

RESUMEN Hoy día los anuncios publicitarios nos inundan de forma tan abrumadora que captar la atención del receptor y mantenerla el tiempo suficiente para que el anuncio sea procesado en su totalidad se han convertido en objetivos esenciales para el publicista. El empleo de determinadas estrategias en el diseño de los anuncios contribuye eficazmente a la consecución de dichos objetivos, facilitando no sólo que la audiencia preste atención al estímulo sino también que lo procese de una forma determinada, favorable al publicista. Proponemos que la teoría de la Relevancia, un enfoque de la comunicación que se construye sobre una visión de la cognición como un sistema masivamente modular, ofrece las herramientas adecuadas para explicar la naturaleza de los procesos interpretativos en la comprensión verbal. El conocimiento de los procedimientos inferenciales reflexivos que intervienen en la interpretación de los enunciados permite al publicista prever el tipo de procesamiento que los receptores realizarán, dándoles la posibilidad de controlarlo de tal manera que determinados efectos interpretativos se recuperen de la forma prevista.

PALABRAS CLAVE Anuncios. Teoría de la relevancia. Inferencias reflexivas. Enunciados retroactivos.

SUMARIO 1 Introducción. – 2 Modularidad masiva y sistema de comprensión verbal. – 3 Lectura de pensamiento, interpretación de enunciados y el procedimiento de comprensión de relevancia. – 4 Las inferencias en la comprensión verbal. – 5 Control y desarrollo del proceso interpretativo. – 6 Inferencias reflexivas y procedimiento interpretativo según la teoría de la relevancia. – 7 Inferencias reflexivas y efectos cognitivos. – Conclusión. – Referencias.

Inférences réflexives dans la publicité

RÉSUMÉ Aujourd'hui les annonces publicitaires nous envahissent de tel manière que capter l'attention du récepteur et la maintenir le temps suffisant pour que l'annonce soit traitée en sa totalité se sont convertis en objectifs essentiels pour le publiciste. L'emploi de certaines stratégies dans la réalisation des annonces contribue efficacement à la réalisation de ces objectifs en facilitant non seulement que l'audience fasse attention au stimulus mais aussi qu'il le traite d'une manière déterminée, favorable au publiciste. Nous proposons que la théorie de la Pertinence, une approche de la communication qui se construit sur une vision de la cognition comme un système massivement modulaire, offre les outils pertinents pour expliquer la nature des processus interprétatifs dans la compréhension verbale. La connaissance des procédures inférentielles réflexives qui interviennent sur l'interprétation des énoncés permet au publiciste de prévoir le type de processus que les récepteurs réalisent en leur donnant la possibilité de le contrôler de façon que les différents effets interprétatifs répercutent de la manière envisagée.

MOTS CLÉS Annonces publicitaires. Théorie de la Pertinence. Inférences réflexives. Énoncés rétroactifs.

SOMMAIRE 1 Introduction. – 2 Modularité massive et système de compréhension verbale. – 3 Lecture de la pensée, interprétation d'énoncés et processus de compréhension de la pertinence. – 4 Les inférences dans la compréhension verbale. – 5 Contrôle et développement du processus interprétatif. – 6 Inférences réflexives et processus interprétatif selon la théorie de la pertinence. – 7 Inférences réflexives et effets cognitifs. – Conclusion. – Références.

Reflexive inferences in advertising

ABSTRACT Advertisements are so ubiquitous nowadays that capturing the addressee's attention and maintaining it long enough for them to be fully processed have become fundamental objectives for advertisers. Employing specific strategies in the design of the advertisement contributes efficiently to achieving these goals, getting the audience not only to attend the stimulus but also to process it in certain ways favourable for the advertiser. We argue that Relevance theory, an approach to communication built on a massively modular view of cognition, offers the right tools to explain the nature of the interpretative processes in verbal comprehension. Knowledge of the relevance-based reflexive inferential procedures involved in utterance interpretation allows advertisers to foresee the addressee's processing behaviour, giving them the possibility to control it in a such a way that the intended interpretative effects are achieved in the desired way.

KEY WORDS Advertisements. Relevance theory. Reflexive Inferences. Garden-path utterances.

SUMMARY 1 Introduction. – 2 Massive modularity and the verbal comprehension system. – 3 Mind-reading, utterance interpretation and the relevance-theoretic comprehension procedure. – 4 Inferences in verbal comprehension. – 5 Controlling and calculating the interpretative process. – 6 Reflexive inferences and the relevance-based interpretation procedure. – 7 Reflexive inferences and cognitive effects. – Conclusion. – References.

Reflexive inferences in advertising

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1 Introduction

Advertising is an essential part of today's society. Every day we are exposed to so many advertising messages in all kinds of format and through all sorts of medium that we have become used to them. According to the Media Dynamics publication, *Media Matters*, the average adult is daily exposed to about 600 ads in any form (whether noticed or not), 272 of them coming from major traditional media (TV, newspapers, radio and magazines). Story (2007), from *The New York Times*, cites Yankelovich, a market research firm, that estimates that a person living in a city 30 years ago saw up to 2,000 ad messages a day, while today it is around 5,000 the advertisements we come across. These huge numbers represent more a problem than a benefit for advertisers as most of these ad messages, though very cleverly built, and ignored and go unnoticed, and if they manage to catch the audience's attention they do not achieve to maintain it for a very long time. The consequence is that addressees only process a very limited amount of the total number of advertisements they come through and this is a serious disadvantage for advertisers, who intend their messages to be fully recovered and remembered. As a result, gaining the reader's attention on their advertisement and maintaining it long enough for it to be fully processed has become one of the main goals for advertisers. However, this is a very complicated objective, given that addressees have developed this kind of immunity to advertising stimuli and the messages communicated by them.

One way around this problem is employing specific strategies in the design of the advertisements that contribute to success in getting the audience not only to attend the stimulus but also to process it in certain ways favourable for the advertiser. We argue that advertisers can foresee and control the addressee's processing behaviour on the basis of the knowledge of how the human cognitive system and, more specifically, the verbal comprehension system, work. This knowledge will give them the possibility of selecting the adequate stimuli which will capture the addressee's attention in the first place, initiating in this way the interpretative process. It will also allow them to design the advertisement in such a way that the reader will be compelled to go ahead in the processing, proceeding through a series of carefully calculated steps.

Our aim in this paper is to argue that Relevance theory, a cognitive approach to communication and pragmatic interpretation, offers the right tools to explain how

the verbal comprehension procedure functions and how individuals can take advantage of this knowledge to communicate efficiently, with reference to the special circumstances of advertising. We start presenting an outline of the massive modularity view of the human cognitive system that underlies Relevance theory and its main implications for verbal comprehension. In the following section we analyse Sperber and Wilson's proposal regarding the relationship between the mind reading ability and inferential comprehension, which is considered to be a modular process. Regularities unique to the domain of verbal comprehension relative to the human tendency to look for relevant information have led to the development of a mechanism which applied to the processing of ostensive stimuli. This mechanism, the *relevance-guided inferential comprehension procedure*, accounts for how speaker's meaning is recovered, and the kind of inferential processes involved in comprehension. In the following sections we discuss the fundamental role that reflexive inferences play in the interpretative process, showing how their computations, together with the limited access to background information that the verbal comprehension modular system has, can affect in a decisive way the resulting interpretation of a given stimulus. Knowledge of the relevance-oriented nature of human cognition and of the mechanisms involved in verbal comprehension makes it possible to predict and plan the way in which people will interact with the information they receive.

2 Massive modularity and the verbal comprehension system

Relevance theory, as developed by Sperber & Wilson (1986, 1995), is one of the most attractive pragmatic analysis of human communication from a cognitive point of view. They start from the idea that pragmatic interpretation of utterances is a cognitive activity which involves a number of inferential operations on mental representations, operations which are governed and guided by a single cognitive principle, the principle of relevance.

The theoretical foundations of Relevance theory can be found in the modular view of the human cognitive architecture proposed by Fodor (1983, 2000). On his view, there are two types of human cognitive systems: perceptual input systems, including language perception, which are properly modular, and central systems, responsible for forming beliefs and making decisions, which are properly inferential and nonmodular. Fodor lists a number of features that characterise modular systems, the most important and controversial being their domain specificity, according to which modules can only operate on specific kind of stimuli, and their informational

encapsulation, that refers to their limited access to information in specific databases to perform their computations.¹

Fodor proposes that the language faculty is an autonomous module composed of different submodules (phonetic, phonological, lexical, semantic and syntactic) which behave in an autonomous, independent way, only accepting as input the output of the computations of preceding modules. In utterance interpretation, the linguistic processing modular system acts in an initial phase, decoding the utterance in an automatic, fast and encapsulated fashion. Then, a second phase follows, that of pragmatic interpretation, which is inferential, highly context sensitive and carried out by the central system that bridges the gap between the decoded meaning and the speaker's intended meaning. Pragmatic inferences are special because, while modular processes have restricted access to contextual information, they are not limited on the type or source of contextual information they may use in their computations.

In the last years, evolutionary psychologists have put forward a different view of the human cognitive system which has brought about a revision of the concept of module as initially developed by Fodor. They propose that the cognitive architecture is massively modular, including the central systems responsible for higher level functions such as reasoning or belief fixation.² Mercier & Sperber (2009) explain it as follows:

Massive modularists are neither monists nor dualists, they are pluralists. They see the human mind as made up of many specialised modules, each autonomous, each with a distinct phylogenetic and/or ontogenetic history, and each with its own input conditions, specific procedures, and characteristic outputs. (150)

The originality of this new conception is that a module is now characterised, not by a number of properties, but by the presence of specific, autonomous mechanisms which have developed to deal with regularities in specific domains (Sperber 1996, 2001). For instance, Wilson (2003) explains how mind-reading, the ability that enables human beings to explain the behaviour of others in terms of mental states

1 Besides being informationally encapsulated and domain specific, modular systems are mandatory, stimulus driven, fast, produce shallow outputs, are inaccessible to consciousness, have fixed neural localization and present characteristic breakdown patterns. For a detailed explanation of each of these features see Fodor (1983: 43-101).

2 There is a variety of positions on modularity; from the minimal *modularity* proposed by Fodor (1983, 2000) to the *massive modularity*, the very extreme proposal defended by evolutionary psychologists (Cosmides & Tooby, 1992; Pinker, 1997; Sperber, 1994, 2001, 2005). There are also a number of middle positions which propose a moderately massive modular view in which the mind contains modular as well as non-modular systems besides central systems (Carey & Spelke, 1994; Smith & Tsimpli, 1995; Carruthers, 1998, 2003; Cosmides & Tooby, 2001).

(intentions, beliefs, desires...), can be considered to be modular from this new perspective:

According to the classical version of the modularity thesis, mind-reading should be a central rather than a modular process because its outcome depends on global factors: there is no principled restriction on the type of contextual information that may be required to predict and explain someone's actions. From an evolutionary perspective, the question is not so much whether the processes involved are global or local, but whether they are carried out by general purpose mechanisms or by autonomous, special-purpose mechanisms attuned to regularities existing only in the domain of intentional behaviour. To the extent that mind-reading involves such special-purpose inferential mechanisms, it would be modular in this new, broader sense. (306)

Cognitive modules, a sub-type of biological modules, are *domain-specific*, that is, they process specific inputs that meet specific conditions and inform the organism about them. A cognitive module has its own procedures and may also have a database of its own³.

The massive modularity thesis faces two problems that Sperber (2005) answers in detail. The first one has to do with the informational encapsulation of modules. If modules are so restricted their computations must lack the flexibility and context-sensitivity typical of higher central processes and would not have access to information from other modules necessary to perform their computations. However, the human mind is highly flexible; the context of cognitive processes is continuously changing because the output of those processes modify the context in which the next inputs are processed. All these contextual changes can be taken into account and be reflected in the computations performed by the human mind. Or, as Sperber (2005: 2) explains it in the case of verbal comprehension: "In verbal comprehension, for instance, the interpretation of every utterance modifies the context in which the next utterance is interpreted. Context-sensitivity is the ability to take this ever changing context into account." Then informational encapsulation and context-sensitivity can be combined in the following way. The operations of a cognitive module are not directly influenced by what other modules are doing or by the information available to them. However, the different modules can influence one another indirectly; for instance, the outputs of a module's operations can be the input to some other module. Thus, in verbal comprehension, the pragmatic interpretation module gets part of its input from the output of the linguistic decoding module. The restriction imposed by encapsulation relates to the point in

3 Some modules are innate while others are acquired. For instance, in the case of humans, most innate modules are learning modules (e.g. the language faculty) which function using environmental inputs to construct other modules (e.g. the grammar of a particular language). See Sperber (2005).

the process when information from other modules becomes available as while the module is working its operations cannot be affected in any way.

The second problematic property of modules is mandatoriness. Sperber (2005: 10) points out that if the module operations are automatically triggered by every input that meets its specific conditions then there would be a *computational explosion* and besides, it would also mean that “every input would be processed in the same way in every situation.” Sperber solves this problem distinguishing two senses in which a cognitive procedure can be mandatory. In a first sense, “a procedure is mandatory if, given the appropriate input, it will follow its course and produce its output whatever the rest of the mind/brain is doing” (Sperber, 2005: 10). In a second sense, a procedure is “mandatory” or *involuntary* if it cannot be voluntarily willed or blocked” (Sperber, 2005: 11). When Fodor claims that the operations of the modules are mandatory he means that they are both, automatically input-triggered and involuntary. But Sperber defends that both properties do not necessarily go together.⁴ The operations of input modules are mandatory only when the stimulus is and stays long enough at fixation, and the processor is not actively attending some other stimulus. A stimulus could be well within the field of perception and not be processed by the module for different reasons: because it has not received enough attention, or other stimuli are being processed at the time, etc. Mental modules in the human cognitive system compete for energetic resources and, according to Sperber (2005), the context-sensitivity of the system is shown in the way energy is allocated among modules. It is easy that a number of modules, all at once, have inputs available for processing and, as resources are limited and not all of them can function simultaneously, they have to compete for brain power to process them. Although the appropriate input may initially activate specific modular procedures they may not run their full course due to ‘inattentional blindness, that is, to the receiver’s attention being focussed on something else.’⁵ Energy distribution for modular processing will be effected via some kind of flexible, context-sensitive procedure in such a way that it contributes positively to the efficiency of the human cognitive system as a whole.

Humans are continuously monitoring the environment and establishing contact with many potential inputs for further processing. But new inputs must be processed in the light of information already stored in the individual’s memory and this process has a cost which must find its compensation, as Sperber (2005) explains:

4 There are many procedures, not under the voluntary control of the individual, which can be inhibited and boosted by internal factors (for instance, expectations) or external factors (distracting stimuli). See Sperber (2005) for examples.

5 Very striking experimental evidence of this “inattentional blindness” can be found in Simons & Chabris (1999). They used in their experiment a number of videos to prove that we only perceive and remember those objects that receive focused attention. Some of the videos they used can be watched at <<http://viscog.beckman.illinois.edu/flashmovie/15.php>>.

Attending to a given stimulus, activating memorised information, bringing the two together and drawing inferences are effort-demanding mental activities. Effort is a cost that should be incurred only in the expectation of a benefit. Different trains of thought involve quite different evolving allocations of efforts and may produce quite different cognitive benefits. (13-14)

Cognitive efficiency is a matter of investing effort in processing the right inputs. The question is how the mind selects them. Well, according to Sperber & Wilson (1995), attending to their relevance, a property of inputs to cognitive processes defined in terms of the cognitive benefits that the system can obtain from processing the input and the processing cost involved in the procedure. The brain is optimistic about its own procedures and, in making decisions regarding the allocation of its processing resources, the mind is guided by *expected* effects and *expected* effort. Obviously there is no guarantee of how the processing will evolve. Different inputs may initially activate specific modular procedures which then compete for the required energy resources to complete their action. If the system decides that one of the inputs has the highest level of expected relevance then resources could be re-allocated to the processing of that specific input.

A consequence of this mode of functioning is that we do not choose the stimuli we attend to, the stimuli we process, or the kind of procedures we apply to them. Not at least in the initial stages of the cognitive operations. We behave in specific ways because it is in-built in the innate design of our cognitive system. As Wilson (2003) states:

As a result of constant selection pressure towards increasing efficiency, the human cognitive system has developed in such a way that our perceptual mechanisms tend automatically to pick out potentially relevant stimuli, our memory retrieval mechanisms tend automatically to activate potentially relevant contextual assumptions, and our inferential mechanisms tend spontaneously to process them in the most productive way. (315)

This idea is reflected in the *First, Cognitive Principle of Relevance* which, according to Sperber & Wilson (1995: 262), governs the functioning of human cognition: "Human cognition tends to be organised so as to maximise relevance." Relevance, they claim, is a property of defined in terms of cognitive effects and processing effort. That human cognition is naturally relevance-oriented means that the cognitive operations carried out by it will aim at the processing of the input in the most productive way in terms of effects obtained and processing effort demanded. Thus, attention and processing resources are automatically allocated to information that seems relevant enough to be worth processing.

3 Mind-reading, utterance interpretation and the relevance-theoretic comprehension procedure

Sperber & Wilson (1995) defend that human communication is also governed by the search of relevance; human beings only pay attention to that information that seems relevant to them. Every act of overt communication is an act of ostension and, as such, it involves the use of a stimulus which, by attracting the audience's attention, will trigger expectations of relevance that will guide the audience in the recovery of the communicator's intended meaning. This is what Sperber & Wilson (1995: 260) call the *Second, Communicative principle of Relevance*: "Every act of ostensive communication communicates a presumption of its own optimal relevance." Thus, the principle of relevance governs the inferential processes of pragmatic interpretation and helps the audience to select and build a single plausible interpretative hypothesis for the utterance.

Sperber & Wilson (2002) view inferential comprehension as falling within the domain of an intuitive 'theory of mind' module. Understanding an utterance is a special case of understanding intentional behaviour, a process carried out by means of the mind-reading ability which enables humans to predict and explain people's behaviour in general, and more specifically the recognition of speaker's intentions in communication.

Traditionally mind reading has been classified as a central, non-modular process involving the application of general reasoning abilities. However, recently, evidence has been found that suggests that it could be a modular process which depends on special-purpose, inferential mechanisms which have developed in tune with the regularities in the domain of intentional behaviour.⁶ In the light of this new evidence Sperber & Wilson (2002) have modified their initial position and defend the idea that pragmatic interpretation is a specialized module:

[...] pragmatic interpretation is not simply a matter of applying Fodorian central systems or general mind-reading abilities to a particular (communicative) domain. Verbal comprehension presents special challenges, and exhibits certain regularities, not found in other domains. It therefore lends itself to the development of a dedicated comprehension module with its own particular principles and mechanisms. (5)

Pragmatic interpretation is domain-specific as it can only be applied to the interpretation of ostensive stimuli, that is, stimuli that have been produced with the

6 There are clear dissociations between mind-reading and general reasoning abilities. For instance, people with Williams Syndrome have strong mind-reading and communicative abilities but poor general reasoning abilities. And the opposite: people with Asperger's syndrome may have very poor mind-reading abilities and very good general reasoning abilities. Both facts suggest that mind-reading depends on dedicated inferential mechanism that may remain intact while reasoning abilities are impaired and the other way round.

intention of making mutually manifest to the audience and speaker that he/she has the intention to communicate something to the audience. Thus, the relevance-based comprehension module cannot be activated by non-communicative, non-ostensive stimuli. Pragmatic interpretation, at least to some extent, is also encapsulated as, for instance, the existence of pragmatic illusions seem to suggest.⁷ Under this view inferential comprehension is considered to be an intuitive, unreflective, modular process which takes place below the level of consciousness and whose operations are constrained by the principle of relevance.

The verbal comprehension submodule differs from the general mind-reading module in two ways: first, in the complexity of the metarepresentations involved in inferential comprehension and second in the sort of regularities in its domain. First, the verbal comprehension may involve several levels of metarepresentation and so, different levels of complexity (Sperber 1994, 1996, 2000). In a communicative act the idea activated in the receiver's mind and the message finally inferred are normally very different. The idea is merely a trigger for the identification of the speaker's meaning via the recognition of his/her communicative intentions.⁸

And second, the mind-reading module can exploit the regularities in intentional behaviour to develop certain inferential procedures to function only in those domains, procedures which will be special in the case of the verbal comprehension submodule as it presents regularities unique to its domain. These regularities have to do with the Cognitive principle of relevance, that is, with the natural tendency of humans to look for relevant information, and how it gets reflected in communication through the development of a dedicated inferential procedure: the *relevance-guided inferential comprehension procedure for ostensive stimuli*.

The relevance-guided inferential comprehension procedure is a dedicated inferential mechanism which functions with an in-built tendency for considerations of relevance. When a speaker engages in ostensive communication and produces an utterance, he does so with the intention that his/her receiver finds the stimulus

⁷ Carston (1997:47) comments the following example taken from a lecture by Wilson (1996): *No head injury is too trivial to ignore*, which we wrongly understand as meaning "all head injuries should be attended to", the opposite of what the semantics of the utterance indicate ("all head injuries are trivial and should be ignored"). The curious fact is that if the same utterance is reprocessed the same incorrect interpretation arises again in the first place, even having already worked out the correct meaning. Carston (1997) mentions that, although there is not a clear explanation of what is happening in the example, it is interesting how there is a persistent limitation on the access to the information that could help the receiver to process the utterance correctly.

⁸ According to Sperber (1994) there are three interpretative strategies the receiver could adopt: a *naïve optimistic*, a *cautious optimistic* and a *sophisticated* strategy. All these strategies involve the ability of the part of the hearer to deal with different levels of higher order intentions. See Sperber (1994) and Wilson (2000) for a deep analysis of each of these strategies.

relevant enough to be worth his/her attention. Thus, every utterance conveys a presumption of its own relevance; this is the Second, Communicative Principle of relevance and, as Sperber & Wilson (1995: 270) claim, the key to inferential comprehension:

Presumption of optimal relevance (revised)

- (a) The ostensive stimulus is relevant enough for it to be worth the addressee's effort to process it.
- (b) The ostensive stimulus is the most relevant one compatible with the communicator's abilities and preferences.

The presumption of optimal relevance is built into our verbal comprehension system and this is why the relevance comprehension procedure is automatically used in interpreting the speaker's meaning. Sperber & Wilson (2002:14) explain how it works:

Relevance-theoretic comprehension procedure

- (a) Follow a path of least effort in computing cognitive effects. In particular, test interpretive hypotheses (disambiguations, reference resolutions, implicatures, etc.) in order of accessibility.
- (b) Stop when your expectations of relevance are satisfied.

The interpretative process begins with the recovery, by the semantics module, of the linguistically encoded meaning. In most cases, this will correspond to an incomplete and fragmentary semantic representation, so the hearer will have to develop it into a full-fledge semantic representation, that is, the complete propositional form of the utterance. A few subtasks may be necessary in this process: disambiguation, reference assignment, enrichment and the recovery of ellided elements. The hearer expects the speaker to have made his/her utterance as relevant as possible, that is, relevant in terms of content and accessibility and this expectation justifies the hearer following a path of least effort in the interpretative process. So, the first interpretation coming to his/her mind will be the one intended by the speaker and will satisfy his/her expectations of relevance. For instance, the utterance may contain a lexically ambiguous element and different interpretations could be accessible to the hearer. In that case the relevance-theoretic comprehension procedure will prompt the hearer to choose the first one to come to his/her mind, because it will be the only one that produces the relevant effects without putting him/her to extra processing effort.

Once the complete propositional form of the utterance has been built, if necessary, the hearer will then enrich this representation at the explicit level and will complement it at the implicit level until the interpretation he recovers meets his

expectations of relevance. In summary, this inferential relevance-oriented procedure will be automatically applied to the on-line processing of attended stimuli to construct a hypothesis about the speaker's meaning on the basis of the information in the utterance and available contextual information which is highly activated at the time. The kind and nature of the inferential processes employed in comprehension is the topic of the next section.

4 Inferences in verbal comprehension

Experimental research in reasoning and decision making suggests that reasoning involves two mental systems or better, two kinds of mental processes.⁹ *Type 1* reasoning, a fast, automatic and mostly unconscious process which relies on *fast and frugal heuristics* (Gigerenzer, Todd and ABC Research Group, 1999) and produces effortless conclusions that are generally correct and appropriate in most settings. In this kind of reasoning intuitive inferences take place without attention to reasons for accepting them. And *Type 2* reasoning, which is slow, consciously controlled and effortful (Evans & Over, 1996). In everyday human thinking, any of those processes of reasoning could be activated depending on the task, the context and the individual.¹⁰

Mercier & Sperber (2009:155-156), in line with this proposal, establish a distinction between *intuitive inference* and *reflective inference* or reasoning proper.¹¹

There is thus, within a massive-modularist framework, a subtle but unambiguous way to distinguish two categories of inferences: intuitive inferences the conclusion of which are the direct output of all inferential modules (including the argumentation module), and reflective inferences the conclusions of which are an indirect output embedded in the direct output the argumentation module. Since reflective inferences involve the representation of reasons, they well deserve the name of reasoning proper.

So, according to them the cognitive system delivers intuitive inferences through its many component subsystems, inferences that are reliable in most cases; it is only that one of these subsystems, the argumentation module, besides directly delivering

⁹ There is much evidence in favour of such a dual view of reasoning. However, as it is not completely clear how these two systems should be characterized, Evans (2008) proposes talking about *Type 1* and *Type 2* processes rather than *System 1* and *System 2*. See Evans (2003), Evans & Over (1996), Osman (2004) and Sloman (1996).

¹⁰ It seems that the ability for *Type 2* processes or reasoning proper varies depending on the individual. See Stanovich & West (2000).

¹¹ Mercier & Sperber (2009) argue: "We defend the hypothesis that the main function of reflective inference is to produce and evaluate arguments occurring in interpersonal communication (rather than to help individual ratiocination). This function, we claim, helps explain important aspects of reasoning." (150)

intuitive reflexive inferences, also delivers indirectly reflective inferences, which are mainly produced on occasions when the individual has to decide on the reliability of the communicated information.¹²

The intuitive, reflexive inferences that modules draw are heuristic in character, as Carruthers (2006) explains:

For example, rather than searching exhaustively through all the information in its proprietary database, a module might adopt the satisfying heuristic of stopping search when it has found an item of information that is *good enough* for use in its current task. Likewise, a modularist might accept that simple heuristics play a role in orchestrating the *interactions amongst* modules and their influence upon behaviour. Similarly, believers in simple heuristics could surely accept that at least some of the processes that issue in belief or that lead to a decision are modular in character. (8-9)

Sperber & Wilson (1995) view inferential comprehension as an intuitive, unreflective modular process which takes place in an automatic way. If the relevance-based inferential procedure is to contribute to cognitive efficiency, it must be seen as “providing special-purpose inferential procedures (‘fast and frugal heuristics’, in the terms of Gigerenzer, Todd and ABC Research Group 1999) attuned to regularities in some particular domain, which yield reliable conclusions only when applied to input from this domain” (Wilson 2003: 311). Reflective inferences, or *proper* reasoning would only occur when spontaneous inferences of this kind fail to yield a satisfactory interpretation.

What are those fast and frugal heuristics that Wilson mentions? How do they work? Gigerenzer, Todd and ABC Research Group (1999) develop a proposal about heuristics as cognitive mechanisms by which humans make decisions very quickly and efficiently on the basis of very little information. Heuristics are fast and frugal, and they are reliable enough to be worth having. A very clear example of frugality is the *recognition heuristic* (Gigerenzer, Todd, and the ABC Research Group 1999 and Goldstein & Gigerenzer 2002): if asked to decide which of two objects has a higher value on some criterion people will choose the one they recognize. Or the *Take the Best heuristic*, in which the system decides between two alternatives just taking into

12 The argumentative module, that is, reasoning, has basically a primarily social function and has to do with human reliance on communicated information which can be positive but also negative, as it can lead to deception or misinformation. To be protected from this *danger*, humans have developed *epistemic vigilance* mechanisms which filter communicated information so that only that information which appears to be reliable is accepted. Some of these mechanisms evaluate the source of information considering whether they trust the speaker or not, and some of them evaluate the information itself, checking its coherence against his own knowledge base (Mascaro & Sperber, 2009). So, reflective inference is basically employed when dealing with specific problems related to the acceptance or not of communicated assumptions.

consideration the most valid cue which is the first to discriminate between the alternatives. Or the *Take the Last* heuristic, in which the system decides between the alternatives using the cue which has most recently been used to decide between the alternatives. Heuristics like these can work as well as the most complex procedure, but in a frugal, economical way, both, in terms of the amount of information involved and in terms of processing complexity.

If the operations of the verbal comprehension module are to contribute to cognitive efficiency then they have to be frugal, and then there are two conditions that should be fulfilled. First, *information frugality* which establishes that there must be a limit on the amount of information the system has to consider before making a decision. Information frugality has to do with encapsulation: either the module cannot access stored information while it is working (wholly encapsulated system) or it can only access a limited database of information relevant to the actual procedure being performed. These two possibilities correspond to the distinction between the *input* to the module and the *processing database* of the module (Sperber 2001; Carruthers 2003, 2006). And second, *processing frugality*, which controls the complexity of the algorithms the system has to execute in order not to require an excessive amount of time or working memory¹³.

The language comprehension module and the relevance-based inferential procedure are heuristic processes that make decisions on the selection of specific contextual assumptions relying on their *relevance* and *validity* for the interpretative process (very similar to the *Take the Best* heuristic), on the *salience* of a given piece of information in a context, or the *accessibility* of that information because it has been recently processed (very similar to the *Take the Last* heuristic). A procedure that works with spontaneous, reflexive inferences or heuristics differs from a procedure that works with reflective inferences or reasoning procedures in two main aspects. The first one has to do with the number of steps involved in the inferential process: just one in the case of spontaneous inference and several in the case of reflective inference. And the second one, which derives from the first one, relates to the attentional requirements and the concentration effort needed to maintain long enough an expectation of relevance strong enough to keep the module working while other modules are competing for the energetic resources. So, in summary, the relevance based comprehension procedure works drawing reflexive, spontaneous

¹³ Carruthers (2006) explains as follows the relationship between simple heuristics and massive modularists: "For example, rather than searching exhaustively through all the information in its proprietary database, a module might adopt the satisfying heuristic of stopping search when it has found an item of information that is *good enough* for use in its current task. Likewise, a modularist might accept that simple heuristics play a role in orchestrating the *interactions amongst* modules and their influence upon behaviour. Similarly, believers in simple heuristics could surely accept that at least some of the processes that issue in belief or that lead to a decision are modular in character." (8-9).

inferences because it is an economical, fast way of constructing interpretations of utterances which are on most occasions correct.

5 Controlling and calculating the interpretative process

According to Sperber & Wilson (1995) the human cognitive system is relevance-oriented, that is, we look for relevant information, information that is likely to interact positively with our mental representation of the world. The knowledge of how the human cognitive system functions, and more specifically, of how the comprehension system behaves gives speakers the possibility to predict and control the mental states of others and the way in which they will interact with the information they receive. Thus, as Sperber & Wilson (2002) explain:

The universal cognitive tendency to maximise relevance makes it possible, at least to some extent, to predict and manipulate the mental states of others. In particular, an individual A can often predict:

- (c) which stimulus in an individual B's environment is likely to attract B's attention (i.e. the most relevant stimulus in that environment);
 - (d) which background information from B's memory is likely to be retrieved and used in processing this stimulus (i.e. the background information most relevant to processing it);
 - (e) which inferences B is likely to draw (i.e. those inferences which yield enough cognitive benefits for B's attentional resources to remain on the stimulus rather than being diverted to alternative potential inputs competing for those resources).
- (14)

Consequently, the regularity described in the Cognitive and Communicative principle of relevance, that is, the relevance-oriented nature of human cognition, is in-built in our general mind-reading ability and, more specifically, in the verbal comprehension sub-module. This, together with the fact that the three processes above are governed in their functioning by considerations of relevance, makes it very easy for speakers to foresee how hearers' thoughts will flow: the kind of stimuli that will get their attention, the items of knowledge in their memory device that will be activated to play a part in the process and the inferences the hearer will draw when processing the stimulus against the background assumptions retrieved. If employed efficiently, this knowledge will help speakers in their communicative attempts, guiding the addressee through a comprehension process carefully designed to reach a specific end.

A factor that plays a fundamental role in the interpretation process is the recognition of the speaker's intention in the communicative act. Sperber and Wilson

(1995) have argued that the relevance-based theoretic procedure is domain-specific and it is only activated by ostensive stimuli, that is, stimuli that have been intentionally produced by the communicator with the intention that the addressee recognizes this intention and uses it as a basis to recover the speaker's meaning and infer some specific conclusions from it. Very frequently advertising has been defined as the typical case of *covert communication* (Dyer 1982; Tanaka 1994; Forceville 1996; Fuertes Olivera, Velasco-Sacristán, Arribas-Baño & Samaniego-Fernández 2001; Crook 2004). It cannot be denied that advertisers very often have hidden intentions and, by communicating covertly, they try to avoid the possible negative effects of having their intentions recognised. The interpretative process of covert communication is not explained by the relevance-based comprehension procedure because in these cases there are no communicative intentions that carry a presumption of optimal relevance to guide the process. However, advertisers do not always have hidden intentions and there are many instances of advertising acts in which the recognition of the advertiser's communicative intentions plays a fundamental role in the interpretative process, especially when the intended interpretation is not as straightforward as it would have been in *normal* communicative acts.

Take for instance the following advertisement which is an example of garden-path interpretation:

- (1) After a visit to the tropic we packed our bags
HEATH AND HEATHER
Tropical Fruit Herbal Teas (Cosmopolitan, July 1992)

The reader may initially access the following interpretation:

- (2) After a visit to the tropic we packed out baggage.

but as soon as he reaches the final part of the advertisement that interpretation will be abandoned in favour of one in which *bags* is interpreted as *tea bags*. We can argue that although the interpretation initially constructed is not the *final* interpretation it is in fact intended by the speaker, who also intends the audience to recognise this intention.

It is difficult to maintain that the advertiser is trying to communicate a set of assumptions covertly, without the addressee realizing he is doing so. It is a fundamental part of the interpretative process that the advertiser intends the addressee to construct an initial interpretation that has to be abandoned very soon. This assumption, that the advertiser has this intention, is one of the set of contextual assumptions employed in the interpretative process, and part of the background knowledge the addressee holds about the source of the message and advertisers in general.

So, we want to argue that in cases like the one above the addressee employs a cautious strategy to recover a relevant enough interpretation that is not the first one to come to his mind, but the one the speaker might have intended to communicate. In these cases the speaker is assumed to be benevolent and also competent, and the 'mistake' in the interpretation process is not due to a miscalculation on the part of the advertiser of the resources available to the addressee, but a carefully planned and calculated process. The advertiser not only manages to convey relevant information, but he also does so in a very special way, making different interpretations accessible at different times in the process.

6 Reflexive inferences and the relevance-based interpretation procedure

According to Sperber & Wilson (1995), the verbal comprehension procedure, which is automatically applied to the online processing of verbal stimuli, will start with the recovery of a linguistically encoded semantic representation(s), usually fragmentary and incomplete, that will be later developed into a single, full propositional form of the utterance on the basis of available contextual information. Both, the propositional form of an utterance and its contextual effects are recovered by means of inferential processes of an intuitive, unreflective nature which mostly take place below the level of consciousness. Later, if necessary, the addressee will enrich this representation at the explicit level and/or the implicit level until the interpretation he recovers meets his expectations of relevance. The final interpretation of an utterance will be then a combination of the explicit content expressed by it and the set of contextual effects it gives rise to when processed in a specific, intended context.

In order to recover the complete propositional form of the utterance, the relevance-theoretic comprehension procedure may have to perform a series of inferential subtasks on the basis of the information linguistically decoded and the set of contextual background assumptions active at the time. So, it may be necessary to resolve ambiguities, assign reference, supply ellided elements or enrich certain expressions that need their meaning to be fully specified. In all these processes, and according to the relevance-theoretic comprehension procedure, the addressee will consider interpretative hypothesis in order of accessibility, the most accessible one being the least effort demanding, and will stop when his/her expectancies of optimal relevance are satisfied. In normal circumstances, all these sub-tasks will be carried out through reflexive, spontaneous inferential processes as well¹⁴.

14 Even the recovery of implicit content, a process traditionally considered to be reflective, can be explained along the same lines. Sperber & Wilson (2002) comment that even Grice "might not have been averse to a modularised implementation of his approach, in which the recovery of implicatures was treated as an intuitive rather than a reflective process." (10)

Two factors are crucial in the performance of these reflexive inferences (Iza & Esquerra 2000). The first one is *attentional focus*, a kind of working memory containing representations that are important in the current processing and will have a very high degree of accessibility in the interpretative process. The activation of these representations could be due to the presence of a given stimulus in the physical environment at the time of the processing, for instance, in the pictures accompanying the slogan. Or it could be due to the presence in the utterance of some lexical element which activates and brings to attention certain concepts that will be essential in the process. And the second factor to be taken into account is the addressee's *knowledge of the world* about the information in the stimulus and the role it plays in the inferences to be made. Advertisers can take advantage of their knowledge of how these reflexive inferences function, when they are drawn, and why the verbal comprehension system employs them.

As addressees cannot consciously decide to activate the information processing modules, the first task of the advertiser will be to design an ostensive stimulus relevant enough to start this process; that is, to get the addressee's attention and maintain it long enough to increase the probability of the advertisement being fully processed. Different techniques serve to catch the reader's attention: it has been proved useful to employ stimuli (verbal or non-verbal) that are pleasant, personally relevant to the intended audience, surprising, unexpected, or humorous.¹⁵ Once the ostensive stimulus has caught the reader's attention, the second and most important aim is maintaining it long enough for the advertisement to be processed; in other words, winning the competition among modules for cognitive resources to be applied to the interpretation of that specific stimulus.¹⁶

Advertisers can design their advertisements in such a way that they are subjected to an automatic, spontaneous pragmatic processing, which will end up with the recovery of an initial interpretation that will not satisfy the addressee's expectations of relevance. At some stage, the cognitive, in-built tendency to optimal relevance will 'force' the addressee to reprocess the utterance in his search for an interpretation that justifies his expectations of relevance; the one the advertiser intended to communicate. Obviously, reprocessing involves an increase in the effort necessary to arrive at the intended interpretation. However, as Sperber & Wilson (1995) claim, the concept of effort is relative to the benefits resulting in the process and, as far as this is a preplanned situation, very carefully calculated by the advertiser, we can expect a

15 For different techniques see Barry (1997), Dyer (1982), Lineros Quintero (1998), Messari (1997), Sutherland & Sylvester (2000) and Vestergaard & Schroder (1985).

16 As Mercier & Sperber (2009) explain: "Attention' refers to the dynamic selection of some of the available information from the environment and from memory for deeper processing. From a modularist point of view, attentional selection might be best seen, not as the output of a distinct attention mechanism allocating resources to specific modules, but as the result of a process of competition for such resources among modules" (151).

compensation for the extra effort involved. Thus, the fact that the addressee has to reprocess will be reflected not only in the kind of interpretative process that is finally carried out, but in the set of contextual effects the interpretative process will give rise to.

Consider the following advertisement:

- (3) Now you can do the wash without the wear
Improved Tide keeps clothes looking more like new
(*Good Housekeeping*, September 1994)

The first step in the interpretative process will be the decoding of the different semantic representations of the utterance. The relevance-based inferential procedure will then select one of these representations and will develop it into the complete propositional form of the utterance. One of the sub-tasks that the relevance-based procedure performs in this process is the disambiguation of the word *wear*, which is carried out by drawing a reflexive inference on the basis of available contextual information. This set of assumptions in the database of the module is a subset of the total information base the module could have looked at. Any information in this main database could have been automatically selected to be included in this subset if it had been made salient, or highly accessible at the time of the processing. Those elements recently processed in the utterance enjoy this special accessibility, and will be part of this momentarily-existing database of the relevance-based procedure. For instance, the word *wash* will make highly accessible the sense *clothes* of the ambiguous word *wear* because it is regularly used in connection with this concept. So, the relevance-based procedure, by means of a reflexive, spontaneous inference, will select and develop an initial interpretation on the basis of this sense:

- (4) Now you [the reader] can do the wash without the 'clothes'.

The addressee will continue processing the rest of the advertisement which reads as follows:

- (5) Improved Tide keeps clothes looking more like new.

and new items of information will be made available from the concepts in the utterance itself, the assumptions they activate in the database of the system, and the concepts activated in the utterance or utterances he has just processed. These new assumptions will be part of a second, momentarily-existing database against which a second interpretation will be recovered:

- (6) Now you [the reader] can do the wash without the clothes deteriorating.

The relevance-based comprehension procedure will perform both sub-tasks, disambiguation and reference assignment, drawing reflexive, spontaneous inferences on the basis of the saliency of a sense (*estate-property*) and a referent (the mansion in the picture) in the set of contextual assumptions immediately accessible for the system to perform its computations.

As in the example previously analysed, when the processor reaches the second part of the text, new assumptions are activated from the general database and integrated into the temporarily-existing database of the module. These assumptions, which among others are about the make and type of car advertised, a Subaru Legacy, an estate car, will contribute to revealing the mistake in the interpretation initially constructed. The relevance-based procedure will reprocess the utterance, performing new automatic inferences to disambiguate the ambiguous lexical item and assign reference to the noun phrase and thus, recover a second interpretation that justifies the reader's expectations of relevance:

- (9) The definitive country estate is the Subaru Legacy 2.2 car in the advertisement.

This advantageous use of reflexive inference making can also be observed in cases in which the linguistic form of the utterance sets up a slot, physically marked by an element in the utterance or not, which must be inferentially filled for the propositional form to be recovered, a process known as *saturation* (Carston 2000: 15). Consider the following advertisement:

- (10) Over the last five years we've helped millions to emigrate to Europe
Merrill Lynch (*The Economist*, November 1993)

The incomplete semantic representation of this utterance includes a slot to be filled, *millions of what?*, that has to be contextually supplied for the addressee to recover the truth-conditional content, that is, the complete propositional form of the utterance. Once again the advertiser can control the contextual assumptions that will become highly accessible for the addressee and so will be selected to be part of the temporarily-existing database that the module will use in its computations. The word *emigrate* will activate the piece of knowledge "it is people who emigrate" which will provide the module with a relevant option to fill the slot in a fast, frugal way, via a reflexive inference:

- (11) Over the last five years we've helped millions [of people] to emigrate to Europe.

Next, the reader processes the second part of the advertisement where the name of the company appears, and he assigns reference to the pronoun *we* in an automatic way, as *Merrill Lynch* will be the most accessible and relevant referent in the context. Processing continues with the small print in the ad at the same time as new

contextual assumptions are made available in a very dynamic, context-sensitive way: for instance, information about Merrill Lynch, which is a leading financial management and advisory company, and from this, the knowledge that financial companies deal with money, and not people. The small print also informs the reader that Merrill Lynch want to advertise their contribution to the flow of investment capital from US to Europe. These new pieces of information will come into play in the processing and will signal the mistake in the initial selection, offering, by making it very salient, a second possibility of recovering the right propositional form through a reflexive, automatic relevance-guided inference:

- (12) Over the last five years we've helped millions [of US dollars] to emigrate to Europe.

Advertisers also make use of the human natural tendency to draw reflexive inferences in verbal comprehension in advertisements that include some utterance that expresses a complete semantic representation but need some kind of pragmatic adjustment and enrichment if we are to say that we understood what the speaker meant to communicate. If we consider the following example:

- (13) Drop everything. Previews begin Monday, Sept. 25.
The Full Monty. The Broadway Musical (New York Times, September. 2000¹⁸)

In the development of the propositional form of this example the addressee will have to perform a combination of disambiguation, for the sense of *drop* intended by the speaker, and enrichment, for the specific meaning of *everything* that has to be determined contextually. The picture accompanying the text reproduces the famous scene of the play, in which the group of unemployed steel workers who have prepared a strip act are just about to do the full monty: the image shows their six naked legs in a row while they are holding a police cap hiding their nudity. Obviously, this is a good eye-catching stimulus which is very likely to attract the reader's attention and that will activate a specific set of assumptions that will be used a context in the development of a first propositional form for the first of the utterances in the ad:

- (14) Let the police caps fall.

In this initial interpretation *drop* will be disambiguated as meaning *let fall by releasing*, and the selection of this sense will also influence the way in which the meaning of *everything* is pragmatically enriched. In this case, the domain of the

18 Example taken from <<http://www.adflip.com>>.

quantifier *everything* must be contextually inferred thereby narrowing down the interpretation to *let the caps fall*¹⁹.

When the addressee processes the rest of the advertisement, as in the examples previously analysed, new assumptions are activated and become part of a renewed and extended context which prompts the construction of a second, immediately accessible interpretation. Now *drop* is understood as *leave unfinished* and *everything* is narrowed down to mean *whatever you are doing at this moment*:

- (15) Leave anything you are doing right now.

These four cases we have analysed are all instances of garden-path utterances, that is, utterances in which the interpretation initially constructed by the reader soon has to be abandoned and replaced by a second interpretation. In all these examples the recovery of an initial mistaken interpretation has to do with the selection of the wrong semantic representation and its development into the wrong propositional form as well. The mistake that relevance-based procedure makes in the interpretation process can be explained in terms of the inferences it draws, heuristic and so reflexive, and the specific assumptions in the limited database it has at its disposal to perform those computations.

Another factor that contributes to the module spontaneously deriving the wrong inferences is the lack of certain items of background information necessary for process to be carried out in an efficient and relevant way. Those pieces of knowledge could be absent from the database of the module for two main reasons. It could be because the processor has not acquired them previously and consequently, as they are not in the general database, they cannot be activated and used in the process. In this case, the necessary assumptions will be made accessible to the processor in the ostensive stimulus itself, that is, in the advertisement, but late enough in the process for the module to have already selected an initial, mistaken interpretation. For instance, in the Merrill Lynch advertisement the addressee has to read the small print to be able to understand fully what the advertiser intends to communicate. Or it could be that these assumptions are already in the general background knowledge database of the processor, but their saliency or accessibility has not been increased on purpose so that they could not be used in the interpretative process soon enough to avoid constructing an interpretation that has to be abandoned later.

19 The process of *narrowing* (also called *enrichment* or *strengthening*) of a lexically encoded concept is one of the possibilities within ad hoc concept construction. According to Carston (1996), in cases of narrowing “there is a subset relation between the extension of the concept actually communicated in these examples and the extension of the lexical concept from which it has been derived [...]” (3). Another variety in ad hoc concept construction is the process of *loosening* (also called *broadening* or *weakening*). For a detailed analysis of how these processes contribute differently to the proposition expressed by the utterance and the problems of explanation they pose see Carston (1996, 2000)

7 Reflexive inferences and cognitive effects

In the previous section we have analysed a number of advertisements and explained how reflexive inferences are responsible for the recovery of the wrong propositional form and how reflexive inferences are also involved in the recovery of a second line of interpretation. In what follows we want to develop an explanation of the reasons that make the reader decide that the interpretation initially developed is mistaken and should be abandoned and replaced by a more relevant interpretation.

According to Sperber & Wilson (2002) the relevance-theoretic comprehension procedure will follow a path of least effort when processing an utterance and will stop when its expectations of relevance are satisfied. When does that happen? Well, for an utterance to be optimally relevant on a given interpretation it must produce a number of positive cognitive effects, that is, improvements or changes in the individual's representation of the world due to the interaction of the newly presented information with the set of existing assumptions. This interaction could be of three kinds: a) it could serve to strengthen an existing assumption, b) it could contradict and eliminate an existing assumption, or c) the new assumption could combine with an existing assumption to derive a contextual implication, that is, "a conclusion deducible from input and context together, but from neither input nor context alone" (Wilson & Sperber, 2004: 608).

Utterances are ostensive stimuli and, as such, they come with a guarantee of their optimal relevance. If an utterance, on a given interpretation, fails to produce positive cognitive effects, that is, it fails to interact with the context of interpretation in one of the three ways above, then the reader will search for those effects in another direction: either by deriving a second propositional form (as in the previous examples) and/or extending the context so that some relevant implications can be derived. The following advertisement for the consumption of milk is very illustrative. In the picture we can see a very beautiful girl posing, dressed in very smart, fashionable clothes. Her upper lip is stained with milk, as if she had just drank from the glass she is holding in her hand. The text, right next to her face, says:

(16) Model behaviour. (*Vanity Fair*, May 2001)²⁰

The relevance comprehension procedure, in an automatic fashion, will develop the following interpretation for this utterance:

(17) Having dirty lips after drinking milk is the kind of behaviour to imitate.

The addressee will find it difficult to combine this information with existing assumptions in the context of interpretation to derive new contextual implications.

20 Advertisement taken from <<http://www.adflip.com>> [20-11-2009].

Probably, one of the beliefs the reader holds very strongly is that we should dry our lips after drinking, and not leave them stained, which is not a very nice behaviour. The utterance, on that interpretation, is not relevant in the context available because, although it contradicts an assumption in it, it does not manage to eliminate it because this is held with a very high degree of strength.

The reader will then continue processing the advertisement, guided by these expectations of relevance created in him by the ostensive stimulus and the cognitive need to find an interpretation that compensates the processing effort involved with positive cognitive benefits. In the rest of the advertisement, the necessary assumptions to complete the interpretative process are supplied. The reader will process the small print and the communicated assumptions will become accessible to the module to be used as contextual assumptions to complete the interpretative process:

- (18) Model behaviour.
Want strong bones? Your bones grow until about age 35 and the calcium in milk helps.
After that, it helps keep them strong. Which means milk is always in fashion.
GOT MILK? (Dairy Farmers)

In the light of this new extended context, the reader will re-interpret the first utterance and, again through a reflexive inference process, will develop a second propositional form for the utterance:

- (19) Drinking milk is an example of ideal, perfect behaviour to imitate.

Now, the relevance theoretic processor can combine the developed interpretation with the set of background contextual assumptions available to the procedure and derive the adequate set of positive cognitive effects that will fulfill the expectations of relevance created by the ostensive stimulus.

In summary, the interpretation initially constructed in these cases is soon abandoned because it fails to provide the adequate contextual effects to compensate for the effort employed in the process, failing in this way to provide an interpretation that justifies the reader's expectations of relevance. The processing will continue until a relevant interpretation is found, an interpretation that interacts with the reader's cognitive environment, improving it or changing it in some way intended by the speaker.

Conclusion

We have analysed a number of advertisements which clearly illustrate how advertisers, taking advantage of the knowledge about the functioning of the human cognitive system, can develop their adverts in specific ways that will secure a particular processing activity on the part of the reader. One of the strategies widely employed makes use of the mechanism of spontaneous, reflexive inferencing which is involved in much of the processing in verbal communication.

Inferences play two major roles in interpretation. Firstly they serve to fill in gaps in the process of recovery of the propositional form of the utterances. And secondly, they play an essential role in elaborating the structure, that is, in making the necessary connections and combinations with contextual information, to derive new assumptions or contextual implications. Both processes, mostly carried out by means of heuristics, can be carefully calculated and planned by advertisers, so that readers go through a specific interpretation procedure in which different interpretations are recovered in a pre-planned sequence, and different assumptions are activated or acquired in a very skilfully premeditated way.

All these cases are characterised by a number of features. First, the advertiser has carefully chosen the verbal and non-verbal stimuli so that they capture the addressee's attention and have a good probability of activating the modules involved in their processing. Second, the advertiser has carefully decided which concepts these stimuli will contain and/or give access to, as they will serve to activate specific assumptions that will become part of the context of interpretation and play a fundamental role in the recovery of a given interpretation. Third, a knowledge of the human cognitive system and the way in which we represent and later access information allows the advertiser to calculate which pieces of knowledge are or will be highly salient in the addressee's mind at the time of the processing, because they have been recently processed, or because they enjoy of a special saliency due to social or cultural reasons. Fourth, the advertiser can also calculate which items of knowledge or set of assumptions are frequently processed together, and can be treated as a pack of background knowledge that the module can bring momentarily into its database as a whole. Fifth, a knowledge of how the verbal comprehension sub-module works allows the advertiser to foresee the sequence in which the different assumptions are likely to become available for the addressee. The processing system operates very quickly, using the interpretation of preceding elements as context to process new elements, and integrating the output from other modules in a very fast, dynamic fashion. Knowing the system works in this way gives the advertiser the possibility to calculate and plan in advance the temporal flow of the interpretative process.

In summary, a consideration of the previous elements makes it possible for the advertiser to expect that the interpretation procedure applied by the verbal comprehension sub-module to his ostensive stimulus will develop along the

intended lines. The inferential mechanisms of the verbal comprehension system have evolved to react quickly and effortless to the stimuli that activate them. Thus, the relevance-based inferential procedure, working in a fashion that enhances cognitive efficiency, is a fast and frugal heuristic that functions drawing reflexive, spontaneous inferences when processing specific data, inferences that produce the right conclusions on most occasions and that can be used, in cases like the ones discussed to achieved the intended interpretative effects.

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