Risky Claims and Off-colour Truths.

The Distribution and Role of Hedges in Popular Science Articles on Genetic Engineering.

Tutkielman tarkoituksena on selvittää pehmentimien (eng. hedges) laatua ja roolia populaarilehdistön (Time 1985-2001)tieteellisissä artikkeleissa, jotka kuvailevat geenitekniikan saavutuksia suurelle yleisölle. Vaikka pehmentimiä on tutkittu melko laajalti tieteellistä kieltä käsittelevissä tutkimuksissa, niiden roolista yhtenä populaarilehdistön viestinnällisistä käytänteistä ei ole otettu samassa määrin selvää. Tutkimuksen tarkoituksena on selvittää pehmentimien määrä, laatu ja niiden rooli populaarilehdistön kirjoittajien/toimittajien viestinnällisessä toiminnassa.

Pehmentimiä käytetään yleensä ilmentämään epävarmuutta esitetyn tiedon totuusarvosta ja perusteista (episteeminen), mutta niiden käyttö voidaan nähdä myös retorisena keinona ja keskinäisen viestinnän strategiana (interpersonal strategy). Tarkoituksena onkin selvittää, missä määrin pehmentiä on käytetty tiedon luotettavuuden arvioimiseen, ilmaisemaan kirjoittajan suhdetta tietoon tai sen tunnearvoon (affect) ja lukijakuntaan, eli miten tekstien kieli pehmentimien avulla muokataan erilaisille lukijoille sopivaksi. Tutkielmassa yritetään ottaa selvää myös pehmentimien viestinnällisestä sisällöstä, jonka löytämisessä kontekstilla katsotaan olevan suuri merkitys.

Millerin mukaan (1989, 31)päin vastoin kuin tieteeellisissä artikkeleissa, väitteen totuusarvon arviointi ei ole välttämättä laajalle lukijakunnalle merkittävä asia, vaan tarvitaan jotain muuta suostuttelemaan lukijat tutustumaan tekstiin. Tästä syystä tutkimuksella on myös tarkoitus ottaa selvää, missä määrin pehmentimien käyttö tutkituissa populaarilehdistön artikkeleissa on toimintaa, jossa pyritään muuttamaan vastapuolen suhtautumistapaa vedoten monenkirjavan yleisön asenteisiin ja tunteisiin.

Tekstien lähilukemisen jälkeen tunnistetut pehmentimet luokiteltiin seitsemään luokkaan (modaaliset apuverbit, adverbit, verbit, adjektiivit, substantiivit, likiarvot (apptoximation) ja sitaatit (attribution). Tiedon alkuperän ilmaiseminen tekstissä(attribution) otettiin mukaan tutkimukseen, koska sen voidaan ajatella vaikuttavan tekstin viestinnälliseen sisältöön samalla tavalla kuin pehmentimien (White, 1991). Tiedon lähteen valinta vaikuttaa sen totuusarvoon ja kielellinen ilmaisu tiedon julkaisussa viestii kirjoittajan omasta suhteesta tähän muualta tuotuun tietoon (Fuller, 1995). Tutkimuksessa haluttiin myös selvittää onko pehmentimien määrässä ja laadussa tapahtunut muutosta tutkitulla aikavälillä. Vertailua varten tutkimusaineisto on jaettu neljään osaan julkaisuajankohdan mukaan, siten, että kukin aikakausi käsittää artikkeleita viiden vuoden ajalta.

Pehmentimien määrä aineistossa lisääntyi huomattavasti tutkitulla aikavälillä. Ensimmäisessä aikajaksossa pehmentimiä löytyi noin neljäkymmentä tuhatta sanaa kohti (40.99) ja viimeisessä jaksossa melkein kuusikymmentä (58.44). Eniten lisääntyi modaalisten apuverbien ja likiarvojen käyttö. Grabe ja Kaplan (1997) ovat selvittäneet genrejen välisiä eroja pehmentimien käytössä. Kun verrattiin heidän tuloksiaan tämän tutkimuksen tuloksiin, selvisi, että ensimmäinen kauden (85-89) pehmentimien määrä vastasi niiden määrää popularisoiduissa tiedeartikkeleissa G&K:n tutkimuksessa , kun taas viimeisen jakson määrä vastasi niiden määrää pääkirjoituksissa G&K:n tutkimuksessa. Tiedottamisesta olisi tämän mukaan tullut kannanottoa, eli mielipiteen ilmaisua. Pehmentimien kokonaismäärän lisääntyessä myös niiden vuorovaikutus tuntui lisääntyvän ja yhä useampi pehmennin tuntui ottavan kantaa tiedon totuusarvon sijasta sen tunnearvoon.

1   Introduction

The purpose of this pro gradu thesis is to study the function of hedges in popular press (*Time,* 1985-2001) science articles dealing with genetic engineering, the novel field that has typically been conceived as both unethical and exciting. The study aims at identifying the forms and role of hedging in thirty popular science articles, and leads up to explaining a possible change in their functionality in this socially and ideologically complex context.

   The choice of the subject matter, genetic engineering, and the popular article format is deliberate, and plays an important role in this study. The four basic elements of communication process; writer, audience, language, and reality, are all of particular nature. As distinct from the more extensively studied scientific literature , the writers do not generally have comprehensive knowledge in this particular area of study, and the reading public is far from proficient in , and maybe even unconcerned about this highly specialised domain. Furthermore, the field of research, and consequently the texts reporting of its advances, threaten to transform the meaning and texture of the lives of all who live under the knowledge system. The institutionalising of feeling, taking into account the values of affect, and promoting solidarity are surely as important as communicating knowledge in the reporting of its latest trends.

   Today, our understanding of reality, and with it, our concept of what constitutes a scientific approach, have changed profoundly, and found a completely new orientation. Geist (1992) maintains that the old keywords in scientific writing; 'economy, precision and explicitness', should be replaced with words like 'complexity, uncertainty and ambiguity'. According to Geist (1992), the new postmodern concept of science has its influence on discourse, as well. Rather than specialization, the new way to deal with theoretical ideas is 'the problematization of the commonly accepted', which realizes in a 'new discourse'. On the grounds of his analysis of the 'new discourse' in the humanities, Laermann (1991) questions the legitimacy of the permanent values ' problem, argument and evidence'. Laermann's claim concerns scientific discourse, but may apply to popular press scientific writing as well. As a reflection to Laermann's claim, Markkanen and Schröder (1997,12) suggest that

'it would be interesting to find out whether the use of hedges and the attitude to hedging have changed as a result of these developments in postmodern science'. They believe that 'hedging might play an essential role in the "new discourse'.

Hyland (1996,435) states that' in the ratification of knowledge there is need for community consensus'. The general approval is of paramount importance as regards to genetic engineering. Therefore, the motivation for hedging in some cases can be quite divergent from the hedging in scientific articles. The coming together of civil society i.e. audience and their present reality and the latest accomplishments of this field of research is surely not exclusive of complications and the writers of popular science articles, who are the arbiters and mediators between the two parties, surely need a means to mitigate or soften the force of their claims.

The mission of popularizations is obviously quite different from that of academic literature. Miller (1989, 31), who compared visuals in academic texts and the popular press, argues that the presentation of scientific findings in news articles differ from their reporting in academic papers. While scientific articles try to convince the reader of the validity of the findings by telling 'how the findings were obtained', in news reports, the obtainment is often insignificant, and the 'findings play the leading role'. The reader is not seen as someone who seeks for knowledge, but as someone who must be 'enticed into the article. Therefore, scientific argumentation is frequently replaced by a 'human-interest story' that discusses the findings in 'an interactive and emotional way'. If this pertains to writing, as well, it could affect the interpersonal style of an author, and have its effect on his/her hedging strategies, as well. According to White (1991,17), who studied the textuality of modern news reporting, found that 'truth is frequently not an issue' in hedging process'. He claims that hedging structures are, more than often, expression of 'authorial attitude' and 'construe social evaluation and/or promote solidarity'. However, in the communication of the latest achievements of this novel field, there is also room for genuine lack of unambiguous, unbiased truths.

Chapter one provides a general introduction to the study, and chapter two a review of the literature on hedging and the three most influential approaches to this linguistic tendency, i.e.

evidentiality, modality and politeness. Chapter three unfolds the aim of this study. Chapter four describes the material studied and chapter five relates the method and leas up to the definition employed in this study. Chapter six reports on the results of the quantitative and qualitative analysis of the discourse functions of the linguistic and pragmatic particles under investigation and is followed by the discussion of the results and final words.

2   Theoretical Background

Even if we are not quite conscious of it, we rarely wield bald statements of truth, when we either speak or write. This does not mean that we would lie through our teeth, but instead of using categorical assertions, which Lyons maintains(1977, 763) "express the strongest possible degree of speaker's commitment to the truth of the proposition", we tend to score propositions for e.g. 'opinions, judgments, hypotheses, guesses and predictions' (Crismore and Vande Kopple, 1997). The values that contribute to the configuration or tuning of ideational, textual, and interpersonal meanings are most often called hedges.

In general use (the *OED),* the verb 'hedge' is used to 'insure against risk of loss by entering into contracts which balance one another', and 'to go aside from the straight way'; 'to shift', 'to shuffle', 'to dodge; 'to avoid committing oneself irrevocably' or 'to leave open a way of retreat or escape'. The actions described by the *OED* portray evasive movements and sort of trimming one's sails to every wind for protection, having it both ways and even some sort of deception. The meaning of the adjective 'hedge' substantiates the negative reading of the meaning. The adjective is used to describe something as dim, vague, or even bad in the sense of unsatisfactory. In a similar way, in linguistics, 'hedge' is generally construed as a lexico-syntactical element that pronounces departure from an accepted standard or convention. In the literature, as well, the central concern is seen as appraising the truth.

In one way or another, the idea of epistemic openness is always incorporated in the definitions of hedging. Yet, hedges are also perceived to play an important role in providing personal or interpersonal protection, in which case the central concern of the writer is not merely the truth. In compliance with the preceding conception of hedging, White (1991) states that hedges are resources that language provides for 'the expression of social evaluation and authorial attitude'. Moreover, Hübler (1983, 23) maintains that hedges can have 'multiple functions', and therefore 'simultaneously

perform the functions of expressing indetermination and of making sentences more acceptable to the hearer to thus increase their chances of ratification'.

While scientific articles are implicitly concerned with ideological legitimating and convincing the reader, popular press science articles, like in any other journalistic texts are, more or less, engaged in the 'systems of belief' (White, 1991, 238) and entertainment. Therefore, popular science reporting is at least as much about 'the experience of proposals' (White, 1991) as it is about the qualification of the knowledge. Hyland (1996,436) points out that 'the writer must make hypothesis both about the nature of reality and about the acceptability of the hypothesis to the audience'. This might be especially the case, when the field of research, genetic engineering, covered in the articles studied, and consequently the texts reporting of its advances, threaten to transform the meaning and texture of the lives of all who live under the knowledge system.

According to White (1991, 70) 'the modes of journalistic textuality are not static, but are in constant state of modification and reformation as a response to changing social conditions'. The earliest articles, published in 1985, are among the first popular articles ever written about the research and pronounce the first achievements in the field, meanwhile the latest (2001) lay stress mainly on the ethical questions raised by the research. So, during the sixteen years, genetic engineering had changed from a young prospect to an everyday matter. Therefore, the study also includes the time perspective and the material is divided into four five-year sets, between which I intend make comparisons especially as regards to the motivation for hedging.

2.1   Evidentiality, Modality and Face. The veracity and/or pragmatic adequacy of a proposition.

The notion of hedging cuts through the three most influential approaches of evidentiality, modality, and face. These approaches overlap to some extent, but serve different purposes and have different perspectives, within slightly divergent frameworks (White, 1991). Yet, the level of interpretation seems to be important, when we decide whether a particular linguistic device implements evidentiality, modality, politeness or hedging.

These linguistic approaches have common goals with hedging research; they attempt to define and explain elements and/or strategies that we use to fine control or adjust 'natural language to meet our ideological and/or interpersonal goals' (White, 1991). Furthermore, the very same forms that in this study are described as hedges may, while viewed from a slightly different angle, be conceived as modals, evidentials, or expressions of politeness.

The phenomena to be described may function on different levels of language than hedging, but are still relevant to this study on hedges, as their influence is implicated or occasionally even predominant in the hedging process. Yet, evidentiality, modality and politeness seem to pertain to more predefined areas of language use than hedging. Evidentiality concerns the validity and sourcing of knowledge, and modality relates to authorial attitude, whereas politeness moves on to interpersonal level, where hedges construe social evaluation. As one of the aims of this study is to decide the level/s of language (ideational, textual, and interpersonal) the meanings studied operate at, the introduction of these three approaches is of crucial importance. Their introduction might also illuminate the essential, but somewhat amorphous nature of hedge and hedging.

2.1.1 Evidentiality, Marking the Degree of Confidence in a Statement

Evidentiality impinges on both hedging and modality, and focuses on the assessment of truth-value. Evidentiality and modality dispense some uniform resources. Evidentiality is also often considered to be a sub-type of epistemic modality (Palmer, 1986). According to Palmer who divides epistemic modals into two categories – 'judgements' and 'evidentials', ' evidentials' provide resources by which 'a speaker may indicate that he is not presenting what he is saying as a fact…' (1986, 51).

Many linguists, however, think that these two notions are clearly different in character. They see evidentiality marking 'the source of information in a statement', and epistemic modality marking 'the degree of confidence in a statement' (De Haan, 1999). The proposition '<u>I see </u>that he is dying.' is, therefore, considered evidential on the grounds of visual perception, and '<u>I guess</u> that he is dying.' epistemic. Thus, according to them, modality focuses on the 'writers'/speakers' experience', meanwhile evidentiality focuses on 'the writers' assessment of truth-value' of a claim.

Chafe & Nichols (1986, 262), who were the first to study evidentiality cross-linguistically, point out that' the writer's appraisal of a claim is based on evidence not on their experience of it'. Thus, as White puts it (1991, 14) 'evidentials are understood to classify the informational content of utterances as more or less reliable epistemologically'. Chafe (1986) argues that various markers of evidentiality 'qualify knowledge' and consequently constitute 'modes of knowing'. He identifies following modes: 'knowledge through belief', 'induction', 'sensory evidence', 'hearsay' and 'deduction'. So, those who hold the evidentialist position concern themselves with having adequate evidence. Furthermore, many other linguists consider the expressions, Chafe (1986) calls evidentials as hedges.

De Haan (1999) agrees with Chafe, and argues that there are major differences between modality and evidentiality. He states that evidentiality 'asserts evidence' while epistemic modality 'evaluates evidence'. Semantically, there is a marked difference between 'marking the source' of

the information (evidential) and 'the degree of commitment a speaker places in his/her utterance' (epistemic) (De Haan, 1999).

The utilization of various sources, a person, publication or other record or document, is an essential feature of journalism. The use of multiple journalistic sources, here attribution, shows parallelism in function and form with evidentials. Both evidentials and the choice of persons, publications, other records, or documents that give information, classify and evaluate statements presented in press. Obviously, marking the source, in journalistic texts is not merely about evaluating evidence, but also an agreeable sign of respect, to acknowledge the author and give him/her credit for his work.

Aikhenvald (2003) finds that evidential-marking may co-occur with epistemic-marking, and that evidentials may also indicate speakers' assessment of the validity of a statement'. In that case, attribution would not only be a means to acknowledge a source, but also to grade knowledge as more or less reliable. The choice of a source and reporting verb may also either reveal or disguise the writer's own attitude to a proposal.

2.1.2   Modals and Modality, Doubting and Evaluating

Modality is a system that deals with knowledge, beliefs and cognition and is derived from philosophy and modal logic. In logic, modality is the classification of propositions on the basis of whether they assert, or deny the possibility, impossibility, contingency, or necessity of their content.

In the description of modality in linguistics Lyons (Lyons, 1977) sets against the 'subjectivity' of the modal meaning to the 'objectivity' of 'bare assertions'. Both Lyons and Palmer (1986) point up the truth-value of a proposition and 'the speaker's indicated willingness or unwillingness to commit to it'. Therefore, according to Lyons, 'modalized' propositions are said to reference the speaker's 'opinion or attitude' towards the propositional content (1977, 452).

Most linguist approaches focus on two major types of modality; deontic modality and epistemic modality. The deontic is generally thought to be involving the notions of obligation, permission, and requirement. The deontic is the modal system of duty, and it is concerned with a 'speaker's attitude to the degree of obligation '(Simpson, 1993). Epistemic modality, which is of some interest in this study, is thought to be concerned with 'the speaker's confidence or lack of confidence in the truth of a proposition expressed' (Simpson 1993, 48). Coates (1987,112) maintains that epistemic is also concerned with 'speaker's assumptions and beliefs, or assessments of possibilities, and again , in most cases, the speaker's confidence or lack of confidence in the truth of the proposition expressed'. Thus, epistemic modals do not necessarily require inference, or evidence.

Besides modal auxiliaries (such as may), certain lexical verbs (such as reckon), adverbs (such as perhaps), adjectives (e.g. possible), nouns (such as assumption) can have an epistemic reading. The following statements can be described as epistemically modal: 'He may survive, after all.', 'I reckon he will survive.', ' Perhaps he will survive.', 'His survival is still possible .', and ' There is still a chance of his survival. The modal auxiliaries (e.g. may, might, can, could, will, would etc.) are, however, the most transparent and outstanding generators of modality in English.

There are some points of contact, but also clear discrepancies, in the definitions of epistemic modality and the definitions of hedge. Namsaraev (1996, 66) claims that 'epistemic modality is a deliberate strategy conditioned by considering a certain communicative purpose and/or communication situation'. Thus, his description of modality pays attention to readers and closes on the idea of hedge in pragmatics. In his contemplation of the correlation of hedging with modality, Namsaraev (1996), however, argues that modality and hedging devices operate on different 'spheres' of language. He states that "modality is an integral part of the semantic structure, but hedging is outside the structural and semantic levels and within the pragmatic sphere" (1996, 66). According to Namsaraev (1996, 66), both modality and hedging are "expressions of an author's attitude, but the object and orientation are different". Namsaraev (1996, 66) further points out that

'the same linguistic devices can implement simultaneously the function of expressing modality and

hedging'.

White (1991, 199) construes modals of probability as 'rhetorical devices that may function to

enable speakers to avoid indicating a firm preference for one heteroglossic position, not because

they entertain genuine epistemological doubt over the issue, but because they wish to show

deference to alternative positions'. This understanding of the function of modals again closes up to

the functionality of hedging within politeness theory and 'face saving'.

The literature does not pose a mutual understanding on the functions of modal meanings.

According to Lyons (1977, 452), 'modality can be described as lack of commitment towards the

proposition that the sentence expresses or the situation it describes', whereas White (1998, 24) and

Namsaraev treat it as an interpersonal strategy. The bold conclusion could be that the

communicative content of a modal is determined by the textual and social context of the value.

2.1.3   Politeness, Social Behaviour to Promote Solidarity

Politeness sees hedging, in which modals and evidentials are usually included, as 'social behaviour to

promote solidarity' and not as a means to qualify knowledge, or to express opinions of a claim.

The concept of politeness was universally under discussion in the pragmatic literature in the

1970's. Brown and Levinson (1987, 1978), who are the most outstanding investigators of the

phenomenon, in their study of politeness in spoken language in a discourse oriented hedging

research, suggest that 'speakers/writers use lexical and /or syntactical devices such as modal

auxiliaries, to mitigate or strengthen the utterances in order to achieve broader acceptance from the

recipient' as well as 'to evade possible criticism'. They view hedging as an expedient for 'avoiding

disagreement', 'saving faces', 'being polite', and 'promoting solidarity in interpersonal

communication' (Brown & Levinson, 1972).

In Politeness theory hedges are seen to 'weaken the illocutionary force of an utterance' and subsequently 'minimise social damage'. Politeness strategies are, above all, seen to promote the 'sense of being approved and the sharing and endorsing values' (Brown & Levinson, 1972). In this domain, communication that puts 'the face' at risk is constituted as a 'face threatening act'. Even though people want to be 'efficient', 'sincere', and 'relevant' in their communication, the Grice's maxims are put at risk, when the hearer's or speaker's face is threatened, and in that event, people resort to 'face maintaining strategies' to minimize the occurrence of damage in social interaction.

Goffman (1963), who introduced the concept 'face', argues that we strive to maintain 'the face', we have created, in a social situation'. Down the road, the concept was further broken down into two different categories: 'positive face' and 'negative face'. According to Brown and Levinson, 'positive face' is concerned with an' individual's self esteem, the sense that they are approved of' that people 'share and endorse their values', that others 'want what they want', meanwhile 'negative face' is concerned with an individual's desire 'to be unimpeded', 'the basic claim to territories, personal preserves, rights to non-distraction - i.e. freedom of action and freedom from imposition' (1987, 61)

Brown and Levinson's study covered immediate spoken language, rather than communicating information, and hedges were seen for the most part as socially motivated. Yet, politeness has been seen as the motivating factor for the use of hedges in scientific discourse, as well. Myers (1988, 13) claims that in scientific discourse hedging is used for the sake of negative politeness, to mark the claim 'as being provisional, pending acceptance in the literature, acceptance by the community'. He (Myers, 1988), however, points out that 'hedging in academic texts cannot be reduced to mere politeness', but that it also reflects the uncertainty of scientific knowledge'.

2.2 Hedges, Expressions of Categorical Commitment, Possibility and/or Rhetorical Utility for 'Gaining Acceptance of Claims' and Conveying the Writer's Attitude

T he explanations of politeness, modality, and evidentiality describe quite a few functions generally related to hedging, such as; asserting and evaluating evidence, indicating the attitudes of speakers/writers towards statements, and promoting solidarity in interpersonal communication. Hedges have respectively been studied from divergent perspectives within somewhat alternate frameworks. Semantics, sociolinguistics, pragmatics and applied linguistics, all deliver, from their respective basis of discussion, influential analyses of these values. Due to the varied nature of the studies of this language resource, there are also several definitions of the term 'hedge'. The scope of the term tends to vary, as well. Both the variety of linguistic devices identified as hedges, and the role of the meanings are still under argument. Even though the term hedge is used to present somewhat deviant devices, each device has more or less similar function; 'they allow writers to express their claims with precision, caution, and modesty.' (Hyland, 1996b)

2.2.1 Hedges Revealing Distinctions of Category Membership/ Accuracy Oriented Hedges

Lakoff (1972) was the first linguist to explicate and make use of the concepts hedge/hedging in his semantic studies of category membership. He describes hedges as follows: 'For me, some of the most interesting questions are raised by the study of words whose meaning implicitly involves fuzziness - words whose job it is to make things fuzzier or less fuzzy. I will refer to such words as "hedges"' (1972,195). He built his theories upon formal logic, studied the logical properties of words, and how linguistic items in the fringe areas of conceptual categories like sort of, rather, largely, in manner of speaking vary in their ability "to make thing fuzzier or less fuzzy". Lakoff studied hedging mainly as a device for revealing 'distinctions of category membership'.

Instead of saying that 'A bat is a mammal.', we would usually say 'A bat is a sort of mammal.' . We would 'hedge' the term mammal with the value a sort of, since the bare term mammal would evoke an idea of some four legged hairy animal and not a flying animal species. By the force of the

hedge, the term <u>bat</u> is, thereby, delivered a more accurate definition. These so-called 'accuracy oriented hedges' are thus, concerned with the correspondence between the language and the world. Chafe agrees with Lakoff's original idea of hedges as expressions that denote that "the match between a piece of knowledge and a category may be less than perfect" (Chafe 1986, 271).

2.2.2   Hedges as Modifiers of the Reliability of a Statement,

Lakoff (1986: 264) elaborated the concept of hedge and introduced the idea of 'hedged performatives', which qualify the knowledge of an expression indicating the speaker's assessment of its degree of reliability. According to Lakoff (1989) certain verbs and syntactic constructions convey hedged performatives (I suppose/think/guess that Harry is dying), where 'the act described by a verb or construction includes mitigation'.

Prince and her associates (1982) found hedges, they call "plausibility shields" ,in their examination on physician-physician discourse. According to them (1982,85), these shields do not affect the truth-value of the proposition, but in general produce 'fuzziness in the relationship between the propositional content and the speaker'.

Hübler's (1983, 13) construction for the motivation of these meanings is that people, and typically 'physicians, add a plausibility shield to a proposition to reduce the degree of liability or responsibility that they might face in expressing a proposition'. Hübler, thereby, widened Lakoff's idea of hedged performatives, as hedges were taken to be modifiers of the speaker's commitment to the truth-value of a whole proposition. Thus, the fuzziness was not between the word and the world but ' in the relationship between the propositional content and the speaker, that is the speaker's commitment to the truth of the proposition conveyed' (Prince, Fader/Bosk 1982, 885). Vande Kopple (1985) also sees that hedges (e.g. <u>propably</u>, <u>could</u>, <u>in a away</u>) do not only modify the individual elements in a claim, but also show a lack of full commitment to 'the propositional content of an utterance in its entirety'.

In what Hyland calls the narrowest definitions of hedging, the values are equated with "the expression of tentativeness and possibility" (1996,433). This definition is partly coupled with the general description of modality, where modality qualifies the commitment to the proposition's 'believability', 'obligatoriness', 'desirability', or 'reality' (Hyland, 1996). Therefore, the focus is not anymore only on the veracity of the statement but also on the desirability of it.

2.2.3   Hedges as Realisations of Communicative Strategies

In the pragmatic domain the concern is with the speakers' psychological state and 'tension free social interaction' (White, 1991) i.e. the two-way influence between the speakers and the audience and hedges are seen as realisations of interactional/ communicative strategies. Brown an Levinson see it 'as a means to maintain the sense that values are shared', and as 'an expedient to minimise the danger of potential conflict, which would damage communication' (1987, 116)**.**

Markkanen/Schröder (1989), who discuss the role of hedges in scientific texts, also, treat hedges 'as realizations of an interactional or communicative strategy'. According to Markkanen and Schröder (1997), the use of hedging is often connected with the speakers'/ writers' values and beliefs and can even be used to 'hide the writer's attitude'. Markkanen and Schröder (1997) actually suggest that hedges offer a possibility for 'textual manipulation in the sense that the reader is left in the dark as to who is responsible for the truth value of what is being expressed '(1997).

2.2.4   Hedges as a Pragmatic phenomenon in Social Evaluation, and in the Disclosure of Attitude
         Authorial Position

Poynton (1985) maintains that 'social roles, between the reader and the writer are negotiated primarily by hedges'. Within the applied linguistics domain these meanings are perceived as resources for construing social evaluation, attitude and authorial position. It is therefore natural that texts are constructed and interpreted within particular contexts of culture, in Swales's terms 'discourse communities' (1990, 3). White (1991), who studied the communicative functionality of the contemporary news items, states that 'a media text can create a sense of its solidarity with various social positions/discourse communities by acknowledgement of those positions or by means of representing itself as open to negotiation with those positions'. White (1991,20) further points out that 'hedging may have no connection at all with doubt or vagueness, but is being used to acknowledge the contentiousness of the authors primary proposition and the willingness of the

speaker to negotiate with those who hold a different view', or the 'deference of the speaker for those alternative views'. He (1991, 24) also claims "modals of probability and agnate structures not only introduce the authorial evaluation into the text, but also evoke the possibility of alternative, though unspecified, voices." His understanding of hedging is suggestive of politeness, only in its written form.

Popular press articles parallel with news reporting in many ways. Both have mixed audiences and convergent rhetorical ends i.e. to inform and entice the mixed audiences. According to White (1991, 24), the use of resources like hedging directly 'inscribes the possibility of social heterogeneity into the text'. In politeness, this social heterogeneity is perhaps more visceral and automatically written into the strategies employed in spoken discourse. White (1991, 19) further states that these values do not necessarily code speaker's individual attitude but 'operate to reflect the process of interaction within a text between alternative socio-semiotic positions' (White, 1991). Besides 'signalling that the meanings are at stake for heteroglossic negotiation, hedging may be used to conceal the writer's position in the discursive site.' (1991,20).

This way hedging supplies writers with a feasible expedient to take cognizance of divergent social ideologies. According to the *OED*, to hedge is to 'insure against risk of loss by entering into contracts which balance one another'. Therefore, hedging is like investment by multi-manager funds, where you spread the risks by not putting your eggs in one basket.

If we were in an argument on the status and/or acceptability of genetic manipulation, the excuse for our hedging the proposition: "Further experiment on gene therapy could save lives. " in a group of people, we are not well acquainted with, could be diversified. It is possible that we are not sure of the potential of the research. It is also possible that we, or the people we are talking to, are not that interested in prolonging peoples lives, or perhaps, we are discussing with someone who does not accept the whole idea of genetic manipulation for ethical reasons, and we try to mitigate the illocutionary force of the statement, and possibly even persuade the disinclined hearer to change

his/her mind about the therapy. In any case, by hedging the sentence, we yield space for dissentient opinions and further discussion.

As well as, Crismore and Van Kopple (1997,103) many linguists argue that 'hedges with controversial written text act as a powerful inducement for readers to change their attitudes towards the subject matter'. Hübler defines hedging as 'manipulative non-direct strategy of saying less than one means' (1983,23). He maintains that hedges can have 'multiple function and therefore simultaneously perform the functions of expressing indetermination and of making sentences more acceptable to the hearer to thus increase their chances of ratification'.

Namsaraev's (1996) explanation of the functions and spheres of realisation of hedging illustrate the multifunctional nature of hedges, as well. He interprets hedging as a 'pragmatic category that includes linguistic devices, which function on the level of interpersonal metadiscourse, and perform (as its main pragmatic/communicative function) the protective transformation of the utterance' (1996,65). The multifunctional character of hedging, which among other things, supplies means for 'creating a sense of solidarity with reader's from alternate ideological positions' (White, 1991), but also provides the writers with means to express their critical attitude to the knowledge, their own perhaps divergent notion of the presented proposals, or their unwillingness to expose their standing to a piece of knowledge.

Hyland (1996, 434) argues that 'hedges help to negotiate the perspective from which conclusions can be accepted'. According to Hyland (1997, 446) the hedged statements may also suggest 'the way in which, the writer thinks the reader should see the communicated claim'. Apart from influencing on the readers' choice of the reading of a claim', hedging can further be used to hide the writers' view on the discussed matter

The research on this phenomenon has gone a long way from Lakoff's semantic modifiers '(that make things fuzzier or less fuzzy') to Namsaraev's definition of hedging as 'a pragmatic category that functions on the level of interpersonal metadiscourse'. The level of interpretation seems to be the main source of the lack of conformity in the study of the hedging phenomena as such.

3   The Aim of this Study

In good faith, that hedging needs to be studied in the context of use, I attempt to identify hedging by close reading of the texts. Taking into account, that almost any item can function as a hedge, and that the hedging element of an expression is, more than often, generated and fostered by the ambient context and intertext, every contingent hedge is viewed in its context before it is classified as a hedge. Subsequent to the identification, I try to work out the alternative strategies and multitude of functions these linguistic devices generate in the texts. The salient reading options are: hedging used for assessing the truth-value, as an argumentative strategy and/or a device for entertaining and taking into consideration the sentiments of the audience. To recognise the functionality of contentious hedging, a close reading of the context and the detection of the possible intertextual references of the values is eminent.

I agree with White (1991), who gives greater role to audience. He (1991) claims that 'social processes are wholly or partly implemented through language', and that language use, even in its written form, is 'conditioned by its communicative objectives'. Furthermore, according to Lemke (1985, 85), 'all meaning is made against the background of other meanings already made and shared in a community'. Therefore, 'texts are seen to negotiate meanings with actual and potential audiences' with multiple social realities and worldviews.

It will be impossible to predict the multiple interpretations of the readers, as each token of judgement, either concerning possibility or affect, is sure to be interpreted according to readers' own distinctive cultural and ideological background. I can, however, try to see the strategies the writers resort to, to minimize the anticipated 'social damage' rendered by the proposals in the texts. I will, therefore, try to define the emphatic function of the values from this point of departure.

My further challenge is to decide which of the identified functions are predominant in each case and on each period. White (1991) claims that hedging is a 'heteroglossic rhetorical strategy' and that hedges have 'polysemous functionality'. From these premises it will be practically impossible to

decide, whether the hedges detected in these texts construe chiefly epistemic or interpersonal values, but I will attemp to decide the point of main effort.

Divergent views can be found in the literature as to which lexical and/or syntactic hedging devices should be assigned to strategy of hedging. Pragmatic approaches, however, employ more extensive categories. This broader usage of the term 'hedge' has been made use of in this study.

Attribution, a resource not typically included in hedging systems, plays an important part in this study. The words of others, reported speech, merged or direct, are a distinctive feature of journalistic texts. Fuller (1995/1998), who studied media texts, claims that attribution, and 'probability share a common functionality, and that the degree of probability attached to a proposition agrees with the social status and epistemic standing of the source'. Therefore, special attention is paid also on the sourcing of the knowledge in the texts.

According to White (1991,72) 'modes of journalistic textuality are in constant change of modification and reformulation as they respond to changing social conditions'. Genetic engineering was a new line of research in the middle eighties, and there were not many generally accepted truths about the line of research, whereas the third millennium has seen gene therapy as a salvage in the treatment of many serious ailments. Therefore, I aim to discuss the potential change in the bias between the ideational over the interpersonal during the sixteen-years-time-scale of the publishing of the articles.

To get a clearer picture of the mode of hedging strategies in these texts, I compared my results with Grabe's in his study '*On the Writing of Science and the Science of Writing: Hedging and Science text and Elsewhere'*. In this particular study, Grabe (1997) compared the extent of evidential marking in science writing, in both professional and popular form, to three functional written genres and narratives. The comparison will hopefully also illuminate the diachronic contrast in this study.

4   Material

The data set for this study was obtained partly electronically (Ebscohost, Academic Search Elite: 1990-2002) April 2001 by using the key words "Genetic Engineering". The electronic source did not include earlier texts, and therefore the articles from 1985-1990 were converted to digital form for the purpose by means of scanning. The electronic search resulted in 49 articles, of which I chose the texts with genetic engineering as the salient theme. The number of references to genetic engineering and the length of the article (truly brief ones were rejected) had an impact on the selection.

The research material comprises thirty Time articles published between 1985 and 2001, totalling approximately 34290 words. Most of the data (1990-2002 in the date range) set for this study was obtained electronically. Articles were selected in May 2000 by using the key words "genetic engineering" in *Ebscohost, Academic Search Elite*. Articles in the date range of 1985-1989 were not available in this database so I referred to Tampere University library for paper versions and converted the articles into digital form.

The rapid progress in the field of Genetic engineering, and accordingly the transient views of the public urged me to compare texts from disparate periods of time. Accordingly, the material was broken down to four sets after the time of publication.

The fist set T1 (7635 words), published between 85-89, consisted of 10 articles of which three dealt with genetic engineering as an adjunct of preventive medicine *Conquering inherited enemies* (T1A), *The end of the beginning* (T1E*), Progressing parkinsonism (inset)*(T1F*), New clues for detecting killer* (T1I*). O*f (transgenic) Mice and Men* (T1B) *concerns* new technology for turning genes on and off. *Everyone's genealogical mother* (T1C*)* presents the discovery of our common forefather with an inset articles dealing with Dna Prints as a crime test i.e. *DNA Prints, A foolproof crime test* (T1D*). Montana State Troublesome Elms* (T1F*)* discusses altered bacteria as a potential threat to the nature; and only one of the articles dealt with ethical issues, *Should Animals be patented* (T1G*)* and the last *The Importance of being blue*(T1H) *(The importance of being earnest, Oscar Wilde)* discusses GM of bacteria*.*

Of the seven articles in the second set T2 (8870 words), the first one *Green light* (T2A) concerns ethics of animal tests and human trials; *Giant step for gene therapy (T2B) with an inset*, Future targets (T2C) and *Allergies nothing to sneeze at* (T2D) present genetic engineering as an ailment for disease plus inset, *Bumper crop for biotech (T2E) and Fried Gene tomatoes* (T2F) deal with genetically altered crops and *Seeking a godlike power* (T2G) human gene mapping, gene technology as a means of preventive medicine.

The third set, T3 (6426) takes in six articles of which one discusses losing weight, *Weight-loss nirvana?* (T3A), two cloning of animals, *Dolly, you're history* (T3B), *Brave New Farm (*T3E) (brave new world) and the remainder of three, *Seed of Controversy* (T3C), *(seeds of wrath)* (cover story), *All for the Good* (T3D), *If We Have It, Do We Use It?* (T3F)*(Cover story)* discuss ethical issues and human cloning.

Three of the seven articles of the third millennium, T4 (11379 words) deal with animal cloning and gene manipulation in animals, *Will we clone a dinosaur?* (T4A), *Monkey business* (T4C), and *Noah's New Ark* (T4E), the inset of the article, *What should the rules be?* (T4D), discusses ethical matters, *Will Frankenfood Feed us(T4B),* discusses the future of genetically modified food, *Risky business* (T4F) the dangers of interference in human reproduction and the last and the latest article in my study, *Baby it's you and you and you ...* (T4G) discusses the drawbacks and benefits of human cloning. In the discussion of the texts in my study I have identified the texts according to the date of publication and set, i.e. T1B denotes the second text in the first set.

5   Method

5.1   The Identification and Classification of Hedges

In this stydy my point of departure will be "text as process". Both in the identification of the hedges and in deciding their effect on the text, context plays a crucial role. Text external factors that have an effect on text production, inciding the mixed audiences are explored .

My approach in examining these articles was empirical and interpretive. I started with the identification and collation of hedges from the data and then determined the occurrences of hedges in each text and set. The linguistic realisations of hedging are indeed of heterogeneous quality, and range from morphological devices to syntactic constructions. Owing to the contextual nature of hedges, there was no full-fledged list of to refer to. Yet, in English, the devices commonly perceived as hedges such as modal auxiliaries, adverbs of probability, general nouns, verbs that express belief and doubt were taken up. This study, however, adds in approximation and attribution (sourcing of the evidence) but includes e.g. passive voice out.

Unfortunately, the interdependence of hedging elements and 'the context of situation' (Malinowski, 1923) also results in the lack of an available classification system. Therefore, I was compelled to find my own solutions for the classification of hedging devices found in these texts but I principally followed the most widely used hedging categories. All meanings, discussed in affiliation with modality, evidentiality and politeness are, however taken under consideration in this study and any identified meanings or strategies that classify or qualify knowledge will be considered as a potential hedge.

The linguistic elements counted as hedges are modal auxiliaries, adverbs of possibility and intensity, some lexical verbs, nouns and adjectives with modal meaning, approximators, and the strategy of attribution. The hedges identified in the data were classified in those categories accordingly.

The multi-functional nature of hedging led up to a solution where the first six categories are grammatical and the last one is functional. There is also some grammatical overlap in the chosen categories, e.g. all adverbs are not included in a sole category. Apart from round numbers and imprecise expressions of measure the category of approximation also includes adverbs of inaccurate timing and localisation. Furthermore, if a lexical verb is part of the strategy of attribution, it is exclusively dealt within this category.

The point of departure in this study is the function of modal auxiliaries and the strategy of attribution. Although identified and computed, the other hedging devices in the data i.e. adverbs, lexical verbs, nouns, adjectives, and approximation, were not further dealt with independently, but commented on only in the context of the other forms in focus.

In order to get the general idea of how consistent hedging is in this data with other text types, and whether there is a significant distinction in modal counts between the periods studied, I first calculated the overall incidence of the chosen categories in hedging and then compared the modal counts to the results with Grabe and Kaplan's (1997) results in their study '*On the Writing of Science and the Science of Writing: Hedging and Science text and Elsewhere'*. In this particular study, Grabe Kaplan compared the extent of evidential marking in science writing in both professional and popular form to three functional written genres and narratives (professional natural science, popular natural science, newspaper editorials, annual business reports and fiction narrative). Yet, only the first three are included in the following comparison.

5.2   Modals (auxiliaries, adverbs nouns and verbs, adjectives)

Modal auxiliaries may, could, might, would, should, will, and can, form the point of departure in this study. Their occurrence and co-occurrence with other modal and evidential values and/or hedging stategies constitute the core of this investigation. With the exception of some clear-cut cases of permission, ability and marking the 'future as a matter-of course', the 'communicative content' of a

modal auxiliary like any other hedge is identified only in its textual , communicative and social

context. The rest of the English auxiliaries are computed, but not further dealt with. Besides

straightforward auxiliaries, some modal expressions like <u>ought to</u> and <u>have to</u> ,<u>had better</u>, <u>is going to,</u>

, <u>would rather</u> etc with a similar function are included in this class.

Adverbs like, <u>perhaps</u>, <u>possibly</u>, <u>probably</u>, <u>practically</u>, <u>likely</u>, <u>presumably</u>, <u>virtually</u>, <u>apparently</u>

are examples of so-called 'plausibility shields' which according to Channel (1994) 'protect the speaker

from accusation of being committed to a false proposition'. Some intensifiers e.g. <u>particularly</u>,

<u>inevitably</u>, <u>obviously</u>, and <u>especially</u> are also construed as hedges, as they seem to add on fuzziness in

the context of multiple hedging. All adverbs are not included in this category. Linguistic expressions

denoting imprecise measure, time or reference, are identified as approximators.

According to Smith (Adams Smith 1984; Skelton 1988b) adjectives with epistemic meaning like

<u>possible</u> and <u>probable,</u> <u>likely</u> and <u>apparent</u> form the group of modal adjectives. Additionally,

restrictive adjectives like <u>certain</u> and <u>particular</u> are seen as potential hedges, since they seem to

reduce the scope of application of the truth. Nouns like, <u>assumption</u>, <u>claim</u>, <u>evidence</u> enter into the

group of modal nouns.

A wide range of lexical verbs can be used in hedging strategies. In this study the category

includes speech act verbs such as <u>claim</u>, <u>postulate</u>, <u>reckon</u>, <u>suppose</u>, <u>suspect</u>, and epistemic

verbs like <u>appear</u>, <u>seem</u> , <u>sound,</u> This group also includes verbs like <u>promise</u>, <u>intend</u>, <u>attempt</u>,

<u>try</u>, <u>intend</u>, <u>tend</u>, which reflect the speakers effort of performing an act. Many of the verbs like

<u>seem,</u> <u>believe,</u> <u>assume,</u> <u>suggest,</u> <u>estimate,</u> <u>think,</u> <u>argue,</u> <u>propose,</u> <u>speculate</u> are employed in

attribution and are therefore respectively discussed with attribution.

5.3   Approximators

Approximators were separately computed but discussed only in the context of other hedging strategies. The category includes structures, which Channel in "*Vague Language"* (1994) describes in someway 'imprecise' or less 'than exact', including 'approximators of measure' (<u>about </u>100, <u>five or six</u> articles), 'approximations through the use of round numbers '(<u>the city has a population of one million</u>), 'non-numerical approximators of measure' (<u>a lot of </u>, <u>heaps of</u>, a few etc), 'vague references to categories' (<u>sort of</u>, *or* <u>some</u>). According to Channel (1994), approximators can also have 'the effect of withholding commitment to a proposition especially as elements in multiple hedging'. Therefore, it is justified to comment on their function in the texts in the context of other forms of hedging.

5.4   The strategy of Attribution

In this study attribution or reported speech is included as a resource within hedging strategies, although it is not typically included in hedging systems. I consider it as a possible means to 'introduce alternate voices into the text and thereby reach divergent ideologies '(White, 1991).

        Quoting several sources is a standard practice in journalism, but White states that' resources like reported speech may also be considered to function as a type of modality in media texts '(1991, 25), since attribution and probability both have the functionality in characterising the texts propositional content as multiply sourced'. Yet, according to Fuller (1995) attribution and probability differ in that 'attribution constructs sourcing in ideational terms while implicit probability like modals, construes it in interpersonal terms'. Thus, attribution can be seen as grading knowledge, similar to markers of evidentiality, which by revealing the source, connotes the speaker's /writer's assessment of the evidence for his or her statement.

        White (1991), who studied the interpersonal style of the hard news report, found that attribution provides 'vital functionality in the strategy of tactical impersonalisation'. Attribution

for the writer is a fine tuned way to distance from or assimilate to the propositional content of the text.

'The variation of these resources is determined by the degree to which the intertextual voice remains differentiated from the surrounding text '(Fuller 1995, 182-186). The statement can be a verbatim quote, which is explicitly differentiated from the discourse. The meaning can be rendered as deriving somewhere else but it is not assigned. It can, however also be recontextualised or merged into the representing text through reformulation.

There is also variation in the maintaining of the style of the original speaker/writer. 'These words of other's carry with them their own expressions, their own evaluation tone, which we assimilate, rework and accentuate '(Bakhtin 1986, 89 cited in Fuller 1995, 113). There is, however, always ambivalence whether 'the actual wording is attributable to the person whose speech is represented,or to the author of the main text'.

The choice of the verb in attribution reflects the writers' own opinions of the truth-value of a presented propositions. Skelton (1988) claims that natural languages are reflective:'not only saying things, but also reflecting on the status of what they say.' Skelton's (1988, 45) remark of hedges as part of the larger phenomenon called 'commentative potentials' of any language is especially eligible to the strategy of attribution. The comments may be on the 'truth-value' or the 'emotional value' of a proposition.

6   Results

6.1   The Overall Incidence of Hedges and Comparison to the Results in Grabe and Kaplan (1997).

6.1.1   Total Frequencies Through Categories in the Corpus

The total occurrence of individual hedges and the variation with time in the use of the identified

hedges is presented in this chapter. The figures, however only include the ones that I have

interpreted as hedges.

The use of modal auxiliaries as a hedging device in the data mounts from 11.10 (T1) up to 19.95

(T4) in the corpus. There is a clear raise also in the use of approximation, ranging from 15.00 (T1) to

20.65 (T4)(per thousand words). The employment of the strategy of attribution is rather steady

(06.02-07.12). The employment of adverbs as hedges is most frequent in T1. The number of verbs

and nouns in hedging remains low throughout the corpus.

There seems to be clear change in total hedges between the two earlier and two later periods.

The last set, that is T4, makes the greatest use of hedging (58.44) and the total occurrence of modals

per thousand words doubles from T1 (11.10) to T4 (19.95). Therefore, it would be safe to conclude

that there is some sort of change in the journalistic mode of the writers' between the first and last

sets.

Table 1: Total frequencies through categories.

Set	Aux.	Attribution	Approximation	Adverbs	Verbs	Nouns	Total
T1	11.10	06.02	15.00	02.10	02.36	00,70.	40.99
T2	16.69	04.96	17.47	03.16	02.36	00.79	49.27
T3	14.31	07.31	18.67	02.96	02.60	00.62	58.20
T4	19.95	07.12	20.65	03.60	02.60	01.49	58.44

The choice of the verb in attribution varies from period to period. The most commonly used

attributive verbs in T1 are think (0.7) and believe (0.5), In T2 they are believe (0.9), and admit, and

acknowledge (0.9), T3 uses technical and non-committal says (1.2), argue (0.8), and in T4 the most

commonly used attributive verbs are say (1.2), believe (0.9), and think (0.9).

Table 2:The total occurrences of the most common verbs in attribution.

	Say	believe	think, consider, speculate	argue, contend	suggest	I think	admit, acknowledge	expect	doubt	hope	concede	show	assume, hypothesize	predict	propose	imply	see	Total
T1	2	4	5	3	4	2	4	2	3	2	2	2	2	1	0	2	0	40
T2	4	8	1	1	3	1	8	1	2	3	2	0	1	1	3	0	1	40
T3	8	3	4	5	3	2	0	4	2	1	1	2	1		1	1	3	41
T4	12	10	10	4	5	7	0	3	2	3	2	3	2	3	1	2	1	71
Tot	26	25	20	13	15	12	12	10	9	9	7	7	6	5	5	5	5	191

Hence, we could say that in the late nineties (T1), the cited researchers mostly thought and believed,

in T2, they believed, admitted or just said. In T3, the researchers, at least according to the writer, say,

contend, think and expect and the researchers of this third millennium (T4) for their part, say,

believe, think and, suggest and even know.

6.1.2   The Comparison to the Results in Grabe and Kaplan(1997)

The comparison to Grabe and Kaplan's (1997,163) study shows that while the total frequency of

hedging in the first period is consistent with Popular science in Grabe and Kaplan's study, the counts

of the last period level with the counts of Editorials in the particular study, and as we all know,

editorials are predominantly about opinions. In their study on different types of texts, Grabe and

Kaplan (1997) came to the conclusion that there is remarkable variation in hedging in different types

of texts and found out that 'editorial writing is strongly persuasive and evaluative' (1997,165). The

editorial set, in Grabe's study, which is parallel to T4 in this study, made the greatest use of modals,

hedging and emphatics in general in their study. Therefore it is safe to conclude that the relevance of

comparing the periods is justifiable.

Table 3: Total frequencies of Modals per 1000 words in Grabe and T1, T2, T3 and T4

Modal	Prof Sci	Pop Sci	Editls	T1	T2	T3	T4
May	01.75	01.99	01.71	01.79	02.40	02.80	01.76
Might	00.41	00.00	00.00	00.92	00.79	02.18	01.41
Could	00.56	00.64	01.87	01.58	02.59	03.73	02.70
Would	00.46	01.28	04.55	01.05	01.35	03.27	04.66
Modals	08.82	10.00	24.42	11.10	16.69	14.31	19.95
Total Hedges	25.67	41.14	58.29	40.99	49.27	58.20	58.44

6.2   Hedges in Context

In all probability, the motivation for hedging in this particular context is manifold and 'the choice of a

particular hedging device does not always permit a single, unequivocal interpretation' (Hyland, 1996,

437). It is impossible to eliminate the interference of my worldview and non-native background on

the reading of the meanings, but then again, Time magazine is read worldwide, and many readers

share my position within the heterogeneity of worldviews. I have, however, tried to decide the

motivation for some typical cases of hedging as objectively as it is possible in the first place.

The most common modal auxiliaries may, could, would, might, should, will, and can in the

respective order, are employed as the point of departure. The order in sequence agrees with the

frequency counts in T1. In these texts, hedging often manifests itself as compound hedges (double,

treble, quadruple hedges and so on). Thus, while looking into modal auxiliaries I came to describe the

function of the strategy of attribution, approximation, adverbs and adjectives concurrently.

6.2.1   May

 May is the most commonly employed modal in T1. It is often employed in the context of grandiose

expressions like 'conquering inherited ailments', and 'a revolutionary approach'. These elevated

expressions in the representing discourse designate the writer's attitude to the knowledge but do

not contribute to the evidential value of the modals. There is a lot of doubt present, but in alliance

with wide-eyed optimism, which may be seen as a rhetorical move to cajole the readers' to come to

terms with the claim. In the absence of elevated expressions, however, the focus is more on the

tentativeness of the expression (examples 3-4).

1)   Conquering Inherited Enemies Doctors stand on the brink of a genetic revolution. T1A (subtitle)

2)   But that bleak picture may soon change. Genetic engineers at a handful of U.S. laboratories are getting ready to
        embark on the first trials of human gene therapy, a revolutionary approach to conquering inherited ailments.T1A

3)   Eventually, crops and farm animals may be raised to produce not just food and clothing but also a wide array of
        chemical compounds and human proteins like insulin. T2B

4)   Yet the Continental food fight that continues to pitch up scare headlines in Europe may herald what genetic
        engineering can expect to encounter as it moves more broadly into pharmaceuticals and medical procedures. 3TE

In T3 and T4, auxiliary <u>may</u> hardly ever refers to the future, but is used for discussing the present state of affairs and browsing possibilities, commenting on the truth value and expressing doubt. The style is suggestive of scientific writing (examples 5-8).

5)   The mice responded by cutting their food intake and shedding the extra ounces, <u>suggesting</u> leptin <u>may</u> have value in reversing more typical cases of weight gain. T3A

6)   That <u>may</u> be <u>in part </u>because his technique treated the cells more gently. It's also <u>possible</u> that injecting just the nucleus introduced fewer contaminants into the host cell. T3B

7)   But by the end of this century, if not sooner, biotechnology <u>may</u> have reached the point where it can take just about any DNA recipe and read off a passable 3-D interpretation of the animal it would create. 4TA

8)   That <u>may</u> explain why Dolly's cells show signs of being older than they actually are--scientists joked that she was really a sheep in lamb's clothing. 4TF?

In the later periods <u>may</u> expresses circumspection rather than hope. In example (9), the evidential phrase <u>it looks as though</u> forms a compound hedge with auxiliary <u>may.</u> The degree of the writer's commitment is mitigated by the structure, and thus, the writer refrains from raising false hopes.

9)   ... <u>it looks as though</u> help for Cady, and for more than 50 million other seriously overweight Americans, <u>may</u> finally be on the way.T3A

Example (10) from T2 shows how equivocal the context may be. In the presentation of the <u>real possibilities,</u> the writer refers to science fiction and *brave new world* to proclaim the novelty and controversial nature of the underlying proposition. The reference to a literary scene is perhaps a means to show the author's own notion of the proposal, at least to a congenial audience. The world, the novel describes, is a dystopia, where many things that humans consider to be central to their identity - family, culture, art, literature, science, religion have been sacrificed to create this "Brave New World". This approach to the topic could be seen as creating a sense of solidarity with 'readers from alternate ideological positions', but it also provides the writer with means to express his/her critical attitude to the knowledge.

10)   Such curios <u>may</u> sound like <u>science fiction</u>, but they are <u>real possibilities</u> in <u>the brave new world</u> being created by the marriage of biotechnology and agriculture. T2B

The expression <u>someday,</u> put into the context of modal <u>may</u> delivers a presentiment of a future utopia with treatment for a disease. In this context, (see example 11) auxiliary <u>may,</u> expresses

epistemic openness. The explicit and thorough sourcing of the knowledge, however, increases the

credibility of the claim.

11) To understand better the genetic basis of cancer, Philip Leder, a molecular geneticist at the Harvard Medical School and his colleague Timothy Stewart, have bred line of transgenic mice that may someday serve as a model for human breast malignancy. T1B

12) The study of these mutants and the effects of the interloping genes may help provide answers to such fundamental questions as what switches DNA on and off, and how a single cell blossoms into a complex organism like a mouse or a human being. Someday the new technology could yield treatments for diseases such as cancer, thalassemia and sickle cell anemia.T1A

The auxiliary may also occurs in citations reported with the verb hope. The verb hope was popular

only in T1, and commonly employed with loosely defined expert sources e.g. biologists and scientists.

In example (14) hope is rendered as deriving elsewhere, but it is not assigned. The choice of the

strategy reflects the writer's desire to avoid full responsibility for the validity of the statement, but

the choice of the verb hope can be seen as a signal of his/her positive attitude to the proposal. The

discourse is, however, merged into the presenting text. The latter proposition has been reformulated

to the extent that it is difficult to say who is responsible for the modal may and therefore the

authenticity of the knowledge.

13) Some scientists hope that they can use it soon to reap medical benefits. If cancer genes can be so readily turned on, for example, the new technique may reveal ways to turn them off.t1B

When hope is used independently, it seems to be assigned solely to the biologists.

14) What is more, biologists hope that for at least two of the disorders, only a tiny amount of the enzyme need be produced to alleviate the worst symptoms. T1A

It is difficult to find the point where the citation ends in the following recontextualised quote.

Therefore, the clustering of hedges i.e. almost certainly, appears and may reduces both the writer's

and the source's commitment to the truth-value of the address. However, while browsing the

citations in the corpus, I got under the expression that the claims of renowned scientist are often

more heavily hedged than the quotes from the sources with less authority. This may well be the

request of the scientist in question.

15) Friedman, for one, believes leptin is almost certainly a hormone that travels through the bloodstream to act on the brain. In fact, it appears leptin may act in a feedback loop like the temperature sensor in a thermostat--or in this case a "fatstat"--to tell the body whether to turn metabolism and appetite up or down. T3A

The non-committal verbs say (16) and concede (17) leave the judgments of the truth-value to readers, who in their part are expected to pay attention to the authority of the cited source and further hedging. A distinguished, differentiated voice can translate the meaning of may from plain ambivalence to great expectations. The consulting of a renowned source, also communicates the writer's commitment to the knowledge. In example (17) the employment of the auxiliary could may be seen as a means of persuasion.

16) The discovery, said Sir Walter Bodmer, director of research at London's Imperial Cancer Research Fund and a principal investigator, may eventually enable doctors to provide better diagnosis and treatment for all patients with colon cancer. .T1H

17) He concedes, however, that the Flavr Savr may be safe. It could even be safer than conventionally bred tomatoes, says Carl Winter, director of the independent, university-funded FoodSafe Program at the University of California at Davis. T2F

While quoting unreliable sources, the writers often choose indirect speech (in 18) but when citing trustworthy sources the writers more than often make use of direct speech (in 19). This may explain the difference in the amount of hedging. Interestingly enough, in indirect speech the meaning of say seems to approach the meaning of claim.

18) "It may be possible to collect semen in the wild and inseminate animals in captivity," he says. 4TE

19) They say they are willing to try to clone a dead child. Though their outfit is easy to mock, they may be even further along than the competition, in part because they have an advantage over other teams. 4TG

The credibility of a source is interplay of several factors i.e. the authority of sources, the level of recontextualisation, the choice of reporting verbs, and the way of presentation. The following two propositions from T4 are both clustered with hedges, but the effect of the multiple hedging is quite different. The claims of renowned scientists are often heavily hedged (20), but still maintain their credibility.   The selection of quoting strategy, direct/indirect speech seems to strengthen the impact of the verb. The criticism of the technique of saving endangered species is attributed to other scientists (in 20), who soften their attack with the adverb unlikely. The use of the verb argue in

reporting, associates the claim to scientific texts, in which the verb is frequently exploited, and hedging seems to me epistemic. Example (21) is not explicitly signed to anyone by the reporting verb view, which indicates opinion rather than knowledge. The practice seems to imply the writers less than full commitment to the emotional value of the statement.

20)   Robert Lanza, ACT's vice president of medical and scientific development, says the technique is not a panacea but "presents exciting possibilities" that may help rescue endangered species and perhaps even reverse extinctions. Other scientists aren't so sure. They argue that such high-tech approaches are unlikely to make a significant contribution to the support of vulnerable species, especially if their habitats have been destroyed. T4E

21)   Cloning advocates view the possibilities as a kind of liberation from travails assumed to be part of life: the danger that your baby will be born with a disease that will kill him or her, the risk that you may one day need a replacement organ and die waiting for it, T4G

Attribution with the verb suggest usually co-occurred with may, and is mainly used in T1 and T2. The use of the verb reveals a more or less scientific approach to the discussed matter (in 22). Suggest is also employed in T4, but with multiple hedging. In the following example (23), the writer attributes the responsibility for the truth-value to the chimera he himself has previously created. The auxiliary will with almost and the adverb certainly makes a reader confused about the writer's opinion and the status of the claim. What the auxiliary may defines as improbable remains a mystery. Is it cloning as such, or the unethical nature of the particular experiment? The reading, closest to the truth of the motivation for hedging in this case (23), could be the mitigation of the illocutionary force of the statement.

22)   Last week the National Cancer Institute published two studies suggesting that susceptibility to lung cancer may be associated with a single gene. (Green light)

23)   As this suggests, the first such experiment will almost certainly produce a bit of a Frankenstein's monster, and the whole idea may well therefore be cruel and unethical, T4A

In example (24), the good intentions of researchers are hedged with may, and the authority of environmentalists is lowered with approximator some. The use of these different forms of hedging can, however, be seen to have common function i.e. pronounsing that the representations are open to debate.

24)   Such research may be intended to benefit society, but some environmentalists see it as a cynical play for profits. T2B

25)   That may be tricky, given the concerns raised by some environmental and animal-rights groups. T2B

The unworthiness of the sources is usually clearly stated in the text, and their claims often remain less hedged. As the decennium draws to a closem, the writers summon a variety of opinion groups to come forward with alarming comments. They are usually referred to as a coarsely cropped groups like renegade scientists (in 26), others (in 27). This way, the writer escapes from intimidating the readers. The scare mongering is attributed to unknown quantities.

26) Others will say we need an international ban lest we find ourselves taking orders from the next Saddam Hussein's eugenically brewed army. 4TD

27) Renegade scientists say they are ready to start applying the technology of cloning to human beings. 4TG

A common strategy to invite the audience into a discussion and promoting solidarity is the use of first person pronouns, we and I or by putting a question, in this case a rhetorical question, to the readers.

28) Bessie's ultrasound tests may look good, but is the concept itself a sound one?

29) These decisions reflect widespread concerns that we, as humans, may not have the wisdom to modify the most precious of all human treasures--our chromosomal "instruction books." T3D

30) Unlike many of my peers, I'm reluctant to accept such reasoning, again using the argument that you should never put off doing something useful for fear of evil that may never arrive. T3D

31) Dare we be entrusted with improving upon the results of the several million years of Darwinian natural selection? Are human germ cells Rubicons that geneticists may never cross? T3D

In the earlier texts, the use of auxiliary may signals guarded optimism and doubt, but can simultaneously be seen as a strategy of persuasion, a way to talk the reader into reassessing his or her own position towards GM. In T4 and T3 may either expresses cautious deliberation, or is used to discussing the present state of affairs.

The communicative content of may is, however, more than often qualified in context. Extravagant expressions in T1 deliver the sentiment of future utopia and hope. The references to science fiction in T3 proclaim the contentiousness of the claims and engage the reader into the discussion. The increase in the total instances of hedging in T4 realise as compound hedging, which makes it more difficult to retrace the writers' intentions and motivation for hedging.

The cooperation of <u>may</u> with the sourcing of the knowledge is more straightforward in T1 and T2 than in T4. In the earlier texts, the crucial claims are attributed to persons who are supplied with names and places of work and the sources are more explicitly separated from the representing context. Strangely enough, the strategy strengthens the claim and thus allows further hedging without loss of credibility. It also becomes fairly clear that proposals from explicit sources of authority, suggests epistemic hedging , whereas, when meanings are recontextualised as a part of the representing discourse, and in some cases not explicitly assigned, hedging seems to pertain to the emotional value of a statement. In that way, the writer perhaps restates and masks his position to the presented notions. The choice of the reporting verb is concerned with the affect and the writer's commitment to a statement.

6.2.2   <u>Could</u>

The auxiliary verb <u>could</u> also indicates cautious assessment of truth, weighing of evidence and careful drawing of conclusions in T1. The use of the opaque expression <u>someday</u> in example (32) signifies remoteness of possibility but also gives voice to author's wishful thinking.

32)   <u>Someday</u> the new technology <u>could</u> yield treatments for diseases such as cancer, thalassemia and sickle cell anemia. T1B

In T1 auxiliary <u>may</u> was used to browsing possibilities, whilst in T2 it has often given way to <u>could</u>, which connotes conceivable alternatives, but also has the sense of competence, being able to. Many people were then, and still are reacting against genetically modified food. The presence of fervent expressions like <u>enormous</u> (33), <u>Age of Genetics</u> in (34), and <u>revolution</u> in (35) with <u>could</u>, suggests that the writers are pending acceptance for the research.

33)   The long-term impact on society <u>could</u> be <u>enormous</u>. T2A

34)   The stage will be set for an <u>Age of Genetics</u> that <u>could</u> rival the Industrial Revolution in its impact on society. T2D

35)   ... scientists are changing the genetic endowments of plants and animals, and the results <u>could</u> spawn a <u>revolution</u> in farm fields, feedlots and dairy barns. T2C

In some cases writers' awareness of the general distrust in GM is put into words. In example (36), the writer states that scientists would have the competence and desire to heal, if given permission to move on with their research. It is probable, that <u>could</u> simultaneously performs the functions of expressing uncertainty and mitigation to make the sentence more acceptable to the hearer, and thus increases its chance of ratification

36)   If scientists <u>could</u> harness their powers, these cells <u>could</u> serve as the body's self-repair kit, providing cures.4TG

In the following example from T4 (see example 37) the writer uses conditional <u>could</u> to protect himself/herself from accusations of being committed to a false proposition. However, the use of the modal can also be seen as a means to redress negative reactions and a means of persuasion.

37)   Trying to block one line of research <u>could</u> impede another and so reduce the chances of finding cures for ailments such as Alzheimer's and Parkinson's, cancer and heart4TG

In examples (38-40) the use of conditional <u>could</u> indicates conjecture. The generosity of the facetious expressions of future applications shows that the writer is far from committed, to what he is proposing. In example (40) the sense of uncommitted posture is reasserted with the use of adverb <u>perhaps</u> and the approximator <u>a few</u>.

38)   Cows genetically engineered to produce valuable human proteins, for example, or pigs whose organs have been altered to remove proteins that trigger rejection after transplant operations, <u>could</u> be stamped out on an assembly line. T3B
39)   <u>Doing it in monkeys</u>, however, <u>could</u> save lives. 4TG
40)   ... they <u>could</u> <u>go fishing</u> in other bird genomes, or <u>perhaps</u> import <u>a few</u> ideas from lizards and turtles. 4TA

The presentation of potential risks is often mitigated with multiple hedging. The cluster of hedging in (41) makes the risks seem less plausible than the benefits, as the clause, <u>there is always the possibility</u> keeps company to the modal <u>could</u>.

41)   With plants, for instance, <u>there is always the possibility</u> that new traits <u>could</u> be accidentally transferred to wild relatives of domestic species? Theoretically, experiments with genes that confer resistance to disease or herbicides <u>could</u> create hardier weeds. 2TE

Clusters of hedges in the discussion of possible setbacks in a research project include an abundant use of the auxiliary forms, <u>could</u> and <u>might</u>. The extensive use of hedges in examples (42-43)

minimizes the illocutionary force of the claims and therefore supports the unreal and improbable

nature of the presented hazards.

42) But <u>there is no guarantee</u> that gene therapy <u>will</u> be effective against <u>any</u> of these illnesses. <u>Some</u> genes are too big to fit inside the viral taxi. And things <u>could</u> go wrong. The new genes <u>might</u> not "turn on" inside the body, or they <u>might</u> get misplaced in the gene sequence and rather than fight cancers, start triggering them instead. T2A

43) If a gene is accidentally spliced into a vital segment of a cell's DNA, it <u>could</u> disrupt the functioning of another critical gene. Or it <u>might</u> activate a nearby oncogene, initiating the growth of a tumor. Transplanted without all its accompanying regulatory DNA, the new gene <u>might</u> order …T2B

The use of adverb <u>perhaps</u> and <u>someday</u>, distances the propositions further from real time. The co-occurrence of adverbs and the auxiliary reinforce their individual power to withhold the writer's commitment presumably to the emotional value of the utterance in question. The strategy lubricates the processing of these intricate issues by making the statement less forceful. The understatement of the possible benefits can be seen as a strategy of persuasion and/or a demonstration of politeness. Examples (44-45) come from T4 and support the notion that hedging in the data becomes more complex and unfocused in the course of time.

44) <u>On one hand</u>, the ability to manipulate the genes of a creature so similar to humans <u>could</u> give researchers an incredibly powerful tool for studying and <u>perhaps someday</u> curing human illnesses.4TC

45) It has provided scientists with a new avenue for exploring a still poorly understood metabolic pathway, one that <u>probably</u> consists of many other equally powerful compounds, each of which <u>could</u> lead to new drugs. T3A

To enhance the egalitarian effect, the writer presents the readers with a profound question (in 46) and thus invites the readers to take part in the discussion. At the same time he thrusts the responsibility for the truth-value of the propositions upon the reader. The writer is hedging against angry readers, pointing out that he is in awe of the idea of human cloning, and aware of the dangers it entails. The writer does not speak out, reveal his position to the matter, instead, he refers to what could happen, just pecking at what he can find.

46) <u>Could</u> scientists use Wilmut's method to clone not just sheep but also <u>billionaires, basketball players</u> and bodies grown for spare parts? T3B

The claims about human cloning in (47) are hedged with <u>would</u>, <u>could</u>. Here, these hedges express ambivalence, but they also comment on the emotional value by making the claim less forceful and more easily approachable for the readers.

47) The difference in age between parent and child alone <u>would</u> prevent it, and because genetics only partly determines who we are, a clone <u>could</u> never be exactly the same person as its parent. T3B

More layers in hedging become common towards the end of the studied period (1985-2001). The two-dimensional truth continuum changes into three-dimensional charts and the distance from the truth is even more difficult to assess. The clustering of hedges in examples (48-49) reveals that the writer is conscious of the challenge of confronting hostile audiences, but it also communicates the readers the writer's less than full confidence in the techniques he is discussing. The profusion of hedges notifies the reader that the writers do not want to disclose their own thoughts, but are just browsing the odds. Strangely enough adverb <u>someday</u> in this context has lost its romantic quality.

48) Rather, <u>if it lives up to its billing</u>, it <u>could</u> produce potentially <u>unlimited</u> <u>numbers</u> of endangered creatures.4TE

49) … <u>someday</u> scientists <u>could</u> and <u>most likely</u> <u>would</u> insert genes into human eggs to try to make kids smarter, stronger, faster, healthier or happier than their parents.4TD

Laxity or even ambiguity produced by multiple hedges prepares the way to diverse interpretation of a claim. The abundant use of hedges in example (50) leaves the readers with the responsibility to form their own interpretation of the proposal, based on their respective ideological systems. The use of adverbs in hedging proliferated towards the end of the period studied and the adverb <u>potentially</u> was commonly used in the predictions in T4. In example (50) <u>could</u> means that something is possible but not yet actual. I, however, get the idea that the writers are asking for permission to present the claims.

50) Rather, <u>if it lives up to its billing</u>, it <u>could</u> produce <u>potentially</u> <u>unlimited</u> <u>numbers</u> of endangered creatures Just as women have long been able to have children without a male sexual partner, through artificial insemination, men <u>could</u> <u>potentially</u> become dads alone: 4TG

The reporting verb <u>believe</u> was commonly used with <u>could.</u> The use of the verb in attribution (in 51-52) seems to denote the subjectivity of the predictions. <u>Believe</u> is often used for citing worthy scientists. The writers' positive attitude to the knowledge presented, can be seen in the choice of the reporting verb. Careful deliberation, which is characteristic of scientific texts, comes through in the use of auxiliary <u>could</u> (51-52).

51) John Baxter of California Biotechnology, the firm where the heart disease markers were found, believes the RFLP could help in alerting people to their tendency in time to change their behaviour. T1A

52) For that reason, says Richard Weleber, a professor of ophthalmology at Oregon Health Sciences University who believes the research could help cure the form of blindness known as macular degeneration, 4TC

Attribution through claim, which usually attracts counterclaims, totally relieves the writer from the responsibility of the truth-value of the claims presented. By using the verb claim in attribution (in 53) the writer clearly expresses his/her non-alignment with the reported opinions. The writer probably wants to communicate that he is as aware of the intrusive nature of the address as the cited person. The verb is mostly used for quoting unreliable sources and antagonists.

53) Antibiotechnology activists were infuriated with Strobel's actions and with his mild punishment. They claim that scientists could unwittingly unleash destructive mutant bacteria into the environment, a worry that is considered alarmist by most scientists. T1G

The closing conundrum in (54), in a way, hedges the whole chapter, as it illuminates the absurdity of Mr. Seed's claims and prospects. The writer does not hedge Mr. Seed's statements in example (55). He is, however, introduced as an unemployed scientist, who has spent a lifetime dabbling in ill-fated ventures. Consequently, everything he says is introduced with he says and he claims.

54) I'd rather see somebody do it than nobody." That way, at least, Seed could pursue his next project--reprogramming DNA to achieve immortality--which he sees as the all-important successor to cloning. So here's a conundrum: Which would be stranger, a world full of Richard Seeds, or a world in which Seed never goes away? 3TD

55) The unemployed physicist, who has spent a lifetime dabbling in ill-fated ventures, is trying to build support and raise money; he claims to have commitments for $800,000. An impressive start, if true, but still far from the $2.5 million he says is necessary to clone the first human before 2000. 3TD

When the topic is too hot to handle, a specialist in (56), who, for his part, calls in faceless fertility specialists, is summoned. Double attribution is followed by the auxiliaries could and would, which in this context denote indemnity.

56) Princeton biologist Lee Silver says fertility specialists have told him that they have no problem with cloning and would be happy to provide it as a service to their clients who could afford it. But these same specialists would never tell inquiring reporters that, Silver says--it's too hot a topic right now. 4TG

By attributing the fears and criticism to some critics and some theologians in examples (57-58), the writers get through with risky claims, reportedly made by others, but the strategy also signals their

slender commitment to the propositions. The use of the modal auxiliaries with attribution gives the reader the idea, that if this will ever happen, it will be in the remote future or in a distant place and has nothing to do with the reader's everyday life.

57) <u>These risks and the fears of some critics</u> that the technique <u>could</u> be misused have raised safety and ethical issues that the practitioners of the new art are quick to recognize. T2B

58) <u>Some theologians</u> <u>decried</u> the apparent equation of God's creatures with manufactured goods. T1F

When the clause '<u>Even if all goes well</u>' (in 59) introduces a claim hedged with <u>could</u> ,it becomes clear to the reader that it is mere conjecture we are dealing with.

59) <u>Even if all goes well</u>, it <u>could</u> be five to 10 years before leptin is approved for human use. T3A

The auxiliary <u>could</u> suggests remoteness of possibility but also has a sense of competence. Predictably, <u>could</u> is often used for browsing possibilities. <u>Could</u>, however, seems to me more ambiguous than <u>may</u>, and in some way more open to multiple interpretations. Therefore it is not surprising, that it is often employed as a means to allure the reader to, at least, consider an allegedly disagreeable proposal.

Multiple hedges prepare the way to multiple interpretations of claims. <u>Could</u> in the context of other auxiliaries, modal adverbs and approximation more than often indicates that the claims are nothing more than conjecture. This way, the writers refrain from disclosing their own opinions. The reader is, therefore, forced/free to work out his/her own mind on the grounds of his or her presuppositions.

Auxiliary <u>could</u> seems to me more concerned with affect than auxiliary <u>may</u>. Auxiliary <u>could</u> also strikes me as more open to multiple interpretations, and therefore sort of more reader dependent. Even in direct quotation, the meaning of the value, strangely enough, seems to be linked to the author of the text, as well.

6.2.3   Would

Auxiliary would was not used in the comments on the state and progress of research in the field in

T1. In examples (60-61) would is used in picturing alternate futuristic scenarios.

60)   Parents would be making decisions over which their children had no control and whose long-term impact would be uncertain. 3TF

61)   But a longer-lasting, even permanent treatment that would generate ADA in the bloodstream is obviously preferable.T2B

In the discourse that has retained its scientific style, would proclaims the almost inevitable outcome

of the process.

62)   The retroviruses, rendered harmless by genetic engineering, were the vectors, the vehicles that would deliver the genes to their target. T2B

In example (63) the literary reference makes the claim stronger, and increases the writer's

commitment to it. Brave New World was a transparent faultfinding commentary on our future. The

use of would does not make it less forceful but quite the contrary.

63)   Such Brave New World--style manipulations would affect the genetic endowment of future generations, raise new ethical issues and pose unknown risks. T2B

The use of the unreal would in the context of the adverbs ideally in (64) and probably in (65) informs

the reader of the hypothetical nature of the claims, and leaves the propositions epistemically open.

64)   Ideally they would prefer to insert ADA genes into bone-marrow stem cells, which would continuously manufacture blood cells containing the gene and ensure a steady supply of the enzyme. T2B

65)   To do its work, leptin would probably have to be either injected daily, like insulin, or implanted under the skin for the rest of one's life. T3A

The claim about human cloning in (66) is hedged with would and could. The hedges express

ambivalence but they also comment on the emotional value by making the claim less forceful and

more easily approachable for readers.

66)   The difference in age between parent and child alone would prevent it, and because genetics only partly determines who we are, a clone could never be exactly the same person as its parent. T3B

Conditional auxiliaries bring the discussion into a safer zone. The employment of would in (67),

however, admits a likelihood that the predictions presented will come true, and perhaps, that is why,

it hardly ever occurs without the consolidation from other hedges, in this case <u>perhaps</u>. In the gentle

reminder of the possible risks, the writer perhaps wants to promote solidarity with the reader by the

mitigation of the risks with <u>might</u>. The pronoun <u>us</u> pronounces that the writer is one of the

undecided, and reveals his notion on the matter.

67) <u>Perhaps</u> it <u>would</u> help us get better grades, land a better job, but it <u>might</u> also take us down a road we'd prefer not to travel. "3TF

In one of the articles (in 68) the explanation on the advantages of the technique ends up in a hedged

joke about cloned human champions. The strategy discloses an unconcerned attitude towards the

matter, and reduces the writer's commitment to the article as a whole.

68) You can wait until the litter has grown up, see which individuals have proved themselves to be great producers of wool, milk or--a stretch, <u>perhaps</u>--<u>NBA titles</u>, and then clone the <u>champs</u>. T3B

The use of <u>would</u> with approximation in the denial of generally undesired lines of research, waves off

the fears and makes their materialisation less probable (see examples (69-70). In this case of multiple

hedging, approximation does not only qualify its headword, but interacts with other hedging

elements.

69) ... amber, insects and bits of frog DNA--would not work <u>in a million years</u>, 4TA

70) ... what <u>many</u> scientists have said no scientist <u>would</u> <u>ever</u> want to do--use genetics to change, improve or enhance our children. 4D

In multiple hedging, approximation does not usually exclusively qualify its headword, but interacts

with other hedging elements. A cluster of hedges usually expresses a writers' reluctance to speak out

his mind, to disclose his/her personal opinion. It is characteristic of popular press articles to use

rough numbers and imprecision, as detailed descriptions might tire and merely confuse the reader.

The use of approximation can, however, especially in the context of other hedges be socially

motivated mitigation.

In example (71), dealing with human cloning, the quoted researcher appears very tentative.

The use of the verb <u>believe</u> signals of a trustworthy source, a man after our own heart. Even with the

inverted commas it is, however, difficult to say, where the quote starts and where it ends, and, thus, where the writer's responsibility starts end ends. In the following example (71), the heavy hedging may partly result from the delicate nature of the topic.

71) Wilmut believes "it is almost a certainty" that cloned human children would be born with similar maladies. Of course, we don't euthanize babies. But these kids would probably die very prematurely anyway. 4TG

Questions invite the readers to the discussion on the ethically difficult matter of manipulating human genes and implicate the reader into further contemplation of the matter. The writer serves the reader with several leading questions cushioned with would (ex. 72), and lets the readers answer them at their own peril. The writer does not have the gumption to speak his mind or perhaps he has not made it up yet.

72) Which side effects would we tolerate? What if making kids smarter also made them meaner? What if only the rich could afford the advantage? 3TF

Would alone is used in predicting sequences of events, and suggests explanations for phenomena accepted, more or less, likely to be true. The strategies in the use of would in compound hedging follow the line of the use of may and could, but where could is used for alluring or even tantalising the audiences, would is used to smooth out the way to the new gospel and thus, comments especially on the emotional value through mitigation.

6.2.4   Might

The auxiliary might was non-existent in writers' comments in T1. Meanwhile auxiliary would is often used in browsing future options, auxiliary might is often employed in the presentations of a slight chance or possible threats, as well as toning down the possibility of an undesired outcome. The motivation for using this value is probably mitigation of potential anxiety caused by the claims (see examples 73-75). The magnitude of the threat stated in (74) calls for double hedging.

73) The immediate risk is that a backlash against renegade science might strike at responsible science as well. 4TG

74) If not held in check, the weapons they made possible might well destroy the very fabric of civilized human life. T3D

75)   We <u>might</u> just meet ourselves there.4TF

In examples (76-77) <u>might</u> protects the writers from accusations of being committed to fiction, when

they tender readers with furtive flashes of unpleasant consequences of GM.

76)   <u>So far</u>, fears that genetically modified, pest-resistant crops <u>might</u> kill good insects as well as bad appear unfounded. 4TB

77)   They <u>might</u> not have to fix <u>that many</u> genes- The genes for the immune system, for memory mechanisms and the like <u>would</u> all be standard for a vertebrate. T4A

The breeding of racehorses and the medical application of the technique (in 78) is hedged with

<u>might,</u> which in this instance clearly signals lesser commitment than <u>could</u> in the presentation of GM

applications. The auxiliary <u>might</u> may also project the writer's indifferent attitude to GM in animal

breeding, reflecting on 'the status' of what he/she says.

78)   Fast <u>racehorses</u> or blue-ribbon pets <u>might</u> be duplicated at will. T3B

The scenarios on the more serious line of research are further hedged with approximator <u>someday</u>.

With the optimistic <u>someday</u>, <u>might</u> expresses hope against hope (79).

79)   Thus a better understanding of how genes work <u>might</u> <u>someday</u> have <u>implications</u> for anti-cancer and anti-aging treatments. T3B

The verb <u>think</u> is commonly used to cite loosely knit opinion groups and in this case (in 81-82) with

<u>might</u>. As the decennium is drawing to a close, the writers summon a variety of opinion groups to

interject alarming comments. In the earlier texts the meaning of the verb <u>think</u> refers to intellectual

activity and opinion (80), but in examples (81-82), the meaning of the verb closes on that of the verb

<u>suppose</u> and is used for presenting opinions of some misguided crowds.

80)   But by sidestepping the arduous regulatory process, St<u>robel </u>fanned the fears of <u>those who think</u> genetically altered bugs <u>might</u> behave unpredictably in the wild, setting off an ecological catastrophe or disrupting local ecosystems. T1H

81)   <u>There is little reason to think</u> that the drive to do right by our kids will be any different if and when we are offered the chance to improve them genetically. T4D

82)   Before we assume that the market for human clones consists mainly <u>of narcissists who think</u> the world deserves more of them or neo-Nazis who <u>dream</u> of cloning Hitler or crackpots and mavericks and mischief makers of all kinds, it is worth taking a tour of the marketplace. T4G

By attributing fears to <u>others</u> in examples (83) and (84), the writer gets through with risky claims, reportedly made by others. The use of the unreal conditional <u>might</u> does not only dampen the fulmination of abolitionists against altering animals genetically, but also signals the writers slender commitment to the propositions. The use of the modal auxiliary with attribution gives the reader the idea, that if this will ever happen, it will, again, be in the remote future or in a distant place, and has nothing to do with the reader's everyday life. The Approximators <u>some</u> and <u>other</u> were often used in the description of abolitionist opinion groups, the writer does not dare, or want to agree with.

83)   <u>Others feared</u> that the new policy <u>might</u> enable biotechnology companies to take control of the livestock industry, T1F

84)   <u>Others were afraid</u> that the patenting of genetically altered human beings <u>might</u> be next, T1F

More than often, criticism (in 85) and feelings are attributed to loosely defined subjects like <u>animal-rights advocates</u> with little authority. Perhaps, the author thinks that calling them by name is the same as putting them on the map. Be that, as it may, the writers are distancing themselves from the proposed uncertainties by calling in new voices in the texts. The writers remain unconcerned and uncommitted. As a contrast in Example (86) the distinguished scientist admits his personal fears. This strategy, through explicit source, direct quotation and first person pronoun makes the reader more convinced of the reality of the threat.

85)   While <u>animal-rights advocates</u> <u>concede</u> that conventional animal breeding has produced sickly misfits, they <u>fear</u> that genetic engineering will inflict greater suffering and disability. T1F

86)   "My fear is that we will begin valuing human beings as no different from animals," said J. Robert Nelson, director of the Institute of Religion at Texas Medical Center in Houston. T1F

The auxiliary <u>might</u> is generally used for pending acceptance of the audience. In some claims it looks like the writer is apologising the audience with <u>might</u> for being compelled to mention the predictions. While dealing with more serious matters, <u>might</u> is used to raising hopes in picturing desired, but improbable outcome of GM research.

6.2.5 Should

The auxiliary <u>should</u> is rarely used in the texts of the first three periods. When brought into play, it usually has the same meaning as <u>ought to</u>, and is employed to pass moral judgements (see examples 87-88).

87) And as a result, the conversation that has occupied scientists and ethicists for years, about how much man <u>should</u> mess with nature when it comes to reproduction, will drop onto every kitchen table, every pulpit, every politician's desk.T4

88) It <u>should</u> be easy enough to tell whether the invisible microorganisms survive and spread: T1I

<u>Should,</u> followed with <u>will,</u> in the main clause makes the statement more solid. <u>Should</u> in (89) makes readers more confident of the consequences of the condition and the corollaries than a common if-clause.

89) <u>Should researchers pinpoint</u> that genetic defect, the next step <u>will</u> be to develop a simple diagnostic test T1H

Although <u>should</u> is an assertive auxiliary, it does not reveal the writer's position on the matter, but leaves him, a sort, of external and neutral evaluator.

6.2.6 Will

The auxiliary <u>will</u> is often used as an element in multiple hedging. The use of <u>will</u> as an element in a hedge cluster instead of the tentative auxiliaries <u>may</u>, <u>might</u>, <u>could</u>, <u>would</u>, leaves the main claims more assertive. The writers are creating an appearance of certainty, but at the same time save their faces in case proven wrong later. The writers' less than committed attitude is communicated with approximation e.g. <u>almost</u> (90), construction <u>in the hope that</u> (91), <u>some</u> (92), and attribution <u>some experts believe</u> (93).

90) <u>All told</u>, genetic technology <u>will</u> give humankind an <u>almost</u> godlike power to improve its condition. T2E

91) A new gene is introduced (or an existing gene is suppressed) in a tissue culture <u>in the hope</u> that any resulting plants or animals <u>will</u> gain (or lose) the trait in question. T2F

92) ... which <u>will</u> lead <u>some parents</u> to opt for abortion. T2E

93) ... raises the curtain on what <u>some experts believe will</u> be a new era in medicine, T2B

By hedging the revolutionary nature of the test with the adverb <u>potentially</u> in (94) the writer signals

his less than full commitment to the truth-value of the statement in its totality.

94)   Clemson University scientists, mindful of public fears about the escape of dangerous microbes, <u>will</u> begin a <u>potentially revolutionary</u>, 18-month test of special blue bacteria T1I

Once again the examples that come from the last set (T4) establish that hedging becomes more

complex towards our time. In the first example (95) the use of qualifying constructions, the

introductory phrase '<u>There is little reason to think</u>' and the conditional clause, leaves the statement

itself intact.

95)   <u>There is little reason to think</u> that the drive to do right by our kids <u>will</u> be any different <u>if and when</u> we are offered <u>the chance</u> to improve them genetically. 4TD

In the next example (96) <u>will</u> is employed with a modal adverb and approximation. The strategy

brings in a sense of veracity regardless of heavy hedging. Approximation is widely used and has

several functions in the texts. Quite often overall approximation, in the description of goals and

methods and even those who do the research, seems to be a deliberate choice on the part of the

writer. In examples (96-97) the present degree of accuracy is perhaps conceived as more illustrative

to the alleged audience, or maybe the more precise values are seen as redundant.

96)   And by 2050, the U.N. <u>estimate</u>, it <u>will</u> <u>probably</u> <u>near</u> 9 billion. <u>Almost all</u> that growth <u>will</u> occur in developing countries. 4TB

97)   Yet, FAP accounts <u>for less than</u> 1 % of the 170,000 new cases colorectal cancer diagnosed 1H

In some instances the fulfillment of the main announcement, is conditioned by a dependent clause.

The strategy allows the employment of a modal of a higher degree of certainty in the main claim,

while the use of a conditional clause saves the writers' faces if proven wrong later. <u>If all goes</u>

<u>well/according to plan</u> in context with the auxiliary <u>will</u> expresses guarded optimism (see examples

98-99).

98)   <u>If all goes well</u>, the good genes <u>will</u> begin producing enough of the missing enzyme to cure the disease. T1A

99)   <u>If all goes according to plan</u>, a team of Clemson researchers at the school's agricultural research station near Blackville, S.C., <u>will</u> sprinkle a murky white liquid teeming with billions of Pseudomonas fluorescens bacteria on winter wheat seeds during planting T1I

In the context of approximation, however, a similar qualified construction indicates that the writer is not fully committed to the potentially false proposition

100) <u>If his tests are successful</u>, the procedures <u>will</u> be <u>almost</u> directly applicable to human beings. T1A

In these examples, the conditional clauses function differently with <u>will</u> and <u>could</u>. The conditional clauses with <u>will</u> signal hope and positive attitude, but the same construction with <u>could,</u> and the complementary <u>even</u> communicates caution.

The adverb <u>probably</u> commonly co-occurred with <u>will</u> throughout the studied data. In example (101) the use of the adverb <u>probably</u> signals epistemic openness. The expression, <u>much the way</u> is used to create an analogy digestible to a layman.

101) When they are finally attempted, germ-line genetic manipulations <u>will probably</u> be done to change a death sentence into a life verdict--by creating children who are resistant to a deadly virus, for example, <u>much the way</u> we can already protect plants from viruses by inserting antiviral DNA segments into their genomes. T3D

In (102), even the future climate change, which is a generally accepted fact, is hedged. In this case the writer probably hedges the emotional, instead of the ideational value of the claim.

102) ...... the planet's crop and livestock growers <u>will</u> <u>probably</u> have new environmental challenges to meet, among them a changing climate and increasingly salty soils. T2C

The following proposition (103) is not a very flattering estimation of the consumers approach to the problems of GM food, and perhaps, that is why, it is softened with the adverb <u>probably</u> in order to save the reader's face.

103) Consumers <u>will probably</u> be more worried about a different set of issues, like how Flavr Savr will taste and whether it will be worth the high prices (up to $2.50 per lb.) that Calgene (392)is expected to charge. T2F

Modal nouns and verbs have the same function as modal auxiliaries, but they also reveal the writer's attitude to the discussed matter. The use of the noun <u>hope</u> (in 104) signals that the writer has doubts about the outcome, but still trusts the line of research.

104) Fresh insights into the process, combined with the new techniques of molecular biology and genetic engineering, offer <u>hope</u> that this plague <u>will someday</u> be brought under control.T2C

The verb <u>believe</u> with auxiliary <u>will</u> in (105) should make a reader quite confident about the implementation of the prediction, but the attribution of the more conservative prediction to <u>biotechnology specialists</u> ,and the more daring one to <u>some scientists</u> reflect the writer's increasing irresolution.

105)   The consensus among <u>biotechnology specialists</u> is that within <u>a few</u> years--<u>some scientists believe</u> <u>a few</u> months --the news <u>will</u> break of the birth of the first human clone. 4TG

Social evaluation, the acceptability of the claim presented, and the writers' attitude to the claim are administered through sourcing of the text and in the choice of the reporting verb. Fears and risky claims are more than often attributed to indeterminate sources like <u>some</u> and <u>others</u>, the maladjusted and not generally accepted. Through their mouths the writer introduces the opinions and claims he dares not identify with, to the full.

106)   <u>Others will say</u> we need an international ban lest we find   ourselves taking orders from the next Saddam Hussein's eugenically brewed army. 4TD

107)   <u>Some will surely argue</u> that we need tough laws to prevent some kook from setting up a DNA shop 4TD

In its hedging function, i.e. not merely referring to the future, <u>will</u> is generally used in the context of other hedging elements. These elements, introductory phrases, adverbs, approximation and conditional clauses, communicate the possibly contingent nature of a statement. Yet, by using the auxiliary with the most definite degree of certainty, the writers give credence to the claim. The choice of <u>will</u> also perhaps reflects their conception of the significance of what they are saying. The writers are emotionally committed to the claim but admit that what they are saying is dependent on future events.

6.2.7   <u>Can</u>

Most cases of <u>can</u> were not identified as hedges. The auxiliary <u>can</u> in example (108) expresses ability while in example (109) it indicates epistemic possibility.

108)   ... and pinpoint on each one the location of genes that <u>can</u> predispose people to serious disease. T2E

109)   Incorporating pest-resistant genes into seeds <u>can</u> help restore the balance. 4TB

7   Discussion of Results

According to Channel (1994), "vague language' has an extremely diverse, contextually-determined, communicative functionality –' the same wordings may serve very different rhetorical ends in different contexts of situation'. The inquiry into the hedges in texts studied supports the claim. The study also suggests that lexical choices often communicate the emotional stance of the writer. Therefore, it is unfortunate, that an array of meanings, associated with intertextual references, and culturally authorised evaluative perspectives and judgements must have remained unnoticed due to the social and cultural distance.

In the absence of further hedging each auxiliary implements its fundamental grammatical meaning regardless of the date of publication. The communicative content of auxiliaries is, however, frequently qualified in context, where lexical choices often reflect writers' attitudes and judgments. The modal auxiliary may is a good example of the interdependence of context and function. In T1 may is often employed in the context of elevated expressions like revolutionary and refers to future events, which can be interpreted as the writers' positive attitude to the claim. On the other hand, while may is accompanied with the term Rubicons (T3), it communicates cautiousness on behalf of the writer. Furthermore, in T1, may is mainly used for cautious assessment of truth but in T3 and T4, may is multifunctional, in which case this auxiliary is usually accompanied by approximation or some other form of hedging.

The increasing use of could since T2 may imply that the writers acknowledge the capability of the researchers and hedge the desirability of the research. Context sensitive could delivers various meanings in different textual and social contexts and from these various meanings readers can choose the option befitting for their ideology and world view. Could, however also shows some doubts about the realisation of the predictions.

In T4 could was often replaced with would, which suggests that the writers confront the scientists' capability and willingness, and comment on the emotional value, rather than the truth

value, of the predictions, but are simultaneously pending for the acceptance of the audience. This may reflect the increasing need for 'community consensus' in the 'ratification of the knowledge'. As far as I know, human cloning is already possible, but whether it is desirable is another matter. On top of that, the use of would and could also introduces new voices into the discussion of future advancements and implies that the writers are even more reluctant than earlier, to disclose their own attitudes towards the propositions, or on the validity of the line of research en bloc. It is also possible that they have inconsistent thoughts on the subject.

The presentation of potential risks is often mitigated with multiple hedging. Fears and possible threats are usually waved away with the use of might or would with approximation and the modal adverbs. Especially, the hedge clusters inclusive of might are used for mitigating and for the underestimation of the, at least for me, existent danger. The use of would with approximation, in the discussion of generally undesired lines of research, also make materialisation of the fears less probable.

Clusters of hedges are employed to minimize the illocutionary force of the claims that present hazards, but also possible benefits of the line of research. Thus, the same strategy was used to divergent ends, that is, to communicate the unreal and improbable nature of the hazards presented and as a strategy of persuasion and/or a demonstration of politeness. The use of such clusters increases towards the end of the period studied, and is especially prevalent in the discussion of the ethics of human cloning. My understanding is that the strategy is used for hedging the emotional value rather than the truth-value, which seemed to be a prevailing tendency of the hedging in the T3 and T4 in its entirety.

Towards the end of the period studied, the readers are increasingly exposed to new ways of looking at the world, but the writers' desire to disclose their position on the discussed matters decreases. Furthermore, hedging in the data becomes more complex and unfocused in the course of time. This, conceivably, prepares the way to multiple interpretations, and produces ambiguity, which

allows readers their own final summation, that does not contradict their worldview. Thus, hedges produce flexibility in the interpretation of the claim.

The abundant use of approximation in its typical function, i.e. adjustment of accuracy did not come as a surprise. In popular press articles relative accuracy is sometimes conceived as more illustrative to the audience. Although approximators often aim at higher accuracy, they also produce vagueness. In some cases, especially as an element in multiple hedging, approximators clearly indicate the writers' unwillingness to make precise and complete commitment to the propositions expressed. In addition, approximation is used for the presentation of diverging perspectives, bringing new voices into the discussion, e.g. 'some researchers believe', and for saving the writer's and reader's face, e.g. 'People often choose'.

The functionality of adverbs, as well as approximators, results from the fact that they are often out of focus. For example, in the expression, 'Perhaps, most dramatic of all', the adverb is used to tone down the dramatic nature of the claim but, at the same time, it qualifies the speaker's commitment to the following proposition as well. Besides making the claim less forceful, it can be seen as a strategy of persuasion. In general, a clustering of hedges signals that the writers want to stir up controversy, but do not want to disclose their own position.

With approximators, like someday and somewhere, and references to science fiction and other genres of literature, the writers distance themselves from the texts and make the texts suggestive of fiction. In literature, and especially in science fiction, it is a common practice to transpose the action far from the present time and place. The so-called 'estrangement', transposing the problems to the future and strange surroundings, primes the reader to see the problems clearly from a fresh perspective, as if it were for the first time. Perhaps, the writers of these articles estrange the problem from the real world in order to lubricate the processing of these intricate issues.

The modal nouns have the same function as modal adverbs i.e. saving the writer's face, but they also reveal the writer's attitude to the matter discussed. With the use of hope in "…offer hope that this plague" the writer makes a favorable stance on GM in cancer studies.

Attribution in general signals that a writer does not want to commit himself on a matter, but gives the floor to named and unnamed sources. Sourcing of knowledge, in its simplest form, comments upon the epistemic value of a proposition. The validity of a statement is implied in the choice of the source, the explicitness of the assignment, and the degree of restatement in the representing text. The choice of the verb in attribution, however, also reflects the writer's confidence and, especially, attitude to the source and the address, i.e. his degree of commitment to both the truth-value and the emotional of a claim. Writers also restate, and often mask their position to the notions presented by means of attribution.

The choice of the verb and the authority of a source are interdependent. The scientists of authority are reported as <u>believing</u> and <u>hoping</u> and the verbs function as a stamp of approval on the part of the writer. The verbs <u>believe</u> and <u>hope</u> alsodenote the subjectivity of a prediction. They are used in citing worthy scientists and signify a higher degree of commitment in a claim from the part of the writer.

The selection of the quoting strategy, direct/indirect speech seems to strengthen the impact of the reporting verb. The neutral verb <u>say</u> becomes more neutral in reporting direct speech, and the verb <u>claim</u> makes a source more notorious in indirect speech. If <u>say</u> is commissioned in attribution, the veracity of a source is established otherwise in the text. Naming the source usually indicates credibility. In the event of named rogues, like the dangerous Mr Seed, the unreliability is verbalised in the surrounding text.

The interaction of attribution and further hedging is not straightforward. Attribution to a distinguished source strengthens a claim, which thus allows further hedging without loss of credibility. The claims of renowned scientist are often heavily hedged but still maintain their validity. The unworthiness of sources is usually clearly stated in the text, but their claims often remain less hedged. Scientists like Davis, who the writers portray as untrustworthy, do not hedge, the responsible do. But, as Fairclough (1992, 105) points out 'there is always ambivalence about whether

the actual wording is attributable to the person whose speech is represented, or to the author of the main text'.

There seems to be a strange balance of nature in the use of hedging. Further hedging, for example, rarely follows the opinionated verb claim, meanwhile the neutral <u>say</u> is seldom the sole hedge in a proposition. I believe, that hedging , perhaps with the exception of scientific articles and other technical texts, is like performing a balancing act on a tightrope; you know your destination, but the moves that keep you in balance are often intuitive.

The choice and the representation of the source are also used for mitigation i.e. for minimizing the illocutionary force of the statement. The more detailed predictions and, therefore more hazardous claims, are usually attributed to faceless scientists and opinion groups. This way the writers further disentangle themselves from the propositions, and prepare the way to new voices and perspectives to the discussion. Similarly, while fears and risks are revealed, the commentary is attributed to inadequately defined sources. This way the writers are distancing themselves from the proposed uncertainties. Approximators <u>some</u> and <u>other</u> are often used in the introduction of usually abolitionist opinion groups, the writers do not dare or want to agree with. As the commentators are unidentifiable, the alarming predictions presented through their mouths become less probable, as the authority of the source contributes to the probability of the statement.

There is a parallel rise in all categories in the frequencies in hedging along the time continuum. What is significant, is that the increase manifests itself in the increase of the clustering of hedges, a strategy that in Skelton's (1988,54) words "weave a curtain of creative ambiguity around any judgements". At the same time, the hedging does not clearly indicate, which parts of the knowledge presented, the writers regard as uncertain. Hedges from different categories and within certain categories are operationally variable in their focus and sphere of influence. The hedge may comment on the use of a sole word, and in the other extreme, the hedge may call into question the soundness of the entire field of research.

Hedges also seem to have multiple functions. According to Hyland (1997), editorial writing is strongly persuasive and evaluative. Most of the hedges do not hedge the truth-value but are multifunctional and signal writers' acknowledgement of divergent realities and worldviews. As White (1998, 24) puts it, "values of probability act to introduce not only author but also audience into the text".

All in all, one gets the feeling that hedging becomes more inadvertent towards the third millennium. Perhaps, the writers have to admit that there is no univocal truth and therefore introduce new voices into the text, and thus give the signal that the notions under discussion are subject to heteroglossic negotiation.

8   Conclusion

While communicating the latest achievements in GM, the writers of popular press articles

undoubtedly aspire at alluring readers instead of offending them. Genetic engineering represents the

present for scientists, the insiders, but for most outsiders, such as the readers of the popular press, it

is a matter of the future they are not, and perhaps, do not even want to be conversant with. Yet,

transforming claims into knowledge requires reader acceptance.

        According to White (1998:24), values of probability act to introduce not only author but

also audience into the text. In the texts studied, hedges, in most cases, reflect the relation between

the writer and the reader, rather than the probability of the statement. Accepting the novel gospel of

GM unavoidably forces the writers and readers to make adjustments to their thinking and philosophy

of life. Therefore, the authors of the articles studied have been compelled to pay regard to the

presence of various discourse communities, and socio– ideological languages in the audience.

Therefore, the complications of the task, do not solely lie in the judgment of the truth-value of the

statements presented in the texts, but also in the estimation of the degree of knowledge people or

the writers themselves, can endure. Hedges produce laxity or even ambiguity in the texts, which

prepare the way to the congenial and multiple interpretation of the claim. Markkanen and Schröder

(1989,12) emphasise that "the linguistic devices used for hedging get their meaning only through the

response they produce in the reader". But, could it be possible that the responses the hedged

expressions produce in different readers were multiple and varied and that this could be the

intention on the part of the writer.

     Furthermore, the field of science that already has a hand in people's lives is not easily

explicable. On their common journey through the texts, the writers and the readers, move from the

world of possibilities to the world of ambiguities as the use of hedges with multiple

function increases in the course of time. Lemke maintains that (1985) 'all meaning is made against

the background of other meanings already made and shared in a community including how we interpret meanings and how we interact with our environment'.

In the 80's this line of research was not more than another curious science event, but as we come to the third millennium, its progresses have become more and more part of our everyday life. Therefore the change from evidential to affect is not surprising. In the eighties the writers were, for the most part, communicating and evaluating knowledge, but in the end of the twentieth century and in the twenty-first century, the writers rather negotiate the new knowledge into the reality of our everyday life. August science articles have turned into ¨'human-interest stories' in the course of time. The writers increasingly introduce new voices, literally and by means of ambiguity, into the discussion, which, undoubtedly by intention, result in several interpretations of the texts. Granted, most of the underlying questions are too close to the essence of humanity to be answered by a sole journalist.

9   References

Aikhenvald, Alexandra Y. 2003. Evidentiality in typological perspective. A. Y. Aikhenvald & R. M. W. Dixon(Eds.), 33-62.

Bakhtin, M. 1981. Discourse in the Novel. The Dialogic Imagination: Four essays by M. M. Bakhtin. M. Holquist, (Ed.), V.W. McGee (Trans.). Austin: University of Texas Press: 259-422.

Brown , Penelope and Levinson, Stephan. 1978. " Universals in language usage: Politeness Phenomena." in Goody, E. N. (ed): *Questions and Politeness. Strategies in Social Interaction*. NY: Cambridge: 56-259.

Brufee, K. 1986. "Academic Tribes and territories: Language and the authority of knowledge." An bibliographical essay. College English 48: 772-9.

Chafe, W.L. 1986. "Evidentiality in English Conversation and Academic Writing." in Chafe, W.L. & Nichols, J.(eds): *Evidentiality: the Linguistic Coding of Epistemology.* Norwood, New Jersey, Ablex Publishing Corporation.

Channell, J. 1994. *Vague Language.* Oxford, Oxford Univesity Press.

Crismore, Avon and Van Kopple, William. 1997. "Hedges and Readers: Effects on Attitudes and Learning." in Markkanen, Raija Schröder, Hartmut (eds): *Hedging and Discourse Approaches to the Analysis of a Pragmatic Phenomenon in Academic Texts*. Berlin Federal Republic Germany: Walter de Gruyter: 83-114.

Crismore, Avon and Farnsworth, Rodney. 1989. "Mr Darwin and His readers: Exploring Interpersonal Metadiscourse and Dimensions of Ethos.", *Rhetoric Review* 8: 91-111.

Coates, J. 1987. "Epistemic Modality and Spoken discourse." Transactions of the Philological Society 85: 110-131.

De Haan, Ferdinand. 1999. "Evidentiality and epistemic modality: Setting boundaries. "*Southwest Journal of Linguistics*, *18*, 83-101.

Fairclough, N. 1989. *Language and Power.* London, Longman.

Fairclough, N. 1992. Discourse and Social Change, Cambridge: Polity Press.

Füller, G. 1995. *Engaging Cultures: Negotiating Discourse in Popular Science*. Ph.D Thesis, University of Sydney, Sydney.

Fuller, G. (1998) 'Cultivating Science: Negotiating Discourse in the Popular Texts of Stephen Jay Gould', in JR Martin and R. Veel (eds) Reading Science: Critical and Functional perspectives on Discourses of Science. London Routledge.

Grabe, William; Kaplan Robert B. 1997 "On The Writing of Science and the Science of Writing: Hedging in Science Text and Elsewhere." Markkanen, Raija, & Schröder, Hartmut (Eds):

Hedging and Discourse: Approaches to the Analysis of a Pragmatic Phenomenon in Academic Texts., Berlin, Federal Republic Germany: Walter de Gruyter: 151-167.

Hübler, A. 1983. "Understatements and hedges in English. Amsterdam. John Benjamins Publishing Company.

Hyland, K. 1996. "Writing Without Conviction? Hedging in Science Research Articles." *Applied Linguistics*, Vol. 17, 4: 433-454. Oxford University Press.

Hyland, Ken. 1996. "Talking to the Academy: Forms of Hedging in Science Research Articles". *Written Communication*. 13: 251-281

Laerman, Klaus. 1991 "*Fiat Nox*!, in Die Zeit, No, 32, 42

Lakoff, G. 1972. "Hedges: A Study in Meaning Criteria and the Logic of Fuzzy Concepts", *Proceedings of the Chicago Linguistics Society* 8: 183-228.

Lemke, J.L. 1992 "Interpersonal Meaning in Discourse: Value Orientations.", Davies, M. & Ravelli, L.(eds): *Advances in Systemic Linguistics. Recent Theory and Practice.* London, Pinter Publishers: 82-194.

Lemke, J.L. 1985. " Ideology, intertextuality, and the notion of register". J.D. Benson and W.S. Greaves, Eds., Systemic Perspectives on Discourse. Norwood, NJ: Ablex Publishing. 275-294.

Lepennies, Wolf 1993. "Die Übersetzbarkeit der Kulturen – Ein europãissches Problem, eine Chance für Europa, Unpublished paper.

Longman Dictionary of Language Teaching & Applied Linguistics. 1992. Richards, Jack C. Schmidt Richard (eds). Longman.

Lyons, J. 1977. *Semantics.* Cambridge University Press. London.

Malinowski, B. 1923. 'The Problem of Meaning in Primitive Languages', in *The Meaning of Meaning* , vol. International Library of Philosophy, Psychology and Scientific Method, Ogden, C.K. & Richards, I.A. (eds), London, Kegan Paul.

Markkanen, R. Schröder , H. (eds.) . 1997. Hedging and discourse: Approaches to the Analysis of a Pragmatic Phenomenon in Academic Texts. Berlin/NY: Walter de Gruyter.

Markkanen,Raija and Schröder, Hartmut , "Hedging: A Challenge for Pragmatics and Discourse Analysis", URL:http://viadrina.euv-frankfurt-o.de/~sw2/...ts/Welcome.html, consulted May 15, 2003.

Markkanen,Raija and Schröder, Hartmut. 1989. "Hedging as a Translation Problem in Scientific Texts." Lauren, C and Nordman, M (eds.): *Special Languages: From Human thinking to Thinking Machines*. London: Multilingual matters. 171-175.

Markkanen,Raija and Schröder, Hartmut. 1997. "Hedging: A Challenge for Pragmatics and Discourse Analysis." Markkanen, Raija, & Schröder, Hartmut (Eds.): *Hedging and Discourse: Approaches*

to the Analysis of a Pragmatic Phenomenon in Academic Texts. Berlin, Federal Republic Germany: Walter de Gruyter: 3-18.

Miller, Thomas. 1998. "Visual persuasion: A comparison of visuals in academic texts and the popular press", *English for Specific Purposes* Volume 17, Issue 1: 29-46

Myers, Greg. 1989. "The Pragmatics of Politeness in Scientific Articles." *Applied Linguistics* 10: 1-35.

Namsaraev, V. 1996 "Hedging in Russian Academic Writing in Sociological texts", in Markkanen, R. and Schröder, H. (eds.): *Hedging and Discourse: Approaches to the Analysis of a Pragmatic Phenomenon in Academic Texts*. Berlin, Federal Republic Germany: Walter de Gruyter: 64-75.

Prince, Ellen F, Frader, Joel and Bosk, Charles. 1982. "On Hedging in Physician-Physician Discourse." Di Pietro, R. J. (ed): *Linguistics and the Profession*, Norwood NJ: Ablex Publishing Corporation: 83-97.

Schröder, Hartmut and Zimmer, Dagmar, "Hedging Research in Pragmatics: A Bibliographical Research guide to Hedging." URL:http://viadrina.euv-frankfurt-o.de/~sw2/...ts/Welcome.html, consulted in June 11. 2003.

Simpson, P. 1993. Language Ideology and Point of View, London, Routledge

Skelton, John. 1988. " The Care and Maintenance of Hedges." ELT Journal 42, 1:37-43.

Swales, J. 1990. Genre Analysis: English in Academic and research Setting. Cambridge: Cambridge University Press.

Vande Kopple, W. 1985. "Some Exploratory Discourse on Metadiscourse." *College Composition and Communication* 36:82-93.

Wales, K. 1989. Dictionary of Stylistics. Longman.

White, P.R.R. 1998. "Telling Media Tales: the News Story As Rhetoric." Unpublished Ph.D Dissertation, University of Sydney, Sydney. http://www.grammatics.com/appraisal/AppraisalKeyReferences.html, consulted in May 20, 2004.