

Communicative and cognitive dimensions of discourse on science in the French mass media



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ABSTRACT The emergence of a 'new' discourse on science in connection with events to do with the environment, food safety or public health (e.g. the BSE crisis, genetically modified organisms, dioxins in chickens) has caused questions to be raised concerning the suitability of the triangular communication model generally applied to scientific popularization, i.e. in which there is an 'intermediary' discourse plying between science and the general public. This 'traditional' discourse would appear, then, to co-exist alongside the new discourse. The pragmatic functions of these two separate discourses on science are compared here by looking at the linguistic and discursive variations which characterize their *communicative* and *cognitive dimensions*. In the new discourse on science, which has come to light over the past few years, the strict task of 'popularizing' (i.e. explaining science) appears to have been dropped in favour of explaining the social stakes of the issues in question: thus the typically didactic and scientific nature of the cognitively-discursive category, *explanation* (as demonstrated in a previous research project concerning media discourse on astronomy) can be seen to make way for a different type of explanation, which uses an *interdiscursive memory bank* built upon the productions of the mass media destined for the general public.

KEY WORDS: *dialogism, discourse on science, explanation, interdiscursive memory bank, French mass media, monological intertext, plurilogal intertext, popularization*

1. Introduction

Scientific popularization is generally considered to be based on an 'intermediary' discourse, lying in between that of the science world and that of the general public. This intermediary discourse, viewed by some as a form of 'translation' (*discours-traduction*), and by others as a means of 'distortion' (*discours-trahison*) (Cheveigné, 1997: 15–21), can be represented by means of a specific triangular communication model. In those media which typically display this triangular arrangement, it is most marked in cases where the journalist or reporter assumes the role of manager *vis-à-vis* the reformulation, destined for the public, of the

linguistic productions of specialists: thus the popularization becomes the work of this third actor (Mortureux, 1985: 827). Figure 1 shows this process (by mediator we mean a theoretical entity: institution + constraints of the media + journalist).



FIGURE 1. *The third actor of popularization.*

However, recent works on scientific or technological events which also have political implications, whether linked to environmental issues, public health or food safety, have led us to challenge this traditional representation of the discourse of scientific popularization.

A new type of discourse on science has appeared, which, rather than simply replacing the existing one (contrary to Wolton, 1997: 9–14), exists alongside it, doubling it up, as is shown by the co-existence of two types of discourse on science in the French media today. This, then, is what I aim to demonstrate here, by comparing results from two research programmes carried out on everyday French media sources (press articles and radio and television programmes destined for the general public, Internet newsgroups, CD-ROMs):

- the first research programme was concerned with space sciences (astronomy, astrophysics), and was carried out in accordance with the 1997–2000 contract awarded to my research team, the *Centre de recherche sur les discours ordinaires et spécialisés* at the University of Paris III–Sorbonne Nouvelle (Beacco, 1999);
- the second programme looked at such recent events as the BSE crisis¹ or the current debate surrounding genetically modified organisms (GMOs), and was made possible by funding from the *Médias et sociétés* research programme set up by the CNRS² led by Dominique Wolton, director of the Communication et politique research group (Cusin-Berche, 2000).

2. *The analytical framework*

The model used to study the pragmatic functions of the discourse on science (Moirand, 1997, 1998, 1999c, 2000a) is based essentially on the comparison of certain features of the *communicative* and the *cognitive dimensions* involved in the transmission of information, and of different types of knowledge and know-how such as they appear, for example, in explanations:

M explains something to P

The mediator's position is rather special, i.e. that which is 'explained' relates to what is said within certain speech communities other than the one to which

he/she belongs, and to the structuring of the objects of knowledge peculiar to these scientific or technological communities:

M explains [that which science SAYS] to P

The *communicative dimensions* involve the study of the enunciative standpoints (*places énonciatives*) built up by the discourse (the standpoints of the mediator, utterer and addressee), and of the *representations* of the discourse of other groups (brief interview extracts, speech either quoted or mentioned in passing, as well as the 'framing' of reported extracts). The *cognitive dimensions* are concerned with the study of the designations and reformulations of the states and objects of knowledge which, in turn, become the *objects of discourse* of media texts on science subjects. They also involve the *representations* of the types of knowledge conveyed and of the cognitive operations used in the scientific or technical domains concerned (scripts or scenarios which are representative of a particular professional practice). The linking of the cognitive with the communicative dimensions is brought about by the use of notions borrowed from *natural logic* (image, representation, Grize, 1996), with the help of different discursive types or categories such as *description*, *narration*, *explanation*.

Only certain dimensions will be dealt with in the course of this article, and, in particular, those which play a part in the recognition of the pragmatic aspects of the *prototypic cognitivo-discursive type involved in mediation*, i.e. *explanation*, which is realized differently in the two types of media discourse on science, see Figure 2.

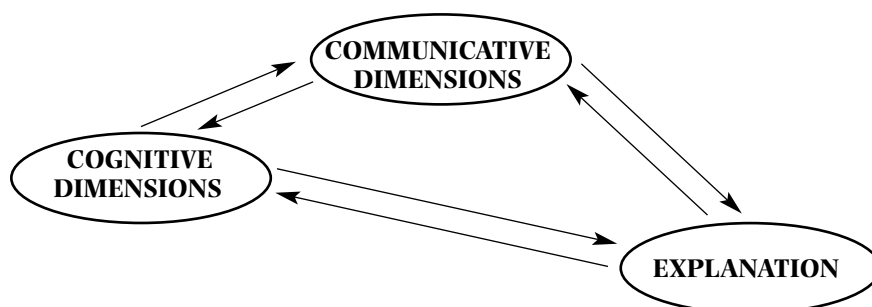


FIGURE 2. A model for the study of pragmatic functions of the discourse on science.

Quoted extracts are mostly taken from corpora I have collected and analysed. These are essentially made up of articles from the French daily press:

- the first corpus consists of articles published in the ordinary press on topics relating to astronomy and astrophysics: in *Libération*, from July 1997 to January 1998 (exhaustive corpus), completed by selected articles from *Le Monde* and *Libération*, from 1996–98 (non-exhaustive corpus), and articles which appeared during the period of intense celestial activity, August 1998, in *France Soir*, *Libération*, *Le Monde* and *Le Parisien*;
- the second corpus is made up of articles on the BSE crisis and GMOs in the

ordinary press: in *Libération*, from 1997 to January 1998 (exhaustive corpus), completed with all on-line texts from *Libération* (on-line corpus) since 20 March 1996 (the outbreak of the affair), articles from *Le Monde* and *Libération*, from November 1996 up to June 1998, on GMOs, as well as articles from *Le Figaro*, *Libération*, *Le Monde* and *Le Parisien* at the time of the citizens' conference on GMOs held in Paris (June 1998);

- the third corpus was constituted around the notion of 'discourse moment' (*moment discursif*, Moirand, 2000b), which is concerned with the surge of intense and diversified media activity in connection with a single event (e.g. the war in Kosovo, Russian intervention in Chechnya, the football World Cup, the blood contamination scandal:³ the discourse moments covered here, then (with the exception of the BSE crisis and GMOs), include such events as 'chicken flu'⁴ (December 1997), dioxins in chickens (June 1999), the contaminated Coca-Cola affair⁵ (June 1999), the animal feed meal racket (August 1999), etc.

The notion of *discourse moment* permits the constitution of corpora based on factors other than arbitrarily chosen sociological characteristics. It also means that many different *discourse genres* can be collected. This allows, for example, the study of the diffusion of terms and expressions, different forms of intertextual use, or different lexical and enunciative reformulations, from one event to another (i.e. from one discourse moment to another) or when the same issue repeatedly crops up over a number of years (e.g. the BSE crisis or the so-called 'greenhouse effect').

Once collected, the different corpora were reconstituted and redivided into several smaller sub-corpora. The latter, made up according to the contexts surrounding given linguistic categories, enable us to order the otherwise diverse textual, enunciative and semiotic features found. It was a question here of forming sub-corpora which would group together contexts for the different categories of 'person' or 'non-person' ('je' (I), 'nous' (we), 'on' (we) vs 'ils' (they), 'on' (one)) and the different ways of referring to cited utterers (expert, scientist, consultant, minister, etc.); it was also a question of picking out contexts for the different types of verbs used to introduce reported speech ('x explains', but can also 'moan' and 'be delighted' about) and the designations of the speech acts of different speakers or speech communities (to *defend*, *refuse*, *accept*, *complain*, etc.); and finally, it was a question of looking at the contexts of the co-referents of certain specialized terms (e.g. *black hole* or *genetically modified organism*) or new actions (*precautionary approach/principle*), and the treatment of certain activities or the development of the activities of different actors across the different corpora collected (to *proceed*, *observe*, *manipulate*, *calculate*, etc.). The systematic study of these sub-corpora initially allows the linking of given categories with the communicative and cognitive dimensions of the model; the subsequent study of their distribution and the ways in which they can combine enables the linking of these dimensions to the cognitivo-discursive mode of explanation.

3. The communicative dimensions

In the discourse on space science, as found in the media, the mediator's position is in between the actual linguistic output of the scientific community (i.e. of astronomers, astrophysicists, etc.) and the supposed public of the particular branch of the media concerned. Thus, whenever we encounter apparent 'inter-textual dialogism'⁶ within the 'monological'⁷ texts of the popular press, the reported, mentioned or quoted speech is either taken directly from the scientists themselves, or is lifted from their written work. Moreover, if several speakers are quoted, then they all belong to the same *speech community* (in our case, that of astronomy), as is illustrated by the types of words used to describe them:

Astronomer, astrophysicist, professor of astronomy, planetologist, cosmologist, specialist in galaxies, specialist in small celestial bodies, astronomer by trade, professional astronomer, etc., or their anaphoric replacements researcher, scientist, theoreticist, specialist, etc.

as well as the descriptions of their places of work (*observatory, laboratory, university*) and the reviews in which their findings are published.

In the case of the BSE crisis or the debate surrounding GMOs, the number of different discursive genres observed from 1996 to 1999 (Moirand, 2001b) is equal to the number of different speech communities targeted by the media: the political, scientific, economic, industrial, professional and business worlds, i.e. communities which are, themselves, mediators of the original scientific discourse and which also generate their own opinions. Thus the mediator appears torn between several different enunciative poles, of which some may, themselves, be 'confused' by the influence of an *expert figure* who, operating in between the scientific and political, or scientific and economic, worlds, also leaves his trace, as the various different designations encountered show:

An expert from Brussels, European experts, a committee made up of independent veterinary experts, European virologists, an expert from Monsanto, a scientific expert, an expert consultant, an independent expert, a scientist charged with communication for Monsanto, etc.

The unity of the intertextual pole of the discourse on science is thus broken, and the media become transit areas for the different sciences which have already been marked by their handling in various other communities. The *monological intertext* (i.e. the voice of science or of a particular given scientific community) makes way, then, for a *plurilogal intertext*, made up of the opinions of the different communities called upon by the mediator. Examples of this can be found within the same radio or television programme, on the same page of a newspaper (Example 1a,⁸) or within the same article (Example 1b):⁹

Example 1a: *Libération*, 23/03/96, page 2

Les scientifiques réunis à Bruxelles **ont recommandé**, vendredi, l'abattage de ...
La plupart des pays de l'Union européenne – dont la France – **ont décidé** ...
La commission européenne a jugé légales ces mesures unilatérales ...

Le comité vétérinaire de l'UE doit décider lundi des mesures sanitaires à prendre ...

On estimait hier, à Bruxelles, que la Commission déciderait sans doute ...

Ce branle-bas de combat **étonne plus d'un eurocrate: '...'; '...' expliquait hier un fonctionnaire européen; '...' explique un diplomate**

La principale association de consommateurs britanniques a conseillé hier ...

Pendant dix ans, **les ministres ont assuré que** la transmission de l'animal à l'homme était impossible **alors que les scientifiques, plus modestement, avouaient** que l'on en savait rien ...

Selon Consumers' Association, '...' ... Les grandes chaînes de supermarché faisaient toutes état d'une mévente ... **Un groupe Coop a indiqué que,** pour la première fois de son histoire ... **Pour les fermiers britanniques, ...**

Example 1b: *Libération*, website¹⁰

•DA•§21/06/1996

•CO•§4692

•TY•§Récit

•RF•§MONDE

•PG•§6–7

•TI•§Les trois mois qui ont fait trembler l'Europe

•AU•§auteur (author)

•DE•§descripteurs (keywords)

•TX•§texte (text)

Depuis l'annonce par le gouvernement britannique d'une possible contagion à l'homme, la psychose enfle.

La bombe a explosé le 20 mars 1996, au beau milieu de l'après-midi à la Chambre des communes. Très nerveux, **Stephen Dorrell, ministre britannique de la Santé, lit une déclaration décidée, le matin même, en Conseil des ministres:** il admet, pour la première fois depuis onze ans, la possibilité d'une contagion à l'homme de l'encéphalopathie spongiforme bovine (ESB), plus connue sous le nom de 'maladie de la vache folle'. **Le gouvernement, explique Dorrell, vient d'être informé par un comité d'experts qu'** 'il n'existe toujours aucune preuve scientifique que l'ESB puisse être transmise à l'homme par le bœuf', mais que, néanmoins, **l'étude de dix cas de Britanniques récemment décédés** d'une forme atypique de la maladie de Creutzfeldt-Jakob **suggère que** 'l'explication la plus probable à ce jour est que ces cas sont liés à un contact avec l'ESB'. C'est la phrase qui va déclencher le maelström qui secoue l'UE depuis trois mois.

Dès le 21 mars, la France, où une vingtaine de cas de vaches folles sont apparus depuis cinq ans, décide de suspendre les importations de bœuf britannique. Plusieurs pays lui emboîtent le pas. **Londres fustige cette réaction 'disproportionnée, inutile et illégale'** et, **à Bruxelles, un porte-parole de la Commission se range à cet avis.** En visite à Paris, **Jacques Santer, le président de la Commission, rectifie le tir: l'embargo est 'une réaction normale de la France'.**

A Londres circulent les messages les plus contradictoires. **Le gouvernement continue à juger le risque 'extrêmement faible',** tandis qu'**un de ses experts n'exclut pas que** les 11 millions de bêtes du cheptel britannique partent à l'abattoir. Résultat, c'est la psychose. **Richard Lacey, un spécialiste de l'université de Leeds, fait sensation en évoquant le spectre de '5.000 à 500.000' victimes humaines de l'ESB d'ici 2015.** Les ventes de bœuf s'effondrent, les cours aussi. Les chaînes de fast-food lancent le haro sur le steak anglais; **les scientifiques tombent à bras raccourcis sur les gouvernements Thatcher et Major, qui,** depuis la première vache folle apparue

dans le Kent en avril 1985, ont ignoré toutes leurs mises en garde. **Taxé de 'négligences en série', Londres est accusé d'avoir cédé aux pressions du puissant lobby agricole.** 'Parce que le marché du bœuf représente près de 5 milliards de livres, les autorités ont toujours voulu croire que l'ESB ne présentait aucun risque pour les humains', **peste le spécialiste Stephen Dealler. Il dénonce** l'insuffisance des mesures prises face à l'épizootie, qui, ...

Le 27 mars, **la Commission se décide à décréter un embargo mondial** sur la viande et les produits dérivés bovins britanniques. **Les experts vétérinaires européens n'ont toujours aucune preuve scientifique que** la maladie de la vache folle est transmissible à l'homme, mais **comme le confie un eurocrate**, 'les Britanniques ont tellement mal géré leur affaire qu'ils ont déclenché un bordel sans nom'. ... **La presse britannique se déchaîne en méchantes caricatures contre le chancelier Helmut Kohl**, présenté comme le meneur du blocus européen. En France, **le ministre de l'Agriculture, Philippe Vasseur, rame au secours de 'ses' éleveurs**: un label 'viande française' est créé.

Le 29 mars, la vache s'invite au sommet européen de Turin, où les quinze chefs d'Etat et de gouvernement lancent les travaux d'aménagement du Traité de Maastricht. **Jacques Chirac, 'solidaire' de Major, est le premier à assurer que** la crise de la vache folle 'est un problème européen qui sera financé de façon européenne'. **Le chancelier autrichien, Frantz Vranitzky, se taille un beau succès en désignant 'la presse folle'** comme principale coupable. Major repart rasséréné. ...

Thus, besides showing the different 'sources' via designations of classes of speakers, the text presented in Example 1b appears to consist of a patchwork of segments, often very brief, which are borrowed from the various communities involved in the different events: *British Health Minister, British Cabinet, the government, a committee of experts, London, a spokesman for the European Commission, a specialist from the University of Leeds, scientists, the specialist Stephen Dealler, European veterinary experts, a Eurocrat, the British press, the [French] Agriculture Minister, Jacques Chirac, the Austrian Chancellor*. However, although the mediator may make use of all the possible different forms of reporting speech (cf. ways of indicating 'knowledge sources', Dendale and Tasmowski, 1994), it is not so much the information and the facts which are finally 'shown', as a representation of the different attitudes, emotions and reactions of the speakers mentioned (e.g. 'highly tense' – *très nerveux*) via the descriptions of the speech acts and actions, and, in particular, by the use of certain verbs introducing reported information: London *condemns* ('Londres *fustige*'), the specialist Stephen Dealler *fumes* ('peste le spécialiste Stephen Dealler'), Philippe Vasseur *struggles* ('Philippe Vasseur *rame*'), etc. This invites us to take a closer look at the cognitive dimensions of this multi-voiced media discourse (*discours médiatique plurilogal*). I propose here to look at just two of the conclusions arrived at.

This multi-voiced media discourse (*discours médiatique plurilogal*) can be seen on television news bulletins from the actual presence of different speakers on the platform and heard on radio news from the acoustic presence of different voices. In the written media it is the diversity of the forms of reported speech which conveys this discursive complexity. Different forms coexist within the same article, as is shown in examples 1a and 1b earlier:

- The use of indirect speech (in French: '*que* phrases', *de* + infinitive, nominalization) introduced by verbs which characterize the speech acts of the different speakers (*recommander*, *conseiller*, *assurer*, *avouer*, *indiquer* in 1a; *admettre*, *exclure*, *accuser*, *dénoncer* in 1b).
- Segments of direct speech distributed throughout the press article, preceded or followed by interpolated elements featuring subject-verb inversions (*verbes en incise*), with verbs which are not usually found in indirect speech (with reported '*que* phrases'), and which no journalist or reporter would ever use on TV or radio to introduce the various invited speakers. Nonetheless, as is shown above, the aim of these is to represent the emotions of the individuals whose speech is reported (*peste le spécialiste Stephen Dealler*), which in writing are not 'visualizable'.
- Presence of what is referred to of late (Rosier, 1999; Tuomarla, 2000) as 'mixed' forms of reported speech, using both direct and indirect speech ('*que* phrases' in inverted commas, a phenomenon not yet accounted for in French grammars), and which are the result of a recent mini-revolution in the written media in France

... vient d'être informé par un comité d'experts qu' 'il n'existe toujours pas une preuve scientifique que l'ESB ...'

... has recently been informed by a committee of experts that 'there is still no scientific evidence to prove that BSE ...'

... suggère que 'l'explication la plus probable ...'

... suggests that 'the most plausible explanation ...'

This systematic use of inverted commas allows the mediator to distance him/herself from the what is being said, considerably more so than is possible by more 'conventional' methods (*according to X, for British farmers ...*); *Londres fustige cette réaction 'disproportionnée, inutile et illégale'* (London condemns this 'unhelpful and illegal reaction, blown out of all proportion'); *le gouvernement continue à juger le risque 'extrêmement faible'* (the government continues to consider the risk 'extremely weak'); *le chancelier autrichien, F. V., se taille un beau succès en désignant 'la presse folle' comme principale coupable* (the Austrian Chancellor, F. V. gains praise for identifying the 'mad media' as the main guilty party).

This means of not committing oneself, i.e. marking distance via the use of inverted commas, in fact shows how it is the actual productions of the different speakers invited to speak on TV or radio, or the segments reported in inverted commas in the written media, which harbour many of the keywords in these events (specialized terms and emerging notions looked at later in Section 4). These are, then, diffused as they circulate from one linguistic community to another. And since the spatio-temporal constraints of the media naturally leave very little place for the explanation of these terms orally, restricting them to writing in specific didactic genres (glossaries and indices, explicative boxes), we see them undergoing change relatively easily, taking on new meanings as they continue to circulate. It is thus that GMO, as we will see below, can be seen to oscillate between several different interpretations: M 'meaning' Manipulated or

Modified? And if Manipulated, what of the different meanings depending on whether it is used by scientists, politicians, ecologists, anti-GMO protestors, etc. (i.e. scientific manipulation, and its figurative, more pejorative sense meaning to influence or tamper with by sly means)? The change may be so marked to such an extent that, by a process of *cognitive association*, Modified, too, ends up taking on pejorative connotations as it passes from one community to another on the same TV or radio programme or the same page of a newspaper.

4. *The cognitive dimensions*

The study of the cognitive dimensions is concerned in part with the description of designations, denominations and reformulations, as well as of thematizations which transform objects and states of knowledge of the world of science into the *objects of media discourse*, according to the representations the author forms personally of these discourse objects and those which he/she in turn chooses to give them.

In the case of space sciences, the mediator reformulates or borrows scientists' explanations in order to describe the objects of knowledge of the particular domain, whose presence is strong in the texts and images found in the different media: the reason for this is most likely that planets, comets, asteroids, shooting stars, eclipses, etc. are not only the stuff of fantasy worlds and poetry, but are also real objects, accessible to the general public, who are capable either of witnessing them directly (e.g. eclipses), by means of instruments similar to those actually used by astronomers (e.g. in the case of amateur astronomy groups), or via images (e.g. photographs, motion pictures, computer simulations). Thus, for example, the mediatization of the eclipse of the summer of 1999 contributed to demonstrating the role of science, up against the influence of irrational beliefs and age-old fears, in diffusing the knowledge of such a phenomenon, even though it was merely a matter of giving detailed explanations and diagrams, stating the exact times and places so that the eclipse could be witnessed by everyone.

With the BSE crisis or the debate on GMOs, it is less easy to describe and visualize the objects of scientific or technological discourse: how should one go about explaining what a prion is when scientists are not entirely sure themselves? How can the genetic make-up of maize be visualized from a photograph? Moreover, how should one best go about trying to explain uncertain and contradictory areas of science such as the exact way in which the human form of BSE is contracted or the potential health risks of GMOs? The answer must be, then, that '*an explanation is effectively only possible when a fact is known. An uncertain phenomenon is not to be explained but rather established, and it is the uncertainty surrounding it which, at the very most, needs explaining*' (Grize, 1996: 112, my translation). As a consequence, though not before attempts have been made at defining or reformulating discourse objects such as prions and BSE (Moirand, 1997), or describing (with diagrams) the process of genetic modification, we see in the media

treatment of such events two types of approach depending on whether we are dealing with 'specialized terms' or 'emerging notions'.

4.1 SPECIALIZED TERMS

The different designations and reformulations of the same object from the scientific or technological worlds (prion or GMO for example) were looked at within a given radio or TV programme, or double spread of written news devoted to this type of event, and in the weeks and months following the initial coverage. A brief glance at a double spread from a French daily (what Grosse and Seibold, 1996, call *hyperstructure*, and Lugin, 2001, defines as the structuring of information, from a complementary set of articles and images grouped together graphically), is sufficient to see the many types of reformulation and designation, according to the different types of article distributed over the page (information/news, glossary of terms, explicative boxes, commentary, editorial, interviews) and different speakers (writers, quoted speakers or interviewees).

With the 'arrival of the first genetically modified vegetable on the market', as the French daily *Libération* put it, we can see the different designations and reformulations of this 'new soya' within a single issue of the newspaper (1 November 1996: 1–3):

Example 2.1

Front page: premier légume génétiquement modifié, soja fou, soja génétiquement modifié (photo ci-dessous), légume mutant – organismes génétiquement transformés

p. 2 (news article): le légume américain ... transformé, soja génétiquement modifié, le soja mutant, un aliment destiné à la consommation humaine ayant fait l'objet d'une modification génétique, ce mutant, le produit controversé, le soja 'biotech', le nouveau produit, soja génétiquement modifié – manipulations génétiques, organismes génétiquement modifiés, plantes génétiquement modifiées, levures modifiées génétiquement, aliment génétiquement modifié

p. 2 (interview): un expert de Monsanto détaille les atouts de sa plante modifiée

intervieweur: soja génétiquement modifié, les plantes alimentaires 'biotech'

expert: ce soja, l'aliment, ce produit, ce soja est tout à fait identique au soja traditionnel, ce soja

+ **photo:** A Rotterdam, un cargo américain rempli de soja débarque sa marchandise

p. 3 (editorial by Gérard Dupuy): récoltes américaines issues de semences génétiquement modifiées, soja fait de poison subtil ou de braves graines ordinaires, ce nouveau soja

p. 3 (article by Jean Quatremer, correspondent in Brussels): premier aliment génétiquement modifié, ces aliments, nouvelles technologies, 'micro-organismes génétiquement modifiés', le produit de base génétiquement modifié, le produit a été obtenu par modification génétique, produits transformés, 'novel food', organisme génétiquement modifié, maïs génétiquement modifié

p. 3 (on the positions of Axel Kahn and scientists): soja transgénique, plantes transgéniques, Greenpeace bloquait une récolte de soja génétiquement manipulé, 'l'alimentation génétiquement modifiée', le fameux soja transgénique, l'alimentation génétiquement modifiée

+ **photo:** Dans l'Iowa, les militants de Greenpeace manifestent devant un champ de légume transformé

And if we cross this cognitive dimension (the paradigm of ways of referring to a same object such as it may be perceived by the reader) with the communicative dimensions of these press texts, we can relate the reformulations encountered to the different discourse communities called upon: the expert from the multinational agribusiness Monsanto talks of 'this soya', 'this product', since he obviously has no need for a more precise term and, moreover, it is not in his interest to use anything more 'technical'. However, the scientist Axel Kahn defends the 'clean' methods of genetic engineering and, by extension, of genetic food engineering ('genetically modified food'), the editorial asks whether it is produced from a 'subtle poison' or 'good old ordinary seeds' and the journalists whether it is a question of 'mad soya' and 'mutant vegetables'. This last case shows links with the BSE crisis: 'Mad soya scare' (leading headline) and 'Brussels has failed to learn a lesson from the mad cow affair' (headline, p. 3). The dispersion of terms becomes even more pronounced with time and as the number of pieces devoted to the same 'discourse moment' increases.

This also explains how and why, over time, within different areas of the media, there is a shift away from the original meaning of a given term towards new meanings, coloured by the contact with different linguistic communities (the processes of de- and re-contextualization). Such is the case, for example, for *manipulation*, whose original scientific sense (the first definition given in the dictionary) is overlooked when it is attributed to ecologists and anti-GMO protesters:

Example 2.2

Modified or manipulated?

a. Le soja **génétiquement modifié** affole les étiquettes (headline)

Les industriels ne savent toujours pas comment le signaler sur leurs produits (sub-headline)

Gageons qu'aucun ne prendra le risque de parler de **manipulations génétiques**, terme pourtant scientifiquement exact.

[*Libération*, 16/11/97]

b. Est transgénique tout organisme vivant (bactérie, plante, animal) auquel on a greffé un ou plusieurs gènes. Par **cette manipulation génétique**, ledit organisme acquiert de nouveaux caractères héréditaires.

[*Libération*, 22/12/97]

c. Ce qu'on appelle aujourd'hui **manipulation** – terme piégé qui disqualifie les nouvelles techniques avant tout débat – ...

[*Libération*, 28/11/97, editorial]

d. La ministre de l'aménagement du territoire et de l'environnement, Dominique Voynet, s'est ainsi prononcée dans *le Journal du Dimanche* du 20 juin Le 25 mai, elle avait déjà demandé au gouvernement de 'revoir sa position sur les OGM', estimant que les données nouvelles 'devraient amener le gouvernement à suspendre toute nouvelle autorisation de mise sur le marché des végétaux **manipulés** ...'.

[*Le Monde*, 24/06/99]

e. On the subject of contamination, Alain Rey (French linguist and lexicologist) speaks of genetically modified organisms which the French Green Party prefers to call '**manipulés**'

[*France Inter*, 26/05/00, 8.59 a.m.]

'Manipulation' may be used in a scientific sense (as in Examples 2.2.a and 2.2.b) in the media by certain specialist journalists as well as scientists. The choice of 'modify' is initially seen as stemming from a decision taken by Brussels to avoid the more common figurative sense of 'manipulation' (i.e. sly influence, tampering, dubious practices) in GMO: 'modify' appears, then, to be the more neutral of the two. But, as the M in GMO invites ambiguity (Manipulated or Modified? literal or figurative?), we can no longer know the full meaning attributed to 'Manipulated' as it becomes more and more diffused, appearing within different discursive genres and language communities. This, then, is how it comes to be interpreted in different ways: in Example 2.2.d, does Dominique Voynet, French environment minister and member of the country's Green Party, use it in a scientific sense (that of the ministry experts who advise her) or rather in the way certain members of her political entourage use it (figuratively with negative connotations)? This, too, is how 'modified' (as in Genetically Modified Organisms) becomes increasingly assimilated to 'manipulated', gaining, through cognitive association, an equivalent pejorative sense. This is particularly so in the anti-GMO camp, where it is favourable, even, for this semantic slide to occur, and where 'modified' finds itself being used on equal footing with 'manipulated' (contrary to what Alain Rey has to say on the radio, in Example 2.2.e).

The '*contaminated*' rape affair of May 2000 spells a definite end to all idea of neutrality surrounding GMOs and in particular what is implied by 'modified'. First of all, 'contaminated', although appearing within inverted commas for the reported speech of ecologists in the written press, cannot wear those 'useful' distance markers in the spoken language; and second, neutrality is lost as it passes from the genre 'information' to the genre 'commentary' in *Le Monde*, and as it is used as an alternative to 'polluted' (Examples 2.3.c and d):

Example 2.3

a. **L'Europe piégée par le colza transgénique** [titre, la Une]

Des semences de colza génétiquement modifié ont été utilisées dans plusieurs pays européens à l'insu des agriculteurs. Elles étaient mélangées, par erreur, à **des semences non-OGM** achetées à la firme anglo-néerlandaise Advanta. Vendredi 19 mai, des associations écologistes européennes ont exigé de leurs gouvernements respectifs qu'ils fassent détruire les 15 000 hectares, dont 600 en France, de **plantations 'contaminées'**

b. La France prise en flagrant délit de manque de transparence total [p. 2, autre article]

Le 13 avril, la société Advanta Seeds découvre que **des semences de colza** qu'elle a exportées vers quatre pays européens **sont contaminées par des OGM**. Le 18 mai, la nouvelle est rendue publique en France ... Depuis quand les autorités françaises connaissaient-elles l'existence de **cette contamination accidentelle?** ... Vendredi 19 mai, personne n'était encore en mesure de préciser où se trouvaient **les champs de colza accidentellement contaminés**.

[*Le Monde*, 21–22/05/2000]

c. La France a décidé de détruire **les récoltes de colza 'pollué' par des OGM**

Le gouvernement français a tranché: ... il a décidé le 25 mai ... de faire procéder à la destruction **des champs de colza 'pollués' aux OGM**

[*Le Monde*, 27/05/2000]

d. **Matignon décide d'arracher les 600 hectares pollués**

Le colza transgénique ne poussera pas

[*Libération*, 28/05/2000]

A sort of 'discursive contagion' leads to the assimilating of *transgenic*, *modified*, *transformed*, and *GMO* with *manipulation* (figurative sense), *contamination* and *pollution* within in a single cognitive paradigm, which is referred to increasingly along the lines of 'Frankenstein food'. The term 'modified', then, can no longer be considered 'neutral', and organisms said to be genetically 'modified' bear this new characterization which, little by little, becomes framed within the acronym *GMO*. This is all the more so since differentiation between 'normal' rapeseed and the 'genetically modified' or 'GMO polluted' versions in television images or newspaper photographs is visually impossible.

Finally, in this new discourse on science, specialized terms are far less present than in the discourse of scientific popularization studied. It is effectively difficult to 'show' the referents designated (prions or *GMOs*, for example) on television or in photographs. Similarly, it is not easy to 'explain', describe or name, even, relatively unknown or contested scientific or technological phenomena. As a result, these discourse moments, caught between science and politics, the technological and economic worlds, come to encourage the emergence of new objects of discourse, which are not only 'scientific' or 'technical' in nature.

4.2 EMERGING NOTIONS

What we see, then, with the passing of the different discourse moments analysed, is a more general shift towards new *objects of discourse*, i.e. emerging notions involving just as much legal as scientific consideration (*risk*, *precaution*, *traceability*, *transparency*), and which move back and forth within the different linguistic communities to the extent that their presence becomes a necessity when referring to the type of events concerned with health issues, food safety or the environment.

Such, then, is the lot of '*traçabilité*' and '*principe de précaution*': the former first appeared at the beginning of the BSE crisis, and resurfaced in the media in connection with transgenic crops, then again in connection with the Coca-Cola contamination scare (Example 3.1.a) in utterances attributed to researchers, ministers or industrialists, before being used with irony by the cartoonist Plantu in a newspaper sketch (Example 3.1.b: the sketch shows a mother holding a child with a yellow face covered in green blotches, giving the doctor her own diagnosis), or in an advertisement for a large French hypermarket chain, Carrefour, who uses it to try to boost consumer confidence (Example 3.1.c); the latter, which can be dated back to the 1970s in Germany (*Esprit*, November 1997), loses its juridical sense and becomes a political argument (Example 3.1.d):

Example 3.1

Traceability ('*traçabilité*')

a De l'impossibilité de **suivre un Coca à la trace** [headline]

LA SECRETAIRE d'Etat au commerce, Marylise Lebranchu, a justifié la décision de retirer provisoirement de la vente les canettes de Coca-Cola, Coca-Cola light, Sprite et Fanta en invoquant 'l'incapacité de Coca-Cola à être clair sur **la traçabilité de ses produits**'. Mais de quelle traçabilité parle-t-on?

Le concept de 'traçabilité', en vogue dans le domaine alimentaire depuis le début du scandale de la 'vache folle' en 1996, a été mis en avant pour rassurer les consommateurs. Il s'agit 'de suivre le produit dans toutes les étapes de sa vie, de sa production à sa commercialisation', explique Guy de Fontguyon, chercheur au laboratoire d'économie industrielle agroalimentaire qui dépend de l'Institut national pour la recherche agronomique (INRA)

...

En gardant cette définition, **la canette de Coca-Cola est-elle traçable?** Oui, répond l'entreprise américaine. Le consommateur a toutes les informations inscrites sur le fond extérieur de la canette.

[*Le Monde*, 25/06/99]

b. Il a une traçabilité transgénique trop marquée et une biodiversité globale appauvrie! Bref: il a tout vomit!

[*Le Monde*, 24/06/99, cartoon by Plantu]

c. Parce qu'il est normal de pouvoir connaître l'origine et la nature de ce que l'on consomme, Carrefour travaille en permanence à **maîtriser la traçabilité de ses produits**

[Carrefour advertisement in different weekly papers, late 1999/early 2000]

Precautionary approach ('principe de précaution')

d. Vache folle: un 'principe de précaution' [headline]

• **'Principe de précaution'**. C'est désormais le terme en vigueur dans les ministères pour exprimer que l'on admet la transmissibilité à l'homme de la maladie de la vache folle ...

[*Libération*, 09/06/96]

• En obligeant les gouvernements à s'opposer au vu et au su de l'opinion publique européenne à **une politique de précaution**, la Commission fait ainsi la démonstration qu'elle est loin d'être la seule responsable de la mauvaise gestion de la crise de la vache folle.

[*Libération*, 30/10/1996]

• Le directeur général français à l'Agriculture apparaît comme le fidèle exécutant de la politique décidée par ses commissaires successifs. Cependant, à plusieurs occasions, il a proposé **des mesures de précaution** qui n'ont pas été retenues.

[*Libération*, 18/02/97]

• **Le principe de précaution**. C'est aujourd'hui le maître mot de la sécurité sanitaire. Mais, dans le cas présent, l'équation est délicate: comment se prémunir devant une maladie pour laquelle on n'a toujours pas de test de dépistage, et que l'on ne sait diagnostiquer avec certitude qu'à la mort du patient? Depuis cinq ans, **les précautions** s'accumulent.

[*Libération*, 02/04/97]

• Après la vache folle et le plomb dans l'eau, sans parler, dans un autre domaine, du sang contaminé, il devient difficile, pour les gouvernants, d'autoriser, **sans un incroyable luxe de précautions**, la mise en circulation d'aliments manipulés. [*Libération* 28/11/97, editorial]

• Pour certaines de ces directives, la Commission de Bruxelles a souvent été accusée d'être trop tatillonne. De la dioxine aux farines, du poulet aux boissons, avec toutes les affaires qui manifestent **une montée de l'exigence de précaution, de transparence et de contrôle**, on peut se demander si elle l'est encore suffisamment

[*Le Monde*, 15/08/99, editorial]

Thus the notion of traceability, leaving aside its more concrete implications (i.e. instructions physically printed on packaging), takes on a pragmatic slant as it passes into the political or commercial worlds; restoring consumer confidence, reassuring customers. However, in being used as a commercial argument (e.g. in a McDonald's advertisement in November 2000: 'our meat benefits from a traceability process which enables us to identify the origins of each animal' – my translation), despite there being no means of checking what is written on the packet and what is announced in advertising, it can end up losing its credibility, as one commentator in a women's magazine observes in an article entitled 'are we condemned to Frankenstein farming?' – my translation (Example 3.2.a.). And while it is relatively easy to see the social meaning conveyed by the notion of 'traceability' in the words of certain language communities (political, commercial, advertising spheres), we can wonder at the actual meaning of the word 'traceability' for the ordinary citizen and consumer, exposed to the media and, by the same token, to the different communities which use it fairly liberally and with a certain authority, i.e. without stopping to ask themselves what different meanings and representations it might vehicle.

As for the 'precautionary principle', which has become something of a buzzword for the political and commercial worlds in general, this too has journeyed around between the different communities and the different discursive genres encountered in the media ever since the BSE crisis. Nevertheless, it is mostly used as an argument, in particular in political discourse, where the definite article 'le' in French indicates to those on the receiving end that it is a known and stable notion (Example 3.2.b). Thus the formulation, no longer confined to the explicative micro-genres of the press (glossaries, explicative boxes), is used to show a subjective viewpoint ('énonciation subjectivée' – Moirand, 2001b) in press articles or television documentaries, or in the speech of certain communities: either it can lend additional weight to an argument (accompanied by qualitative adjectives such as 'fameux' which reinforces the idea of largely presupposed knowledge) where the 'precautionary principle' risks being transformed into a 'paralysing principle' (Examples 3.2.c and d), or the noun group can be broken up and the 'ordinary' meaning of 'precaution' (i.e. without its 'principle') regained, i.e. 'a measure taken beforehand to avoid or guard against something' (Example 3.1.d):

Example 3.2

a. Depuis que les vaches sont folles, les agences de pub font fortune, puisqu'elles sont chargées de donner un semblant de crédit à toutes sortes d'assurances qualité, de filières estampillées **à grand renfort de mots magiques comme 'traçabilité' et 'transparence'**. Sans convaincre personne.

[*Biba*, mai 2001, p. 136]

b. ÉCOLOGIE La décision gouvernementale de ne pas détruire les cultures de maïs contaminées des semences transgéniques sur plusieurs milliers d'hectares a relancé le débat sur les organismes génétiquement modifiés (OGM) [introductory paragraph]

Le gouvernement défend sa décision au sujet du maïs transgénique [titre]

Marylise Lebranchu assure que 'le principe de précaution a été parfaitement respecté' dans la décision annoncée le 14 juillet. [sub-headline]

... La secrétaire d'Etat affirme que **'le principe de précaution a été parfaitement respecté, puisque nous avons attendu d'avoir les résultats précis et complets du Comité de coordination permanent sur les OGM, qui sont parvenus mardi 11 juillet'**

[*Le Monde*, 18/07/2000]

c. ... il faut accueillir avec faveur la décision d'autoriser la culture du maïs transgénique: elle ouvre une voie nouvelle dans la maîtrise des techniques agricoles, ce qui ne favorise pas seulement les multinationales de l'agro-alimentaire, mais bien les consommateurs de tous les pays. **A condition, bien sûr, de respecter ce fameux 'principe de précaution', règle élémentaire de bonne administration** dès lors qu'on s'aventure en terre à la fois arable et inconnue. Est-ce le cas? Il semble que oui. Les études sont allées au bout de ce qu'il était humainement possible de faire, **à moins de transformer le principe de précaution en principe de paralysie**: le gouvernement annonce une transparence absolue dans cette affaire. Mais il le fait après l'avoir décidé. L'inverse eût été plus correct.

[*Libération*, 28/11/97, editorial, *Nature*]

d. C'est tout l'enjeu désormais du **fameux principe de précaution**, lequel, selon les interprétations qu'on en donne, **peut amener à une paralysie générale** – la suspicion contre les politiques s'étendant à tous les experts – ou déboucher sur une cosmopolitique enfin ajustée au nouveau monde, dans lequel nous sommes tous appelés à nous débattre.

[*Le Monde*, 24/11/2000, Bruno Latour, sociologist]

The examples presented in 3.1 and 3.2 show the semantic dispersion of these notions when they are taken up in the media. They journey between the different speech communities until their original meaning has worn off and they are finally taken up by communities other than the one from which they originate: are the utterer who uses the word '*précaution*' and the reader or listener who understands the given usage (cf. '*politique de précaution*', '*luxe de précaution*' or '*exigence de précaution*', for example) really aware of the juridical sense originally implied in the same word, or do they consider it to convey only the argumentative meaning given by this particular context?

5. Discussion: from scientific to media explanation

It is the link-up of the cognitive and communicative dimensions which allows us to bring to light the pragmatic functions of *explanation*, the prototypical cognitive-discursive type as far as the transmission of knowledge is concerned (Moirand, 1999a, 1999b).

The didactic type of explanation found in the space sciences (i.e. of the sort which anticipates those 'what is it?', 'how can I do it?' questions likely to be asked by the addressee), which includes the description of the objects of knowledge of the domain in question, or which suggests how they should be best observed, is similar to the reformulation of scientific explanations (i.e. of the sort which looks for relations between the facts or phenomena: why do things happen like they do?):

M	explains	a word/term or procedure	to P
M	explains	that S says [that X explains Y]	to P

Moreover, with regard to this type of explanation, much in evidence in the space sciences, the expertise of the domain along with the accumulated knowledge, which form part of the specialists' *common stock of scientific know-how* and the intertext peculiar to astronomy (the history of science of the universe, theories such as that of the 'big bang' or on black holes, or key moments in the history of new findings), are called upon.

However, with regard to the BSE crisis and the question of GMOs, scientific knowledge is too uncertain, too imprecise even, to be relied upon. It is effectively impossible to explain that which science is incapable of explaining. Scientific explanation makes way, then, for *explanation in terms of the social meaning of the events in question*, which is indicative of an increased social awareness of risks (Sicard, 1998). This produces the interdiscursive linking of events which are, from a scientific point of view, related to completely different phenomena. The French media, in dealing with, say, the BSE crisis or the potential dangers of GMOs, draw parallels with the blood contamination scandal, the dioxins in chickens affair, the contaminated Coca-Cola scare, etc.

Thus, notably in the press, we see the shifting of this type of event from the science section to the society pages, and a shifting of the objects of discourse towards new notions. The links established between the different events help build up a specific '*interdiscursive memory bank*' (*mémoire interdiscursive*, Courtine, 1981; Lecomte, 1981): any given formulation is associated with others, thereby permitting the particular event to be placed against a common historical background. This *memory bank*, made 'visible' by the use of certain words and formulations to refer back and forth between different events, functions by means of allusions rather than quotations. This is particularly so in the case of those texts which display a subjective communicative standpoint, i.e. commentaries, analyses, editorials, newspaper sketches (Moirand, 2001b).

These interdiscursive threads are woven together from one event to another (blood contamination, growth hormones, GMOs, sewage treatment, dioxins in chickens, contaminated Coca-Cola) in semantic features (e.g. the '*madness*' of cows, which ends up being first applied to *soya*, then *chickens* and then *Coca-Cola*), in qualifying designations such as *affair*, *scandal*, *saga*, *soap opera* or event-objects such as *the Chernobyl disaster*, *the contaminated blood scandal*, *BSE*, *GMOs*, in certain syntactical forms (e.g. *leading on from the BSE crisis*, *from dioxins to animal feed meal*, *chicken 'à la dioxine'*), and in certain semiotic configurations when, within the same issue of a particular review, on the same page, or on the same programme, information concerning, or alluding to, these events is found in different forms in designations, observations and various types of illustrations in connection with different discursive sequences and types (information, commentary, newspaper sketches, footage of cows, plants or chickens, photographs with commentary, diagrams or drawings – Moirand, 2000b, 2001b).

5.1 THE 'MADNESS' THEME

The French '*vache folle*' is a direct translation of the English '*mad cow*', the term

used by a British farmer when referring to one of his cows who behaved abnormally. However, 'maladie de la vache folle' becomes the equivalent of 'BSE' in the French media. In two-part titles (i.e. with two segments separated by a colon), 'vache folle' can refer to both the disease or the crisis. As for the adjective 'folle' (masculine 'fou'), it follows its own course, independently of 'vache', surfacing in other discourse moments, coming to be used first with transgenic plants, then the dioxins in chicken affair and that of the contaminated Coca-Cola:

Example 4a

- L'homme peut attraper la maladie de la vache folle [headline]
- 'Vache folle': Bruxelles admoneste les Quinze [headline]
- **In Libération**
- Alerte au **soja fou** (01/11/96, leading headline)
- La faux contre **le colza fou** (09/07/97, headline)
- Poulet. En dépit d'un contexte sans précédent (chute de la Commission de Bruxelles, première guerre sur le continent depuis 1945, affaire de la dioxine), les candidats ne sont pas parvenus à faire vivre le débat... . Certes, **le 'poulet fou'** confirme qu'il faut une Europe sanitaire mais laquelle? Une Europe plus démocratique, quand et comment? (12–13/06/99, analysis, European elections)
- **On various radio programmes**
- **'poulet fou'** (*France Inter*, 12/06/99, 9 o'clock news bulletin)
- /après l'amiante, **la vache folle, les les poulets fous** (Daniel Cohn-Bendit on radio and television following the election results on the evening of the 13 June 1999)
- /Alerte au **coca fou** / (*France Inter*, 16/06/99, press review, 8.30 a.m.)

The next step is for the characterization to move away from food products, being used to refer to human communities or systems connected with these communities: the press, the Socialist Party, capitalism, productivism, Europe, agriculture, etc. Does 'fou' still carry the same meaning as in 'vache folle' here? The question is to know in what way 'fou' is used in these 'new' contexts, no longer related to the 'mad cow' affair but not forgetting of course that without this affair, 'fou' would never have been as widespread as it is. When this adjective appears alongside 'vache' to give 'vache folle', it corresponds to the first meaning given by the French-language dictionary *Petit Robert* ('atteint de désordre, de troubles mentaux', meaning 'affected by disorder or mental problems'). However, it would appear to correspond rather to the fourth meaning given by the dictionary when used to qualify the press ('qui agit, se comporte de façon peu sensée, anormale', meaning 'who acts, behaves insensibly or abnormally'), the second meaning when referring to the French socialist party ('qui est hors de soi', meaning 'who is beside him/herself [with anger]'), the sixth in qualifying vegetables ('se dit des plantes sauvages. Folle avoine', meaning 'said of wild plants, e.g. mad [meaning 'wild'] oats'), or the fifth when applied to capitalism ('par analogie. Se dit de mécanisme dont le mouvement est irrégulier, imprévisible, incontrôlable. Moteur fou', meaning 'By analogy. Said of a mechanism whose movement is irregular, unpredictable or uncontrollable, e.g. a mad [meaning something like 'which has a mind of its own'] engine').

The adjective 'fou', then, not only bears the original implication from its use with the bovine disease in the initial discourse moment, but also that which sticks from other uses with other words elsewhere. It becomes a synonym both for 'contaminé' and 'incontrôlable', thereby coming closer to the GMO-polluted rapeseed of the mad scientists and sorcerers' apprentices. 'Frankenstein food' is another qualification for this family of events, which in turn leads us back to the idea of 'manipulation' in its figurative sense (see Example 3.1. earlier). Is the allusion intended or does it come about at the moment of interpretation? This no doubt depends on the semantic networks of the different forms of allusions upon which are built the media explanations of these events.

5.2 EVENT-OBJECTS AND QUALIFYING DESIGNATIONS

Over time, certain terms used to designate the different scientific or technological events with political implications, have come to function as shared denominations (which confirms or results in the use of the definite article 'le'). These terms or 'event-objects' refer back to prior discourse moments, acting as memory triggers. But what exactly do they refer to? Images or representations that these events create or diffuse? This all depends on the degree of prior exposure of each event-object in question, and the interpretation it meets with:

le sang contaminé, le sang, le sida
 Bhopal, Tchernobyl
 la vache folle, la vache folle britannique, le prion, l'ESB, la maladie de Creutzfeldt-Jakob
 le plomb dans l'eau, l'amiante, la pollution de l'air, l'ozone
 le coca-cola contaminé, le coca
 le poulet à la dioxine, le poulet belge, le poulet fou, la dioxine belge
 les farines animales, les boues d'épuration

[Literally 'contaminated blood' (i.e. 'the contaminated blood affair'), 'blood' (i.e. 'the contaminated blood affair'), 'AIDS' (i.e. 'the AIDS epidemic') and so on for the other examples: Bhopal, Chernobyl; mad cow, British mad cow, prion, BSE, Creutzfeldt-Jakob Disease; lead in water, asbestos, air pollution, ozone; contaminated Coca-Cola, Coca-Cola; dioxins in chickens, Belgian chicken (meat), mad chicken, Belgian dioxins; animal feed meal, sewerage treatment]

Furthermore, these event-objects are frequently accompanied by other qualifying terms, often identical, which lend depreciative feeling or additional emotional weight. *Crisis, affair, scandal, drama, plague, catastrophe, saga* and *soap opera*, preceded often by 'new' (*nouveau*) or 'another' (*autre*) – which can only confirm the importance of chronology in the interpretation of these discourse moments – are used time and time again to qualify certain events, adding to them at the same time the 'memory' of other events:

Example 4b

• **Une affaire** comparable à **celle du sang contaminé**

hormone de croissance: *l'autre scandale*

[*Libération*, 10/01/97, headlines]

- **L'affaire de la contamination** des élevages belges par la dioxine ...

[opening words of an article]

L'affaire Coca-Cola [*Le Monde*, 24/06/99]

- Car seule une interrogation draconienne de cette industrie (OGM) peut prévenir à tout le moins une irréversible concentration du pouvoir économique, au pire **un Tchernobyl biologique**

[*Libération*, 24/06/99, editorial]

- **La nouvelle affaire** des farines animales [*Le Monde*, 15/08/99, editorial]

- En réalité, ce qui légitime l'inquiétude de l'opinion même chez ceux qui ne partagent pas entièrement les vues sympathiques de José Bové, c'est que **cette affaire en rappelle fâcheusement d'autres** de sinistre mémoire: la dissimulation des risques d'irradiation **après la catastrophe de Tchernobyl, l'affaire du sang contaminé, et celle de la vache folle.**

[*Le Figaro*, 15/04/2000, editorial]

- **Le feuillet des plantes transgéniques** vient de connaître, à vingt-quatre heures d'intervalle, deux rebondissements qui marquent une radicalisation du débat

(*Le Monde*, 15/04/2000, editorial)

- 'Une tempête dans un verre d'eau'? Non, monsieur Glavany, c'est la pointe émergée de l'iceberg OGM! **L'affaire du colza 'pollué' aux organismes génétiquement modifiés** (OGM) constitue un tournant majeur de **la saga des plantes transgéniques**

[*Le Monde*, 28/05/2000]

These qualifiers and event-objects help bond the different discourse moments, weaving links between facts which, from a strictly scientific point of view, are unrelated: contaminated blood via the AIDS epidemic, the transmission of prions to humans, the modified gene in transgenic plants, and, more recently, the depleted uranium in the Balkans syndrome ('L'Europe réagit plus vite à l'uranium appauvri qu'à la vache folle', which gives literally 'Europe reacts more quickly to depleted uranium than to the mad cow', meaning 'Europe reacts more quickly to the Balkans syndrome than to the mad cow crisis').

5.3 THE ROLE OF SYNTAX

As we have already seen, albeit briefly, in the examples presented in 4b, certain syntactical structures add to the bonding between discourse moments. Certain constructions, of a comparative or analogical nature, supply temporal information explicitly with 'après' ('after') or 'de ... à ...' ('from ... to ...'), implicitly with 'comme' ('like') and lexically in the case of 'aujourd'hui' ('today'), 'hier' ('yesterday'), etc. concerning this recent history as far as scientific and technological risks are concerned, as they actualize, in the theme constituent, the words used for these events or the designations which qualify them:

Example 4c

- **De Tchernobyl au sida** en passant par le sang contaminé et la maladie de Creutzfeldt-Jakob, la mondialisation se manifeste sous la forme la plus effrayante qui soit, celle de la contamination

[*Libération*, 02/04/96, editorial]

- La santé publique est comme un mille-pattes. **Aujourd'hui** le prion. **Hier** les hormones

de croissance douteuse. **Avant-hier** le sang contaminé. Sans oublier l'amiante ou la pollution de l'air, voire de l'eau [*Libération*, 15/01/97, editorial]

• L'épi de maïs sera-t-il la pomme de discorde? **Après la vache folle et le plomb dans l'eau**, sans parler, dans un autre domaine, **du sang contaminé** ...

[*Libération*, 28/11/97, editorial]

• **Après le coca-cola** qui provoquerait des troubles digestifs et **le poulet à la dioxine**, **voilà** le vin clarifié au sang de bœuf ...

[*Le Monde*, 24/06/99, opening words of an article]

• **De la dioxine aux farines, du poulet aux boissons**, avec toutes les affaires qui manifestent une montée de l'exigence de précaution, de transparence et de contrôle ...

[*Le Monde*, 15/08/99, editorial]

It is worth noting the particular nature of the 'le *x* à *y*' structure in French (e.g. 'poulet à la dioxine'), which allows the distinction between, say, 'une salade *de* crabe' (a salad made from crab) and 'une salade *au* crabe' (a salad with crab in) where in English it would just be 'crab salad' for both. This '*x* à *y*' structure is etched on the memories of the French people of a certain age ever since the song by the popular singer Jean Ferrat (in the 1960s) about 'le poulet aux hormones' eaten by the working-classes in their council flats. Here, then, we can see how this particular structure comes to be bound up within this highly controversial question of the contamination of 'new' foods. This can expand to other areas such as the 'colza "pollué" aux OGM' earlier (in Example 3.1, Example 2.3):

Example 4c (continued)

• Alimentation. Les réponses aux cinq questions qui vous font peur

Vache folle, **poulet aux hormones**, maïs génétiquement modifié ... (sous-titre)

1. **Poulet à la dioxine**: est-ce inévitable?

2. **Oufs aux salmonelles**

5. Faut-il refuser **le bœuf aux hormones**?

[*Femina* supplement, *le Journal du Dimanche*, 14/05/2000]

And, finally, certain syntactic constructions, rather than indicating recent history, mark far older, more ideological information. French discourse analysis has shown clearly the role of syntax (relative clauses, nominalization, thematic fronting, see, for example, Courtine, 1981; Lecomte, 1981) in the relations between the utterance and the *interdiscourse* and that which is built by the utterer in the *intradiscourse*. Within the confines of this article I shall look at one example in particular:

Example 4d

Naturel

L'épi de maïs sera-t-il une pomme de discorde? Après la vache folle et le plomb dans l'eau, sans parler, dans un autre domaine, du sang contaminé, il devient difficile, pour les gouvernements, d'autoriser, sans un incroyable luxe de précautions, la mise en circulation d'aliments manipulés. Surtout quand il s'agit de génétique, technique mystérieuse au public, qui touche à quelque chose de sacré. **On a vite fait de crier à l'apprenti-sorcier**, de voir le poison de la modernité incontrôlée se nicher dans le moindre grain jaune, de **regarder soudain le Géant vert, qui est au maïs ce que l'Oncle Ben est**

au riz, changé en créature de Frankenstein. Pourtant, l'intervention humaine sur les cultures – et donc sur les aliments – est vieille comme ... l'humanité. Mère Nature est une marâtre avaricieuse, qui a tenu pendant des millénaires le pauvre hominidé à la limite de subsistance. **Ce qu'on appelle aujourd'hui manipulation – terme piégé qui disqualifie les nouvelles techniques avant tout débat – en des temps plus optimistes s'appelait tout simplement progrès. Les scientifiques et les ingénieurs agricoles contredisent la nature? C'est la chose au monde la plus ... naturelle.** C'est pourquoi il faut accueillir avec faveur la décision d'autoriser la culture du maïs transgénique: elle ouvre une ère nouvelle dans la maîtrise des techniques agricoles, **ce qui ne favorise pas seulement les multinationales de l'agro-alimentaire, mais bien les consommateurs de tous les pays.** A condition, bien sûr, de respecter ce fameux 'principe de précaution', ...
[*Libération*, 28/11/97, editorial by Laurent Joffrin]

The underlined section (my underlining) shows allusions made to the discourse of two opposing communities, both as old as humankind:

- Supporters of 'good old' nature and all things natural which are not to be countered:
 'ce qu'on appelle aujourd'hui manipulation ...' ('That which we nowadays call manipulation');
 'Les scientifiques et les ingénieurs contredisent la nature?' ('Are scientists and agricultural engineers defying nature?').
- Supporters of science, seen as a factor of progress since it helps to control nature, forcing it to comply with the interests of advanced societies:
 'en des temps plus optimistes s'appelait tout simplement progrès' ('in more optimistic times was called quite simply progress');
 'c'est la chose au monde la plus ... naturelle' ('it is the most ... natural thing on earth').

Thus, within a given segment, interrogation or thematic opposition, with semantic linking, such as in 'nature/naturel', reinforced by temporal markers ('ce qu'on appelle, s'appelait'), it is possible to detect the long-term memory bank which anchors these events in time: the history of science, of controversies concerning the role of science, history of the relations between science and society. This memory bank does not relate to an identifiable discourse source, nor to the sayings/words of particular speech communities, but instead to the ideological, philosophical and ethical positions of the discursively antagonistic groups: those who support science as an inescapable factor of progress versus those who support nature, for whom science is dangerous and destabilizing.

While we can see here the role of allusion (whether it be the result of a pragmatic viewpoint adopted by the mediator or an association with particular words and forms established by the reader) in bringing into relation scientifically unrelated facts dressed up to look like a single 'family' by the media discourse around the notions of risk and precaution, what we are not able to pinpoint, however, is what it is exactly the different words and constructions carry, i.e. what they bring

and what they leave as they are passed from one utterer to another, from one community to another.

Alongside the media discourse on science which makes use of the three enunciative poles in the diffusion of knowledge (i.e. in which there is a mediator acting between the voice of science and that of the general public), we see the birth of a new type of discourse on science, whose different forms reflect the complexity of the relations between the social actors (Wolton, 1997), in particular in the case of recent scientific or technological events which have taken on a political significance. Rather than 'explaining' science, this new type of discourse sets out to explain the social meaning of such events: hence the shifting of the objects of discourse in the direction of newly emerging ideas and issues which are no longer merely scientific in nature; hence the *building up of an interdiscursive memory bank* which plays a part in the explicative side of media discourse, in bringing into relation scientifically unrelated matters.

6. Conclusion

The emergence of this new discourse on science is accompanied by a change in the role of the mediator. The latter, not being in a position to explain that which science is incapable of explaining is subject to a flood of different discourses which are difficult to organize. Thus the mediator is left in a state of permanent *discursive insecurity* ('insecurité discursive'), faced with the impossibility of being able to check up on the different items of information, and his/her role slips towards that of 'mobiliser' (Sicard, 1998), more in keeping with the demands of the citizens of the world's modern democracies.

However, over and beyond the linguistic and communicative functioning of this media discourse, these recent findings invite us to rethink the notions of communicative situation and contextualization cues in media discourse. First, the notion of communicative situation: questions can be raised concerning the linear nature of traditional communication models, since the process would, in fact, appear to be circular, i.e. the speech communities concerned are both source and consumer of the different media messages they generate and by which they are, in turn, kept informed. It is this new mental representation which should henceforth be integrated into a theoretical model showing the '*dynamic communication circuit*'. Second, the notion of contextualization cues, such as it can be used in terms of *textuality*, in particular in media writing, and on which the various analyses carried out are based: we see *intratextual cues* within a single article or extract of a radio/television programme, *spatiotextual cues* within the same issue or radio/television programme, *intertextual cues* in different issues and radio/television programmes as well as in the identified source events and texts, and *interdiscursive cues* within the textual materiality of allusions and the intentional or 'accidental' use of terms, which lead to the creation of a short- or long-term *memory bank* (Moirand, 2000b).

APPENDICES

Example 1a: (*Libération*, 23/03/96, page 2)

Scientists meeting in Brussels recommended, Friday, the slaughtering of ...
 The majority of EU countries – including France – decided ...
 The European Commission judged these unilateral decisions to be legal ...
 The EU veterinary committee must decide on Monday what health measures should be taken ...
 The general opinion in Brussels yesterday was that the Commission would decide ...
 These preparations for war surprise more than one eurocrat: '...' explained one European civil servant yesterday; '...' explained a diplomat
 The main British consumers' association advised yesterday ...
 For ten years, ministers have been insisting that the transmission [of BSE] from animals to humans is impossible, whereas scientists have been admitting, far more modestly, that they are simply unable to tell ...
 According to the [British] Consumers' Association, '...' ... Large supermarket chains were experiencing bad sales figures ... One group, Coop, signalled yesterday, for the first time in its history ...
 For British farmers, ...

Example 1b: (*Libération*, on-line document)

The three months that shook Europe.
 Fears are mounting ever since the British government announced the possibility of a human form of BSE being contracted from cattle.
 The bomb was dropped mid-afternoon in the House of Commons on March 20th 1996. A highly tense Stephen Dorrell, British Health Minister, read a determined declaration the same morning to the cabinet: he admitted for the first time in eleven years the possibility of a human form of bovine spongiform encephalopathy (BSE), widely known as 'mad cow disease', contracted from cattle. Although, explained Dorrell, the government had recently been informed by a committee of experts that 'there is still no scientific evidence to prove that BSE can be transmitted from cows to humans', a close study of the cases of ten Britons who died from a new form of CJD suggested that 'the most plausible explanation to date is that these cases are linked to a contact with BSE'. It was these words, three months ago, which unleashed the storm which continues to rock Europe.
 As soon as March 21st, France, a country in which only twenty cases of BSE have been detected, decided to suspend British beef imports. Several other countries followed suite. London condemned this 'unhelpful and illegal reaction, blown out of all proportion', meanwhile, in Brussels, a spokesman for the Commission gave backing to the decision. The president of the Commission, Jacques Santer, on a visit to Paris, readjusted the attack: the embargo is 'a normal reaction by France', he said.
 In London highly contradictory messages were circulating. Whilst the Government continued to consider the risk 'extremely weak', one expert did not rule out the possibility of the 11 million head of cattle which make up the British herd being slaughtered. Fear started to set in as a result of all this. The grim estimations by Richard Lacey, a specialist from the University of Leeds, which put the possible number of human BSE victims between now and 2015 at anything between 5000 and 500 000, have caused great concern. Beef sales have fallen drastically, as have market prices. Fast food chains have condemned British beef; scientists are scathing at the Thatcher and Major Governments who, ever since the first BSE case in Kent in April 1985, have ignored their warnings.

Shouldering charges of 'serial negligence', London is accused of having given in to powerful agricultural lobbying. 'Given that the beef market represents a sum of around £5 million, the authorities have always wanted to believe that BSE is not a risk for humans', fumes the specialist Stephen Dealler. He denounces the lack of appropriate measures taken to deal with the crisis, which, ...

On March 27th, the Commission decided to order a world embargo on British beef and British beef products. European veterinary experts still lack scientific proof that mad cow disease can be contracted by humans. However, as one Eurocrat confided, 'The British have dealt with the affair so awfully that all they have succeeded in doing is creating an absolute bloody mess.' ... The British press opened fire, crudely criticising the [German] Chancellor, Helmut Kohl, who is seen as the leader of the European blockade. In France, the [French] Agriculture Minister, Philippe Vasseur, struggled to the rescue of 'his' beef producers: a 'French meat' label was created.

On March 29th, beef was on the agenda at the European Summit in Turin, where leaders of the 15 member states were starting work on amendments to the Maastricht Treaty. Jacques Chirac, 'backing' Mr Major, was the first to admit that the mad cow crisis 'is a European problem which will be paid for by Europe'. The Austrian Chancellor, Frantz Vranitzky, gained praise for identifying the 'mad media' as the main guilty party. Major came away relieved ...

Example 2.1

Front page: first genetically modified vegetable, mad soya, genetically modified soya (photo below), mutant vegetable – genetically transformed organisms.

p. 2 (news article): the American ... transformed vegetable, genetically modified soya, mutant soya, a type of food destined for human consumption having undergone genetic modification, this mutant, the controversial product, 'biotech' soya, the new product, genetically modified soya – genetic manipulations, genetically modified food

p. 2 (interview): an expert from Monsanto lists the benefits of their modified plant

interviewer: genetically modified soya, nutritional 'biotech' plants

expert: this soya, food, this product, this soya is wholly identical to traditional soya, this soya

+ photo: An American cargo ship full of soya unloads its goods in Rotterdam

p. 3 (editorial by Gérard Dupuy): American harvests of genetically modified crops, soya produced from a subtle poison or good old ordinary seeds, this new soya

p. 3 (article by Jean Quatremer, correspondent in Brussels): first genetically modified food, these types of food, new technologies, 'genetically modified micro-organisms', the basic product genetically modified, the product is obtained by genetic modification, transformed products, 'novel food', genetically modified organism, genetically modified maize

p. 3 (on the positions of Axel Kahn and scientists): transgenic soya, transgenic plants, Greenpeace were stopping the harvesting of genetically manipulated soya, 'genetically modified food', the famous transgenic soya, genetically modified food

+ photo: Greenpeace militants protest in front of a field of transformed vegetables in Iowa

Example 2.2

Modified or manipulated?

a. Genetically modified soya causes havoc for labelling (headline)

Industrialists still do not know how their products should be labelled (sub-headline)

We can guarantee that none will take the risk of talking of genetic manipulation, a term which is, nevertheless, scientifically correct.

[*Libération*, 16/11/97]

b. All living organisms (bacteria, plants, animals) onto which one or several genes have been grafted are qualified as being transgenic. By undergoing genetic manipulation of this kind, the given organism acquires a new genetic make-up.

[*Libération*, 22/12/97]

c. That which we nowadays call manipulation – a term doomed from the outset, which discredits new techniques even before discussion has taken place – ...

[*Libération*, 28/11/97, editorial]

d. The [French] Environment Minister, Dominique Voynet, made a statement on the Sunday news, June 20th. . . . She had already asked the Government, on May 25th, to 'reconsider its position on GMOs': she considered that the new findings 'should force the Government to suspend any new decisions allowing manipulated vegetable products onto the market ...'.

[*Le Monde*, 24/06/99]

e. [On the subject of contamination, Alain Rey (French linguist and lexicologist) speaks of genetically modified organisms which the French Green Party prefer to call 'manipulated']

[*France Inter*, 26/05/00, 8.59 a.m.]

Example 2.3

a. Europe caught in the transgenic rape trap [leading headline]

Genetically modified rapeseed has been used in several European countries unbeknown to farmers. The seed was mistakenly mixed with non-GMO seed purchased from the Anglo-Dutch firm Advanta. On Friday May 19th European ecologist groups demanded that their respective governments destroy the 15 000 hectares – of which 600 in France – of 'contaminated' crops.

b. France caught red-handed not applying absolute transparency (p.2 other article)

On April 13th, the society Advanta Seeds discovered that samples of rapeseed which they had exported to four European countries were contaminated by GMOs. May 18, the news was made public in France ... Since when have French authorities known of the existence of this accidental contamination? . . . Friday May 19th, nobody was yet able to say precisely where the fields of accidentally contaminated rape were.

[*Le Monde*, 21–22/05/2000]

c. France has decided to destroy rape harvests 'polluted' by GMOs

The French government has taken a firm decision: ... it decided on May 25th ... to carry out the destruction of the fields of rape 'polluted' by GMOs

[*Le Monde*, 27/05/2000]

d. Matignon decides to clear the polluted 600 hectares [of rape]

The transgenic rape will not grow

[*Libération*, 28/05/2000]

Example 3.1

Traceability

a. On the impossibility of keeping track of a can of Coke [headline]

The [French] junior minister for Trade and Commerce, Marylise Lebranchu, justified her decision to suspend sales of canned Coca-Cola, Coca-Cola Light, Sprite and Fanta, speaking of 'Coca-Cola's inability to be certain of the traceability of its products'. But which traceability are we talking about here?

'Traceability', a concept in vogue in the food industry ever since the beginning of the mad cow scandal in 1996, has been brought to the fore to help reassure consumers. It involves 'following the product throughout the various stages of its existence, from production to

commercialization', explains Guy de Fontguyon, a researcher at the centre for the study of industrial economics in farming which is dependent on the French national institute for agronomic research, the INRA ...

If we stick to this definition, can we consider a can of Coca-Cola traceable? Yes, replies the American company. The consumer has all the necessary information printed on the underside of the can.

[*Le Monde*, 25/06/99]

b. His transgenic traceability is too high and he has a weakened global biodiversity! In short, he's sicked everything up!

[*Le Monde*, 24/06/99, cartoon by Plantu]

c. Since it is normal to be capable of knowing the origin and nature of what we consume, Carrefour is continuously engaged in efforts to control the traceability of its products [Carrefour advertisement in different weekly papers, late 1999/early 2000]

Precautionary approach

d. Mad cow crisis: a 'precautionary approach' [headline]

- A 'precautionary principle'. This is currently the approved term used by different government ministries to say that they admit that mad cow disease can be transmitted to humans ...

[*Libération*, 09/06/96]

- By forcing governments to oppose precautionary political measures openly and publicly in Europe, the European Commission demonstrates how it is far from being alone in the bad handling of the mad cow crisis.

[*Libération*, 30/10/1996]

- The French agricultural officer [in Europe] appears to be the faithful servant of the politics of successive superiors [in Brussels]. On several occasions, however, he proposed precautionary measures which were not accepted.

[*Libération*, 18/02/97]

- Precautionary principle is the key term in food safety today. However, with the latest affair, the balance is delicate: how should one guard against a disease for which there is, as yet, no means of testing, and which can only be diagnosed with certainty on the death of the patient? Precautions have been accumulating for five years.

[*Libération*, 02/04/97]

- After the mad cow crisis and the problems of lead pollution in water, not to mention the blood contamination scandal, it has become difficult for governments to authorize the sale of foodstuffs without a mountain of precautions.

[*Libération*, 28/11/97, editorial]

- The European Commission in Brussels has often been accused of being too cautious in some of its directives. However, in the light of all the events which have demonstrated the increased need for precaution, transparency and control, from dioxins to animal feed meal, chickens to canned drinks, it could be asked whether it is actually cautious enough

[*Le Monde*, 15/08/99, editorial]

Example 3.2

a. Ever since cows first started being mad, advertising agencies have been making a fortune since their role is to attempt to give some sort of credit to a whole range of different kinds of quality reassurance, procedures marked with a great many magic words like 'traceability' or 'transparency'. This convinces no one.

[*Biba*, May 2001, p. 136]

b. ECOLOGY The government's decision not to destroy the thousands of hectares of maize contaminated by transgenic seed has revived the debate on genetically modified organisms (GMOs) [introductory paragraph]

The government defends its decision on transgenic maize [headline]

Marylise Lebranchu assures that 'the precautionary principle was perfectly respected' in the decision announced on July 14th. [sub-headline]

... The Secretary of State affirms that 'the precautionary principle was entirely respected since we waited for the full and accurate results from the permanent co-ordination committee on GMOs which we received on July 11th'.

[*Le Monde*, 18/07/2000]

c. ... the decision to authorize the growing of transgenic maize must be received favourably: it opens new avenues for agricultural technology, which is not only favourable to multinational agibusinesses, but also to many consumers in all countries. On condition, of course, that the famous 'precautionary principle' is respected, a basic rule in good administration when one is venturing onto unknown arable ground. Has it been respected here? The answer appears to be yes. The investigations went as far as it was humanly possible to go falling short of transforming the precautionary principle into a paralysing principle: the government has claimed absolute transparency in this affair. But it does this after having taken its decision. The opposite would have been more correct.

[*Libération*, 28/11/97, editorial, *Naturel*]

d. This is henceforth the whole problem with the famous precautionary principle, which, according to different interpretations, can lead to a general paralysis – with the suspicion of politicians gaining all the experts – or give rise to a cosmopolitics, at last adapted to the new world, in which we are all called upon to fight for ourselves.

[*Le Monde*, 24/11/2000, Bruno Latour, sociologist]

Example 4a

- Humans can catch mad cow disease [headline]
- 'Mad cow crisis': Brussels admonishes the 15 member states [headline]
- **In *Libération***
- Mad soya alert (01/11/96, leading headline)
- The scythe to protect against mad oilseed rape (09/07/97, headline)
- Chicken. Despite a climate without precedent (collapse of the European Commission in Brussels, first war on the continent since 1945, dioxins affair), candidates were unable to give life to the debate. ... The 'mad chicken crisis' certainly confirms the need for a healthier, more democratic Europe – but exactly how and when is another question. (12–13/06/99, analysis, European elections)
- **On various radio programmes**
- 'Mad chickens' (*France Inter*, 12/06/99, 9 o'clock news bulletin)
- / after the asbestos affair, the mad cow crisis, then mad chickens ... (Daniel Cohn-Bendit on radio and television following the election results on the evening of June 13th 1999)
- /Mad Coke alert/ (*France Inter*, 16/06/99, press review, 8.30 a.m.)

Example 4b

- An affair comparable to the contaminated blood scandal
growth hormones: the *other* scandal
[*Libération*, 10/01/97, headlines]
- The affair involving the contamination of Belgian chickens with dioxins ... [opening words of an article]
- The Coca-Cola affair

[*Le Monde*, 24/06/99]

- Since only draconian investigation into this industry (GMO) can allow us to prevent at most an irreversible concentration of economic power or, worse still, a biological disaster on the same scale as Chernobyl.

[*Libération*, 24/06/99, editorial]

- The latest animal feed meal affair [*Le Monde*, 15/08/99, editorial]
- In actual fact, what justifies the worried views of the public, even amongst those who do not entirely share the sympathetic opinions of José Bové, is the fact that this whole affair resembles rather too closely certain others which still haunt people's memories: the covering up of the risks of radiation following the Chernobyl disaster, the contaminated blood affair, and the mad cow crisis.

[*Le Figaro*, 15/04/2000, editorial]

- The transgenic plant soap opera has just witnessed, within the space of 24 hours, two sudden new developments which mark the intensification of the debate

(*Le Monde*, 15/04/2000, editorial)

- 'A storm in a teacup?' No, M. Glavany, it's the tip of the GMO iceberg! The affair of the rape 'polluted' by GMOs constitutes a major turning point in the transgenic plant saga

[*Le Monde*, 28/05/2000]

Example 4c

- Globalization comes to the fore in the most frightening form possible, i.e. contamination: from Chernobyl to the Aids epidemic, passing by the contaminated blood scandal and CJD

[*Libération*, 02/04/96, editorial]

- Public health is an area of constant change: the primary occupation of today is the prion; yesterday it was growth hormones, and the day before it was contaminated blood, not to mention asbestos or air and even water pollution. [*Libération*, 15/01/97, editorial]

- Will maize become the latest bone of contention? After the mad cow crisis and the case of lead pollution in water, not to mention the blood contamination scandal ... [*Libération*, 28/11/97, editorial]

- Following Coca-Cola said to provoke digestive problems and chicken 'à la dioxine', now it is time for wine made clear using cow's blood ... [*Le Monde*, 24/06/99, opening words of an article]

- In the light of all the events ... , from dioxins to animal feed meal, chickens to canned drinks, ...

[*Le Monde*, 15/08/99, editorial]

Example 4c (continued)

- Food. Replies to the five questions which worry you most.

Mad cow crisis, chickens containing hormones, genetically modified maize ... (sub-headline)

1. Chicken 'à la dioxine': can it be avoided?

2. Salmonella eggs

5. Should we refuse beef with hormones in?

[*The Journal du Dimanche*, 'Femina' supplement, 14/05/2000]

Example 4d

Natural

Will maize become the latest bone of contention? After the mad cow crisis and the case of lead pollution in water, not to mention, in another field, the blood contamination scandal, it becomes difficult for governments to authorize, without a mountain of precautions, the

sale of manipulated food products. Above all when it is a matter of genetics, a mysterious technique for most, tampering with something sacred. It is all too easy to cry sorcery, to see this as the poison of an uncontrolled modernity infiltrating the least little yellow seed, or to see the Green Giant, who is to sweetcorn what Uncle Ben is to rice, suddenly transformed into a Frankenstein's monster-type creature. And yet, the tinkering with crops – and thus with food – by man is as old as ... man. Mother Nature is a cruel parent, who has kept poor humankind for thousands of years on the threshold of subsistence. That which we nowadays call manipulation – a term doomed from the outset, which discredits new techniques even before discussion has taken place – in more optimistic times was called quite simply progress. Are scientists and agricultural engineers defying nature? It is the most ... natural thing on earth. This is why the decision to authorize the growth of transgenic maize must be received favourably: it opens new avenues for agricultural technology, which is not only favourable to multinational agribusinesses, but also to many consumers in all countries. [*Libération*, 28/11/97, editorial]

NOTES

1. The French generally talk of 'la vache folle' (literally 'mad cow'). Whereas in the main text we prefer to use 'BSE crisis', in the translations of the media texts presented in the appendices, we have generally kept the 'mad cow' of the original (e.g. 'mad cow crisis/scandal').
2. *Centre national de la recherche scientifique* = French national scientific research council.
3. The 'sang contaminé' scandal in France dates back to the 1980s when blood donors were sought in the country's prisons. A quantity of blood samples dating from this period which were found to contain the AIDS virus managed to make it as far as blood transfusion centres where certain patients subsequently contracted the virus.
4. In the case of the 'grippe du poulet', this disorder, originally spotted in chickens, appeared to give a flu-like illness to humans having consumed contaminated meat.
5. In the late 1990s, thousands of cans of Coca-Cola in the North of France were found to have been contaminated with toxic substances.
6. *Dialogism* (a concept borrowed from Bakhtin) refers to the relations between any given utterance and those which have already been produced as well as those which are to come. By 'intertextual dialogism' we mean the relations between a given utterance and previously produced utterances on the same subject. 'Apparent dialogism' (*dialogisme montré*), a notion borrowed from Authier-Revuz (1982: 118), refers to the use of 'visible' means (i.e. typographic or linguistic) of representing the speech of others.
7. Certain French linguists make the distinction between that which is 'monologique, dialogique' and that which is 'monologal, dialogal, plurilogal'. Whereas, say, the actual intercommunication, itself, could be called 'dialogal', 'dialogique' is reserved for discourse which does not suppose an answer as such but which is made up of different voices, i.e. is 'polyphonic'. Thus a 'monologal' text can be 'dialogic' (e.g. a text produced by a single speaker, in which he/she refutes things, argues, etc.) and vice versa (e.g. a pseudo-interaction in which the participants do not actually interact).
8. The English translation of the examples, intended as an aid to comprehension only, can be found in the appendices.
9. The bold characters in the examples are my addition.
10. DA = date (date); CO = codage (code); TY = type (type); RF = rubrique (section); PG = page (page); TI = titre (heading).

REFERENCES AND FURTHER READING

- Authier-Revuz, J. (1982) 'La mise en scène de la communication dans des discours de vulgarisation scientifique', *Langue française* 53: 34–47.
- Bakhtine, M. (1929/1977) *Le Marxisme et la philosophie du langage*. Paris: Editions de Minuit.
- Bakhtine, M. (1979/1984) *Esthétique de la Création verbale*. Paris: Gallimard.
- Beacco, J.-C. (ed.) (1999) *L'Astronomie dans les médias. Analyses linguistiques de discours de vulgarisation*. Paris: Presses de la Sorbonne nouvelle.
- Bensaude-Vincent, B. and Rasmussen, A. (eds) (1997) *La Science populaire dans la presse et l'édition XIXe et XXe siècles*. Paris: CNRS éditions.
- Calsamiglia, H. (2000) 'Pratiques discursives dans la communication sociale de la science', *les Carnets du Cediscor* 6: 33–41.
- Calsamiglia, H. and López, C. (2001) 'Polifonia en textos periodísticos con información científica', in J. Garrido Medina (ed.) *Lengua, discurso, texto (I Simposio Internacional de Análisis del Discurso)*, pp. 2647–64. Madrid: Visor Libros.
- Courtine, J.-J. (ed.) (1981) 'Analyse du discours politique', *Langages* 62.
- Cusin-Berche, F. (ed.) (2000) 'Rencontres discursives entre sciences et politique dans les médias', *les Carnets du Cediscor* 6.
- de Cheveigné, S. (ed.) (1997) 'Sciences et médias', *Hermès* 21 (*Cognition, communication, politique*).
- Dendale, P. and Tasmowski, L. (eds) (1994) 'Les sources du savoir et leurs marques linguistiques', *Langue française* 102.
- Doury, M. (1997) *Le Débat immobile: L'Argumentation dans le débat médiatique sur les para-sciences*. Paris: Kimé.
- Esprit* (1997) 'Après la 'vache folle': Alimentation, santé, environnement: vers une politique de la précaution', November: 99–180.
- Gambier, Y. (1997) 'La 'vache folle': lecture terminologique', in *Mélanges de Linguistique offerts à Rostislav Kocourek*, pp. 125–35. Halifax: Presses d'Alfa.
- Grize, J.-B. (1996) *Logique Naturelle et communications*. Paris: PUF.
- Grosse, E.U. and Seibold, E. (1996) *Panorama de la Presse française*. Berlin: Peter Lang.
- Jeanneret, Y. (1994) *Ecrire la Science, formes et enjeux de la vulgarisation*. Paris: PUF.
- Lecomte, A. (1981) 'Comment Einstein raconte comment Newton expliquait la lumière (ou le rôle de la mémoire interdiscursive dans le processus explicatif)', *Revue Européenne des sciences sociales et Cahiers Vilfredo Pareto* XIX(56): 69–93.
- Lugrin, G. (2001) 'Le mélange des genres dans l'hyperstructure', *Semen* 13: 65–93.
- Moirand, S. (1997) 'Formes discursives de la diffusion des savoirs dans les médias', *Hermès* 21 (*Cognition, Communication, Politique*): 33–44.
- Moirand, S. (1998) 'Dialogisme et circulation des savoirs...', in F. Cabasino (ed.) *Du Dialogue au polylogue*, pp. 23–139. Rome: CISU.
- Moirand, S. (1999a) 'L'explication', in J.-Cl. Beacco (ed.) *L'Astronomie dans les médias*. pp. 133–58. Paris: Presses de la Sorbonne nouvelle.
- Moirand, S. (1999b) 'Les dimensions dialogiques d'une catégorie discursive: l'explication', in E. Suomela and Y. Gambier (eds) *JALONS* 2, pp. 71–87. Turku: University of Turku.
- Moirand, S. (1999c) 'Éléments de théorisation d'une linguistique du discours', *Modèles linguistiques* XX(2): 5–21.
- Moirand, S. (2000a) 'Variations discursives dans deux situations contrastées de la presse ordinaire', *les Carnets du Cediscor* 6: 45–62.
- Moirand, S. (2000b) 'Les indices dialogiques de contextualisation dans la presse écrite', *Cahiers de praxématique* 33: 45–84.

- Moirand, S. (2001a) 'Les manifestations discursives dialogiques de la rencontre entre sciences, médias et politique', in J. Garrido Medina (ed.) *Lengua, discurso, texto (I Simposio Internacional de Análisis del Discurso)*, pp. 2681–98. Madrid: Visor Libros.
- Moirand, S. (2001b) 'Du traitement différent de l'intertexte selon les genres convoqués', *Semen* 13: 97–117.
- Moirand, S. (2001c) 'Que reste-t-il des "textes de spécialité" dans les discours sur la science dans les médias?', in *Linguistik als Kulturwissenschaft*, pp. 185–98. Frankfurt am Main: Peter Lang.
- Mondada, L. (1997) 'La construction discursive des objets de savoir dans l'écriture de la science', *Réseaux* 71: 55–77.
- Mortureux, M.-F. (1985) 'Linguistique et vulgarisation scientifique', *Information sur les sciences sociales* 24(4): 825–45.
- Rosier, L. (1999) *Le Discours rapporté: Histoire, théories, pratiques*. Brussels: Duculot.
- Sicard, M.-N. (1998) *Entre Médias et crises technologiques, les enjeux communicationnels*. Lille: Presses Universitaires du Septentrion.
- Tuomarla, U. (2000) *La Citation: mode d'emploi*. Helsinki: Academia Scientiarum Fennica.
- Wolton, D. (1997) 'Présentation', *Hermès* 21 (*Cognition, Communication, Politique*): 9–14.



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