

A Study of Intersubjective Representations of Inferential Information in Health Crisis News Reporting



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1 Introduction

News discourse provides inferential information as well as factual information. Inference is a process of making an epistemic judgement, an act of passing from known facts or evidence to a conclusion with varying degrees of certainty. Intersubjective representations of inferential information in news discourse refer to the ways in which inferences are represented as carrying a higher degree of intersubjectivity. The intersubjectivity of an inference closely relates to the shareability of evidential proof for the inferential process. Intersubjective representations serve to raise the intersubjectivity of inferences, thereby making the inferential information in news reports more objective and credible.

News reporting of health crisis is one of the subfields within the research on disaster news coverage (Joye 2010). Disaster news discourse has been extensively studied in the areas of journalism and communication. A majority of the studies focus on the discursive framing of news events or participants (e.g., Luther and Zhou 2004; Tian and Stewart 2005; Beaudoin 2007; Cox et al. 2008; Powers and Xiao 2008; Thomas et al. 2016). Some studies are concerned with the ideology behind this type of news reporting (e.g., Harwell 2000; Bankoff 2002; Joye 2010). There are also studies focusing on issues like newsworthiness (e.g., Yan and Bissell 2015) and news consumption habits (e.g., Schifferes and Coulter 2012).

Chouliaraki (2006, 2008) developed a typology of news discourse of distant suffering according to different degrees of moral and emotional involvement by the spectator: adventure news, emergency news and ecstatic news. Adventure news refers to the adventurous reports on irrelevant misfortune (Chouliaraki 2006: 143), and the distant suffering is presented as no cause for concern (Joye 2010: 589). Emergency news generates pity and foregrounds humanitarian concern in the representation of

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suffering (Chouliaraki 2006: 151), and the spectator can now identify with the remote sufferer (Joye 2010: 589). The ecstatic news offers spectators a potential of reflexive identification so they can act as if they are within the scene of suffering (Chouliaraki 2006: 178). In ecstatic news, we think of the sufferer as our own (Joye 2010: 589), thus demonstrating the highest degrees of moral and emotional sympathy with the sufferer. My corpus belongs to the category of ecstatic news. The health crisis news reports in the study focus on a pandemic health emergency which, far from being a remote irrelevant calamity, has posed a serious health risk for the countries affected and thereby produced a profound emotional involvement among the people within.

So far, only a small body of research has investigated specific linguistic features in the health crisis news coverage. For example, Chiang and Duann (2007) analysed the metaphors for SARS (a deadly pandemic during 2002 and 2003) in Chinese news reporting. In a similar paper, Marco and López (2011) discussed the wartime metaphors in news coverage of the H1N1 flu health crisis in three Spanish newspapers.

This article provides a linguistic analysis of inferences in health crisis news discourse from the angle of intersubjectivity. Reporters covering the health crisis news have to apply a little caution in reporting inferential information for it is closely linked to the everyday life of people and the future actions in response to the epidemic. The overwhelming sense of crisis and people's deep emotional involvement created an intense feeling of urgency in the news. As Joye (2010) notes, this type of news coverage also features a denouncement of panic. On the one hand, reporters manage to permeate the reports with a keenly felt sense of urgency. On the other hand, they try to avoid inflicting panic on the general public. To avoid public panic, reporters need to frame the inferential information in a reliable and authoritative manner. According to Nuyts (2001a, b), raising the shareability of evidential proof for an inference can contribute to the credibility of the inferential information. A study of the intersubjective representation of inferences may shed more light upon the textual resources for a credible representation of information in health crisis news coverage. For this purpose, the chapter concentrates on two major research questions:

- (1) How are the inferential information sources discursively represented so as to produce a higher degree of intersubjectivity for the inferences?
- (2) How are the inferences grammatically or contextually represented as carrying a higher degree of intersubjectivity?

Based on a corpus of 47 English news reports on the H5N1 avian influenza pandemic during 2005 and 2006, this chapter focuses on the intersubjective representations of inferential information in health crisis news coverage. After a brief review of previous studies of health crisis news reporting in the introduction, I then outline the theoretical framework of intersubjectivity. Next, I report on my corpus analysis aimed at discovering how inferences are intersubjectively represented for the purpose of making the inferential information more reliable.

2 Intersubjectivity

Intersubjectivity concerns the shared status of evidence or a proposition (Nuyts 2001a, b; Cornillie 2007, 2009). The concept of intersubjectivity pursued in this line of enquiry is initially related to the distinction between objective and subjective epistemic modality. Lyons (1977: 797–798) distinguishes the speaker’s subjective commitment to a possibility from the objective factuality of a possibility. The former is accordingly regarded as subjective epistemic modality and the latter as objective modality.

Nuyts (2001a, b, 2012, 2015, 2017) construes the opposition between subjective and objective modality in terms of the ownership of the evidential proof for making epistemic judgements. So, when the speaker suggests that (s)he alone possesses the evidence and makes an epistemic judgement from it, (s)he assumes strictly personal responsibility for the epistemic evaluation which is subjective in nature; when the speaker indicates that the evidential proof is shared by a group of people, (s)he assumes a shared responsibility for the epistemic evaluation which is, therefore, objective in nature:

(1) A: ***It is probable*** that they have run out of fuel.

B: Who says so? (Nuyts 2001a: 71)

(2) A: ***Probably*** they have run out of fuel.

B₁: Who says so?

B₂: Do you think so? (Nuyts 2001a: 71)

In example (1), the reply of B shows that the evidential proof for A’s epistemic evaluation is shared among a group of people, and so the modal expression *it is probable* is regarded as objective epistemic modality. The reply of B₂ in example (2) is more natural than that of B₁. Speaker A demonstrates that (s)he alone is responsible for the making of the epistemic evaluation, and so the modal adverb *probably* is used as subjective epistemic modality. The reply of B₂ recognizes Speaker A’s personal commitment to the epistemic evaluation about whether they have used up fuel. The reply of B₁, however, treats the epistemic commitment as shared among others, contradicting the personal nature of speaker A’s epistemic evaluation.

The term “intersubjectivity” defines the ownership of the evidential proof for making epistemic evaluations (Nuyts 2001a). The epistemic evaluation is subjective if the speaker assumes sole modal responsibility for it; it is intersubjective if the speaker indicates that the epistemic evaluation is shared with others (Nuyts 2015: 107). Since one generally evaluates the epistemic status on the basis of evidence, it is reasonable to say that the (inter)subjectivity of an inference rests on whether the evidential proof is solely owned or collectively shared. Nuyts (2001a: 35) has replaced objectivity with intersubjectivity of modality since the latter reflects more about the evidential base of epistemic evaluation. In this chapter, the intersubjectivity of an inferential process is accordingly defined as the degree of shareability for the evidential proof and the epistemic conclusion based on the evidential proof.

3 Corpus and Methodology

3.1 Corpus Specification

The analysis is based upon a corpus of 47 English news reports of a health crisis. During 2005 and 2006, the whole world was confronted with a grave health risk posed by the H5N1 highly pathogenic avian influenza (WHO 2014). Since the communicable virus was very damaging and likely to combine with human genes, all countries began to brace themselves for the emerging H5N1 pandemic. News media, such as newspapers, played a crucial role in the worldwide dissemination of information related to the epidemic situation. The corpus was compiled during 2005 and 2006. All news reports in the corpus are taken from *The Times*, a world-renowned broadsheet newspaper published in the UK and its corresponding international website www.timesonline.co.uk. The website puts online both the paper version articles and the website's own articles. Collected mainly from the website's news section, the corpus is composed of paper version articles reprinted online and the website's own articles. Due to the limited number of the available issues, only several articles are collected from the paper-delivered newspapers of *The Times*. Altogether 47 articles are finally collected. A sample of the webpages from which the news articles are collected is given in Appendix 1.

The news reports of the health emergency provide the public with the latest information about the epidemic situation and concern three major topics: (a) the seriousness of the epidemic; (b) the latest update of the epidemic; (c) the actions taken in coping with the epidemic. Some reports cover all of the three topics. Nevertheless, the emphasis of these reports is usually on one of the topics. The three topics are closely related to the epidemic situation and reflect the features of the field for health crisis news discourse. Accordingly, the chapter considers them as the criteria for the selection of the corpus. Table 1 shows the formation of the corpus.

The corpus has been collected in accordance with the three topics. A close reading of relevant news reports identifies 16 reports on epidemic seriousness, 15 reports on epidemic update and another 16 reports on action in response to the epidemic. As Table 1 shows, each of the three groups contains a basically equal share of the total words. The collection of the articles coincides with a sudden outbreak of the avian flu in Europe. Given the ecstatic nature of the news reports, the corpus compiled for the study is able to reflect the typical features of this news sub-genre. Details of the sources of all the news reports can be found in Appendix 2.

Table 1 Formation of the corpus

Topic	Total reports	Total words
Epidemic seriousness	16	9241
Epidemic update	15	9255
Action in response	16	9319
Sum total	47	27,815

3.2 Data Collection

In the study, the representation of an inference is defined as the discursive representation of the inferential information source and the inferential process. For example (The emphasis is mine):

(3) He has, however, been quarantined, to reduce the risk of a possible mutation between the bird flu virus and a common human flu virus – which *scientists* fear *could* prompt a global pandemic. (*Times Online*, 26 October 2005)

The inferential process in example (3) is represented through the epistemic modal auxiliary *could* and the inferential information source represented by a group of unidentified collectivized scientists. To collect the data of inferential information representations, I first extract all the tokens of inferences in the corpus. For this purpose, I centre on five types of epistemic modal expressions: modal verbs, modal adverbs/adjectives, verbs of epistemic judgement, nominalized modals and grammatical metaphors of epistemic evaluation (Halliday and Matthiessen 2004). Table 2 shows some examples of various modal expressions in the corpus.

The extraction of epistemic modal verbs is done with reference to the classification of modal auxiliaries by Biber et al. (1999). Since the study focuses on epistemic modal expressions which, according to Saeed (2000: 127), concern the judgement of the way the real world is, only epistemic modal verbs are selected from the categories of modal auxiliaries proposed by Biber et al. (1999). Using AntConc 3.4.4, I search throughout the corpus for the central epistemic modal verbs *can*, *could*, *may*, *might*, *must*, *should*, *will* and *would*, and the semi-modal expression *be going to*.

Then a wordlist is generated with AntConc to extract other types of epistemic modal expressions, such as epistemic modal adverbs/adjectives, verbs of epistemic judgement, nominalized modals and grammatical metaphors of epistemic judgement in the corpus. Table 2 above contains some examples of the epistemic modal expressions used for collecting all the tokens of inferences.

In the corpus, two modal expressions can sometimes be used in a sentence. When the two modal expressions refer to the same inferential process in the sentence, they are regarded as one inference. In the following examples:

Table 2 Examples of epistemic modal expressions in the corpus

Inference type	Epistemic modal expression
Modal verbs	<i>Can, could, may, might, must, should, will, would, be going to</i>
Modal adverbs/adjectives	<i>Probably, possibly, (un)likely, apparently, possible, probable</i>
Verbs of epistemic judgement	<i>Expect, predict, seem, estimate, speculate, suggest</i>
Nominalized modals	<i>Possibility, likelihood, chance, probability, suggestion, prediction, suspicion</i>
Modal grammatical metaphors	<i>I don't think, I don't really believe, I am convinced It is likely</i>

(4) Experts such as Albert Osterhaus, of the Erasmus Medical Centre in Rotterdam, *predict* that countries in which vaccine factories are based *would* nationalise them in the event of a pandemic to secure a supply for their own populations. (*The Times*, 14 October 2005)

(5) An alternative *possibility* is that birds in an earlier batch delivered to the facility *could* have had a “subclinical” infection, and began secreting bird flu virus only after the stresses of quarantine. (*Times Online*, 25 October 2005)

In example (4), *predict* is the verb carrying an epistemic evaluation and is treated as symbolizing the inference since *would* is in an object clause of the predicate verb *predict*, and both modal expressions refer to the same process of making an epistemic evaluation. *Possibility* in example (5) is a nominalization of an epistemic evaluation and is treated as symbolizing the inference since *could* is in a predicative clause which explains the *alternative possibility*, and the two modal expressions refer to the same inferential process.

Based on the classification of information sources proposed by Zhang (2004: 68–70), the collected inferences are then grouped into those with specified inferential information sources, those with underspecified inferential information sources and those with unspecified inferential information sources:

(6) *Sir Liam Donaldson, the Chief Medical Officer for England*, said yesterday that it was a “biological inevitability” that the expected pandemic *would* seriously affect the health of people in this country. (*The Times*, 1 October 2005)

(7) But *scientists* are concerned that this *could* encourage more bird smuggling, which *would* heighten the risk of the lethal flu strain reaching Britain and the Continent. (*The Times*, 24 October 2005)

(8) A ban on all exotic birds caught in the wild *is expected* to be agreed by the European Commission tomorrow after a request from Britain. (*The Times*, 24 October 2005)

Example (6) contains a specified inferential information source which is represented by the name *Liam Donaldson*, his honorific title *Sir* and his official title *the Chief Medical Officer for England*. *Scientists* in example (7) is an underspecified inferential information source since the collectivization of scientists makes it impossible to identify the exact source of the inference. In example (8), the inferential information source is unspecified in discourse, and its presence is only signalled by the backgrounded agent for the passive *is expected*.

4 Results

4.1 *Distribution of Inferential Processes and Information Sources*

A total of 343 inferences are yielded from the corpus. See Table 3.

Table 3 shows that the majority of inferential processes are realized by modal verbs, and only four are realized by grammatical metaphors of epistemic evaluation

in the corpus. I then classify the specified, underspecified and unspecified types of inferential information sources into sub-types. See Table 4.

Table 4 shows that almost two-thirds of inferences contain source attributions in text and more than one-third of inferences possess no specification of information sources.

4.2 Intersubjective Representation of Inferential Information Sources

Information sources can be applied and manipulated for certain rhetorical effects (e.g., Hunston 1993, 2000). Intersubjective representation of inferential information sources refers to the ways the inferential information sources are textually represented for the purpose of raising the intersubjectivity of inferences.

As Table 4 shows, the majority of inferential information sources in the corpus are non-self sources. In order to project an objective image, the reported information is generally attributed to other sources rather than the reporter. The inferential information sources are social actors whose discourse representations, according to van Leeuwen (1996), serve varied rhetorical purposes in news text. In health crisis news discourse, the intersubjective representation of inferential information sources can help increase the shareability of the evidential proof for the inferential processes. The corpus analysis reveals that it can be realized through nomination, objectivation and aggregation.

Table 3 Distribution of inferential processes in the corpus

Inference type	Sub-total	Exemplification
Modal verbs	265	The Department of Health said that having a seasonal flu jab <i>would</i> not offer protection....
Modal adverbs/adjectives	34	Although scientists believe that regular flu vaccines are <i>unlikely</i> to protect against bird flu...
Verbs of epistemic judgement	24	We <i>estimate</i> there could be at least 50,000 deaths as a result of the pandemic,...
Nominalized modals	16	An alternative <i>possibility</i> is that...birds in an earlier batch delivered to the facility could ...
Modal grammatical metaphors	4	Dr Cromie said: “ <i>I don’t really believe</i> this virus is being spread by wild birds...”
Sum total	343	

Table 4 Distribution of inferential information sources in the corpus

Type	Sub-type	Sub-total	Exemplification
Specified	Senior official	69	<i>Sir Liam Donaldson</i> told the BBC's...
	Institution	14	... said the commission .
	Spokesmanship	12	<i>A spokesman for the company</i> said...
	Specialist	32	<i>Dr Martin Wiselka</i> , consultant in...
	Local official	1	... <i>one local health official, Zita Tay</i> ...
	Local specialist	2	<i>The doctor</i> speculated that...
	Institution's report	16	...according to <i>a rapid response strategy</i> ...
	Instrument	3	<i>Both models</i> suggest that ...
Underspecified	Collectivization	39	... which <i>scientists</i> fear...
	Country name	2	<i>Australia</i> said today...
Unspecified	Nominalization	21	... <i>fears</i> that it may...
	Passive	13	This <i>is considered</i> to be...
Without specification		119	The results should be known by the end of the week.
Sum total		343	

4.2.1 Nomination

Nomination refers to the representation of social actors in terms of their unique identity and is realized by the names of the social actors with the addition of honorifics, titles, ranks, affiliations and personal or kinship relation terms (van Leeuwen 1996: 53). The nominated social actors are foregrounded in discourse, whereas those who are not nominated are backgrounded. As shown in Table 5, the corpus yields 104 tokens of nomination.

There are 69 inferences whose inferential information sources are nominated individual senior officials and 32 inferences whose inferential information sources are nominated individual specialists. When individual senior government officials

Table 5 Nomination representation of inferential information sources

Source type	Sub-total
Senior official	69
Specialist	32
Local official	1
Local specialist	2
Sum total	104

and experts serve as inferential information sources, they are all represented through nomination:

(9) *Patricia Hewitt, the Health Secretary*, went on television to reinforce the message that a human flu pandemic was inevitable and that it *could* lead to people staying away... (*The Times*, 24 October 2005)

(10) ...after a prediction on Sunday by *Sir Liam Donaldson, the Chief Medical Officer*, that 50,000 Britons *could* be killed... (*The Times*, 18 October 2005)

(11) *Dr Martin Wiselka, consultant in infectious diseases at Leicester Royal Infirmary*, said that while bird flu *would* be devastating for poultry farmers, ... (*Times Online*, 17 October 2005)

In examples (9) and (10), the status of government senior officials is highlighted by the nomination of the information sources: *Patricia Hewitt* and *Liam Donaldson*; in example (11) nomination foregrounds the professional status of the information source *Martin Wiselka*.

Tables 6 and 7 list all the individual senior government officials and experts who repeatedly serve as inferential information sources in different news reports of the corpus and have made more than one inference in a news report.

Table 6 Nominated government officials as inferential information sources

Inferential Information Sources	
1.	Gao Qiang, the Chinese Health Minister
2.	The Minister of Agriculture, Anton Apriyantono
3.	Lee Jong Wook, the Director General of the World Health Organization
4.	Siti Fadilah Supari, the Health Minister
5.	Gennady Onishchenko, the country's Public Health Chief
6.	William Aldis, the World Health Organization representative in Thailand
7.	David Salisbury, Principal Medical Officer of the Department of Health's communicable disease branch
8.	Harry Burns, the country's Chief Medical Officer
9.	Markos Kyprianou, the European Commissioner for Health
10.	Debby Reynolds, the Chief Veterinary Officer
11.	Sir Liam Donaldson, the government's Chief Medical Officer
12.	Margaret Beckett, the Environment and Rural Affairs Secretary
13.	Herman Koeter, the agency's Deputy Chief
14.	Markos Kyprianou, the European Commissioner for Health
15.	Patricia Hewitt, the Health Secretary
16.	Ben Bradshaw, the Animal Health Minister
17.	David Nabarro, Head of the World Health Organization's flu taskforce
18.	Jim Adams, the bank's Vice President for operations policy and country services
19.	Mrs Beckett, the Environment and Rural Affairs Secretary
20.	Anton Apriyanto, the Indonesian Agriculture Minister

Table 7 Nominated senior experts as inferential information sources

Inferential Information Sources	
1.	Sir Peter Lachmann, Emeritus Professor of Immunology at the University of Cambridge and a past President of the Academy of Medical Sciences
2.	William Chui, of the Department of Pharmacology at the Queen Mary Hospital in Hong Kong
3.	Professor Anne Moscona of Cornell University
4.	Neil Ferguson, Professor of Mathematical Biology at Imperial College, London
5.	Bob McCracken, the President of the British Veterinary Association (BVA)
6.	Professor Peter Openshaw, the Head of respiratory infections at the National Heart and Lung Institute at Imperial College, London
7.	Dr Jeremy Farrar, Director of Oxford University's clinical research unit at the Hospital for Tropical Diseases in Ho Chi Minh City, Vietnam
8.	Colin Blakemore, Chief Executive of the MRC
9.	Dr Martin Wiselka, Consultant in infectious diseases at Leicester Royal Infirmary
10.	Alan Jones, one of the country's leading avian Veterinary Surgeons
11.	Ruben Donis, of the US Centres for Disease Control and Prevention
12.	Peter Aldhous, who edited a recent Nature special edition on avian flu
13.	Ira Longini, Professor of Biostatistics at Emory University in Atlanta and leader of the second team
14.	Ruth Cromie, the waterbird biology Research Manager at the WWT

As these two tables show, nomination can highlight the high social position of senior government officials and the high professional status of the experts. It shows that the inferential information comes from a government agency or a professional association rather than the subjective judgement of an individual. When these information sources appear in news reporting, they are usually accompanied with their official or professional affiliations. The reporter deliberately draws public attention to these affiliations in order to show that the inference is made by the information source on behalf of his/her organization. The attribution of the individual's inference to an organization implies that the evidential proof for the inference is shared among a group to which the source belongs. This intersubjectively shared evidential base can enable the inferential information to appear more reliable and trustworthy.

4.2.2 Objectivation

Objectivation represents social actors "by means of reference to a place or thing closely associated either with their person or with the activity they are represented as being engaged in" (van Leeuwen 1996: 59), and four common types of objectivation are summarized: spatialization, utterance autonomization, instrumentalization and somatization. Somatization refers to the representation of social actors through referring to a part of their human body (van Leeuwen 1996: 60). The corpus yields

Table 8 Objectivation representation of inferential information sources

Category	Source type	Sub-total
Spatialization	Institution	14
	Country name	2
	Spokesperson	12
Utterance autonomization	Institution's report	16
Instrumentalization	Instrument	3
Sum total		47

no cases of somatization where the information sources are represented by means of reference to a part of their body. As a result, this chapter focuses on spatialization, utterance autonomization and instrumentalization.

Spatialization refers to the representation of social actors by means of reference to the place with which they are closely connected (van Leeuwen 1996: 59). In utterance autonomization, social actors are represented by means of reference to their utterances (van Leeuwen 1996: 60). Instrumentalization refers to the representation of social actors by referring to the instrument with which they carry out the activity (van Leeuwen 1996: 60). Table 8 summarizes the occurrences of inferences with the inferential information sources represented, respectively, through spatialization, utterance autonomization and instrumentalization:

In the corpus, there are 16 tokens of spatialization which are realized through the proper noun of a country's name or the name of an institution:

(12) *Australia said* today that it *would* consider vaccinating its entire population of 20 million people against bird flu if trials of a human vaccine are successful. (*Times Online*, 18 October 2005)

(13) Last night, *the World Health Organisation* said human transmission was a *possible* cause of the cluster ... (*Times Online*, 24 May 2006)

In example (12), *Australia* is the inferential information source, representing the Australian government; in example (13), the institution of WHO serves as inferential information source.

There are also 12 tokens of inferential processes, in which the information sources are represented by the spokespersons of various organizations:

(14) *A spokeswoman* for Defra said: "There is a *possibility* that it *could* get here and so we are being vigilant." (*Times Online*, 11 October 2005)

In example (14), the spokeswoman is inferring on a future state of affairs on behalf of the Department for the Environment, Food and Rural Affairs (Defra). This inference, therefore, should be treated as a consensus of the organization the spokeswoman represents. The spokesperson representation is therefore regarded functionally as the same as the spatialization. Spatialization and spokesperson representation enable the inferential information sources to be represented as institutions. They change the inferential information into consensual knowledge of an organization, resulting in a higher degree of intersubjectivity for the inferential processes.

With utterance autonomization, the inferential information sources are represented through their utterances. There are 16 tokens of utterance autonomization. In the following example, the inferential information source is represented through the verbal entity of *a report into the outbreak of bird flu at a quarantine centre in Essex*, which is accessible to the public:

(15) *A report into the outbreak of bird flu at a quarantine centre in Essex* has suggested that the deadly H5N1 strain of the virus – blamed for more than 60 human deaths in Asia – **may not** be as easily transmitted between species of birds as previously feared. (*Times Online*, 15 November 2005)

Utterance autonomization often lends a sense of impersonal authority to the information conveyed by the source (van Leeuwen 1996: 60). In example (15), the authors of the report, those responsible for formulating the inferential information, are absent in discourse. The readers are made less inclined to question the causes behind and the evidential proof for the inferences. Through backgrounding the inferential information source, utterance autonomization distances the inference from the inference maker's subjectivity, rendering the inferential process more intersubjective and objective.

Instrumentalization can also efface the inferential information sources from the discourse and background the subjectivity of the inference makers. Three tokens of instrumentalization have been found in the corpus. In example (16), two computer-assisted simulation models have been used by scientists to gauge a future scenario related to the H5N1 epidemic:

(16) If the H5N1 virus currently circulating among birds in Asia evolves the ability to pass easily from person to person, health authorities **will** have just three weeks to contain it with drugs before it becomes a global threat, according to *two sophisticated computer models*. (*Times Online*, 3 August 2005)

The models serve as an inferring instrument for the scientists who are the real sources of the inferential information. Representing the source with the instrument eclipses the inherent subjective nature of the source's inference and frames the inferential process more like an intersubjectively shared knowledge, giving a façade of impersonality and objectivity to the inferential information.

4.2.3 Aggregation

Aggregation representation is realized through a collectivization of information sources. For example:

(17) *Experts*, including Sir Liam, have said that it is inevitable that a flu pandemic **will** emerge, ... (*The Times*, 20 October 2005)

The plural form of *experts* aggregates the information sources which have made the same inferential process. It demonstrates that the inferential information is not a personal opinion but rather a consensus shared among a group of experts. Through aggregating the information sources, the reporter makes it clear that the inferential

Table 9 Aggregation representation of inferential information sources

Source type	Sub-total
Collectivization of officials	10
Collectivization of experts	29
Sum total	39

process is made by a group using the shared evidential proof. As Hood (2010: 93) demonstrates, experiential meanings can be quantified to invoke an attitude. Aggregation of information sources increases the intersubjectivity of the inference, rendering the inferential information more objective and trustworthy. See Table 9.

What is aggregated in the corpus concerns only two types of inferential information sources: officials and experts. The corpus yields ten inferences whose inferential information sources are an aggregation of officials and 29 inferences whose inferential information sources are an aggregation of experts. In example (18), *the officials* is the aggregation of officials, and in example (19) *virologists* is the aggregation of experts.

(18) ... *the officials* suggested that if the cause proves to be bird flu, it *may* not be the strain that has caused an epidemic in the Far East. (*The Times*, 27 August 2005)

(19) *Virologists* have predicted it *could* infect up to 750,000 people in the UK, ... (*The Sunday Times*, 11 December 2005)

Tables 10 and 11 list, respectively, all the aggregations of officials and experts as inferential information sources in the corpus.

Compared with the general public, these information sources enjoy a higher position of social power and a greater authoritativeness in either policy-making or technical expertise. If these experts and officials failed to reach a consensus, the general public would be placed in a dilemma without knowing whose theories they should follow. Aggregation of inferential information sources can contribute to raising the

Table 10 Aggregated officials as inferential information sources

Inferential information sources
<i>Officials</i> said that they were confident that ...
But <i>health authorities</i> in Bangkok, awaiting confirmatory tests, said...
... <i>veterinary authorities</i> are confident that ...
<i>European officials</i> say that the 25 nations in the EU, ...
... as <i>ministers</i> have made clear that ...
<i>Health officials</i> fear that H5N1 is infecting migrating birds ...
<i>Officials</i> fear it could spread westwards to Europe, ...
... <i>the officials</i> suggested that if ...
<i>Health officials</i> believe she may have contracted the virus ...
<i>WHO officials</i> in the village believe that the likeliest moment of ...

Table 11 Aggregated experts as inferential information sources

Inferential information sources
But <i>scientists</i> are concerned that this could encourage more bird smuggling,...
Although <i>scientists</i> believe that regular flu vaccines are unlikely ...
... which <i>scientists</i> fear could prompt a global pandemic.
... concern among <i>health experts</i> that this feared mutation may be happening.
<i>Scientists</i> say the strain is mutating and could acquire changes ...
<i>They (a delegation of British scientists)</i> said there were concerns that ...
<i>Experts</i> , including Sir Liam, have said that it is inevitable that...
<i>Experts</i> estimate that the pandemic, ...
Last night <i>government</i> vets confirmed they are investigating the possibility that ...
<i>Experts</i> such as Albert Osterhaus, ..., predict ...
<i>Scientists</i> still think it far more likely that...
<i>Forecasters</i> emphasised that these were only predictions but ...
<i>Virologists</i> have predicted it could infect up to 750,000 people in the UK, ...
<i>Scientists</i> are concerned that, if the bird virus were to infect...
However, <i>wildlife experts</i> are convinced that ...
<i>Scientists</i> are concerned that the H5N1 strain could mutate ...
..., <i>EU experts</i> decided at a meeting this week.
<i>Some experts</i> have given a warning that it could spread to Europe, ...
..., <i>scientists</i> said today.
<i>Both teams (scientists)</i> said the World Health Organisation (WHO) should ...
... that would kill millions, <i>scientists</i> said today.
... mutation and resistance to treatment has always been deemed likely by <i>scientists</i> .
<i>Health protection experts</i> said last night that the report of Tamiflu resistance ...
... with poor access to vaccines and antivirals, <i>scientists</i> said yesterday.

intersubjectivity of the inference by construing the inferential information as consensual knowledge among officials or experts. By providing the public with authoritative inferential information, the aggregation representation fends off the panic stemming from a myriad of theories which are difficult for the public to verify due to lack of technical knowledge.

4.3 Grammatical Intersubjective Representation

In news discourse, reporters can also adopt grammatical representations to increase the intersubjectivity of inferential processes. In the corpus, these representations can be realized through passive structures or nominalizations. When grammatical representations are used, the inferential information sources are unspecified. Table 12 shows the respective occurrences of grammatical representations.

4.3.1 Passive Structure

Passives can be used to efface the logical subjects from the sentence structures. According to Wright and Hope (2000: 69), passives can serve to focus attention away from the logical subject in scientific writing so as to give a formal effect. Discussing the general stylistic features of passives, Goatly (2000: 95) summarizes that passives can be used to reduce personality and produce impersonal stylistic features of being formal and distant. This impersonalizing feature also produces an effect of objectiveness.

In the corpus, there are 13 tokens of passives used to increase the intersubjectivity of inferential processes. All passive structures involve two types of action processes: mental processes like *expect*, *accept* and *fear*, and verbal processes like *warn*. In a passive, either the reaction to the inference or the inferential process itself is passivized. For example:

(20) *It is widely accepted* that the most *likely* route of a pandemic will be when avian flu in birds mutates into a form that is easily spread between people. (*The Times*, 20 October 2005)

(21) ... but *millions of others not in those groups have been warned* that supplies are *likely* to run out within weeks. (*The Times*, 22 October 2005)

Table 12 Grammatical intersubjective representation of inferential processes

Type of grammatical representations	Sub-total
Passive	13
Nominalization	21
Sum total	34

In example (20), the inferential process embodied by the modal adverb *likely* is not passivized. The acceptance of the inferential information is realized by the passive structure *it is widely accepted*. By making anonymous those who accept the inferential information, the reporter stresses that this inference is accepted as true by a large number of people. The adverb *widely* once again demonstrates the large membership of those who regard the inferential process as true. Both of these linguistic features raise the intersubjectivity of the inferential process. In example (21), the inference is treated as a warning. By impersonalizing those who make the warning, the passive makes the inference more likely attributable to a group of people rather than to a single source.

Different from these examples, the inferential process in example (22) is directly realized by a passive:

(22) The apparent lapse in the system *is expected* to bring about a review of a policy. (*Times Online*, 13 October 2005)

In this example, the logical subject of the passive structure *is expected* is the maker of the inference. The anonymity of the inferential information sources highlights the fact that the inferential information has achieved both a consensus status and a higher degree of certainty, both of which raise the intersubjectivity of the inferences.

4.3.2 Nominalization

Nominalization gives the action processes the quality potential that is associated with things so that these processes can be classified, qualified, quantified, identified and described (Halliday and Matthiessen 1999). There are 21 nominalizations in the corpus. Reporters sometimes adopt this mechanism of reification to objectify the inferential processes so as to increase their intersubjectivity. Nominalization can be applied to experiential processes and interpersonal modality of probability. In the first case, a mental process is usually nominalized; in the second case, the interpersonal meaning of probability is nominalized:

(23) The H5N1 strain has been closely monitored amid *fears* that it *could* mutate into a form easily passed between people and consequently cause a pandemic. (*The Times*, 5 January 2006)

(24) There remained a *possibility*, however, that the world was “sitting on a time-bomb”. (*The Sunday Times*, 11 December 2005)

In these two examples, nominalization renders the mental process of fearing and the modality of measuring the likelihood of a state of affairs into “things” so that they can be, respectively, quantified by the plural suffix *-s* and the indefinite article *a*. In example (23), the mental process of fearing is transformed into a thing which augments the objectiveness of the process. The process of fearing is thus treated as a fact rather than a certain individual’s subjective emotional reaction. The plural suffix *-s* further emphasizes that this fearing is shared among lots of people and enhances

the intersubjectivity of the mental process. Since this fearing is about an inferential process, the nominalization also strengthens the intersubjectivity of the inferential process. The modal meaning of measuring the likelihood in example (24) is directly reified into *a possibility*. By effacing the maker of the modal judgement, the nominalization renders the probability measurement less negotiable and arguable. In both cases, the reporter presents the inferential information in a form of objective reality, conferring the status of a consensus upon the inference. In this way, the intersubjectivity of the inference is raised, and the credibility of the inferential information is heightened.

4.4 Contextual Intersubjective Representation

The corpus contains 119 inferences which have neither specifications of the inferential information sources nor grammatical intersubjective representations for the inferences. But these inferences are not the subjective judgements of the reporters. On the contrary, they carry a high degree of intersubjectivity which is realized through contextual intersubjective representations.

The context offers a ready background information to verify the inferences. Although the reporters adopt epistemic modals (like *would*, *could*, etc.) which seemingly highlight their own subjective judgements, readers themselves can also form the same inferences with support of the background context. The inferences are consequently framed with a high degree of intersubjectivity and objectivity. The reporters are using subjective forms to deliver objective information. There are two types of contextual intersubjective representations: cause-and-effect context and background-support context. See Table 13:

In example (25), the inference is located in a cause-and-effect context, whereas the inference in example (26) is located in a background-support context:

(25) Since only 300 million doses of flu vaccine are produced every year, there **would** soon be a shortage if the EU dramatically increased the number of its own citizens who receive seasonal flu jabs. (*Times Online*, 13 October 2005)

(26) Although scientists believe that regular flu vaccines are unlikely to protect against bird flu, it is feared that the virus could mutate into a human pandemic strain if people already suffering from normal human flu are then infected with the H5N1 strain. The two viruses **could** get into the same cell and swap genes to produce a dangerous hybrid that sparks a global human epidemic. (*Times Online*, 13 October 2005)

Table 13 Contextual intersubjective representation of inferential processes

Type of contextual representations	Sub-total
Cause-and-effect context	7
Background-support context	112
Sum total	119

In the seven cases of cause-and-effect contextual representation, the reporters use an inter-clausal pattern featuring the logical conjunctions of consequence such as *since*, *because* and *so*. In example (25), the subordinate clause headed by the logical conjunction *since* provides the cause which produces the effect in the main clause. This logical obligation of the cause determining the effect pre-empts other different opinions and commands agreement with the consequential connection between the two events. In this case, the readers are conditioned to treat the inference in the main clause as logically obligated. The naturalized reading position is the readers' "quiet" acceptance of the inferential information as true. In this way, the cause-and-effect context renders the inferential information into a shared consensus and raises the intersubjectivity of the inference.

In example (26), the reporter uses the background-support context to increase the intersubjectivity of the inference realized by the epistemic modal auxiliary *could*. The background information for the inference is in the first sentence in which the reporter mentions the possibility that "the virus could mutate into a human pandemic strain". This possibility provides a background support for the following inference that "the two viruses could get into the same cell ...". The internal link between the background information and the inference involves a relation between what Sweetser (1990) calls a speaker's epistemic premise and its conclusion. Here the background information serves as the reporter's epistemic premise which justifies the inferential information. This predicting relationship between the background information and the inference objectifies the inferential process, thereby increasing its intersubjectivity. The background-support context possesses no rigid formal features and assumes a great flexibility in its realization in discourse.

The analyses above show that the contextual intersubjective representations can maximize the shareability of the evidential proof for the inference and the inference itself. With the help of the context, every reader (naturalized reader) is able to make the same inference. The purpose of the reporter is to make the readers aware that what is being reported is not his or her own subjective judgement but rather a piece of shared objective inferential information. The inference thus achieves a factual status as well as a high degree of intersubjectivity. There are two possible reasons why the reporter uses subjective epistemic modal expressions to express objective inferential processes. Firstly, it shows that the reporter, too, as a member of the general public, can make the same inference on the basis of the same contextual information. Secondly, the reporter intends to create a certain degree of urgency by drawing attention to the inferential information through his or her own subjective commitment to the truthfulness of the inference.

In the background-support contexts, there are no overt textual cues for the predicting relationship between background information and inferences. In the cause-and-effect contexts, however, there are overt textual cues such as *since*, *because* and *so* for concluding a logical cause-and-effect relationship. As shown in Table 13, the intersubjective representations realized through background-support contexts outnumber

those realized through cause-and-effect contexts. The possible reason is that the first contexts display less authorial intervention than the second contexts. Less authorial intervention means that less subjectivity of the reporter will be displayed in news reporting. This probably explains why reporters prefer to use background-support context to raise the intersubjectivity of the inferences which contain no specification of their sources.

5 Discussion

So far, I have discussed three types of discourse representations for raising the intersubjectivity of inferences in health crisis news reporting: representation of inferential information sources, grammatical representations and contextual representations. I hold that these intersubjective representations of inferential information can serve three functions: (1) contributing to covert persuasion; (2) normalizing the existent dominant social hierarchy of power; (3) serving for the buildup of positive images for the inferential information sources. The first function is pragmatic in nature, serving as the foundation for the next two ideologically orientated functions.

Through raising intersubjectivity of inferences, the reporter emphasizes that the evidential proof for the epistemic evaluation and the inferential information itself are shared among a group of people. Compared with the inference based upon the subjectivity of an individual, this inferential process carries a higher degree of objectivity and credibility. The purpose for this intersubjective representation of inferential processes in news discourse is to ensure the readers' "quiet" acceptance of the information as true. Once this naturalized readership is realized, covert persuasion will be successfully realized. Without accepting the information as true, news reports will find it very difficult to exercise their social functions, such as normalizing dominant cultural assumptions (van Dijk 1988), reproducing dominant ideologies (Lupton 1992) and influencing public opinions.

Raising intersubjectivity of inferences contributes to the normalization of the existent dominant social hierarchy of power. News discourse is a ready tool for normalizing the hierarchy of power (van Dijk 1988). One way of maintaining this power structure in discourse is the prevention of the other or alien voices from participating in the discourse so as to make the discourse impermeable. In my corpus of health crisis news reports, the heightened intersubjectivity of inferences insulates the discourse from any involvement of the readers' voices and positions. The discussion of the intersubjective representations shows that the group subjectivity outweighs the individual subjectivity in terms of objectivity and credibility. The epistemic evaluation resting upon the group subjectivity is generally regarded as more credible than that resting upon the individual subjectivity. The naturalized reading position is for the readers to accept what is given without challenging it, thus excluding the readers' voices from the discourse.

Bureaucratic exclusion of readers' voices also occurs in the corpus. In discussion of information source representations, the inferences made by heads of various governmental institutions, governmental agencies and officials are found to carry a high degree of intersubjectivity, thus being more objective and credible. The stark contrast between ordinary readers and the information sources in terms of social position prevents any challenging voices from entering the discourse.

Readers' voices are also discouraged from the discourse through technical and logical exclusion. Intersubjective representations like nomination and aggregation frequently foreground experts as the inferential information sources. The lack of special knowledge prevents the readers from raising different opinions, keeping their voices distanced from the discourse. Logical exclusion is concerned with the intersubjective contextual representations which rely upon the logical obligation to raise the intersubjectivity of inferences. The readers' voices or stances are discouraged from participating in the discourse through the logical consequential relation between the inference and the context which supplies either a cause or background information for the inference. All these intersubjective representations render the news discourse impermeable to disagreeing voices, contributing to normalizing and maintaining social hierarchy.

Finally, the intersubjective representations of inferential information sources put under the spotlight various government organizations, officials and experts. On the one hand, the intersubjective representations reinforce the hierarchy of social power; on the other hand, they highlight what these information sources have done against the backdrop of a health disaster—a potential pandemic which might result in millions of deaths. Media reports on disasters play a critical role in influencing attitudes towards and evaluations of the official response to the disaster (Gaddy and Tanjong 1986; Garner 1996). In the corpus of health crisis news reports, nothing serves better in building positive images for the government organizations, officials and experts than portraying them as actively and constantly engaged in responding to the disaster.

6 Conclusion

News reports aim at providing objective and credible information. The inferential information itself carries a higher degree of subjectivity. As a result, it needs to be represented as an inference with a higher degree of objectivity and intersubjectivity. Based on a detailed analysis of the 47 health crisis news reports, the chapter reveals three major intersubjective representations for inferences: intersubjective representation of inferential information sources, grammatical intersubjective representation and contextual intersubjective representation. The inferential information sources can be intersubjectively represented through nomination, objectivation and aggregation. The grammatical intersubjective representations include passive structures and nominalization. The contextual intersubjective representation can be realized through cause-and-effect context and background-support context. The intersubjective representations of inferences in the study are summarized in Fig. 1:

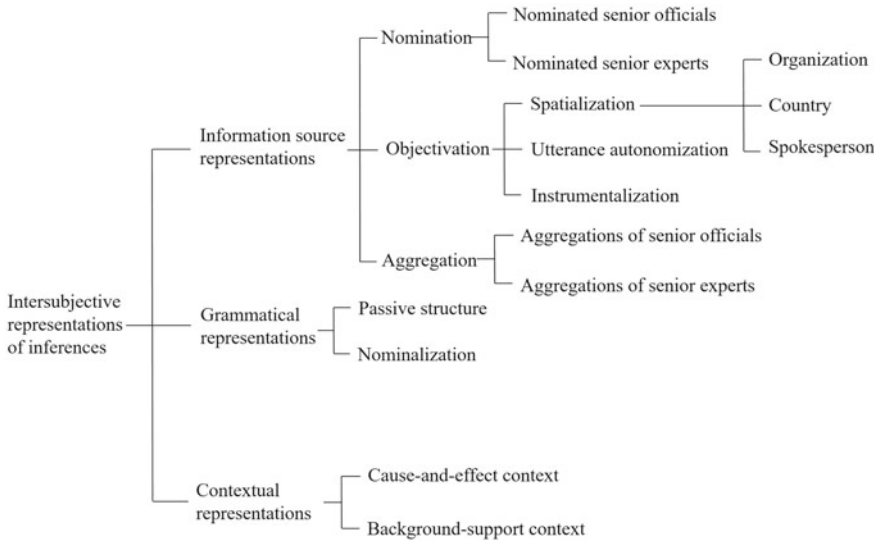


Fig. 1 Intersubjective representations of inferences in health crisis news reporting

The strong correlation between objectivity and intersubjectivity makes intersubjective representations a convenient tool for the realization of objectivity in health crisis news reporting. Realizing the pragmatic significance of intersubjectivity in discourse, Nuyts (2001a: 35) commented that “it is important to realize that the reflection of this dimension in epistemic expressions is a matter of how the speaker presents it rather than of how it ‘really is’”. To wit, the intersubjective feature of an epistemic inference does not necessarily mean that the evidence for the inference is intersubjectively owned. The intersubjective representation is rather used deliberately to achieve the rhetorical effect of objectivity and credibility for the inference. The intersubjective representations reduce the subjectivity of inferences and make them more credible, objective and transform them into consensual knowledge. Ultimately, they contribute to the realization of covert persuasion, the normalization of the existing dominant social hierarchy of power and the buildup of positive images for the social actors involved in health crisis news reporting.

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Appendix 1: A Sample of the Webpages from Which the News Articles Are Collected

The screenshot shows the Times Online website interface. At the top, there's a navigation bar with the site's name and various utility links like 'Listings of car safety ratings' and 'Download The Game podcast'. Below this is a search bar and a secondary navigation menu with options like 'SITE', 'WEB', and 'Windows Live Search'. The main content area is dated 'June 4 2019' (likely a system error or placeholder) and 'Britain'. The featured article is titled 'Fears in Britain grow as bird flu reaches Europe' by Nigel Hawkes, Health Editor. It reports on the discovery of dead seagulls in Oulu, Finland, and the spread of avian flu. A map of Europe highlights the location of Oulu. To the right of the article are several sidebar widgets: 'BREAKING NEWS' with links to 'Britain from PA', 'Power sharing deal under microscope', 'PM agrees with general's comments', 'Huntley 'prison attack' investigated', and 'Anti-binge drink campaign launched'; 'READER OFFER' for 'Restaurant Booking'; 'TIMES ONLINE TV' with a 'TV & VIDEO' section; 'NORTHERN TIMES' featuring 'Russell Jenkins on the news'; 'WORK REVOLUTION' with a 'More weblogs' link; 'SPECIAL' with a 'Credit Clinic' section; 'SPORTS CALENDAR' with a 'Launch calendar' link; 'POWER 100' with a 'We track down the most influential individuals in business' link; and 'ADVERTISEMENT' with 'Events listings' and 'Screen' sections.

Appendix 2: The Sources of the Corpus

NHS buys 2 m doses of vaccine to protect staff from bird flu
 BY NIGEL HAWKES, HEALTH EDITOR AND RICHARD LLOYD PARRY
The Times, July 21, 2005
 Russia orders cull as bird flu migrates towards West

FROM JEREMY PAGE IN MOSCOW

The Times, August 02, 2005

Scientists warn over bird flu threat

BY MARK HENDERSON, SCIENCE CORRESPONDENT OF THE TIMES

Times Online, August 03, 2005

Only emergency jabs can halt bird flu, studies show

BY MARK HENDERSON

The Times, August 04, 2005

Britain prepares for bird flu death toll of thousands

BY JONATHON CARR-BROWN, HEALTH CORRESPONDENT

The Sunday Times, August 07, 2005

Government orders bird flu vaccine for 200,000 staff

BY DEARBHAIL MCDONALD

The Sunday Times, August 14, 2005

Deadly strain in Russian bird flu outbreak

BY PAUL PLATT, TIMES ONLINE, AND AGENCIES

Times Online, August 16, 2005

Wildfowl trapping and testing begins in Britain

BY VALERIE ELLIOTT

The Times, October 18, 2005

Fears in Britain grow as bird flu reaches Europe

BY NIGEL HAWKES, HEALTH EDITOR

The Times, August 27, 2005

Britain is blamed for vaccine delay as bird flu comes closer

BY MARK HENDERSON

The Times, October 10, 2005

Public asked to report suspicious bird deaths

BY TIMES ONLINE AND PA

Times Online, October 11, 2005

Flu jabs could prevent deadly gene mutation

BY MARK HENDERSON, SCIENCE CORRESPONDENT

The Times, October 14, 2005

Farmed poultry may be kept indoors over bird flu fears

BY PHILIPPE NAUGHTON AND AGENCIES

Times Online, October 14, 2005

Don't panic over bird flu, say EU ministers

BY PHILIPPE NAUGHTON AND AGENCIES

Times Online, October 18, 2005

120 m bird flu vaccine doses available within six months

BY SAM LISTER, HEALTH CORRESPONDENT

The Times, October 20, 2005

EU approves exotic birds import ban

BY JENNY BOOTH AND AGENCIES

Times Online, October 25, 2005

Scotland is short of drug to deal with flu pandemic

BY ANGUS MACLEOD, SCOTTISH POLITICAL EDITOR

The Times, October 20, 2005

New bird flu vaccine could save millions

BY NIGEL HAWKES, HEALTH EDITOR

The Times, September 07, 2006

Bird flu deaths force Indonesia to declare epidemic

BY RICHARD LLOYD PARRY, ASIA EDITOR OF THE TIMES

Times Online, September 21, 2005

£186m drug consignment may be ineffective against bird flu

BY SAM LISTER, HEALTH CORRESPONDENT

The Times, October 01, 2005

First bird flu cases reported in Europe

BY SOPHIE KIRKHAM

The Sunday Times, October 09, 2005

EU vaccine alert after lethal bird flu virus found in Turkey

BY PHILIPPE NAUGHTON AND AGENCIES

Times Online, October 13, 2005

Virulent strain of bird flu 'could kill 750,000'

BY VALERIE ELLIOTT, COUNTRYSIDE EDITOR

The Times, October 17, 2005

Greece confirms first case of bird flu in EU

BY PHILIPPE NAUGHTON

Times Online, October 17, 2005

Infected swans and turkeys found as bird flu spreads further west

BY SAM LISTER AND VALERIE ELLIOTT

The Times, October 18, 2005

Bird flu claims 67th victim as EU plans two-day emergency exercise

BY SAM LISTER AND VALERIE ELLIOTT

The Times, October 21, 2005

Flu jab shortage after bird scare

BY NIGEL HAWKES AND HELEN NUGENT

The Times, October 22, 2005

China says it faces grave threat from virus

FROM JANE MACARTNEY IN BEIJING

The Times, October 22, 2005

Quarantined parrot brought in first avian flu since 1992

BY NIGEL HAWKES, HEALTH EDITOR

The Times, October 22, 2005

Deadly bird flu virus confirmed in Britain

BY VALERIE ELLIOTT, COUNTRYSIDE EDITOR

The Times, October 24, 2005

French tourist 'catches bird flu in Thailand'

BY TIMES ONLINE AND AGENCIES

Times Online, October 26, 2005

Fields where a lethal virus is born

BY RICHARD LLOYD PARRY

The Times, October 31, 2005

Victims of lethal pandemic will be forced to stay home

BY VALERIE ELLIOTT

The Times, November 05, 2005

China fears bird flu killed schoolgirl

FROM JANE MACARTNEY IN BEIJING

The Times, November 07, 2005

Doctors accused of ignoring bird flu threat

BY LOIS ROGERS

The Sunday Times, November 13, 2005

UK report casts doubt on bird flu transmission

BY PHILIPPE NAUGHTON

Times Online, November 15, 2005

Bird flu kills girl but spares brother in new outbreak

BY JANE MACARTNEY IN TAIAN

The Times, November 17, 2005

Virus tests reduce fear over avian flu

BY VALERIE ELLIOTT

The Times, November 16, 2005

Bird flu doctor says fear is exaggerated

BY STUART WAVELL AND LOIS ROGERS

The Sunday Times, December 11, 2005

Study shows virus can resist bird flu drug

BY SAM KNIGHT AND AGENCIES

Times Online December 22, 2005

Turkish boy is the first bird flu victim to die outside East Asia

BY DAVID SANDERSON AND NIGEL HAWKES, HEALTH EDITOR

The Times, January 05, 2006

Europe put on alert as bird flu toll keeps rising

BY SAM LISTER, HEALTH CORRESPONDENT

The Times, January 10, 2006

Britain at highest risk from avian flu pandemic

BY MARK HENDERSON

The Times, January 12, 2006

Victims of Turkish bird flu had a mutated virus strain

BY MARK HENDERSON, SCIENCE CORRESPONDENT

The Times, January 13, 2006

Health chiefs fear worst over family killed by bird flu

BY SAM KNIGHT AND AGENCIES

Times Online, May 24, 2006

Why blood of bird flu survivors is a lifesaver

BY MARK HENDERSON, SCIENCE EDITOR

The Times, August 30, 2006

Chief vet issues new alert over bird flu

BY VALERIE ELLIOTT, COUNTRYSIDE EDITOR

The Times, September 19, 2006

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