Chapter Nine

Rhetoric and cognition: pragmatic constraints on argument processing

Steve Oswald

Running head: Rhetoric & cognition

Keywords: pragmatics, relevance theory, argumentation, persuasion, rhetorical effectiveness, contextual constraint

Abstract

This chapter defends a cognitive-pragmatic take on rhetorical effectiveness by hypothesising that information-selection mechanisms at play in the interpretation of verbal stimuli positively influence the outcome of subsequent argumentative evaluation, and that Relevance Theory (Sperber and Wilson 1995) is ideally equipped to develop this assumption. It is furthermore argued that the inclusion of a cognitive pragmatic component in a theory of argumentation can boost the explanatory power of existing accounts, which typically refrain from adopting cognitive insights (cf. van Eemeren and Grootendorst 2004: 74). An example from political discourse is discussed in this framework to illustrate its explanatory advantages.

1. Introduction

Theories of argumentation are usually concerned with two main issues: (i) identifying criteria to distinguish sound from fallacious argumentation, and (ii) explaining argumentative effectiveness (including that of fallacious argumentation). While the first is perhaps the one that has generated most debate over the years because it confronts competing conceptions of what argumentation is—or should be—with regard to the characterisation of a *norm* of sound argumentation (see, e.g., Copi and Cohen 1990; van Eemeren and Grootendorst 2004; Groarke and Tindale 2004), the second issue has not been consistently theorised yet other than through a survey of argumentative, stylistic and/or rhetorical means taken to be persuasively effective. The absence of a consistent and satisfactory theory of argumentative effectiveness probably follows from the observation that the phenomenon seems to be contextually dependent: the same argument may indeed convince some but not all audiences, and sometimes the same audience may even react differently, at different times, to the same argument. This chapter precisely deals with this second issue by attempting to characterise what it means for an argument to be effective from a cognitive perspective and by outlining a direction for further research on the issue.

In the 20th century, Toulmin's (1958) and Perelman and Olbrechts-Tyteca's (1958) now classical works have explored this direction by moving away from formal logic concerns to focus their attention on the search for an account of 'real-life' argumentation. Accordingly, they have respectively stressed the importance of field-dependency and audience-specificity to characterise the success of our natural and spontaneous argumentative

practices. Both accounts have thus tried to contribute a genuinely rhetorical insight to the description of argumentative reality. The question of argumentative effectiveness receives in both theoretical frameworks an answer highlighting the contextual nature of rhetorical success: as far as arguments are concerned, judgements of persuasiveness are ultimately variable in essence.[1]

However, the field of argumentation theory has yet to fully incorporate cognitive insights into its treatment of these two issues.[2] While reasoning has attracted much attention among cognitive psychologists ever since Wason's experiments on how people deal with logical rules such as the *modus ponens* and the *modus tollens* (e.g. Wason 1960, 1966; Evans 2004, for an overview of the paradigm), these results remain marginally exploited within mainstream argumentation theory, mainly because such insights are not instrumental to fulfil its classically defined goals. On this very issue, according to van Eemeren and Grootendorst (2004:74), the designers of Pragma-Dialectics, which is perhaps the most influential model of argumentation available nowadays, "there is no need to have detailed knowledge of all the cognitive processes that play a role in the interpretation of discourse or text in order to be able to carry out an analysis based on externalized textual characteristics".[3]

If we do not indeed necessarily need cognitive insights to analyse argumentation from the perspective of its *validity*, as the elaboration of a

[1] For a thorough and exhaustive review of both these frameworks, see van Eemeren *et al*. (1996).
[2] Within argumentation theory, some works evoke the importance of considering how we process information in an account of argumentation; see e.g. Jackson (1996), O'Keefe (1996), Walton (2010) and Bardone (2011). However, to this day, virtually no systematic cognitive undertaking has taken place to address these questions.
[3] Even if they recognize that "some insight into these processes can, of course, deepen the analysis" (van Eemeren and Grootendorst 2004:74).

normative system of sound argumentation does not in principle entail the necessity of psychological investigation, such is not the case when it comes to evaluate argumentative *effectiveness*: it stands to reason that in such an endeavour a suited account would inherit its explanatory power from its cognitive plausibility, for rhetorical analysis is expected to explain why and how arguments succeed in convincing people. And in the end, this is undeniably a question of psychological inquiry.

Recent research conducted in cognitive and evolutionary psychology provides a fertile ground for the exploration of the reasons why we find arguments convincing, which is directly relevant to the issue of rhetorical effectiveness. These works have not so far been used in argumentation theory research, and yet it is becoming increasingly clear that they can enrich our understanding of both sound and fallacious argumentation (see Jackson 1996, for early arguments in this direction). Works by Mercier and Sperber (2009, 2011) and Mercier (2011), for instance, focus on our argumentative competence, both in production and reception (within the framework they refer to as the *argumentative theory of reasoning*), and make a serious case for the existence of an argumentative module which has specifically evolved to allow us to produce convincing arguments and to evaluate those of others. From the more general perspective of information processing, related research on cognitive abilities and mental architecture nowadays also suggests that the human mind is characterised by both heuristic and systematic processing mechanisms (see e.g., Petty and Cacioppo 1986; Evans and Frankish 2009; Bardone 2011). It has been furthermore suggested that cognitive heuristics play a role both in the

production of fallacious arguments (see Correia 2011) and in their reception, notably by obfuscating their fallacious nature (see e.g., Maillat and Oswald 2009, 2011; Oswald 2010, 2011). These accounts are especially relevant to the issue this chapter is concerned with, as they fully acknowledge and furthermore provide pointers to theoretically accommodate our natural propensity to process information in a biased, non-systematic way—both in processes of understanding and processes that lead to belief fixation and revision.

As research within this framework is mostly carried out by psychologists and cognitive scientists, it is predominantly concerned with investigating reasoning abilities and various information-processing mechanisms at play in decision making, reasoning and belief management. Even if this makes for a wealth of directions of research in the field of argumentation in its own right, one particular aspect of the issue remains underexplored in that framework, namely the relationship between understanding and believing[4]. This chapter precisely tackles the relationship between these two processes in argumentative, thus communicative, scenarios.

I will start by reflecting about what it 'cognitively' means, in information-processing terms, for an argument to be rhetorically effective (Section 2). In this reflexion I will take the perspective of the addressee, to the extent that the focus of the chapter is argument evaluation in a rhetorical framework, and accordingly describe how argument processing can be construed in such a framework. I will then review the basic tenets of

[4] Although Sperber et al.'s (2010, section 3) work provides insightful pointers in this direction; alternatively, some of the underlying assumptions of the present piece of research have been assessed in Oswald (2011) and will be further elaborated on here.

cognitive pragmatics suggesting that understanding is a heuristic process that allows for suboptimal outputs to be generated—even if it is otherwise well suited for our communicative needs—and consequently flesh out a rationale meant to ground the inclusion of cognitive pragmatics in a cognitive account of rhetorical effectiveness (Section 3). This will allow me to formulate specific interpretative constraints that can affect argument evaluation. Section 4 of this chapter specifies these constraints and provides an illustration through the analysis of a concrete example taken from political discourse. I conclude by drawing parallels between mainstream argumentation theory and cognitive science, together with some implications of the type of model advocated here in view of further research.

2. Rhetoric and cognition

2.1. Defining rhetorical effectiveness from a cognitive perspective

Intuitively, we could define rhetorical effectiveness as the situation in which an argument has managed to lead the addressee to believe its conclusion or to adopt a course of action which follows from/is consistent with it. If we construe rhetorical effectiveness as the result of a process, it could therefore be characterised as the outcome of the following two argumentative scenarios:

(1) An argument is rhetorically effective when it has successfully withstood (possibly all) critical information adduced against it:[5] in this case its standpoint prevails after systematic submission to doubt.

(2) An argument is rhetorically effective if no critical information has been considered during its evaluation (by the addressee); the conclusion's content is accepted because there are no reasons to reject it. In this case the argument's standpoint prevails because it has not been challenged.

Scenario (1) denotes cases where proper argumentative evaluation has taken place, to the extent that it stipulates that critical information has been taken into account and that the conclusion has been carefully weighed to assess the argument's overall merit. Since (1) involves critical submission to doubt, the argument will be deemed rhetorically effective under the condition that its conclusion ends up resisting attempts to refute it—whether this corresponds, in terms of processing, to reflective or intuitive inference is not yet of our concern (but see Section 3). Scenario (2) is obviously different in terms of the lower level of complexity involved by the argumentative evaluation procedure: (2) denotes cases where the justificatory link between premises and conclusion is left unchallenged. One preliminary way of apprehending the difference between (1) and (2) would

[5] In order to observe consistency in terminology, in the remainder of the paper I will use the broader term 'critical information 'to refer to counter-evidence provided in counter-arguments against a given standpoint. It is irrelevant to the purposes of this discussion to clearly determine whether we are dealing with full-fledged or implicit counter-arguments, disconfirming evidence or any other kind of rebuttal, which does not mean that further work along the lines suggested here should not pay attention to these distinctions.

thus be to consider that the density of argumentative operations, from a mere quantitative perspective, is higher in the former than in the latter: (1) involves one premise-conclusion set but also its counter-arguments while (2) is restricted to only one premise-conclusion set. A more sophisticated way of looking at this characterisation, however, would be to try to identify the reasons why (1) and (2) obtain, which we now turn to.

Such a characterisation calls for the need to adopt a representational perspective in which the premises and conclusion of a given argument correspond to *mental representations*, the former acting as justifications for the latter. We will accordingly assume that an addressee who is persuaded by an argument is one who considers that such a relationship holds. From a rhetorical perspective, consequently, we will consider that the arguer who intends to persuade her audience ultimately tries to influence that precise evaluative procedure in order for the justificatory link to be deemed relevant, but also acceptable/sound/valid, which is something that scenarios (1) and (2) have in common—as they are concerned with the addressee's evaluation of the argument and consequently with his perception of the message. Since we are tackling the question of argument effectiveness and not that of argument validity, it is irrelevant at this point to try to establish sharp distinctions between the notions of argumentative validity, soundness and/or acceptability. Suffice it to say for the sake of descriptive convenience that we will take rhetorically effective arguments to be those whose

justificatory link has been accepted by a given audience, i.e., those that make it to the addressee's cognitive environment after processing.[6]

Going back to our earlier characterisation of rhetorical effectiveness given in (1) and (2), there is room to further break down each scenario according to the cognitive system's behaviour in an argumentative situation, depending on its potential confrontation to critical information. In the case of (1), defined as the situation in which the argument has prevailed over critical information, we still need to define what it means for a conclusion to withstand counter-evidence, which could in turn be the result of two sub-scenarios, as formulated in (1a) and (1b) below. In parallel, we need to spell out for (2) the cases in which no counter-evidence becomes available, which correspond to sub-scenarios (2a) and (2b):

(1a) All relevant pieces of information have been weighed against each other in order to establish the epistemic advantages of the conclusion of the argument over alternative available critical information.

(1b) The conclusion of the argument immediately matches or is consistent with an overwhelmingly epistemically advantageous representation that is already part of the subject's cognitive environment.

[6] Relevance theory defines the cognitive environment of an individual as the set of assumptions that are available to an individual at the time of utterance processing: "A cognitive environment of an individual is a set of facts that are manifest to him" (Sperber and Wilson 1995: 39). Interestingly, the notion of manifestness is construed in Relevance Theory in terms of truth: when an assumption is said to be manifest in someone's cognitive environment, it means that the individual considers it to be true or probably true (Sperber and Wilson 1995:39).

(2a) No critical information is present in the addressee's cognitive environment.

(2b) There is no reason to summon critical information.

Let us elaborate on these four scenarios and further detail these descriptions. (1a) describes the ideal situation in terms of rigorous and flawless argumentation, i.e., the situation which corresponds best to a critically reasonable resolution of a difference of opinion (see van Eemeren and Grootendorst's (2004) definition of reasonable argumentation), which is one which aims at determining the soundness of arguments *on their merits*. In turn, but this is outside the scope of this chapter, (1a) supposes that we have identified a clear-cut norm of soundness. This is how argumentation would unfold in the argumentation theorist's paradise: it is the argumentative way of the unbiased and the unprejudiced. In (1a), the conclusion of the victorious argument consequently enjoys a very high degree of epistemic strength.

(1b) is a bit trickier to relate to (1), in the sense that it does not *necessarily* suppose the mobilisation of critical information; for this reason it could be classified alongside (2a) and (2b). Nevertheless, there is a crucial difference between (1b) and (2a)/(2b): (1b) tolerates critical information without this threatening its conclusion's prevalence, which is not the case of (2a) and (2b). (1b) will obtain if, for instance, the argument exploits to its advantage a relationship of consonance between old and new information; in such cases, the confirmation bias (Oswald and Grosjean 2004) or the belief bias (Evans et al. 1983) can explain the tendency to preserve only

new sets of information that are consonant with what we previously believe. This caters for cases of dogmatic adhesion but also for cases of self-deception, as both involve the failure, on behalf of the subject, to take into account the relevance of counter-arguments or more generally any kind of counter-evidence, even if it can be part at some point of his cognitive environment. This means that if critical information enters the picture, it will be discarded because old information is epistemically stronger within the cognitive system. In other words, (1b) denotes cases where the tentative presence of critical information does not challenge the epistemic status of the argument's conclusion.

As (1a) and (1b) involve—or at least allow—the conclusion's confrontation to critical information (either new or old), it seems that the parameter at play in these two sub-scenarios is foremost the epistemic strength of assumptions: if the argument is deemed acceptable, it is because critical information that was brought in when submitted to doubt turned out to be discarded as epistemically weaker. The dichotomy of (1) into (1a) and (1b) is accordingly meant to capture the conditions under which a judgment on the conclusion's epistemic strength emerges. Interestingly, epistemic strength is a property of assumptions that influences the cognitive effects that they trigger. I will return to this idea shortly (see Sections 3 and 4).

The second pair of sub-scenarios describes cases in which the cognitive system has failed to mobilise critical information. (2a) stipulates that the argument will be rhetorically effective because it is left unchallenged by critical information. In cognitive terms, this means that within the evaluation procedure, no critical information is available—and therefore it

cannot be represented—at all to call the conclusion into question. Scenario (2b) is meant to further specify (2a): the basic assumption behind it is that the cognitive system has found no reason to cast doubt on the conclusion. I will postulate that is because the individual has not found it contextually *relevant* to engage in critical evaluation.

Interestingly, this second set of sub-scenarios seems to be focusing on a distinct parameter, namely the accessibility of information: among all possible reasons explaining why a cognitive system fails to represent specific information sets is the idea that perhaps it simply does not have access to them. While there is room to wonder why this is so (see Section 4), for now we will limit ourselves to a more global characterisation; in both sub-scenarios (2a) and (2b), the conclusion prevails and ends up being accepted because the cognitive system has not seen it relevant to—or has simply failed to—challenge it. The relevant parameter here therefore seems to be information accessibility, which, within the cognitive framework advocated here, can also be construed in terms of processing effort, since accessible information is information that requires little processing effort to be represented.

It seems important to highlight that I do not take the accessibility parameter to be sufficient to ensure rhetorical effectiveness, to the extent that one can obviously imagine cases where an argument's conclusion is accepted after having been confronted to critical information (as in (1a)). However, we will see further along that it can contribute to the success of rhetorical effectiveness because it is one of the two conditions that underlies

the selection of information sets as an individual processes communicative stimuli.

The cognitive characterisation of rhetorical effectiveness I have tried to spell out in this section thus highlights two parameters which I take to be decisively involved in information-processing: *epistemic strength* and *accessibility* of information. In each of these 4 sub-scenarios, the cognitive system yields a representation about the 'supremacy' of the conclusion of the argument under consideration. It will be one central assumption defended here that this output representation is affected by constraints of epistemic strength and information accessibility bearing on both the linguistic material encoded in the verbal stimulus containing the argument and available contextual information used in its assessment.

To synthesise, I will therefore consider that a rhetorically effective argument is one

(3) whose articulation between premises and conclusion yields significant cognitive effects,

(4) whose articulation between premises and conclusion requires little processing effort.

One last note regarding this characterisation and the distinctions made is in order. Insofar as the parameters identified here are taken to correspond to cognitive constraints affecting information-processing mechanisms, their operation is not taken to be isolated from one another. I will thus *not* construe rhetorical effectiveness as resulting from either of these parameters

alone: they are not to be envisaged as rigid necessary and sufficient conditions meant to identify rhetorical effectiveness. Rather, they are to be thought of as parameters that can be exploited to increase or reduce the rhetorical effectiveness of arguments. The main purpose of this contribution is therefore not the identification of rhetorical effectiveness *per se*, but its characterisation in terms of the cognitive machinery at play when people end up being convinced by an argument.

2.2. Argument processing

Recent research in cognitive psychology and anthropology, within the framework of massive modularity (cf. Sperber 1994, 2001, 2005) has developed an original assumption about the way we process arguments. Among the domain-specific cognitive modules human beings are equipped with, there is an argumentative module specifically devoted to the production and the evaluation of arguments (see Mercier and Sperber 2009, 2011; Mercier 2011). This module is taken to *deliver an intuitive representation about whether the conclusion of an argument follows from the reasons provided to accept it* (i.e. its premises). In Mercier and Sperber's (2009:155) own terms, "[w]hat the argumentative module does then is to take as input a claim and, possibly, information relevant to its evaluation, and to produce as output reasons to accept or reject that claim". The argumentative module is part of the suite of cognitive mechanisms of epistemic vigilance (cf. Sperber et al. 2010) which is taken to have evolved in order to monitor incoming information, in terms of information

consistency and the believability/reliability of its source[7]. Epistemic vigilance is more generally believed to encompass a wide range of cognitive mechanisms directed at preventing humans from being misinformed and deceived as they interact with other humans. These filters provide an assessment of the information the brain has to make sense of and evaluate in everyday life. Examples of these mechanisms are the assessment of speaker trustworthiness and reliability, face recognition, or consistency checking. The production and evaluation of arguments is one particular feature of epistemic vigilance and is specifically triggered in communicative scenarios where reasons for believing or acting are needed or provided, allowing individuals to adopt sound, adequate and, if required, reasoned beliefs and courses of action.

On the evaluative side, the argumentative module is thus responsible for assessing whether the conclusion put forth in the argument follows from its premises. Its input, defined in terms of "claims" and "information relevant to its evaluation", is composed of mental representations extracted from verbal material, which are combined with what could be thought of as contextual assumptions. This suggests that the argumentative module, similarly to the comprehension module, takes representations as input (and metarepresentations specifically). But there is one crucial difference: the argumentative module operates on claims, which, in order to be argumentatively processed, must in principle correspond to already interpreted utterances. Quite straightforwardly, before you can evaluate

[7] A clear indication that this type of research may provide relevant and fruitful insights for argumentation theory is the fact that (cognitive processes of) source monitoring and message monitoring can be said to constitute cognitive counterparts of the classical notions of *ethos* and *logos* respectively.

whether a conclusion follows from the premises under consideration, you first need to understand their respective informational content. In other words, your comprehension module first needs to deliver a representation of the stimulus before argumentative processes can take over; otherwise, the argumentative module would not have anything to work on. This, crucially, makes the output of the comprehension procedure, partly at least, the input of argumentative evaluation. We will see further on that some constraints affecting argumentative evaluation can already be implemented during the comprehension stage, in an attempt to specify what the notion of relevance amounts to with respect to the input of the argumentative module which Mercier and Sperber characterise as "information *relevant* to its evaluation" (2009:155, my italics).

The argumentative module deals with arguments; its evaluative procedure thus focuses on the justificatory link between premises and conclusions. In this sense, the 4 sub-scenarios presented in the previous section (2.1) describe the four tentative ways the argumentative module can be solicited. The safest, with respect to the reliability of the final judgement on the argument's acceptability, will be (1a); however, the three remaining scenarios might also obtain. The point of a cognitive account of rhetorical effectiveness is to specify the conditions under which each of these can obtain. I will accordingly formulate assumptions as to the way constraints of relevance on interpretation can simultaneously act as indirect constraints on argument evaluation.

A further specification should be made before we proceed. The output of the argumentative module is defined as an intuitive inference. By this

Mercier and Sperber (2009) mean that we do not have conscious control over the procedures that yield this output, and, in other words, that we do not necessarily consciously attend to the reasons we are accepting that the conclusion of a given argument follows from its premises. However, this does not preclude the possibility of doing so in a reflective manner. In such cases, the argumentative module takes the intuitive output of a first stage of processing and then consciously tries to represent reasons to accept or reject it. The argumentative module can thus also yield *reflective inferences*, with the difference that this time they are the result of a conscious effort meant to come up with reasons to accept or reject the previous conclusion, which was arrived at intuitively. Working out reflective inferences is what Mercier and Sperber term *reasoning* proper:

> [t]he conclusion embedded in an output of the argumentative module [i.e., the intuitive inference about the relationship between premises and conclusion] is disembedded and used as part of the input for another operation of the same module, and this can be reiterated many times. (Mercier and Sperber 2009:156)

While intuitive inferences are the *direct* result of the activation of the argumentative module, reflective inferences are therefore *indirect* results of its activation.

An additional implication of Mercier and Sperber's (2009) account of the argumentative module has to do with its heuristic nature. Since the module delivers intuitive inferences, it is by definition a heuristic mechanism, i.e., a

set of fast and frugal general rules allowing the cognitive system to handle a specific task without incurring superfluous cognitive processing (see e.g., Gigerenzer 2008). To the extent that the argumentative module is heuristically-driven and delivers intuitive inferences, it is expected to be fallible and to inherently carry the risk of producing biased outputs. This is actually of utmost importance in someone's failure to spot a fallacious argument. But what is perhaps more surprising is that reflective inference may inherit this fallibility: to the extent that it takes as input the output of an intuitive inference, its result runs the risk of being subjected to the same cognitive shortcomings as the latter. A cognitive account of rhetorical effectiveness must consequently attend to the way intuitive inferences but also reflective inferences can be constrained to bring about consent on behalf of the addressee.

The argumentative module is not the only heuristic-driven device involved in argument-processing. When we process verbal arguments, i.e., in communicative settings, our evaluation crucially depends on what we are able to understand from the communicated premises and conclusion. As stated above, premises and conclusions need to be *understood* before their relationship can be properly evaluated. Crucially, this raises questions about how premises and conclusions emerge to be picked up as input for argumentative evaluation. After all, as acknowledged by Mercier and Sperber, reasoning is "an aspect of social, and more specifically *communicative competence*" (2009:165, my italics), which constitutes an additional reason to take into account the way conversational participants manage meaning.

3. Understanding as a fast and frugal heuristic

Communication is (minimally) successful when the hearer has understood what the informative and communicative intentions of the speaker amounted to, on the basis of the contextualisation of her utterance.[8] That is, comprehension—the successful identification of *speaker meaning*—is a necessary condition for communication to obtain. Relevance Theory develops a full-fledged account of how this can happen, capturing the derivation of explicit and implicit meaning from a cognitive perspective focused on the mechanisms at play when verbal stimuli are processed.

Within the relevance-theoretic model, relevance is postulated as the key criterion by which hearers arrive at the interpretation that they take to resemble most speaker meaning. The fundamental property of this criterion is that it provides a threshold whereby processing of the verbal stimulus stops once it has been reached. Specifically, relevance is construed as a two-dimensional criterion: utterances requiring *little processing effort* are relevant because they spare cognitive effort; in parallel, utterances yielding *significant cognitive effects* are relevant because they prove useful to the cognitive system. This is captured by the two extent conditions of relevance (Sperber and Wilson 1995:125):

[8] The informative intention can be roughly defined as the intention to inform someone of something and the communicative intention as the intention of having one's informative intention recognised. For details see Sperber and Wilson's through discussion (1995:29-31).

Extent condition 1: an assumption is relevant in a context to the extent that its contextual effects in this context are large.

Extent condition 2: an assumption is relevant in a context to the extent that the effort required to process it in this context is small.

The first extent condition of relevance captures the utility of an assumption to the cognitive system. Significant cognitive effects so defined have epistemic advantages: they correspond to enhancements of the cognitive system, where the assumption mobilised either adds reliable new pieces of information or allows to refute or confirm pieces of information that were already present. The second extent condition of relevance, in turn, can be defined as an accessibility parameter and articulates the idea that the less effort a representation requires to be derived, the more likely it is to be picked up by the cognitive system for economic reasons. The ratio between the amount of processing effort and the amount of cognitive effects is therefore what characterises relevance: the assumptions which best fit this ratio are the most relevant, and therefore those that are more likely to correspond to the assumptions the speaker intended the hearer to select.

Such a characterisation has a number of consequences on our construal of the cognitive processes underlying the interpretation of any given utterance. First, it entails that communication is a fallible endeavour: in the process, speakers might fail to provide clear cues for the derivation of specific contextual assumptions, for instance by misjudging the amount of processing effort the hearer will have to incur to derive them. Misunderstandings might occur precisely for this reason: in such cases the

speaker and the hearer have not mobilised the same assumptions and end up entertaining a different representation. Examples of this are commonly found in intercultural exchanges, where chances that the interlocutors do not share certain background assumptions which would be relevant to interpret utterances are high. The contribution of Relevance Theory in this respect is to provide two clear parameters of why this might happen: intended assumptions (either contextual assumptions necessary for the derivation of speaker meaning or assumptions about speaker meaning itself) fail to be adequately retrieved when they are cognitively too costly or when the hearer fails to represent in what way they can be of use to his cognitive environment.

Second, the account of meaning construction put forth by Relevance Theory presupposes a heuristic-driven conception of the cognitive mechanisms governing communication. As Wilson and Sperber (2004: 259) put it, comprehension is a heuristic process which naturally prompts the hearer to:

> a. follow a path of least-processing effort in computing cognitive effects: test interpretative hypotheses (disambiguations, reference resolutions, implicatures, etc.) in order of accessibility.
> b. stop when [his] expectations of relevance are satisfied.

Since comprehension is an inferential procedure, there are a number of possibilities for it to go wrong and for misunderstandings to occur. In this sense, and to the extent that the comprehension procedure has to cope with

time and resource constraints, it can be considered as a 'fast and frugal heuristic' *à la* Gigerenzer (2008): it is bound to ignore part of the information that could otherwise be useful by making the most of resource and time restrictions.

The third consequence of construing communication along the lines of Relevance Theory is that it allows us to predict that constraints on accessibility and on epistemic value will determine which assumptions end up selected. While in the above characterisation this applies to the contents of verbal stimuli, a more global *cognitive principle of relevance*, which states that "human cognition tends to be geared to the maximisation of relevance" (Wilson and Sperber 2004:254) captures the idea that this general principle can apply to different types of input. It certainly applies to what is said if we consider communication *stricto sensu*, but it also concerns any contextual assumption that might be considered as relevant as the stimulus is processed. The extension of a general claim about communication to other information-processing domains in which the cognitive system is solicited is precisely what makes Relevance Theory a particularly apt theoretical model to start exploring not only communication in terms of comprehension, but also communication in terms of the other functions it fulfils—among which argumentation.

Now that the two main parameters governing relevance have been introduced, we can go back to the main issue of the chapter, namely rhetorical effectiveness, and begin to assess how and why the output of the comprehension procedure might influence the argumentative procedure. I will specifically focus on cases (2a) and (2b).

4. Constraints on argument processing

4.1. Two types of constraints

In what precedes I have hypothesised that rhetorical effectiveness may fruitfully be addressed from a cognitive perspective. To be more specific, the main assumption I tried to discuss is that rhetorical effectiveness can be affected by information selection, to the extent that the availability and the epistemic strength of critical information may vary from one context to another. The four sub-scenarios describing argumentative effectiveness (Section 2.1 above) share this assumption and constitute an attempt to characterise the phenomenon according to the accessibility and the epistemic value of target assumptions. Simply put, the idea is that the chances of an argument being rhetorically effective increase (i) when critical information sets turn out to be epistemically weaker than the contents of the argument or (ii) when they simply fail to be represented.

Within the framework outlined above, one can think of two ways of constraining argument processing. The first consists in managing to constrain the *output* of the argumentative module itself, so that a representation of the argument's acceptability within the cognitive environment is favoured. This can be achieved—at least if we go by the observation of typical argumentative features which seem to be fairly common in such type of discourse—through the use of evidential

expressions, the mention of experts and authorities to back up certain claims, the reference to statistics and scientific results of any kind, the use of what seem to be deductively valid formal structures of reasoning, and so on. These are representative of the items we traditionally find in the list of persuasive strategies that have been identified, studied and documented by argumentation theorists for a long time[9]. The exciting news is that we can also approach them from a cognitive perspective the minute we envisage that they are targeted at satisfying the demands set by our epistemic vigilance filters, and specifically the argumentative module's evaluation. In other words, the wealth of research on persuasive strategies in argumentation theory is readily available for a cognitive assessment in terms of epistemic vigilance[10].

The constraints on argumentative evaluation proper are not the focus of this particular chapter. I have chosen to focus here on another way of constraining argument processing which consists in *imposing constraints on its input*. The strategy lies in managing to direct the addressee's comprehension procedure in a specific direction so as to prevent him from representing critical information. I suggest that this can already happen in the interpretative process of speaker meaning derivation, prior to argumentative evaluation. From the perspective of argumentation, the

[9] A cursory look at the contents of two of the most important journals in the field of argumentation theory (*Argumentation*, http://link.springer.com/journal/10503 and *Informal Logic*, http://www.informallogic.ca/) reveals that effective rhetorical strategies are indeed of prime concern to the study of argumentation.

[10] A systematic cognitive reinterpretation of fallacious arguments is thus possible. See, for example, Lewiński and Oswald (2013) and Oswald and Lewiński (2014), for cognitive insights into the straw man fallacy, an argument which consists in misrepresenting someone's claim or argument in order to easily refute it; Oswald and Hart (2013) for a cognitive account of source-related fallacies, namely the *ad populum* fallacy (the fallacious appeal to popular opinion), the *ad verecundiam* fallacy (the fallacious appeal to authority or expert opinion), and the *ad hominem* fallacy (the personal attack); and finally, Maillat (2013, 2014) for a cognitively grounded discussion of the deceptive character of the *ad populum* fallacy.

constraint thus consists in trying to make sure that whatever the hearer interprets from the premises and the conclusion is devoid of any piece of information that would turn out to be (i) relevant as a counter-argument or (ii) used as grounds to represent a counter-argument. To make a culinary analogy, the sort of constraint discussed here is a constraint on 'ingredients': if in the process of baking a cake you use sand instead of flour, the cake will probably not taste good, even if you scrupulously follow the procedure for baking tasty cakes in the standard way. If you feed the evaluative procedure of a given argument biased or compromised representations of its meaning, the output of the evaluation will accordingly be flawed, even if during evaluation the inferential steps that are undertaken are completely unproblematic under criteria of (logical) validity or of reasonableness.

The cases falling under this description will therefore exhibit some kind of mismatch between the contents that should be understood with regard to the efficiency of the argumentative evaluation that operates on them and the contents that the addressee is actually led to represent for comprehension purposes. One way of favouring rhetorical effectiveness is indeed to operate such an 'upstream' constraint on information-processing mechanisms by tampering with the addressee's meaning derivation procedure (see also Oswald 2011).

In order to illustrate how these mechanisms may come to be exploited, let me take an example of poor reasoning taken from political discourse which is nevertheless probably rhetorically effective, and in which the fallacy is arguably missed by the audience. The analysis will specifically show how

accessibility and epistemic parameters may obfuscate the presence or the argumentative significance of the fallacy.

4.2. Interpretative constraints and fallacy blindness

In May-June 2010, a local controversy emerged in Switzerland within the ranks of the Swiss far-right political party UDC (*Union Démocratique du Centre*), when a group of gay members of the party, led by Beat Feurer, voiced their intention of officially creating a gay section of the party. This did not sit very well with some of their fellow conservative members of the party who consider homosexuality as a serious threat on traditional family values, among which Gregory Logean, leader of the UDC youths in the canton of Valais. In a radio interview, he declared that "homosexuality was a cancer that should be treated with chemotherapy".[11] In reaction to this rather verbally violent statement, Beat Feurer gave an interview in which he said the following:

(5) *La psychologie a mis en évidence que les personnes qui ont des sentiments homosexuels mais les refoulent ont de vives réactions contre les homosexuels. Les propos inadmissibles et blessants de Grégory Logean sont peut-être explicables de cette manière.*
As psychology has shown, people who have repressed homosexual tendencies are prone to adopting homophobic

[11] See the story on the website of the Swiss Radio and Television broadcasting organisation: http://www.rts.ch/info/suisse/2071893-les-gays-une-tumeur-pour-certains-udc.html (in French, last accessed 16.12.2012).

> behaviour. Perhaps this is a way of explaining the unacceptable and hurtful comments of Gregory Logean.

The first task at hand is to reconstruct the argument in order to identify its structure and the way it articulates its premises and conclusion. The text supplies something that structurally resembles the major premise in a classical deductive categorical syllogism (i.e., something of the form 'all As are Bs'); in this case it is the universal affirmation encoded in the utterance reported below in (6), "people who have repressed homosexual tendencies are prone to adopting homophobic behaviour". In the second proposition, Feurer refers to an implicit content with the demonstrative "this" and invites us to assume that the content to be identified should serve as an explanation of why Logean has uttered those unacceptable statements; we are thus encouraged to find a conclusion that will be relevant, when combined with the major premise in (6), to the point he is making. I suggest that the intended implicit conclusion corresponds to something like (8), namely "perhaps Gregory Logean has repressed homosexual tendencies", which can be reformulated in (9) as "perhaps Gregory Logean is gay". So far we have identified the major premise and the conclusion, but we are still missing the minor premise. I argue that the one we will select to make sense of the argument is contextually very salient, since Feurer's interview is a reaction to what can be qualified as "adopting homophobic behaviour"; I have noted it down in (7) as "Gregory Logean has adopted homophobic behaviour".

(6) People who have repressed homosexual tendencies are prone to adopting homophobic behaviour.

(7) Gregory Logean has adopted homophobic behaviour.

(8) Perhaps Gregory Logean has repressed homosexual tendencies.

(9) Perhaps Gregory Logean is gay.

A first observation to be made about this argument is that its implicit conclusion functions as a personal attack meant to discredit Gregory Logean on the grounds of an alleged inconsistency on his behalf. If, indeed, Gregory Logean is gay, then the insult he uttered about gay people also applies to him. For this reason, the argument could be classified as a *tu quoque* variant of the *ad hominem* fallacy: the participant's credibility is undermined "by pointing out a contradiction between their opinions in the past and the present, or between what they say and what they do" (van Eemeren *et al*. 2002:112). In this case, Feurer is trying to make Logean look ridiculous and/or inconsistent.

Interestingly, if we look at the argumentative articulation represented by (6-8), there is little doubt that we are facing a serious formal problem: the argument looks like an instance of the fallacy of affirming the consequent (If P, then Q. Q. Therefore P).[12] It would be somehow like uttering (10)

[12] One could object that since the conclusion is introduced by the modal expression "perhaps", we cannot consider (5) to be a true instance of affirming the consequent – a formal fallacy which tries to make the conclusion follow from the premises *from necessity*. While I agree with the objection from a purely formal viewpoint, the pragmatic relevance of (5) seems to me to be contextually overwhelmingly favourable to the derivation of (8) and (9). That is, the speaker cannot be taken not to want his addressee to proceed with the reasoning pattern involved in the formal fallacy. In other words, the inference prompted in (5) follows the fallacious pattern for pragmatic reasons linked to the necessity of making (8) and (9) relevant with respect to (6) and (7).

whose fallaciousness, due to its mutually exclusive major and minor terms, is probably easier to spot than the fallaciousness of (5):

(10) All cats are mammals. My father is a mammal. Therefore my father is a cat.

However, I venture that the tentative reaction of readers to this utterance was not to reflect upon—and perhaps not even to identify—the formal fallaciousness of the argument: few readers, except those who have had training in logic, would probably realise that (5) can be treated as an instance of affirming the consequent. What is more, I hypothesise that a number of linguistic and pragmatic features in this example, for reasons linked to the contextual relevance of the utterance in terms of comprehension, will weaken the chances of spotting this instance of poor reasoning. Indeed, I take the example to be constructed in such a way that it drives the addressee's attention away from thorough argumentative evaluation by making relevant an alternative focus of interest, namely a humorous effect, which is recognised as interpretatively significant and hence prioritised among other possible cognitive tasks such as argument evaluation.

The first indication in support of this claim comes from the observation that the argument explicitly contains the major premise (6) and that the latter seems to pair up particularly aptly with the highly contextual minor premise in (7). The structure thus resembles that of formally valid arguments; even if it is fallacious, one might argue that its apparent display

of deductive consistency could still manage to fool epistemic vigilance. But a second set of observations linked to the contents the utterance encourages the addressee to represent at some point—i.e., contents which are necessary to the derivation of speaker meaning—can provide indications that the fallacy, in this context, might very well go unnoticed. To start with, the last sentence "Perhaps this is a way of explaining the unacceptable and hurtful comments on Gregory Logean" explicitly points to the usefulness of the implicit conclusion (8), which is said to constitute a potential explanation of why Logean has uttered what he has uttered. In other words, (8) is expected to achieve relevance by contributing an explanation of Logean's earlier homophobic behaviour, that is, to provide the reasons behind it, which is in itself useful in terms of cognitive effects. Since it is explicitly presented as providing significant cognitive effects, it is therefore likely that (8) will be deemed relevant. From the perspective of argumentation, (8) also serves as a legitimation of the argumentative structure that has partly been made explicit: the major premise (6) is explicitly communicated and so is the content of the minor premise (7) (which captures "the unacceptable and hurtful comments of Gregory Logean"). From the presence of both (6) and (7) we are led to expect as relevant any content which combines the information contained in the premises. This is incidentally primed by the demonstrative "this", which directs us towards the representation of a relevant referent. A second observation to be made here is that (7) is highly accessible in the context of interpretation because it refers to what Feurer is actually reacting to. (7) is therefore also likely to be represented by virtue of its contextual salience—and thus by virtue of its accessibility. A third

remark to be made is that the explicit major premise (6) would not be relevant unless it is combined with the implicit premise (7): I take this to follow from the presence of "adopting homophobic behaviour" in both propositions. As such, the expression fulfils the role of the middle term which is characteristic of all categorical syllogisms.

But the most important observation to be made in the example is probably that if you do not follow the fallacious structure of the argument, conditions will not be met to allow you to derive the humorous or ironic effect. In other words, if you do not process the utterances following the fallacious pattern of reasoning reconstructed above, you will not reach the intended conclusion, which is the one responsible for the humorous effect.

The example is quite complex because in spite of its argumentative features, it can still be considered as a humorous piece of discourse, to the extent that the charge of being gay, launched against someone who has notoriously adopted homophobic behaviour, is somewhat ironic when uttered by a gay person. It thus seems straightforward to accept (5) as an instance of discourse which combines humour and argumentation.[13] However, it must be noted that it does so in a quite specific way, which is not unknown to scholars who have researched humour and its mechanisms (see, e.g., Aubouin 1948; Ziv 1984; Attardo 1994): many times jokes require us to engage in faulty reasoning in order to be led "into the entertainment of the incongruous" (Curcó 1995:27). One could argue that

[13] It could also be argued that (5) is to be construed as an explanation rather than as an argument, which is not the same, as explanations are meant to identify reasons for an already admitted proposition, instead of trying to convince. However, it could hardly be defended here that the conclusion is already admitted by the readership, as Logean does not come across as a gay person – quite the opposite, in fact. Moreover, the focus of this discussion is the (fallacious) inferential work the addressee is asked to perform to understand Feurer's utterance. Whether it serves to convince or to explain is not crucial in this discussion.

this is precisely what happens in (5), as it is the fallacious articulation of the argument that makes the humorous effect possible. This also means that the interpretative significance—and relevance—of (5) will be measured against a humorous goal, and, crucially, not against an argumentative goal. You do not get the joke if you start questioning the validity of the argument, which seems to indicate that the argumentative evaluation is perhaps not what (5) is about. I therefore suggest that (5) achieves relevance not by being gauged as an argument, but instead by being interpreted in view of the enjoyment of a humorous effect.

If we now take these observations one step further and assess them from a cognitive perspective concerned with information-processing and the cognitive modules that appear to be solicited here, (5) exhibits an interesting property: its features are such that it could tentatively be processed by either the argumentative module or the comprehension module. In the first case, the evaluative procedure should discard the argument and consider what Feurer has uttered as fallacious. In other words, in case (5) is processed by the argumentative module, the output of the procedure would lead the addressee to consider that the conclusion does not follow from the premises. However, this is arguably not what happens with the readers of (5): instead, I argue that in this context (5) is picked up by the comprehension module exclusively, because of the anticipation of increased relevance relatively to the humorous component of the utterance. In this case, the mind is busy computing information and drawing inferences relatively to a humorous goal—not to an argumentative one. Going back to the earlier characterisation of rhetorical effectiveness (cf. Section 2.1), it seems that the

example under consideration is best captured by scenario (2b), in which the hearer does not find any reason to summon critical information. This is presumably so in (5) because the hearer is encouraged to engage in cognitive processing with regard to a humorous goal, i.e., a goal whose fulfilment requires operation of the comprehension module. The consequences in terms of argument evaluation are crucial: since the addressee does not identify the formal fallacy as such, the contents communicated in (5) might go through without having been submitted to doubt.[14] The risk is therefore associated here with the absence of the evaluative procedure.

One last remark, inspired by the specificity of such a borderline example (which navigates between argumentation and humour), is in order. One could argue, following what I have suggested so far, that if (5) does not end up being processed by the argumentative module it *ipso facto* loses its persuasive power altogether. If you do not process (5) as an argument, then how can you justify that it is still convincing?

I believe a twofold answer can do away with the problem. First, the comprehension module arguably also has a built-in, albeit rudimentary, evaluative procedure which relevance theorists envisage as "a cost-effective epistemic assessment" (Wilson 2010). Furthermore, Sperber et al. (2010: 376) note, as they assess the way vigilance towards the content of verbal stimuli is deemed to operate, that

[14] An anonymous reviewer highlights that the kind of account defended here has clear links with research on deception detection (for a concise review of the field, see e.g. Levine and Kim 2010: 22-23). While I agree that fallacies can be deceptive, they are not necessarily so, as anyone is prone to commit reasoning mistakes which are not deliberate and thus non deceptive. Nevertheless, assessing how the contents of this chapter relate to deception detection mechanisms remains a promising direction for further research.

> the search for a relevant interpretation, which is part and parcel of the comprehension process, automatically involves the making of inferences which may turn up inconsistencies or incoherences relevant to epistemic assessment. When such inconsistencies or incoherences occur, they trigger a procedure wholly dedicated to such assessment.

Cognitive effects are defined in epistemic terms, since they contribute true information or allow us to discard information that turned out to be false. Incidentally, Relevance Theory postulates that to consider that an assumption is manifest in someone's cognitive environment amounts to considering that said assumption is true or probably true. In relation with my analysis of (5), this suggests that the fallacy of affirming the consequent, even if it goes unnoticed as a fallacy, might still carry some persuasive power by misdirection of cognitive resources—or at least enough persuasive power to keep the cognitive system computing the humorous tone of the utterance instead of yielding an error which would then hand in the material to further epistemic assessment procedures such as those the argumentative module is responsible for.

The second part of the answer to the challenge comes from the argumentative significance of the example; even if there were no real claims as to the fact that Grégory Logean might be hiding repressed homosexual tendencies, (5) is still a personal attack and turns Logean into the butt of the joke. The impact of the personal attack on speaker *ethos* is potentially disastrous for him, and this is clearly of argumentative significance.

Arguments are certainly evaluated on their merits, the evaluation being based on the consistency of their content, but it is no secret to rhetoricians that the image of the source of information plays a crucial role in any persuasive endeavour. By launching the *ad hominem* attack, Feurer is thus not only trying to cast doubt on Logean's sexual identity, but he is also depicting him as an unreliable speaker, and undermining the credibility of someone is unquestionably one way of trying to refute whatever they say.

5. Conclusion

This chapter aimed to articulate a cognitive take on rhetorical effectiveness by trying to characterise different scenarios meant to capture the phenomenon within a unified framework. I have argued that rhetorical effectiveness can result from two types of processing, which I distinguished through a criterion of (non-)selection of critical information in the evaluative process. I have furthermore argued, following the core tenets of epistemic vigilance, that the relationship between understanding and believing can be explored so as to provide answers to the question of rhetorical effectiveness. The main assumption defended in this chapter can be summarised as follows: constraints on meaning derivation may determine whether a given argument is properly evaluated by reducing the availability and the strength of critical information, sometimes before the evaluative procedure can even begin.

With my discussion of an example taken from naturally-occurring political discourse, I have particularly focused on the last of the four sub-scenarios of rhetorical effectiveness, namely the situation in which the cognitive system is led not to find it relevant to mobilise critical information for evaluative purposes. I claim that this is typical of a fallacious argument: defined by Hamblin (1970:12) in the so-called 'standard treatment', as an argument "that seems to be valid but is not so", an effective fallacy arguably always manages to immediately pass as a sound argument—and therefore to prevent critical evaluation. I have ventured that cases like these are of great interest to research located at the interface between (cognitive) pragmatics and argumentation theory, or, in more general words, between communicating and reasoning.

The implications of this analysis are significant for the two fields of research brought together here. First, the premises of what could look like *cognitive rhetoric* have been laid out, and in principle this characterisation would be applicable to the study fallacious arguments that we find in everyday discourse, but also to sound arguments. The type of model advocated here has the advantage of distinguishing the processing of sound arguments from that of fallacious arguments, but not on the grounds of qualitative criteria. To the extent that sound and fallacious arguments are both processed as communicative stimuli, considerations of relevance obtain in both cases, and their processing is arguably governed by the same cognitive mechanisms. The difference between them is that fallacious arguments manage to prevent critical information from entering the picture, while sound arguments encourage it. This conception incidentally echoes

mainstream conceptions of sound and fallacious argumentation within argumentation theory. While it remains compatible with the research carried out within the scope of the first question formulated in the introduction (that of argument validity), it provides new directions of research for a development of the second question, namely the effectiveness of arguments.

The significance of the type of research reported here for cognitive science more globally lies in the recognition that the processing of particular verbal stimuli can trigger some sort of modular competition. Within the massively modular framework advocated by Sperber (1994, 2001, 2005), cognitive modules are believed to "compete for energetic resources" (Sperber 2005:61). The example discussed above is in my view a clear example of such competition. Whether the comprehension module or the argumentative module is solicited will determine the stimulus' role in the communicative exchange but also its impact on the addressee's cognitive environment, if not on his beliefs. Interestingly, considerations of relevance, defined following Relevance Theory as a general principle underlying cognitive processing, seem to provide the necessary import to start developing a cognitive account of rhetoric which takes into account both the importance of understanding and that of reasoning.

References

Attardo, Salvatore. 1994. *Linguistic Theories of Humor*. Berlin-New York: Mouton de Gruyter.

Aubouin, Elie. 1948. *Technique et psychologie du comique*. Marseille: OFEP.

Bardone, Emanuele. 2011. *Seeking Chances. From Biased Rationality to Distributed Cognition*. Berlin/Heidelberg: Springer.

Copi, Irving and Carl Cohen. 1990. *Introduction to Logic* (8th edition). New York: Macmillan Publishing Company.

Curcó, Carmen. 1995. "Some observations on the pragmatics of humorous interpretations. A relevance-theoretic approach." *UCL Working Papers in Linguistics* 7: 27-47.

Eemeren, Frans van, Rob Grootendorst, and Francisca Snoeck Henkemans. 2002. *Argumentation. Analysis, Evaluation, Presentation*. Mahwah, NJ: Routledge.

Eemeren, Frans van, and Rob Grootendorst. 2004. *A Systematic Theory of Argumentation. The Pragma-dialectical Approach*. Cambridge: Cambridge University Press.

Eemeren, Frans van, Rob Grootendorst, Francisca Snoeck Henkemans, Anthony Blair, Ralph Johnson, Erik Krabbe, Christian Plantin, Douglas Walton, Charles Willard, John Woods, and David Zarefsky. 1996. *Fundamentals of Argumentation Theory*. Mahwah, NJ: Erlbaum.

Evans, Jonathan S. B. T. 2004. "Biases in deductive reasoning". In *Cognitive Illusions. A Handbook on Fallacies and Biases in Thinking, Judgement and Memory*, ed. by Rudiger Pohl, 127-144. Hove and New York: Psychology Press.

Evans, Jonathan S. B. T., and Keith Frankish (eds). 2009. *In Two Minds*. New York: Oxford University Press.

Evans, Jonathan S. B. T., Julie Barston and Paul Pollard. 1983. “On the conflict between logic and belief in syllogistic reasoning”. *Memory and Cognition* 11(3): 295-306.

Gigerenzer, Gerd. 2008. “Why heuristics work”. *Perspectives on Psychological Science* 3(1): 20-29.

Groarke, Leo and Christopher Tindale. 2004. *Good Reasoning Matters! A Constructive Approach to Critical Reasoning*. Don Mills, Ontario: Oxford University Press.

Jackson, Sally. 1996. “Fallacies and heuristics”. In *Logic and Argumentation*, ed. by Johan van Benthem, Frans H. van Eemeren, Rob Grootendorst and Frank Veltman, 101-114. Amsterdam: Royal Netherlands Academy of Arts and Sciences.

Levine, Timothy R. and Rachel K. Kim. 2010. “Some considerations for a new theory of deceptive communication”. In *The Interplay of Truth and Deception*, ed. by Mark Knapp and Matthew McGlone, 16-34. New York: Routledge.

Lewiński, Marcin, and Steve Oswald. 2013. “When and how do we deal with straw men? A normative and cognitive pragmatic account”. *Journal of Pragmatics* 59(B): 164-177.

Maillat, Didier. 2013. “Constraining context selection: On the pragmatic inevitability of manipulation”. *Journal of Pragmatics* 59(B): 190-199.

Maillat, Didier “Manipulation et cognition: Un modèle pragmatique”. In *Rhetoric and Cognition. Theoretical Perspectives and Persuasive Strategies*, ed. by Thierry Herman and Steve Oswald, 69-88. Berne: Peter Lang.

Maillat, Didier, and Steve Oswald. 2009. “Defining manipulative discourse: the pragmatics of cognitive illusions”. *International Review of Pragmatics* 1(2): 348-370.

Maillat, Didier and Steve Oswald. 2011. “Constraining context: A pragmatic account of cognitive manipulation”. In *Critical Discourse Studies in Context and Cognition*, ed. by Christopher Hart, 65-80. Amsterdam: John Benjamins.

Mercier, Hugo. 2012. “Looking for arguments”. *Argumentation* 26(3): 305-324.

Mercier, Hugo, and Dan Sperber. 2009. “Intuitive and reflective inferences”. In *In Two Minds*, ed. by Jonathan. S. B. T. Evans and Keith Frankish, 149-170. New York: Oxford University Press.

Mercier, Hugo, and Dan Sperber. 2011. “Why do humans reason? Arguments for an argumentative theory”. *Behavioral and Brain Sciences* 34(2): 57-74.

O’Keefe, Daniel. 1996. “Argumentation studies and dual-process models of persuasion”. In *Logic and Argumentation*, ed. by Johan van Benthem, Frans H. van Eemeren, Rob Grootendorst, and Frank Veltman, 61-76. Amsterdam: North-Holland.

Oswald, Magrit, and Stefan Grosjean. 2004. “Confirmation bias”. In *Cognitive Illusions. A Handbook on Fallacies and Biases in Thinking, Judgement and Memory*, ed. by Rudiger Pohl, 79-96. Hove and New York: Psychology Press.

Oswald, Steve. 2010. *Pragmatics of uncooperative and manipulative communication.* PhD diss., University of Neuchâtel.

Oswald, Steve. 2011. “From interpretation to consent: Arguments, beliefs and meaning”. *Discourse Studies* 13(6): 806-814.

Oswald, Steve, and Christopher Hart. 2013. “Trust based on bias: A cognitive and evolutionary treatment of the rhetorical effectiveness of the *ad verecundiam* and *ad populum* fallacies”. In *Virtues of Argumentation. Proceedings of the 10th International Conference of the Ontario Society for the Study of Argumentation (OSSA), 22-26 May 2013.*, ed. by Dima Mohammed and Marcin Lewiński, 1-13. Windsor, ON: OSSA.

Oswald, Steve, and Marcin Lewiński. 2014. “Pragmatics, cognitive heuristics and the straw man fallacy”. In *Rhetoric and Cognition. Theoretical Perspectives and Persuasive Strategies*, ed. by Thierry Herman and Steve Oswald, 313-343. Berne: Peter Lang.

Perelman, Chaim, and Lucie Olbrechts-Tyteca. 2008 [1958]. *La nouvelle rhétorique: Traité de l’argumentation*. Bruxelles: Editions de l’Université Libre de Bruxelles.

Petty, Richard E., and John T. Cacioppo. 1986. *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York: Springer-Verlag.

Sperber, Dan. 1994. “The modularity of thought and the epidemiology of representations”. In *Mapping the Mind: Domain Specificity in Cognition and Culture,* ed. by Lawrence A. Hirschfeld and Susan A. Gelman, 39-67. New York : Cambridge University Press.

Sperber, Dan. 2001. “In defence of massive modularity”. In *Language, Brain and Cognitive Development*: *Essays in Honor of Jacques Mehler*, edited by Emmanuel Dupoux, 47-57. Cambridge, Mass: MIT Press.

Sperber, Dan. 2005. “Modularity and relevance: How can a massively modular mind be flexible and context-sensitive?”. In *The Innate Mind: Structure and Content*, ed. by Peter Carruthers, Stephen Laurence and Stephen Stich, 53-68. Oxford: Oxford University Press.

Sperber, Dan, and Hugo Mercier. 2012. “Reasoning as a social competence”. In *Collective Wisdom. Principles and Mechanisms*, ed. by Hélène Landemore & Jon Elster, 368-392. Cambridge: Cambridge University Press.

Sperber, Dan, and Deirdre Wilson. 1995. *Relevance. Communication and cognition* (2nd edition). Oxford: Blackwell.

Sperber, Dan, Fabrice Clément, Christophe Heintz, Olivier Mascaro, Hugo Mercier, Gloria. Origgi and Deirdre Wilson. 2010. “Epistemic vigilance”. *Mind & Language* 25(4): 359-393.

Toulmin, Stephen. 2008[1959]. *The Uses of Argument*. Cambridge: Cambridge University Press.

Walton, Douglas. 2010. “Why fallacies appear to be better arguments than they are”. *Informal Logic* 30(2): 159-184.

Wason, Peter. 1960. “On the failure to eliminate hypotheses in a conceptual task”. *The Quarterly Journal of Experimental Psychology* 12(3): 129-140.

Wason, Peter. 1966. “Reasoning”. In *New Horizons in Psychology*, ed. by Brian M. Foss, 106-137. Harmondsworth: Penguin.

Wilson, Deirdre. 2010. “Understanding and believing.” Paper delivered at the 4th International Conference on Intercultural Pragmatics, Madrid.

Wilson, Deirdre and Dan Sperber. 2004. “Relevance theory”. *UCL Working Papers in Linguistics* 14: 249-287.

Ziv, Avner. 1984. *Personality and Sense of Humor*. New York: Springer.