer 1986 or Coates 1983.

The early work on evidentiality and epistemic modality tended to focus on the grammar of the relevant meaning making resources, usually considering their functionality in isolated sentences rather than in the context of the broader rhetorical functionality of complete texts. In the last several decades, however, scholars have turned their attention to the communicative workings of these and related meanings from a discourse-analysis perspective. Thus, for example, Hyland, has developed a framework for dealing with authorial stance within text where evidentials and epistemic modals are grouped together with other related meanings and classified as either "hedges" or "boosters". The former are defined as evaluative expressions by which the speaker/writer reduces "the force of statements" and expresses "uncertainty, scepticism, and deference", and the latter as expressions by which the speaker/writer increases "the force of statements" and expresses "confidence" in the proposition (Hyland 1998: 350). (The notion of "hedging", was originally proposed by Lakoff 1972 as an effect by which vagueness or "fuzziness" could be applied to the semantic categories referenced by noun phrases (1972: 195). Subsequently it has been modified and extended by discourse analysis theorists to include expressions which "show a lack of full commitment to the propositional content of an utterance" (Markkanen & Schröder 1997: 5).

The literature on attribution (formulations where a proposition is attributed to some external source, frequently via directly or indirectly reported speech) is an extensive one, with scholars addressing a range of different communicative effects associated with these expressions. Broadly speaking, there is agreement in the literature that at least some forms of attribution (for example, those employing "neutral" reporting verbs such as *to say*, *to state* and *to report*) act to disconnect the authorial voice from the attributed proposition in some way. For example Hunston analyses "neutral" attributions of this type as "delegating responsibility" for the attributed proposition from the writer to the quoted source (Hunston 2000: 190).

A significant subset of the literature on attribution is concerned with how the speaker/writer may indirectly or implicitly favour or disfavour a proposition, even when it has been attributed to some external source. See, for example, Bergler (1991, 2006), Thompson and Ye (1991), Calsamiglia and López Ferrero (2003) and White (2012a). This literature attends, for example, to the specific evaluative meanings of reporting verbs and whether they indicate some endorsement or support of the proposition by the writer (for example so-called "factive" verbs such as *to demonstrate* or *to prove*) or whether, alternatively, they indicate some distancing of the authorial voice from the proposition (most typically via the verb *to claim*). The literature also attends to how the standing of the proposition in the text (whether favoured or disfavoured) may be conditioned by the social status or evidential standing of the source to whom it is attributed. Thus for example, propositions will often be favoured by the text when their quoted source is a recognised expert or a person of high repute and disfavoured when they lack expertise or are not well regarded in the community. An example of a proposition being favoured in this way can be found in extract 1, cited above.

(8) Reputable groups like Pew and Gallup find that increased gun control is supported by about 50% of the country, and opposed by 50%.

Here, of course, it is significant that the proposition about how many people support increased gun control is attributed to a source characterised attitudinally as "reputable" and that this source is presented as not simply "saying" this but as "finding" this.

The approach to these various stance-taking expressions developed within the Appraisal framework literature of Martin and White and their colleagues (Martin & White 2005) differs from the prior scholarship in two ways. Firstly, Under the influence of Bakhtinian notions of dialogism (see for example Bakhtin 1981), evidentials, epistemic modals, attributions, along with concessives, negations and some additional meanings are dealt with as a single system, termed "Engagement", on the grounds that they are all "dialogistic": i.e. they all involve the speaker/writer engaging either with prior utterances on the same topic or potential responses to the current utterance. Secondly, and again under the influence of Bakhtin, evidentials, epistemic modals and attributions are are understood, not in truth functional terms (i.e. as not necessarily concerned with authorial certainty or commitment to truth value) but rather as providing for different possibilities by which the authorial voice positions itself vis-à-vis the diversity of other voices and alternative viewpoints which always apply in any communicative event. Thus for example, modal formulations such as *may*, *might*, *must*, possibly, *probably* are not treated as necessarily communicating degrees of authorial certainty or assessments of reliability but, rather, as functioning to ground the proposition in the speaker/writer's contingent subjectivity and therefore "opening up dialogic space" for alternative voices and viewpoints. (See White 1998, 2000, 2003 and 2012).

4.1 Computational analysis of stance taking

Authorial positioning of these various types poses obvious challenges for those developing sentiment analysis algorithms. If a reliable determination of the actual attitudinal orientation being advanced in the text is to be made, then the following are required. In addition to identifying and classifying the attitudinal proposition itself, the software's algorithms must determine the source of the proposition (whether the author or an external source) and determine whether that source asserts the proposition categorically or presents it as more or less certain, contentious or otherwise dialogically charged. As well, as indicated above, even when the proposition is "neutrally" attributed to an external source, it is still possible for the author to covertly indicate alignment with or dis-alignment from the proposition. Accordingly, the software would need to be able to distinguish, for example, between "The media has been lying.", "Arguably the media has been lying.", "It's unlikely the media has been lying.", "This study found that the media had been lying.", "A few commentators claim the media has been lying.", and so on. While there is widespread recognition in the sentiment analysis literature of the need to take into account the positioning effects associated with such authorial stance-taking, there is also widespread acknowledgement of the difficulties stance-taking expressions pose for natural language processing given the diversity, variability and co-text dependence of the formulations which operate here (see, for example, Choi et al. 2012; Farkas et al. 2010; Bergler 2006; Wilson et al. 2005). Accordingly, research in this area is in its infancy. Tellingly, Farkas et al. (2010: 1) report that in 2010 the influential Conference on Computational Natural Language Learning set "the detection of uncertainty and its linguistic scope in natural language sentences" as the new "competitive shared task" it was setting for the natural language processing community.

5 Conclusion – social and ideological functionality

As demonstrated by this discussion, the linguistic expression of evaluative meaning has provided many interesting challenges both for linguists concerned directly with communication by humans and for those interested in how computational algorithms might identify and characterise such expression. In both cases, the interest and the challenge arise from the diverse, variable and co-textually determined nature of the mechanisms by which evaluative meanings are conveyed.

Evaluative meanings are, of course, of central importance for any scholar interested in the social and ultimately ideological functionality of language. It is via the sharing of attitudinal evaluations that crucial social alignments are formed: the kinds of alignment which determine the affiliations of national and regional identity, party politics, religion, social activism, popular cultural preferences, not to mention consumerist affiliations associated with the latest new gadget or holiday destination. All attitudinal evaluations therefore are "political" in the broad sense of the term and the study of evaluative meaning making thus provides for crucial insights into how humans in societies organise themselves for both collaboration and conflict.

In the same vein, the study of the mechanisms of evaluative meaning making must be central to any study of ideology which is interested in how ideologically-charged value systems are formulated, reproduced, contested, revised and made to seem "natural". In this regard it is the analytically most challenging aspects of evaluative meaning making which are most at issue since most of the ideological "heavy lifting", so to speak, is done by those resources which imply attitudes and by which attitudes are negotiated dialogistically. That is to say, it is via these resources that attitudinal positions are argued for, when a need for persuasion arises or, alternatively, taken for granted and treated as "givens" when the communicative objective is the "naturalisation" of a world view.

As the above discussion shows, sophisticated analytical frameworks have been developed over the last several decades for the analysis of how language may achieve these ideological effects. While much evaluative language remains beyond the scope of computer automation, nevertheless the progress made over the last decade in sentiment analysis suggests that it is increasingly able to reach further into the more subtle, less stable mechanisms of evaluative meaning making.

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6 Understanding implicit meaning understanding

Abstract: Human communication has a unique feature: speakers do not need to encode the whole set of representations they may want to convey; rather, they can use linguistic expressions as evidence for the intended message and rely on the hearers' inferential abilities to include some extra content during utterance interpretation. Implicatures are additional assumptions communicated by the speaker in a non-overt way; they are independent from the explicitly communicated content and cannot be predicted from the sentence meaning alone. This chapter reviews the main approaches to implicit meanings and to the inferential processes involved in implicit meaning understanding, including kinds of inference patterns and attribution of intention. The role of implicit meaning in social interaction, particularly in politeness, is also considered.

Keywords: Implicature, inference, maxims, heuristics, defeasible inference, attribution of intentions

1 Human communication: Using symbols as indexes

Verbal communication is usually seen as a process in which a message is transmitted and interpreted thanks to the existence of a shared linguistic code: the sender encodes her message into a conventional signal and the receiver decodes it by using his knowledge of the same code. There are, however, a number of facts that cannot be easily explained in these terms. Consider the following situations:

(1) [Reading a newspaper]: – There is nothing on TV tonight.

(2) [Looking at a woman that has just entered the room]: – The boss.

(3) [Customer to shopkeeper]: – Is this salami good?
[Shopkeeper to costumer]: – We sell only the best, madam.

(4) [Talking about a new co-worker]: – How is he doing?
– It's not for me to say.

In situation (1), what the addressee will understand is not that TV stations are not working, but rather that the programmes announced do not attract the speaker's