Argumentation from expert opinion in science journalism: The case of Eureka's Fight Club

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1 Introduction: a double-edged sword

In the modern and post-modern context, science pervades many aspects of the human society; scientists are involved in the public debate and it is impossible to do without experts in numerous institutional spheres as well as in private life. Science journalism is a promising context to study argumentation from expert opinion, because this type of journalism aims to transmit scientific results to the large public. Because of its nature and pur-

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pose, scientific journalism is a paradigmatic case of expert-layperson relationship, in which laypersons are bound to rely on the experts' opinion in order to get updates on current scientific developments (Caulfield 2004 : 337). For this reason, we expect scientific journalism to be a context in which studying expert opinion is particulary important and promising.

In this context, the importance and the perils of authority in general and expert opinion in particular are felt both by scientists themselves and by the large public. Argumentation from expert opinion is feared because it is a double-edged sword: on the one hand, it may be accepted uncritically by the public for fear of going against the prestige of "science" (Walton 1997 : 5-6 ; see also Fuller 2013 : 40); this would be a typical application of the ad verecundiam fallacy (cf. van Eemeren and Grootendorst 1992: 135). On the other hand, the public may be wary of the asymmetry of information between them and scientists and be skeptical or overcritical towards expert opinion in general (see the results presented in Hargreave et al. 2003: 29-30).

Because of the latter risk, despite the fact that is possible to cite many debates in which scientists' initiatives have been well received by the public (as the danger from high blood pressure, and the negative health effects of smoking (Davis 2012), scientists feel they are not always understood (Chan 2005). Communication with the large public is a sensitive point, which is more and more topicalized in the scientific community. An editorial of the journal *Science* devoted to public engagement with science appeared as early as 2003 (Leshner 2003), while discussion is still ongoing (Sykes 2007 ; Bubela et al. 2009; Fuller 2013).

In this framework, approaches to communication with the public based on an indiscriminate use of argumentation from expert opinion are often seen as inadequate even by scientists themselves (Leshner 2003: 977). The awareness is increasing that laypersons should not only be instructed but respected as rational interlocutors. Therefore, the public should be involved in an argumentative partnership concerning the human, social and environmental implications of research, while it has been proven that massively relying on argumentation from authority increases the public-expert divide (Goodwin and Honeycutt 2009).

At the same time, on the public's side, as Walton (1997) argues, laypersons living in the contemporary society have to trust experts anyway for

many issues in ordinary life. Yet they need to find a way to assess argumentation from expert opinion, in order not to be deceived.

From a cognitive viewpoint, our choice to focus on argumentation from expert opinion is driven by the fact that this type of argumentation presents what we might call a cognitive puzzle. On the one hand, in fact, relying on expert advice is to some extent unavoidable for a layperson to build well-informed knowledge in the context of cutting-edge scientific research. In this sense, expert opinion is part and parcel of a layperson's cognitive process of reasoning about science. On the other hand, however, misuses of expert opinion have been reported to block processes of argumentation in laypersons, particularly for fear of going against science (Walton 1997). Arguably, thus, if arguers make rhetorical misuses of appeals to expert opinion, these latter might paradoxically become *arguments that block argumentation*[2] – therefore we have been speaking of a cognitive puzzle in this relation.

As a first approach to this complex topic, it is wise to start with a case-study in order to guarantee proximity to the reality we are analysing (Flyvbjerg 2001) and see how appeals to authority are used in a specific case of science journalism. In section 2, we will present the case-study that we are going to analyse, preceded by a short discussion of the communication context (Rigotti and Rocci 2006) in which it is placed. In section 3, we will discuss present studies on argumentation from expert opinion. Our theoretical framework is the Argumentum Model of Topics (AMT). Yet we will start from the informative contribution by Douglas Walton and extend it theoretically in two different senses. In section 4, on the basis of the theoretical instrumentation just discussed, we will analyse data and discuss one possible way in which the argument from expert opinion can go wrong. Section 5 briefly summarizes our findings and opens up new possible research paths.

[2] We believe it is noteworthy that J. H. Newman, in his *Essay in aid of a grammar of assent*, speaks of "*capricious* ipse dixit of authority" (our emphasis), having in mind misuses of authority which one needs to defend against in order to develop sound reasoning processes.

2 Appeals to expert opinion in science journalism

In this section, we set out to briefly describe science journalism as the context of the use of appeals to authority. We will start from a general analysis of science journalism as a communication context (in the sense proposed by Rigotti and Rocci 2006) in which argumentation plays an important role (2.1); in section 2.2, we will describe the case-study we have selected and motivate our choice.

2.1 Science journalism as a context of argumentation

Science journalism represents a peculiar context of argumentation as it is usually "spoilt" by two related problems which tend to hinder the development of an argumentative debate.

On the one hand, in fact, as science acts in an extremely regulated and defined way, where opinions are created, evaluated and falsified through a rigorous and laborious process, every counter-argument coming from other contexts is usually rejected a priori. There is, thus, a sort of non-permeability of the scientific debate to societal concerns (see Figure 1). In fact, scientific debate is closed to the general public and the arguments exchanged by scientists are not considered on the same level as, for example, economic arguments or arguments concerning potential social effects of scientific results. As Goodwin and Honeycutt (2009: 28) have shown, appeals to expert opinion in the public debate contribute to increase such non-permeability, because their use maintains "a sharp boundary between technical and public contexts".

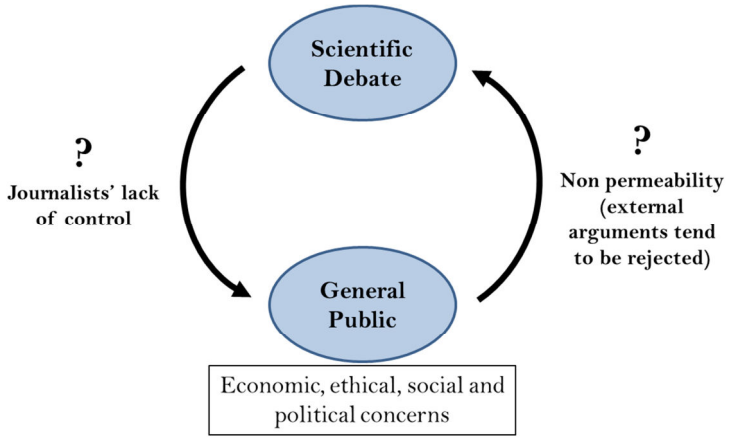

Figure 1: Sketched illustration of the problems affecting science journalism as context of argumentation. The two main problems in the communication between scientists and the general public are indicated with a question mark.

On the other hand, scientific debate is often non transparent for the general public. The supposedly informative mediation of science journalists, who should bridge scientists and the general public, is not always effective. The work of science journalists is to inform the general public of the advancement of science and to contribute to the divulgation of scientific opinions in the wider public. However, it is still debated whether science journalism is a canonical kind of journalism. While, for example, political journalists are an active part of the decision process on the topic they are referring, science journalists, because of their lack of time and because of the impossibility to be able to refer critically on every aspect of scientific knowledge, limit they action to the selection of topics and to reporting press releases by scientists. As a consequence, "science journalists are not players in the scientific process" (Murcott 2009: 1054). Besides, science journalists may lack the amount of knowledge or time which would be necessary in order to critically evaluate arguments put forwards by the experts; issues of accuracy may therefore arise (cf. Friedman, Dunwoody and Rogers 1986: 104ff).

Finally, a particular problem affecting science communication as a context of argumentation is related to the fact that there is a "cycle of hype" in

science communication (Bubela et al. 2009; Caulfield 2009). This means that all the stakeholders involved in science face pressure to publish positive results. Scientists, research institutions and founding agencies face pressure to justify the money they spend while individual journalists need to define they work as newsworthy. As result of these factors, research projects tend to be described to the general public with a very positive attitude and are not critically evaluated (Caulfield 2009); by so doing, the commitment to reasonableness is jeopardized would be expected from an argumentative attitude (Rigotti and Greco Morasso 2009).

2.2 "Fight club": a case study in science journalism

The case-study we have selected stands against this background as a "best practice" and an innovative one for the reasons we are going to discuss in this section. We have chosen to analyse the column *Fight Club* published within Eureka, a monthly supplement of the British newspaper The Times (http://www.thetimes.co.uk) launched in October 2009 (and then closed in October 2012). Building on The Times' longstanding tradition in tackling science issues, Eureka's specific goal was to cover a wide spectrum of topics which are currently debated at the scientific level and which significantly affect society. As the editors put it, "In launching Eureka, we recognise that many readers crave a better understanding of how science can transform our lives and our planet, which demands rigorous, engaging and inspirational reporting […]. Its focus will be on the latest scientific developments".

Latest scientific developments obviously tend to include controversial issues on which scientific debate is in progress. In particular, Eureka included a one-page double-column section, named "Fight club", explicitly devoted to controversial issues, on which there is no unanimous scientific opinion. Our paper is based on the analysis of the Fight Club column; we take into account the fourteen issues published from October 2009 to November 2010. The types of discussion covered by Fight Club vary from human responsibility for global warming to commercial archaeology and from a reflection on human talent to the definition of autism (see Table 1).

Issue	**Page n.**	**Title**
October 2009	p. 13	Should conservation groups focus on cuddly, popular animals? David Nussbaum and Robert May decide the polar bears' fate
November 2009	p. 13	The origins of Man. Was it an accident that Neanderthals died out and humans survived? Two eminent scientists give their view
December 2009	p. 13	Is man largely responsible for global warming?
January 2010	p. 15	Is medical science doing enough to replace, reduce and refine animal experiments?
February 2010	p. 17	Is screen culture damaging our children's brain?
March 2010	p. 17	Is the science curriculum serving the needs of future scientists?
April 2010	p. 49	Should commercial archaeologists have a role in exploring our marine heritage?
May 2010	p. 49	Is talent taught rather than innate?
June 2010	p. 49	Should we cut our meat consumption to reduce carbon emissions?
July 2010	p. 49	Is autism a single condition?
August 2010	p. 49	Is pornography damaging to society ?
September 2010	p. 49	Is over-cleanliness to blame for the rise in food allergies?
October 2010	p. 12	Are TV science stars more important than practicing scientists?
November 2010	p. 37	Should doping be allowed in sport?

Table 1: Eureka issues October 2009 – November 2010

Eureka's Fight Club might be considered a best practice about the use of expert opinion because it sets out to present a balanced view on a controversial issue. In fact, because two opposite expert opinions are proposed, scientific authority is challenged: the presence of two experts shows how scientific evidence on the issues considered is controversial. Thus, Fight Club does not administer to the readers a monolithic scientific opinion. The intervention of scientific journalists is kept to a minimum, because the experts are directly drawn in almost all cases from the scientific world, in light of Eureka's goal is to present the public directly with the scientific dialogue. The intervention of scientific journalists, however, is still present in the selection of the experts.

3 Tools for evaluating appeals to expert opinion: the tradition of argumentation theory

3.1 Walton's critical questions

Undoubtedly, we owe to Douglas Walton extensive and detailed studies on argumentation from expert opinion (cf. Walton 1997, 2006). On the backdrop of a careful and multidisciplinary review of several approaches to the problem of authority and expert opinion in various contexts, Walton famously defines six (now very well-known) critical questions to evaluate the argument from authority (Walton 1997 : 223). In the following list, E indicates the Expert and A stands for Assertion:

I. *Expertise* question: How credible is *E* as an expert source?
II. *Field* question: Is *E* an expert in the field that *A* is in?
III. *Opinion* question: What did *E* assert that implies *A*?
IV. *Trustworthiness* question: Is *E* personally reliable as a source?
V. *Consistency* question: Is *A* consistent with what other experts assert?
VI. *Backup evidence* question: Is *A*'s assertion based on evidence?

Walton explicitly says that these questions have been formulated with an eminently *pragmatic* aim in mind: i.e. that of helping us weight the strength of the arguments from expert opinion we are inevitably confronted with in our everyday life (financial advice, legal advice, science, medical consultations, and so on). Consistently with his purpose, Walton interprets the list of critical questions as a heuristic tool; he never claims to have analytically deduced *all* possible critical questions. In his words:

> "It is my *recommendation* that the following six critical questions, matching the argumentation scheme for the argument from expert opinion, be called" (Walton 1997 : 223, our emphasis).

In this sense, the selection of these six questions among others counts as a principle of economy and prudence (a *recommendation*). This leaves us with a theoretical problem. In fact, it is not clear whether Walton really wants to adopt the perspective of an analyst of argumentation; or if he is rather providing advice for laypersons to evaluate experts, as the term « recommendation » would seem to imply. The problem of aiming to a more consistent and comprehensive analysis of the argument from expert opinion from the theoretical point of view is therefore still open. In fact, if systematic criteria for the elicitation of critical questions are not provided, we will never be certain to have covered all possible critical questions for this argument scheme[3].

In order to address this problem, we have two suggestions. First, we propose to "zoom out" and consider the broader picture of the human relationship in which argumentation from expert opinion may be used. Following Goodwin (2010), we take into consideration the expert-layperson human relationship as an *agency relationship*; this can help put many of the fallacious uses of the argument from expert opinion in the perspective of the human motivations behind the derailments of the arguers' *strategic manoeuvring* (in terms of van Eemeren and Houtlosser 2002, van Eemeren 2010). We will discuss this in section 3.2.

[3] A set of sub-questions is provided for each critical question. Also in this respect, however, no systematic and univocal criteria for the elicitation of sub-questions are made explicit.

Second, we suggest to "zoom in" on the relation between argumentation from expert opinion and the standpoint it supports. For this purpose, we adopt the Argumentum Model of Topics (Rigotti and Greco Morasso 2006, 2010) to analyse the inferential configuration of arguments and try to show how critical questions can be systematically associated to the different premises composing an argument from expert opinion (section 3.3). As it will become clear in section 4.3 especially, basing the analysis of argumentation from expert opinion on the AMT will allow discovering a new possibile critical question.

3.2 Agency theory and strategic manoeuvring

Goodwin (2010) has proposed to extend Walton's theory on expert opinion by grounding his critical questions in a more general view of the expert-layperson relationship. Drawing on well-established acquisitions of economics and related disciplines, she regards the expert-layperson bound as an *agency relationship* (Eisenhardt 1989; Goodwin 2010: 136). In an agency relationship, "someone – the "principal" – needs to retain someone else – an "agent" – to do something she cannot or does not want to do for herself" (ibid.). Very often, the agent is an expert in some field in which the principal is a layperson; this latter needs to evaluate the expert's trustworthiness and reliability despite the asymmetry of information which intrinsically characterizes such type of relationship. In agency theory, as we might add following Palmieri (2010), not only the principal but also the agent is seen as a human being (rather than an instrument at the principal's disposal), who has his or her own desires and interests ; and who, therefore, may want to engage in argumentation to persuade the principal about his or her objectives.

Notably, the agent's interests may under certain circumstances not be aligned with the principal's ones; in this perspective, agency explains why *conflicts of interests* may arise[4], which kind of challenges these involve (cf.

[4] We have a prime example of how conflicts of interests may occur in the expert-layperson relationship in our corpus. In April 2010, the debate is devoted to this issue: "Should marine archaeologists have a role in exploring our marine heritage?" (Table 1). One of the two experts selected to answer to this question is Greg Stemm, the chief executive

Goodwin 2010: 137), and what types of contracts are best suited to monitor agents in different possible scenarios.

Goodwin (2010: 138ff) suggests that reinterpreting Walton's critical questions in light of agency theory helps clarify why such critical questions are really *critical* and relevant to the expert-layperson relationship ; it also helps eliciting and using critical questions in a more *systematic* way. In particular, she suggests regrouping Walton's questions into two loose clusters, referring to two derailment of the expert-layperson relationship known as *moral hazard* and *adverse selection*. Moral hazard refers to lack of effort on the part of the agent, because the agent "may simply not put forward the agreed-upon effort" for a certain task (Eisenhardt 1989: 61). For example, if agents receive a fixed income which is independent from their results, they may decide not to work too intensively in order to reach the principal's goals.

Adverse selection is the misrepresentation of ability by the agent, who may claim to have certain skills when he or she is hired which the principal is not in the position to verify (ibid.). As Goodwin notices, regrouping Walton's questions in these two loose clusters emphasizes, "perhaps more than Walton did, that in judging whether to rely on what someone says, the layperson is assessing not the knowledge, but the *trustworthiness* of the purported expert" (Goodwin 2010 : 141, our emphasis).

We would now like to bring Goodwin's suggestion a step further. The classification of Walton's questions under the labels of moral hazard and adverse selection allows focusing on the agent's and the principal's goals, thus linking more directly the possible "bad behaviour" of the agent (expert) to his *strategic manoeuvring* in terms of van Eemeren and Houtlosser 2002 (see also van Eemeren 2010). We assume here the *extended* pragma-dialectical theory of argumentation (van Eemeren 2010), which claims that the arguer's dialectical aim to solve their difference of opinion on the merits

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of Odyssey Marine Exploration which turns out to be a commercial archaeology company; and, should we trust what his counterpart suggests, one who is in huge debt. Not surprisingly, Mr. Stemm's standpoint is that "The private sector must be encouraged to help with the shipwreck resource". In such a case, when analysing argumentation from authority, the problem of conflicting interests should be taken into account, because it throws doubts on the expert's trustworthiness on this issue (Walton 1997: 227; Goodwin 2010: 138-139).

by means of a critical discussion is always paired with a rhetorical goal. Each arguer (the expert being no exception) wants to win his cause; at the same time, he is committed to do it reasonably. Maintaining the balance between the commitment to reasonableness and the attempt at being effective means that the arguers have to *manoeuver strategically in all moves that are carried out in an argumentative discussion* (van Eemeren and Houtlosser 2002). In particular, strategic manoeuvring manifests itself in the discourse through three aspects: "A particular choice made from the available *topical potential*, a particular way in which the opportunities for framing the addressee's perspective are used [*audience demand*], and a particular way in which presentational possibilities are exploited [*presentational devices*]" (van Eemeren and Houtlosser 2009: 6). Because the three aspects are always connected, van Eemeren (2010) proposes to picture them in a triangle to highlight their mutual interdependence.

Now, Goodwin's contribution, by emphasizing the problem of trustworthiness which, in turn, is based on the expert's own goals and desires, allows considering the expert's own contribution to dialogue with the layperson/principal as an *argumentative* contribution. The expert is an arguer and he/she has got his/her goals to pursue; therefore the principal must evaluate his contribution by carefully analysing and assessing the strength of the argument he proposes. Considering the agency relationship will thus help explain why the expert's strategic manoeuvring may derail, for example because the agent finds himself or herself in a situation of conflict of interest; and may use argumentation from expert opinion to cover a moral hazard or an adverse selection strategy.

3.3 The Argumentum Model of Topics

In section 3.2, we have reframed Walton's critical questions for argumentation from expert opinion in the broader picture of a human relationship, by using the concept of agency relationship. From the point of view of argumentation, this has permitted to connect possible manipulative uses of appeals to expert opinion to the expert's personal goal to win his cause; at this point, the pragma-dialectical notion of *strategic manoeuvring* has been introduced to explain derailments of appeals to expert opinion.

If we now zoom in on the details of the relation between a standpoint and an argument from expert opinion, we claim that a model such as the Argumentum Model of Topics, which allows distinguishing all implicit and explicit premises in an argument scheme (Rigotti and Greco Morasso 2009, 2010) helps reframe the critical questions more systematically and possibly add new ones, when necessary. It helps understand which premises are questioned by each single critical question.

The Argumentum Model of Topics (henceforth: AMT) was first proposed by Rigotti and Greco Morasso (2006) and then developed in a series of publications (cf. in particular Rigotti and Greco Morasso 2010). The AMT is compatible with the general framework of the pragma-dialectical approach to argumentation. Moreover, the AMT allows analysing the inferential configuration of arguments by distinguishing, on the one hand, premises of a *procedural* (formal) nature, directly depending on the locus, i.e. the relation or principle of support connecting standpoint and argument. On the other hand, it accounts for *material* premises, connected to the speakers' cultural and personal experience.

At the core of the procedural component, we find the locus itself. i.e. the relation between the standpoint and the argumentation supporting it. When used to construct premises in real argumentations, loci give rise to a series of inferential connections called maxims. For example, in the case of the *locus from the final cause*, different maxims may be considered, such as "If a certain goal is to be pursued, it is reasonable to select a means to pursue it" or "If no means are available, the goal cannot be achieved" and some others (cf. Rigotti 2008). The maxims are then unfolded following logical forms, such as the modus ponens ("If no means are available, the goal cannot be achieved; and no means are available; therefore, the goal cannot be achieved"), modus tollens, or others.

Loci, maxims and logical forms give an account of the procedural component in argument schemes. Yet the analysis of argument schemes should not only account for logical principles; it should take into account real arguments used in real-life discussion. Therefore, in the AMT, it has been proposed to consider the intersection between procedural starting points and *material* starting points. Two material starting points have been distinguished: the *endoxon*, a general statement concerning cultural values or

knowledge available to the arguers; and the *datum*, a premise of factual nature concerning the specific situation the arguers are considering.

In order to illustrate how the material and procedural components intersect in the AMT, we will briefly consider an example taken from Rigotti and Greco Morasso (2010: 498 ff) and refers to argumentation from *analogy*. It is based on a case of everyday life argumentation:

A: Should we travel by train or by car?

B: Remember the traffic jams on New Year's Eve? And today is our national holiday!

The argumentation here draws on the analogy between two celebrations, namely New Year's Eve and a national holiday, to conclude that travelling by car might not be wise on a holiday because of traffic. The graphical AMT representation of the analysis of this argumentation is shown in Figure 2[5].

[5] For a more detailed discussion, see Rigotti and Greco Morasso (2010).

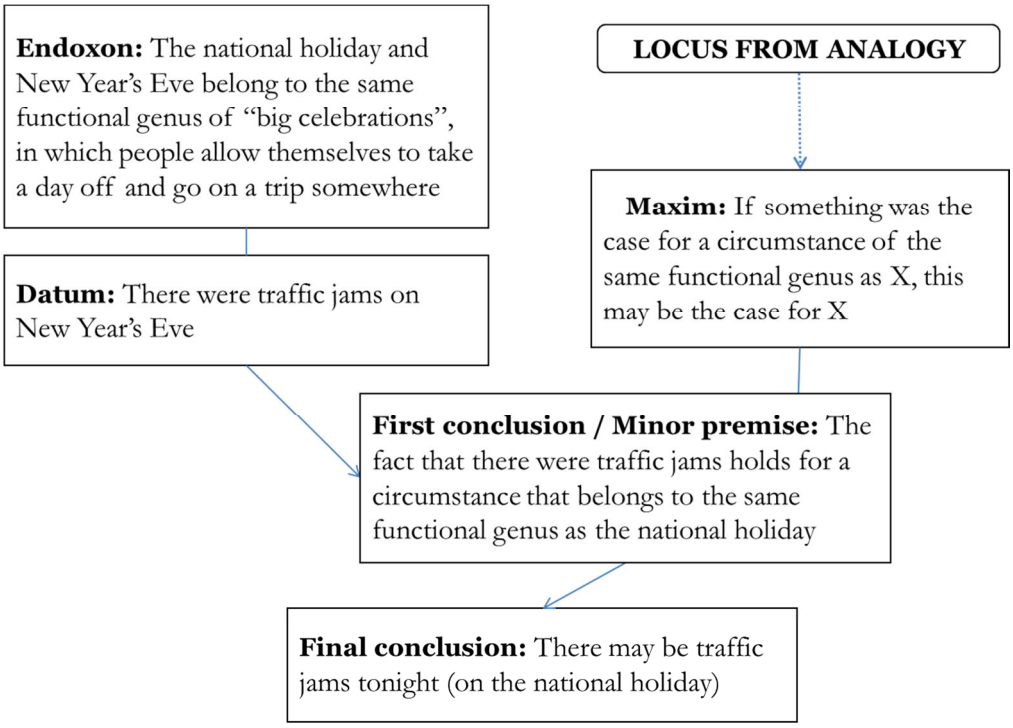

Figure 2: AMT representation of the New Year's Eve – National holiday argument from analogy. The procedural component is represented on the right of the quasi-Y structure of this graph. The material starting points (endoxon and datum) are on the left. The conjuction between endoxon and datum provides a "First conclusion" which is used as a minor premise in the procedural component. This First conclusion represents the intersection between the material and procedural components.

Each node of the diagram representing the AMT analysis is potentially subject to verification. Therefore, as Christopher Guerra (2008) has suggested, critical questions should be associated to each node. By this doing, the analyst of argumentation would guarantee completeness in the critical attitude towards an argument: in fact each of its premises, be it implicit or explicit, would be analytically put into scrutiny via the tool of critical questions. Within studies on the AMT model, this work is still in progress; and

we wish to contribute to it with this paper. For the moment, Rigotti (2008) has given an example of how critical questions may be connected to the nodes of the AMT model, by analysing in particular the procedural implicit premises of the means-end relation in pragmatic argumentation.

4 Discussion

In what follows, we will discuss the results of our analysis, which we approach by trying to integrate the theoretical instruments presented in the preceding section. We will start with a general characterization of the column Fight Club in terms of the model of a critical discussion (section 4.1). In sections 4.2 and 4.3, we will turn to consider two main problems related to appeals to expert opinion which we have identified in our case study: vagueness in the material starting points and semantically unclearness in the procedural starting points respectively. We will see how these problems might be seen as derailments of the arguers' strategic manoeuvring.

4.1 Fight Club as setting the stage for two argumentative discussions

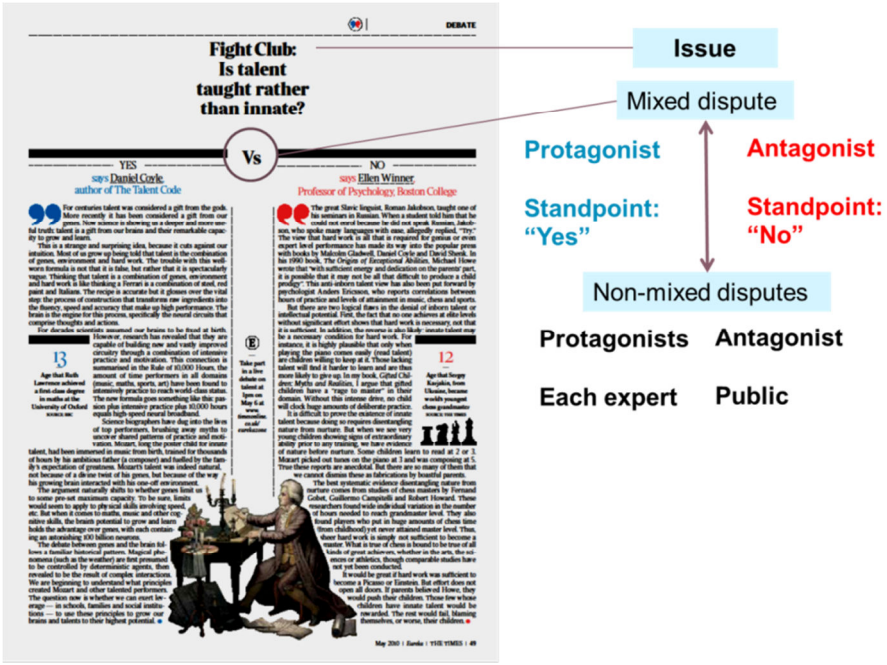

Figure 3: The Fight Club column: two argumentative discussions

At a general level, if we consider its *layout* from an argumentative point of view, the Fight Club column sets the stage for two argumentative discussions. Its structure is similar to what we find in talk-shows and other forms of media argumentation (cf. Goodwin and Honeycutt 2009). The issue of both discussions, namely the aspect concerned by the arguers' difference of opinion, is always formulated as a question addressed to the experts and to the public (Table 1). A first argumentative discussion occurs between the two experts, who play the role of Protagonist and Antagonist in a dispute which is pre-defined as *mixed* (van Eemeren and Grootendorst 1984) because the experts have opposite standpoints to defend. Such pre-defined standpoints correspond to the opposite answers to the question at issue ("YES" or "NO"). However, in several cases we found that the experts have a more nuanced view of their personal position and introduce different types of epistemic modality; they formulate standpoints including linguistic mitigation devices such as "perhaps", "maybe" and others (see Rocci

2005 for a discussion of this notion). One of them, M. Perkin, called to answer "yes" to the question whether over-cleanliness is to blame for the rise in food allergies, even jokes with the format of the Fight Club argumentative discussion in his opening statement: "With apologies to the larger advert, the answer is: probably" (September 2010).

The second argumentative discussion is between each expert and the public of laypersons who are the expected readers of Eureka. In this case, the dispute may be defined as *non-mixed*; in fact, the expert exclusively holds the burden of proof for his standpoint and he proves it in front of a public which is still to be persuaded and, as it is normal in mass-media communication, remains silent.

We face the expert-layperson asymmetry of knowledge only in the latter argumentative discussion. Therefore, in the following sections, we will focus our analysis of expert opinion on this discussion. However, this asymmetry is somehow mitigated by association to the former discussion in one and the same column: in fact, in the discussion with the public, the expert must take into account that his counterpart is a scientist as well. This guarantees a form of peer-review, as each expert knows that his or her arguments must be acceptable not only for the wider public but also for fellow researchers. Such form of indirect control guaranteed by the connection of two argumentative discussions is consistent with Eureka's goal of presenting controversial scientific issues to the public.

4.2 Vagueness in appeals to expert opinion

In general, in our sample, appeals to expert opinion are not used to directly encourage the public to take the expert's side. They are rather exploited to provide evidence and data which are not known to the public, because they are part of the scientific and not of the everyday life discourse. As a consequence of this preferential orientation in appealing to authority, those Fight Clubs whose basic evidence does not need much discussion do not present any argument from expert opinion. On the contrary, in those issues of Eureka in which the debate is about controversial evidence (e.g. is screen culture damaging our children's brain?), experts appeal to expert opinion frequently.

We advance the hypothesis that the reason for this preferential use of appeals to authority is to be found in the constraints imposed by the combination of the two argumentative discussions which the Fight Club experts are taking part in. In fact, while using authority in the form "believe me, do this" would be perceived as paternalistic by expert themselves (see section 2.1) and would not be acceptable in the argumentative discussion with the opposing expert, using the authority of a scientific study to corroborate evidence is a practice acceptable in the scientific community as well. This type of appeal to expert opinion, thus, works in both the discussions identified in section 4.1 because, if correctly used, it is acceptable even between experts.

Yet such appeals to expert opinion are not always used in a sound way. The major problem we have found when expert make use of appeals to authority is *vagueness* in the presentation of the source of authority – a problem already mentioned in Walton (1997 : 139). The examples of vague appeals to expert opinion which we have found in our corpus are reported in Table 2.

	Month	**Issue**	**Standpoint-expert**	**Appeal to expert opinion (text)**
1.	Dec. 2009	Is man largely responsible for global warming?	YES, Chris Rapley, Director of the Science Museum and Professor of Climate Science at UCL	"The evidence is sufficiently compelling **for the science academies of America, Brazil, Canada, China, France, Germany, Italy, Japan, Russia and the United Kingdom** to conclude: 'There is now strong evidence that significant global warming is occurring. It is likely that most of the warming in recent decades can be attributed to human activities".
2.	May 2010	Is talent taught	YES, Daniel	"However, **research** has

		rather than innate?	Coyle, author of The Talent Code	revealed that they [our brains] are capable of building new and vastly improved circuitry through a combination of intensive practice and motivation".
3.	June 2010	Should we cut our meat consumption to reduce carbon emissions?	NO, Maggie Gill, Scotland's Chief Scientific Adviser on Rural affairs and the Environment	"Feeding the world while reducing greenhouse gas emissions is a key challenge. **Science tells us** that ploughing up vast tracts of grassland (on which sheep and cattle graze) would release millions of tonnes of carbon dioxide into the atmosphere and move arable agriculture on to land where yelds are low. **Science** also tells us that grazing animals benefit biodiversity".
4.	August 2010	Is pornography damaging to society?	YES, Mary Eberstadt, Research Fellow at the Hoover Institution in Standford, California	"This year, **50 academics and other writers from left to right, including me**, collaborated on and co-signed The Social Costs of Pornography: A statements of findings and recommendations"
5.	August 2010	Is pornography damaging to society?	YES, Mary Eberstadt, Research Fellow at the Hoover Institution in Standford, California	"Then there is the harm that pornography obviously causes to children and adolescents. **One recent study**, funded by the US Congress, found that more than a third of teenagers

				report having been exposed to unwanted sexual content online. **Another reputable study** found that one in seven of 1'500 adolescents reported unwanted sexual solicitation online".
6.	February 2010	Is screen culture damaging our children's brains?	YES, Baroness Greenfield, neuroscientist and director of the Institute for the future of the mind, University of Oxford	" If most of a young child's actions take place on screen and so have no permanent consequences, it will prove a bad lesson when it comes to real life. **A recent study** found that obese people, for whom the sensual pleasure of eating trumps the consequences, are more reckless in performing tasks that involve an element of gambling. Could a daily life lived in the two dimensions of the screen be similarly predisposing the brain to a disregard for consequences?".

Table 2: List of the vague appeals to expert opinion found in our corpus

Vagueness in the indication of the source of authority makes it difficult to apply any of Walton's critical questions. Let us take for example the Expertise question and all its sub-questions (Walton 1997: 223):

How credible is E as an expert source?
What is E's name, job or official capacity, location, and employer?
What degrees, professional qualifications or certification by licensing agencies does E hold?
Can testimony of peer experts in the same field be given to support E's competence?
What is E's record of experience, or other indications of practiced skill in S?
What is E's record of peer-reviewed publications or contributions to knowledge in S?

If our expert source is "research" or "science", as it is in examples 2 and 3 in Table 2, asking the expertise sub-questions may be even meaningless. Similarly, the trustworthiness question is not applicable to "a reputable study" of which reputability (and, thus, trustworthiness) is predicated. The backup evidence question and the Consistency question do not test specific nodes of the single argumentation advanced by the expert, but intend to open new paths (possible rebuttals) and invite to construct a broader context (co-text to be precise) which the expert's opinion can be weighed against. Clearly, not knowing exactly who the expert is makes it difficult to rebut; this problem even increases if the alleged expert is a monolithic entity such as "science". Therefore, at a first, rough analysis, we understand that vagueness poses problems to a sound use of expert opinion, thus making a layperson's reasoning processes difficult from a cognitive vantage point.

We now turn to analyse this type of vague appeal to authority with the help of the Argumentum Model of Topics in order to elicit implicit premises of a material and procedural nature and, thus, understand the level at which vagueness is working. Figure 4 represents a synthetic AMT representation of the appeals to expert opinion which are present in our corpus (cf. Table 2[6]).

[6] We are aware that these arguments are different the one from the other and that a systematic analytical reconstruction of each and every one of them would bring to a series of different analyses and diagrams. Yet we would like to highlight what the different cases have in common – i.e. vague appeals to expert opinion – rather than their specific traits.

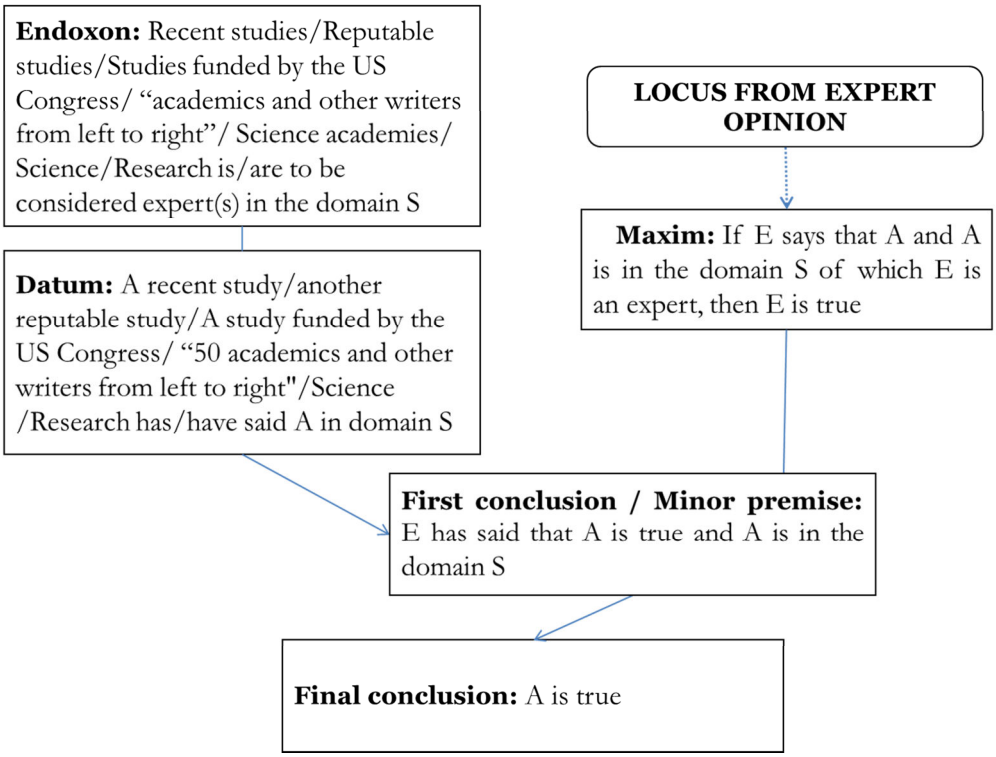

Figure 4: AMT adapted representation of the arguments from expert opinion featuring vagueness

As it appears in the AMT representation proposed in Figure 4, the main problem with this type of vague appeals to authority is to be found in the *material component* of the argument. In particular, the problem lies in the connection between the Datum, which is explicitly asserted in all of our examples, and the Endoxon, which is always implicit (cf. Table 2). Considering our corpus from the point of view of linguistics, we have identified two different types of vagueness.

A first type of vagueness is bound to the use of *abstract* nouns. The predicate "expert" in the endoxon is attributed to general abstract nouns, like "research has revealed…" or "science also tells us…" (Table 2, examples 2

and 3). By so doing, the resulting statements constituting the endoxa are incongruous from the semantic point of view because they violate a *categorial presupposition* (cf. Greco 2003): in fact, it is not science or research which can be experts; but single scientists or researchers.

*Science is an expert in domain S
*Research is an expert in domain S

The use of an abstract noun in this case is confusing. Abstract nouns, in fact, are nouns that refer to modes of being, state of affairs or events (Cigada 1999, 2004: 66). For example, "Linda's relocation" refers to the event of Linda relocating somewhere; "The fall of the Roman Empire" refers to the Roman Empire falling. Similarly, "science", used in this sentence, means "some people working in the scientific field" or "some scientists"; "research" means "some people doing research". The use of an abstract noun, however, leaves the identity of such scientists or researchers very vague. This is certainly not accidental. On the opposite, it can be considered a specific strategy at the level of strategic manoeuvring of the expert contributing to Fight Club. In fact, leaving this information vague is a means to immunize one's argument against specific critiques. Especially for a layperson, it is difficult to figure out whom the expert is referring to in order to verify the hold of his appeal to a (further) expert opinion. This is a derailment of strategic manoeuvring at the level of *presentational devices* in connection with the *topical potential*; in fact, the arguer pre-selects the evidence he or she needs, not giving any possibility to the antagonist (especially at the level of the argumentative discussion with the general public) to object or rebut, as no relevant counter-evidence can be introduced; and this represent a serious obstacle at the cognitive level for the development of a possible counter-argumentation. At the same time, the choice of these endoxa secures another advantage at the level of strategic manoeuvring, albeit an unsound one. In fact, evoking science or scientific research in general may trigger the functioning of the *ad verecundiam* fallacy, because a reader from the wider public may not dare go against the authority of "science" or "research". Moreover, because the endoxon "science/research is an expert" is left implicit, it is even more difficult to challenge it for the readers. At the linguistic level, thus, this formulation of the argument exploits a mechanism

of *presupposition accommodation* (Greco 2003) to immunize the topical selection of the expert's strategic manoeuvring.

The second type of vagueness, which is to be found in examples 1 and 4-6 (Table 2), makes use of *concrete* nouns, i.e. nouns which refer to entities rather than to state of affairs. One might think that the use of concrete nouns is a way to eliminate vagueness; yet the entities that these nouns refer to are not univocally identifiable ("one recent study", "another reputable study", "50 academics and other writers"); therefore, they remain vague, even though the violation of a categorial presupposition described above is not present in this case. Example 1 ("The science academies of America, Brazil, Canada, China, France, Germany, Italy, Japan, Russia and the United Kingdom") seems to have a clearer reference but it might not be easy for a layperson to reconstruct what a science academy is and if the countries mentioned in this long list are really representative of scientific results. In all these cases, vagueness makes it almost impossible for a layperson to reconstruct the "identity" of the mentioned source of expertise; and not being able to identify the expert makes it difficult to propose contrasting evidence[7].

Considering the vague appeals to expert opinion described above from the vantage point of agency relationship, the expert who is using them is trying and exploiting the asymmetry of knowledge which characterizes his/her relationship with the public; the expert is conveying the information that he or she is an indisputably reliable source and that the data he or she is presenting are unquestionable. This is to be interpreted as a case of *moral hazard* (cf. Goodwin 2010) which, at the argumentative level, as we have seen, is translated into a derailment of the expert's strategic manoeuvring.

4.3 Towards the formulation of a new critical question

[7] This strategy at the level of the expert's strategic manoeuvring, which is present in both type of vagueness, could be read as a violation of the *freedom rule* of a critical discussion (van Eemeren and Houtlosser 2004), in the sense that immunizing one's point of view goes against the dialectical context of a resolution of a difference of opinion.

Although the main problem related to appeals to expert opinion in our case-study was bound to the material starting points (see section 4.2), still there is one procedural aspect which needs to be mentioned. To some extent, in fact, problem of expert opinion in the modern times is bound to the maxim itself. In our analysis, as well as in Walton (1997, 2006), the maxim is formulated as follows: "If E says that A and A is in the domain S of which E is an expert, then E is true". Such formulation, indeed, recalls the Medieval principle proposed by Peter from Spain: "Unicuique experto in sua scientia credendum est" ("any expert ought to be believed within his science/domain of expertise/field", cf. Bochenski 1947). Yet a problem may arise about how to semantically define the notion of "field" of expertise, especially in the contemporary approach to science, which is highly interdisciplinary. As a matter of fact, at least four of the Fight Club issues we have been analysing show a problem in this relation; we will report them quoting from Table 1:

October 2009: Should conservation groups focus on cuddly, popular animals?

February 2010: Is screen culture damaging our children's brain?

April 2010: Should commercial archaeologists have a role in exploring our marine heritage?

August 2010: Is pornography damaging to society?

It is quite clear that it is not straightforward to pinpoint at one single and well-defined field and discipline which these questions are referring to. Who is an expert on potential damages for children's brain? Is that an exclusive matter for neuropsychologists? Are developmental psychologists relevant at all? Might scholars dealing with the notion of "screen culture" from the vantage point of media and communication studies be helpful in this relation? Similar problems arise with the other issues: respectively, the focus conservation groups should have, the role of commercial archaeologists in relation to marine heritage, and potential dangers caused by pornography to society. In all these cases, it is difficult to identify a clear-cut disciplinary field and the corresponding experts who could be used as sources for appeals to expert opinion. Eureka's journalists make their choice and they have to restrict it to two experts only; of course this selection may be discussed because in some cases it might not be representa-

tive of the complexity of the selected field. Therefore, we would suggest to add a new critical question to Walton's list, which could be formulated, as a working hypotesis, as : « Is the notion of « field » applicable to this issue ? ». As it clearly appears in this case, a semantic analysis of the maxim (and, in this case in particular, of the term "field") of the type proposed in Rigotti (2008) and van Eemeren and Garssen (2009) may contribute to avoid manipulative uses of expert opinion[8].

5 Conclusions

In this paper, we have analysed a case-study of argumentation in scientific journalism considering how appeals to expert opinion are used and if they are fallacious or not. The main focus of the paper was on the analysis of this empirical case. We have shown that a main source of potential manipulation in the use of expert opinion is vagueness in the indication of the experts who are being cited as sources of expert opinion. This problem is bound to the material component of argumentation, in particular to the endoxa which are evoked in argumentation. Another aspect which is a potential source of manipulation is bound to the semantic problem of how to define a "field" of expertise within the contemporary multidisciplinary approach to science. By analysing these problems with the AMT, we have shown that each node of the model, i.e. each implicit or explicit premise, may be subject to very specific critical questioning in order to test its soundness.

Despite its primarily empirical focus, however, this paper has equally contributed to the theoretical discussion of argumentation from expert opinion. Starting from Walton's approach, we have extended it in two im-

[8] Moreover, as one of the reviewers pointed out, expert opinion is not to be considered equally valid in all issues discussed in Fight Club. In some cases, scientists are asked to comment on fact issues (e.g. *Is over-cleanliness to blame for the rise in food allergies?*), where they are supposed to be knowledgeable. In several other cases, however, they are asked to discuss about values and policies, i.e. domains in which the use of appeals to expert opinion could be questionable.

portant senses. First, following Goodwin's (2010) proposal, we have situated the problem of evaluating the expert's trustworthiness in the broader framework of the agency relationship connecting experts and laypersons. This has made possible to interpret potential problems with the expert's trustworthiness as derailment of his *strategic manoeuvring*, thus situating appeals to expert opinion in the properly argumentative framework of a critical discussion. In this relation, we have found evidence that derailments in strategic manoeuvring based on expert opinion represent attempts to block the development of a layperson's cognitive processes of evaluation of expert argumentation, thus posing a serious challenge from the point of view of a sound development of reasoning in knowledge-oriented argumentation. In order to further pursue this line of research, it would be interesting to compare the results from social psychology reporting about non-argumentative teaching styles in education as potential barriers to learning processes (see for example Perret-Clermont, Carugati and Oates 2004).

Second, we have zoomed on the details of the relation between a standpoint and a supporting argument from expert opinion. For so doing, we have introduced the Argumentum Model of Topics (AMT) to show how the critical questions are connected to different kind of premises in the argument scheme. Relying on the AMT made it possible to give a more complete account of the problems related to appeals to expert opinion which are present in our case-study, by putting both procedural and material premises under scrutiny. This helps identify potential criticalities which go beyond the six critical questions proposed by Walton (1997), as shown in section 4.3.

6 References

Bochenski. I. M. (1947, ed.): *Petri Hispani Summulae logicales.* Torino, Marietti.

Bubela, T. et al. (2009): «Science communication reconsidered», *Nature Biotechnology* 27, 514-517.

Caulfield, T. (2004): «Biotechnology and the popular press: hype and the selling of science», *Trends in Biotechnology* 22 (7), 337-339.

Chan, K. M. A. et al. (2005): «Protecting science from abuse requires a broader form of outreach», *PLoS Biol* 3 (7), E218.

Christopher Guerra, S. (2008): «Themen, Thesen und Argumente zur Position des Italienischen in der viersprachigen Schweiz», *Studies in Communication Sciences* 8 (1), 135–159.

Cigada, S. (1999): *Nomi e cose. Aspetti semantici e pragmatici delle strutture nominali*. Milano, ISU.
eBook available at: http://www.educatt.it/libri/ebooks/C-00000208%20CIGADA%20-%20Nomi%20e%20cose.pdf [March 15th, 2012].

Cigada, S. (2004): «Nomi astratti che diventano nomi propri nel contesto dei messaggi pubblicitari», *Bulletin VALS-ASLA* 80, 63-70.

Davis, K. C. et al. (2012), «Antismoking media campaign and smoking cessation outcomes, New York State, 2003-2009», *Prev. Chronic Dis.* 9, E40.

Van Eemeren, F. H. (2010): *Strategic maneuvering in argumentative discourse: Extending the pragma-dialectical theory of argumentation*. Amsterdam/Philadelphia: John Benjamins.

Van Eemeren, F. H. and Garssen, B. (2009): «The fallacies of composition and division revisited», *Cogency* 1 (1), 23-42.

Van Eemeren, F. H. and Grootendorst, R. (1992): *Argumentation, communication and fallacies: A pragma-dialectical perspective*. Hillsdale (NJ), Lawrence Erlbaum.

Van Eemeren, F. H. and Houtlosser, P. (2002): «Strategic maneuvering: Maintaining a delicate balance». *In* Van Eemeren, F. H. and Houtlosser, P. (*eds*) *Dialectic and rhetoric: The warp and woof of argumentation analysis*. Dordrecht, Kluwer, 131-159.

Van Eemeren, F.H, and Houtlosser, P. (2009): «Seizing the occasion: Parameters for analysing ways of strategic manoeuvring». *In* Van Eemeren, F. H. and Garssen, B. (*eds*) *Pondering on problems of argumentation: Twenty essays on theoretical issues*. New York, Springer, 3-14.

Eisenhardt, K. M. (1989): «Agency theory: An assessment and review». *The Academy of Management Review,* 14 (1), 57-74.

Flyvbjerg, B. 2001. *Making social science matters. Why social inquiry fails and how it can succeed again*. Cambridge, Cambridge University Press.

Friedman, S. M., Dunwoody, S. and Rogers, C. L. (1986): *Scientists and journalists. Reporting science as news*. New York, Free Press.

Fuller, S. (2013) : « The public : Clients of science ? ». *Chemistry World* 10 (1), 40, www.chemistryworld.org [January 12th, 2013].

Goodwin, J. (2010): «Trust in experts as a principal-agent problem». In Reed, C. and Tindale, C. W. *(eds) Dialectics, dialogue and argumentation. An examination of Douglas Walton's theories of reasoning and argument*, London, College Publications, 133-143.

Goodwin, J. and Honeycutt, L. (2009): «When science goes public: From technical arguments to appeals to authority». *Studies in Communication Sciences* 9 (2), 19–30.

Greco, S. (2003): «When presupposing becomes dangerous. How the procedure of presuppositional accommodation can be exploited in manipulative discourses». *Studies in Communication Sciences* 3 (2), 217-234.

Hargreaves, I. et al. (2003): «Toward a better map: Science, the public and the media», Economic and Social Research Council Report. http://www.esrc.ac.uk/_images/towards_a_better_map_tcm8-13558.pdf [January 11th, 2013].

Leshner, A. I. (2003): «Public engagement with science». *Science* 299, 997.

Murcott, T. (2009): «Science journalism: Toppling the priesthood». *Nature* 459, 1054-1055.

Newman, J. H. (1870): *An Essay in Aid of a Grammar of Assent*, London, Burns, Oates & co.

Palmieri, R. (2010): *The arguments of corporate directors in takeover bids*. Unpublished doctoral dissertation, USI-University of Lugano.

Perret-Clermont, A.-N., Carugati, F. and Oates, J. (2004): « A socio-cognitive perspective on learning and cognitive *development* ». In Oates, J. and Gravson, A. (eds) *Cognitive and language development in children*, Walton Hall, Milton Keynes/Malden (MA), The Open University & Blackwell Publishing, 305-332.

Rigotti, E. (2008): «Locus a causa finali». *In* Gobber, G., Cantarini, S. Cigada, S., Gatti, M. C. and Gilardoni, S (*eds*) *Proceedings of the IADA Workshop Word meaning in argumentative dialogue. Homage to Sorin Stati*,. Special issue of *L'analisi linguistica e letteraria* 16 (2), 559-576.

Rigotti, E. and Greco Morasso, S. (2006): «Topics: The argument generator». *Argumentum eLearning module*. www.argumentum.ch [March 2nd, 2012; restricted access].

Rigotti, E. and Greco Morasso, S. (2009): «Argumentation as object of interest and as social and cultural resource». In *Argumentation and education: Theoretical foundations and practices*, New York, Springer, 9–66.

Rigotti, E. and Greco Morasso, S. (2010): «Comparing the argumentum model of topics to other contemporary approaches to argument schemes: the procedural and material components». *Argumentation* 24 (4), 489-512.

Rigotti, E., and Rocci, A. (2006): «Towards a definition of communication context. Foundations of an interdisciplinary approach to communication». In Colombetti, M. (eds) *The Communication sciences as a multidisciplinary enterprise*,. *Studies in Communication Sciences* 6 (2), 155–180. Anniversary issue.

Rocci, A. (2005): *La modalità epistemica tra semantica e argomentazione*. Milano, ISU.

Sykes, K. (2007). « The Quality of Public Dialogue ». *Science* 318 (5855), 1349.

Walton, D. (1997): *Appeal to expert opinion. Arguments from authority*. University Park, The University of Pennsylvania Press.

Walton, D. (2006): «Examination dialogue: An argumentation framework for critically questioning an expert opinion». *Journal of Pragmatics* 38, 745–777.