

li158

Linguistic Insights
Studies in Language and Communication

Bárbara Eizaga Rebollar (ed.)

Studies in
Linguistics
and Cognition

Peter Lang

Bibliographic information published by die Deutsche Nationalbibliothek
Die Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie; detailed bibliographic data is available on the Internet at <http://dnb.d-nb.de>.

British Library Cataloguing-in-Publication Data: A catalogue record for this book is available from The British Library, Great Britain

Library of Congress Cataloging-in-Publication Data

Studies in linguistics and cognition / Bárbara Eizaga Rebolgar (ed.).
p. cm. – (Linguistic insights: studies in language and communication; v. 158)
Includes bibliographical references.
ISBN 978-3-0343-1138-0
1. Linguistics. 2. Cognition. 3. Semantics. I. Eizaga Rebolgar, Bárbara
P121.S8145 2012
410–dc23

2012000885

ISSN 1424-8689
ISBN 978-3-0343-1138-0

© Peter Lang AG, International Academic Publishers, Bern 2012
Hochfeldstrasse 32, CH-3012 Bern, Switzerland
info@peterlang.com, www.peterlang.com, www.peterlang.net

All rights reserved.
All parts of this publication are protected by copyright.
Any utilisation outside the strict limits of the copyright law, without the permission of the publisher, is forbidden and liable to prosecution. This applies in particular to reproductions, translations, microfilming, and storage and processing in electronic retrieval systems.

Printed in Switzerland

Table of Contents

Acknowledgements 7

BÁRBARA EIZAGA REBOLLAR, JOSÉ MARÍA GARCÍA NÚÑEZ,
MARÍA ÁNGELES ZARCO TEJADA
Preface 9

Section 1: The Lexicon and Cognition

MARÍA TADEA DÍAZ HORMIGO AND CARMEN VARO VARO
Neology and Cognition..... 15

GÉRARD FERNÁNDEZ SMITH, MARTA SÁNCHEZ-SAUS LASERNA
AND LUIS ESCORIZA MORERA
Studies on Lexical Availability: The Current Situation
and Some Future Prospects..... 35

MARÍA LUISA MORA MILLÁN
Adverbs in the Internet Lexicon: New Modes of Signification..... 57

MARÍA ÁNGELES ZARCO TEJADA
'Holding' Metaphorical Meaning from a Computational Linguistics
Approach: The Verb *Hold* and its Counterparts in Spanish 81

Section 2: Semantics and Cognition

JOSÉ MARÍA GARCÍA NÚÑEZ Attitude Verbs and Nominalization	107
CARMEN NOYA GALLARDO Cleft Sentences: Semantic Properties and Communicative Meanings	133
FRANCISCO J. RUIZ DE MENDOZA IBÁÑEZ AND ALICIA GALERA MASEGOSA Metaphoric and Metonymic Complexes in Phrasal Verb Interpretation: Metaphoric Chains	153

Section 3: Communication and Cognition

BÁRBARA EIZAGA REBOLLAR Meaning Adjustment Processes in Idiom Variants	185
JOSÉ LUIS GUIJARRO MORALES Beauty and Art in Science	213
ANA ISABEL RODRÍGUEZ-PIÑERO ALCALÁ AND MARÍA GARCÍA ANTUÑA Specialised Communication and Language Teaching for Specific Purposes	245
FRANCISCO YUS RAMOS Strategies and Effects in Humorous Discourse: The Case of Jokes	271
Notes on Contributors	297

Beauty and Art in Science

Se miente más de la cuenta por falta de fantasía; también la verdad se inventa
(Antonio Machado)

1. Introduction

This chapter examines the currently fuzzy concepts of BEAUTY and ART, which are sometimes considered the two faces of the same coin, by adopting a scientific methodology derived from Chomsky (1981)'s and Marr (1982)'s levels of cognitive analysis. Through this methodology it is possible (1) to distinguish neatly between both notions, and, at the same time, (2) to offer a blueprint which may be used to achieve a naturalistic approach to both cognitive processes. Neither goal has ever been treated along the lines we propose here. We claim that with our frame, the problem of fuzziness of the concepts ART and BEAUTY will be explicitly solved.

1.1. Three types of human thinking

There seems to be a widespread belief which tends to categorize *humanistic* and *scientific* studies into two realms that have little, if any, connection between them. Although I will be mildly questioning this purported total separation, my goal in this chapter is rather to illustrate the idea that, contrary to what is normally believed, the separation cannot

1 <joseluis.guijarro@uca.es>.

be based on subject matter. I want to propose that the differences lie in the way humans process information – *any* information, that is.

Among other things, living beings are information-processing devices. That is to say, animals in general need to have some way to interact with their environment in order to survive. In the same vein, human beings are animals with information-processing devices which we call *minds*. Minds must have evolved specifically; it may be possible, then, to find aspects of our minds similar, or even identical, to those of our neighbors in the animal kingdom, and some other aspects that only appeared in our own specific evolutionary history. I want to use a parable² which in a sketchy way can illustrate these evolutionary changes³. Firstly, I will use a table to make the differences clearly noticeable:

Table 1. *Kinds of information processes in humans.*

<i>TYPES</i>	<i>DATA</i>	<i>OPERATIONS</i>	<i>CONSTRAINTS</i>
Primary (Common sense)	Perceivable by the senses	<i>Modus ponens</i> <i>Modus tollens, etc</i>	Species-specific
Secondary (Traditional thought)	Perceivable by the senses + pure mental representations	<i>Modus ponens</i> <i>Modus tollens, etc</i>	Groupal
Tertiary (Scientific thought)	Perceivable by the senses + pure mental representations	<i>Modus ponens</i> <i>Modus tollens, etc</i> causal & materialized	Individual

Let me now complete the information above by pointing out that *primary thinking* is as old (or even older) as our species, and can therefore never be obviated. The information that we get from it is what we would perhaps call the *common sense* aspects of our knowledge. The world is what it is for us because we perceive it and represent it in that primary mode.

2 It is a parable of the same order as Rousseau’s *Social Contract* notion; an oversimplification which, however, helps us to illustrate a few interesting preliminary aspects of the problem to be dealt with in this chapter.

3 The suggestion of such kinds of human thinking is in Horton (1982), although he uses them apparently only in an evaluative sense. This and other important flaws are described by Boyer (1990).

Secondary thinking is also very old and well installed in our mind. We are thereby able to process information in a much freer manner than other animals. One could say that our *humanity* is really the result of this way of processing information and of subsequently creating mental representations that make up our human personality.

As I pointed to above, some of these representations are not individual products of our minds; they are acquired through cultural (*i.e.*, humanly communicated) influence. This influence is precisely what sets the limits as to which are proper and improper representations to have. At times, it is very difficult not to assert unwarranted (for us⁴) cultural acquired notions if we know that a large body of human beings shares them. Some of them appear to us as if they were simple facts⁵ – as if their limit was specific and not cultural, that is. In any case, what we call *culture*, is almost exclusively the product of our secondary thinking; all our *interpretations* of the world that do not wholly rest on our perception of reality, that rely mostly on our free constructions of mental representations (*i.e.*, almost *everything* we think and is expressed in conversation or in writing – this chapter included) are a product of that mode of thinking.

Examples of those products which were not arrived at individually but have been transmitted to us from various sources abound: so, we all believe in things that squarely contradict the information processed by our senses (*i.e.*, the heliocentric system is one of them) because our cultural group has taught us we should. In this sense, our belief has been implanted in our minds by this secondary thinking *culturally transmitted* process – as, say, the belief of Roman Catholics in the virginity of a mother.

4 They may even have been scientifically arrived at by other people. For instance, why do we all accept that the sun is the center of our system and that the earth rotates around it when we *see* perfectly well (*i.e.* a fact of our primary mode of thinking) that it is the sun that moves? We accept it using our traditional kind of thinking (*i.e.*, we *believe* that this idea is true because some people we trust in our group said so).

5 Sperber and Wilson (1986) speak of these factual assumptions as stored directly in human minds (as, for instance *P*), and oppose them to other ways of storing assumptions (for instance: *I believe that P*, or *P is true*, etc).

Nowadays in our global society, there is yet another instance of this same secondary processing, namely, the belief that tertiary thinking (*i.e.*, scientific thought) is, not only the best, but even the only way for humans to acquire true beliefs. Let me stress again: from a cognitive point of view, there is absolutely no difference between the three examples above (*i.e.*, the heliocentric system, the virgin mother and the blind acceptance of scientific models). Some happen to be more in fashion than others, but for us, *as thinking human beings*, they are absolutely indistinguishable. For that reason, it is often heard that science is apt to produce another sort of religious faith; they are referring, of course, to our unwarranted beliefs in models arrived at through scientific thinking *by other* people.

To attain a true *tertiary thinking* process, one does not need to concentrate on material objects perceived by the senses – with or without implemental aids (*i.e.*, microscopes, telescopes, loudspeakers, etc.), as is generally believed. As we will see later in this chapter, we may even invent and posit a seemingly wild hypothesis that, at this moment, is impossible to be proven. The important condition, as shown in the above table, however, is that we must be able to set very strong constraints on the casual relationships that lead to our (imagined or not) object and to its possible effects. In other words, we must be able to organize the set of inferences which we establish around the posited object as a cause-effect chain. Nowadays, the most fundamental constraint on that inference chain is the mechanistic one – the inferences must be able to be translated mechanically into materialistic models that work without human interference – which is *the only* way to predict results. This was an impossible thing to achieve in the so-called humanistic fields, until Alan Turing invented his machine that could do whatever thing a human mind can do, provided it were properly programmed⁶.

6 There is, however, a new way to implement mechanical models of mind products with the so called connectionist models that work sub-symbolically. These models seem to be in great fashion now although, in my opinion, the results obtained are still too simple to simulate the workings of the human mind.

1.2. Preliminary steps to achieve a tertiary mode of thought

In this chapter we will concentrate on the tertiary mode of thought, suggesting ways of achieving it and illustrating a few results (apart from the linguistic one already offered by Chomsky and his collaborators, which I will briefly mention in each step of analysis) that can be obtained through it. Let us start with the three requisites mentioned by Chomsky (1981). According to him, a scientific analysis could only be successful if, and only if, it reaches at least some of the following levels of adequacy:

1.2.1. Observational level of adequacy

When we want to analyze something, we must be sure that we point to a likely object, event or relation that everybody perceives or understands. Chomsky used this requirement to do away with the *social fact* notion of language that Saussure had claimed (1966). A social fact does not exist anywhere. If it does, it is in the heads of all the members of a given society. So, to attain this first level of adequacy we must point to these human heads or, better, this precise mental representation that inhabits the imagination of these individuals. But, why do we need the *social fact* representation in the first place? It is a lot more economical to imagine that language itself is an organized and structured set of mental representations. We are not defining language, we are only pointing to a likely and understandable object inside our mind. It seems an unimportant decision, and yet, with it we are able to see the futility of the traditional view that language was firstly spoken and then written. Language was (and *is*) first a mental object which then can be actualized in speech, whistling, or any other behavioral means during human communication. It can also be recorded in writing, or any other means, of course. Both actualizations, behavior in communication or recorded instances of it, may sometimes interact, but normally they are separate aspects of actualization. It is of course a truism that recording something presupposes that this something exists before the recording act. A thing that is sometimes blurred by the possibility of using this recording (of a mental collection of thought, like

this chapter) to be recovered by others and thereby imagine that some sort of communication also exists in that action⁷

1.2.2. Descriptive level of adequacy

Once we have a clear object to think about, we should be able to describe it as clearly as possible. We may do it in natural language, but this means does not seem to be very appropriate to build up an algorithm that might be fitted into, say, a mechanistic program of sorts. That is why, in general, descriptions in science are more often than not formalized. Physics, for instance, is described in mathematical language. But we have other such languages: logic, programming, derivations, etc.

It is not the case that researchers in cognitive faculties should forcibly be mathematicians, or programming engineers. However, they must always try to describe their objects in a way that may be translated into one of these formal means – in other words, they have to strive for explicitness.

Although they did not mean to complement each other's views, I have found that introducing Marr's (1982) three different levels at this point, deepens the possible outlook we may have when describing a cognitive phenomenon. Therefore, I propose we should describe the object of our attention along these three further recommendations:

7 Although we are not going to go into it, this observational adequateness solves the spoken/written language dichotomy by making it non-existent. However it may also highlight the arguable diversity of the process we call 'human communication'. Imagine that we communicate with a distant human being by sending her/him recorded tapes of our thoughts. Do (we through) these tapes communicate with that person, or does (s)he merely interpret them, through a different type of process that the one we use in face-to-face communication by means of, say, whistling? In other words, is the distinction I have formulated above between the communicative actualization of language and the recording of it pertinent at all? I am not clear about this issue, so I will leave it open for the time being.

1.2.2.1. *The computational level*

At this level, we should try to describe what sorts of computations the mind would be performing when indulging in the mental activities we may be observing. In the case of language, and according to the *Minimalist Program*, the three computations that seem to be needed are *merge*, *agree* and *move* (in certain versions, a fourth operation, *i.e.*, *copy*, is added). When these operations are explicitly described, we will be able to understand how language works. However, these operations may be further analyzed at the next level.

1.2.2.2. *The representational level*

At this level, we should be able to describe the mental representations which are triggered by these computations. Take, for instance, the fact that for English-speaking communities the representation of language seems to be wider than in, say, some Romance-speaking communities, where, when pressed, we are often intuitively able to propose different representations for the three terms we may use as synonyms in general, namely *idioma*, *lengua* and *lenguaje*. If we work along our representations, the three operations may be either considered general (by an English-shaped mind) or specific of a given representation (by a Spanish-shaped one⁸).

1.2.2.3. *The implementational level*

Sometimes, human beings are able to create implements that help them in performing the mental computations required for a given faculty to exist and operate. Maybe at this level of analysis, what may be analyzed and described when concentrating on language should be, among other things, the different normative instructions that are given

8 In point of fact, however, and astonishingly as it may appear, Spanish linguists at large, as followers of the German and English tradition of Linguistics, do not take any stance on what these three terms represent for them. The separation of levels of analysis in the way proposed here, on the other hand, would force them to do so – which would seem to be another advantage of this explicit methodology.

to be able to speak out one's mind in a successful way, or to write down clearly and efficiently.

A detailed description along these three (let me call them) *sub-levels*⁹, would further force us to assume that they are deeply interrelated. This means that any new insight we might have achieved while pondering at one of those levels of description must have an immediate effect on the description we may have already completed at the other levels.

1.2.3. *Explanatory level of adequacy*

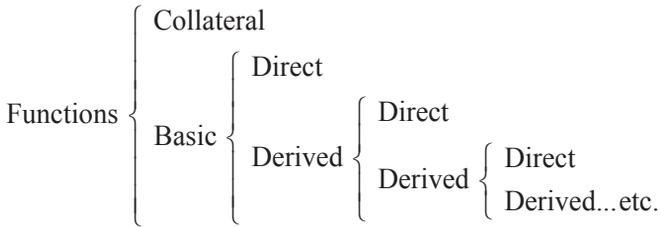
This last level is the ultimate goal of all science. One must try and offer an explanation of what caused the analyzed object to come into existence, what its advantages and drawbacks are, etc. As these levels were posited to allow the scientific endeavor to tackle mental characteristics, the only known way to achieve this last one is in the frame of the evolutionary theory of natural selection. If we were able to find out what mutations lead the mind to perform in a certain way, we would attain this level of adequacy. However, there is some difficulty in fully understanding this process. As John (2009) wisely claims:

While evolution provides the best-yet distal cause of biodiversity and specification, it is yet to provide a proximal cause – a completely specified physical mechanism by which complex behaviors such as those exhibited by humans can be affected by random mutation and natural selection. In the absence of mechanism, evolutionary ‘explanations’ are little more than just-so stories

There have been attempts, however, to overcome this evident lack of material evidence by imagining processes that could work in an algorithmically describable way. Among others, such is the view proposed by Millikan (1984, 1993) which Origgi and Sperber (2000) have used to explain in evolutionary terms some linguistic characteristics. According to Millikan, all evolutionary adaptations (organic or behavioral) exist in order to achieve a basic beneficiary function in (either, or both) the reproduction and the survival processes of the individuals. However, she also claims that some mutations have additional func-

9 I am sure that Marr would not appreciate this terminological precision of mine, but I have found it neater than speaking of yet another set of three levels to consider along the three proposed by Chomsky.

tions which have no direct relationship to these goals. For instance, the heartbeats are not essentially linked to the primary function of the heart which is to allow blood to circulate. One could have the same function performed by any other means. She calls these functions *collateral* and opposes them to the *basic* ones. Moreover, Millikan further distinguishes between those basic functions which are the *direct* result of a mutation and those that are *derived* from them. For instance, the faculty to change color chameleons have would be the direct result of the mutation that allows them to do so, while their becoming blue if put on top of a blue board, a color that does not happen naturally in nature, would be a derived result. However, this derived result may also evolve, in which case it would be the direct mutation of this second step and it would also have a derived function. In short, the process would go along the following lines:



Origgi and Sperber, with that idea in mind, propose eight such steps in the development of human language, starting with (1) the important mutation that enables organisms to react positively or negatively to sudden movements in their environment. The basic direct function of this mutation is to attract sexually or to escape from danger. Individuals with this faculty are in a much better position than those which simply move without predicting anything from their environment. One possible basic function derived from this would be to be able to react to sound changes as well. (2) Now, this last faculty would be the new direct function with other derived functions, such as, possibly, the faculty to adopt different responses to specific sounds (enter innate and automatic codes!). (3) However, decoding everything all the time needs a lot of effort; therefore, Origgi and Sperber, suggest that a derived function of the direct codifying one could have been to watch and process the in-

dices that the behavior of the communicator may point to, helping thereby to decide which of the coded sounds is worth processing and which is redundant or useless. Therefore, a new faculty has appeared: that of embedding representations (*i.e.*, the coded signals) into other representations (*i.e.*, the visual hints). (4) This direct embedding function may in turn have developed a derived capacity to guess the interlocutor's intentions. (5) From the direct function that guesses intentions, a new indirect function emerges: that distinct aleatory behaviors may also modulate different ways of interpreting, refining the possibilities of communicative means. (6) In the same way, when this direct function produces the derived one of establishing codified behaviors, this will prove beneficial for storing the representations more economically. (7) This moment is postulated by nativist theories of language for which there must have been another mutation, responsible for the mental sieve that Chomsky named *Language Acquisition Device*, whose direct function was to simplify a set of complex structural representations in the mind, which, in turn, resulted in the derived function to use jointly all the possible codes humans have evolved in this process.

The last step (8), according to Origgi and Sperber, supposes a natural transition from the biological steps we have seen above, to the cultural environment along the same functional types proposed by Millikan. So, if the direct function of the biologically inherited language faculty is to acquire, store and use cultural elements, like the linguistic ones, each use of any such elements will become derived in every actualization of it. Moreover, and now fully into the cultural level, if the primary function of each actualization is to point to a given object or concept, a derived function may arise when the context determines that this use should be differently processed. Imagine that the expression *old man* has the direct function to point to a male of a certain age. This same *pointer*, though, may develop the derived function to refer friendly to a colleague – who may be in his teens!

This, I agree, may be a *just-so story* as John qualified them in the quote above. But it does not make it lose its likely explanatory power, for it would be possible to describe the processes involved algorithmically in order to make a Turing machine work along these lines, until we have a better, or at least, a more economically descriptive one, allowing for a simpler explanation, which should, then, be preferred.

2. Art and beauty

2.1. General considerations

If Cullick (2009) is right, when he recently pointed out that ‘science is what happens (or can happen) when the signifiers stop slipping. In art the signifiers never stop slipping; all expressions are novel’, we will have to agree with him when trying to find out in an intuitive sense what ART and BEAUTY¹⁰ are. In fact, the pretended theoretical frame called *Aesthetics* in our cultural environment is as slippery as both terms. It seems that when we analyze the nature of an artwork, we cannot separate it from an analysis of beauty, which both seem to be considered part of an aesthetic frame. What is worse, *art* and *beauty* are more often than not defined in terms of each other, making them mutually circular. Moreover, every new attempt to define the three concepts is indeed (or at least tries to be) a novel expression. As I see it, the state of those three concepts, ART, BEAUTY and AESTHETICS has never attained a paradigmatic level. Kuhn (1962/1970), for that reason, would call them *pre-paradigmatic* concepts.

In what follows, I will try to extract those concepts from this pre-paradigmatic state and install them into the paradigm of cognition studies; in other words, I will attempt to show how we may start analyzing them in a scientific manner, considering them human mental faculties. In so doing, it will be apparent that, until now, I have had differing degrees of success in attaining the different levels of adequacy I outlined in the first section. Still, it may become clear that much of the slipping quality of today’s signifiers can be rethought in the mechanistic (and, therefore, explicit) way of the Tertiary mental processes that I attempt to set in motion hereafter.

10 Throughout this chapter, I will use capital letters to point to mental representations or concepts (i.e., ART, BEAUTY, etc.). When I want to refer to the lexical items that name those concepts, however, I will use italics (i.e., *art*, *beauty*, etc.).

2.2. Propositions that try to reach the level of observational adequacy

2.2.1. Where do we point to when we use the word 'beauty'?

There have been many attempts to find out where BEAUTY may be found. Since I will be working with a cognitive paradigm, let me propose that our human mind is the primary originator of that concept. If there were no human interpretative devices to acquire, store and use information from the environment, BEAUTY would certainly not exist anywhere. Probably influenced by my linguistic background, I will further propose that when using the word *beauty* we should be pointing to a mental code. We all have an idea of what a code is, of course: a device that allows translating certain perceived stimuli into valuable information by simplifying the perceptual power and concentrating it on discrete items that are immediately interpreted according to some fundamental scheme. Some codes are considered *modules* in cognitive science¹¹, which are thought of as dedicated mental devices operating in a mandatory fashion, and which are, in a certain number of cases, innate. There are modules, however, that have only an innate blueprint as it were, which must later be fully *formatted* by experience. Our linguistic codes are examples of that type¹².

I will submit that the word *beauty* should point to one of these codes. That is, a modularized one probably with an innate blueprint which will go on developing and getting formatted through personal experience. In other words, BEAUTY in my mind is a structure of representations (or *concept*, for short¹³) result of a decoding processing that acts according to certain abstract and general principles and, also, individual acquired goals. Mind you, we have not

11 Codes may be consciously set by people or by selective evolutionary processes in which case they are unconscious and modularized. See the seminal work on modularity by Fodor (1989) to have a full account of its characteristics. The more recent papers by Sperber (2001, 2005) suggest that all concepts are modules in a certain sense.

12 Chomsky (1980) tells us that the innate blueprint determines the linguistic *principles* functioning universally, while the specific ways in which different languages work should be considered *parameters*.

13 Cf. Sperber/Wilson (1986/1995).

defined what BEAUTY is. What we have done so far is only point to an understandable object, a modularized code with certain characteristics, which is probably a human innate faculty with an evolutionary history. This first move, as we will see, has a number of advantages from the analyst's point of view.

However, before commenting on them, let me stress that cognitivists have found that there are many such codes (modularized or not) operating in our minds, and at different levels of dedicated processes. For instance, it seems that our codes to interpret line drawings are deeper and, therefore, more automatic than codes that help us in making sense of shadowed or colored surfaces. We have to learn how to interpret those surfaces, while we decode lines directly with our human inherited means. There are many indices that point to such a distinction, such as the fact that people of some distant cultures are not able to distinguish photographed portraits while they immediately recognize a line drawing. In our own case, we have no problems interpreting line drawings when they appear in a positive (say black on white) or in a negative (white on black) mode, while there are difficulties sometimes in deciphering the negative of a positive picture¹⁴. At this point, the question arises: is BEAUTY only one code like the linguistic one, or are there a certain number of codes which account for the different aspects in which BEAUTY may appear? We will discuss this issue later.

2.2.2. *Where do we point to when we use the word 'art'?*

As I said above, attempting to reach this first level of observational adequacy, although it leaves us still without a clear notion of what it is whatever we are thinking of analyzing, it does have already some beneficial advantages. For instance, the one that Jerry Fodor mentioned:

Everybody knows that something is wrong. But it is uniquely the achievement of contemporary philosophy [...] to have figured out just what it is. What is wrong is not making enough distinctions. If only we made all the distinctions that there are, then we should all be happy as kings. (Kings are notoriously *very* happy.) (Fodor 1985: 1)

14 Cf. Casati/Piggnocchi (2008).

Unfortunately, the terms *art* and *beauty* are considered to be so inter-related that many times, in the description of one, the other concept is used, and vice versa. When we try to reach this observational level of adequacy, however, the fact that we will point to different objects shall do away with that problem automatically and with no further possibility of mixing them up in the future. On the contrary, if *beauty* and *art* point to two altogether different objects, we will have to analyze, at some level of description, how and why they are so inextricably related in our minds.

Consequently, I want to propose that the word *art* points, not to a code, but to a human attitude. And I will simplify the story (for what an attitude is has been matter of heated debate in Psychology), by stating, along with Sperber and Wilson (1986/1995), that an attitude results when we use our capacity to embed propositions into other propositions. Thus, [*It is ironic that (Caius is clean)*] shows that the embedded proposition, *Caius is clean* has to be processed inside the embedding one *It is ironic that ...*, whereby it acquires a different sense than if it were to be interpreted in a direct (*i.e.*, non recursive) fashion. One of the accepted ways to show this kind of processing is by means of square brackets and parentheses, thus:

e.1. [it is ironic that (Caius is clean)]

or, for short,

e.2. [R (r)]

where *R* and *r* stand for (*mental*) *representations*, and the square brackets mean *the mind*, while parentheses show that whatever is inside them is embedded in another representation. The fact of symbolizing the first order representation with a capital letter and the embedded one with a small one may be wrongly interpreted as an attribution of different properties to one or the other mental representation –which is not true. Both representations are essentially of the same kind. It is only their place in the mind (directly there, or inside another representation) which makes them operate in a different way when processed.

I will, therefore, hypothesize, that when I use the word *art* I shall be pointing to a human attitude (expressed through recursive means). The important thing at this moment is to specify what sort of first order representation may be at work for ART to emerge. I will further submit that this type of attitude should be an evaluating one, along these lines [*I value a (whatever)*], which I would symbolize as,

e.3. $[Va(X)]$

We will have to know what kind of value is this *value a* that appears in the formula, of course; however, this will require that we attempt another level of analysis, the descriptive one. For the time being, without leaving this level, the difference between BEATY and ART is clear. Let me symbolize it again:

e.4.
 BEAUTY \rightarrow Code
 ART $\rightarrow [Va(X)]$

There seems to be absolutely no way for us to mix them up from now on.

2.3. *Propositions that try to reach the level of descriptive adequacy*

We have, I hope, experienced the advantage of trying to set the problem in its first frame of analysis. You may agree with my suggestions or not, but at least you will be conscious that, for me, both concepts are totally different sets of representations. In this level of adequacy, I will try to specify more clearly some¹⁵ of its characteristics, in each of the further sub-levels (*i.e.*, Marr's proposed levels) which, in my analysis, are thought to compose this one.

15 Unluckily, not all, for I must do still a lot of homework to present a full scientific theory that accounts for these concepts. However, the main object of this chapter was never that of final achievement, but rather, to show how we may go on inserting, as it were, notions that arose in the secondary mode of thought into the tertiary one, so that they might be scientifically analyzed.

2.3.1. How do we describe beauty?

This seems indeed a complex attempt. There have been thousands of descriptions which have differently expressed the effects of the decodings to which I insist in pointing to when using the word *beauty*. I am probably going to use (consciously or not) some of the intuitive descriptions which are well distributed in my own cultural tradition and are, therefore, part of my own world view, but I will make the effort to set them clearly in a structured way so that they might describe eventually a universal array of elements and mental computations.

2.3.1.1. Computational level of description

For the time being, I will concentrate only on the three apparently most basic sets of computations at work when humans experience BEAUTY. The reason to separate them in three sets, however, is basically for expositive and analytic reasons, since they probably work interrelated along a computational continuum, as it were.

The first is the *perceptive* set of computations, which converts distal into proximal stimuli by scanning the environment with one (or maybe more) of the senses that we possess and, eventually, sorting out some of its salient components to construct a sufficient formal representation of whatever it is that we are perceiving. According to Phylyshyn (2004), these computations may work at very deep levels in a totally automatic way, developing awareness as we climb to more superficial levels.

It is at one of those more superficial levels that, conceivably, the second set of computations may start working, namely, those that we attribute to *codes*. These computations, typically, transform the formal representations that we constructed in perception into useful information of one kind or another. There is a *caveat* here: although I have spoken of *more superficial* computations, this does not mean that they work necessarily at the surface level of awareness. In fact, many such computations may be modularized, as I suggested above, and function at a deep and mandatory level of computation with scant effective awareness. We have problems explaining why we are attracted to sweets, some human beings, different shapes or sounds, etc. There must be a basic and perhaps inherited set of modules that dis-

pose our organisms to the attraction of some of those decoded representations. We will explore some of the possible evolutionary reasons for that sort of devices when we get to the explanatory level of analysis; for the time being, however, this sketchy description should be able to offer a sufficiently clear illustration of the methodological process we are trying to follow.

The last set of computations is the most superficial one. It is at this level that we may be consciously aware of the motives that attract us toward objects that are culturally determined in our minds. That is why we may now turn to the next sub-level of analysis.

2.3.1.2. Representational level of description

We may ask some interesting questions. Does our BEAUTY concept apply only to objects perceived by only one sense, namely, vision, or can it be extended to objects perceived by any of our senses? In our cultural environment, as far as I am aware, BEAUTY seems also to be related, on top of the visual objects, to the objects that are perceived by our hearing devices, but not to those perceived by the other senses. We have other words to point to the results of the computations above when the object is perceived by our taste, namely, *tasty*, or some such positive qualifications that we use for food. Odoriferous or tactual attraction, on the other hand, doesn't seem to have specific terminological pointers in our culture, so that our respective concepts do not seem to be of any importance in our social environment, except perhaps in professional circles.

This representational characteristic may obscure the fact that we are probably using the same sort of basic computations when we are processing information through different devices. Thus, in our cultural environment, it seems strange to refer to BEAUTY when considering food (unless we are judging it before eating it, by its attractive shape which we *visualize*), taste or a nice tactual feeling. As a result of this represented reality, most of the attempts to specify what BEAUTY might be are, in fact, incomplete and missing a lot of interesting points, for our culture has not implemented them in things that are supposed to be beautiful.

2.3.1.3. *Implementational level of description*

It is, therefore, true that there are many things that implement our BEAUTY representations in the fields of vision and of hearing. For human beings, different ways to arrange our visual appearance (*i.e.*, those that we consider collectively, calling them *fashions*) seem to be implementing this sort of cultural beauty. Other culturally implemented things that should be beautiful are some images that we produce and which may also be called *artistic*, mixing up two different concepts as I said before, and will prove later. The strong cultural connection between BEAUTY and ART makes it possible to perceive reality as beautiful according to cultural contagion of representations. For instance, mountainous landscapes are nowadays considered beautiful, by the impact that some man-made representations of them have had on our minds. However, in the past, mountains were considered anything (*i.e.*, frightful, treacherous, horrible, etc.) but beautiful.

The same happens with sounds. Some rhythmic patterns that some people find beautiful today might have been abhorred as too noisy, primitive and disgusting by our elders, whereas the sort of melodies that they appreciated may be considered tedious by some of our contemporaries. The study of these implementations is a long and difficult research that remains to be carried out in depth in order to understand the shifts of appreciation of the diverse implements that have been built through historic efforts.

2.3.2. *How do we describe art?*

We now turn our effort to describe ART along the same methodological lines. Thus, we will be able to see, I hope, that the outcome of this effort will show a totally different picture of this ART concept, which, however, has definitely clear points of intersection with that of BEAUTY at the representational and implementational level of analysis, as we have briefly indicated above.

2.3.2.1. *Computational level of description*

From my point of view, the computations that are specific to the ART evaluating process are those that calibrate the results of using more

than one context at the same time to interpret a given object. Let me try to clarify this statement.

Our interpretation processes work normally along two different sets of computations. A non-dedicated set, which allows us to extract information from our environment in a general way, by using inferential means, that is, by analysing whatever particular object¹⁶ together with a given set of mental representations of this environment, which we call *context*. I do not react in the same way when I hear my dog barking at me, or when I hear a very similar though absolutely unknown dog barking at me as well. I do not like people laughing when I interpret it in the context that they are laughing *at* me. However, I enjoy the same laughs if the context indicates that they are laughing *with* me. And so on.

The other set of computations are the coded and modularized ones. It is a matter of discussion whether these dedicated sets are more ancient than the non-dedicated ones, or vice versa. Jerry Fodor (1989), for one, believes that modularity is a first computing stage of the human brain, since it mirrors the instinctual processes of other species. The inferential non-dedicated processes, according to him, are the result of our further species-specific evolutionary steps; in other words, they are better and more advanced types of processing since they are very much freer in their computing than the instincts seem to be. However, other researchers, like Cosmides (1992) and Sperber (2001, 2005), for instance, believe that modularizations are automatized inferential processes that help more complex organisms to react promptly and efficiently to certain types of extended stimuli. For them, modules are a useful development of the non-dedicated processes which came first in our evolutionary history. To erase dedicated mental means and create systems without constraints, or in short, to go from complexity to simplicity, does not seem to be a very common process in evolution, they claim. Be it as it may, the fact is that when we use our linguistic codes in communicative interrelations, they do not seem to be altogether evolved in our species, for we need to proc-

16 *Caveat:* when I speak of *object* in this general sense, I am pointing to *things*, naturally, but also to *events, feelings, relationships*, etc.

ess their results in the general set of the inferential computations to achieve a good sharing of messages.

Some living beings are able to use two different contexts to interpret a given situation. This happens normally when they indulge in playing: behaviours that could be considered attacks when interpreted in one context are considered playful when interpreted in another context. Humans can of course play along these lines. When this happens, the *imaginative* context is eventually the one that prevails, although we may return to the abandoned context and become aware that, say, our pebbles are not money, or sweets, or whatever, but real stones (*cf.* Walton 1973).

In humans, this playful faculty became more complicated, possibly along the following lines: (1) Playing like other species and using two contexts to make-believe. (2) Some of these playing actions made it possible to construct imagined transcendental contexts which were used to achieve magic powers. (3) Eventually, as magic lost its central grip on human concerns, the use of two contexts was meant to allow deeper interpretations of objects, conjugating the two interpretations in a harmonic way, and triggering thereby a positive (or, sometimes, negative, though addictive) feeling. According to Boyer (2009) and Lewis-Williams (2002) this would be the explanation of pre-historic cave painting which is now considered ART¹⁷.

This use of more than one context of interpretation became even more diversified in the human species, as Koestler (1967) suggested. Indeed, for him, humans developed, at least, three fundamental ways to operate in this mode. They could change the available context for a new one to replace the old one altogether. This is the way Science advances: changing old contexts for new ones in which the same facts are considered in a new light. For instance, the motion of celestial bodies was considered differently when the context was Earth-centred than it is now with our heliocentric context. Humans may also let the

17 In fact, Boyer is of the opinion that cave paintings are the pre-historic equivalent of our modern *graffiti*, stressing mainly sexual powers. He abhors the idea of magic which is, on the other hand, Lewis-Williams' idea. I think both conceptions are not necessarily contradictory – in fact they neatly explain the artistic development of the playful faculty as I have shown above.

two contexts they are using clash, as it were. This would be the source of humour in most instances, say, in jokes, where the final punch line changes the context of interpretation used for making sense of the story with an unexpected clash. It would also explain the fact that we are sometimes irrepressibly forced to laugh at people stumbling or, even falling down: we change our context where we interpret them as human beings behaving as such, for one in which they are interpreted as a marionettes or any other non-living object that follow *only* physical rules. Koestler also mentioned that we may indeed use different contexts in conjunction, as in the case of our artistic interpretations where we gain some sort of deepness by using both, the imagined and the real contexts *at the very same time*. We know that the object we are interpreting is, say, a canvass smirked with paint, and we may appreciate, for instance, the qualities of this *mélange*. But synchronically, we interpret it as a lively scene or as an abstract form that has some sort of interpreted effect on our mind.

I hope it is now clear that what we *value a* in the proposed formula for ART is, in my opinion, the effect achieved by the computations that result in using more than one context of interpretation, on any given occasion.

2.3.2.2. *Representational level of description*

The last part of the above paragraph has already hinted at the efforts we may have to make at this particular level to reach appropriate adequateness. If my interpretation, based on Boyer and Lewis-Williams' ideas, is accurate at all, we may suppose that the initial representation of some of these activities to be interpreted along two contexts would be a playful one. If the term *art* had existed, then, it would have pointed to some kind of play. However, as this playing became the source of boasting about sexual possibilities, it may be the case that the *art* pointer should have moved towards a space were exaggeration was central. From here, the exaggerated attributes might have been represented as magical, so ART and MAGIC would have been inextricably related. At that time, moreover, the idea to decorate useful implements to make them more attractive (*i.e.*, more beautiful) to some, became the other goal that ART was supposed to achieve. And,

as the magic aspect decreased, the search for BEAUTY became now almost the same as the ART effort, something that we are still strongly representing in our cultural environments.

However, the representations that we have in present times allow for not-very-beautiful objects to form part of them. In fact, anything (even a rolling stone or a dry twig, a common implement, say, a broom or a urinary, etc.) or action (walking, eating, howling, etc.) may be represented as ART on some occasions. That is why we must account for this new more generalized representation in our analyses.

2.3.2.3. Implementational level of description

How is ART implemented in our cultural environment? It is a widely shared representation that there are places which trigger the right attitude that we have called ART. In the realm of the paintings, things hanging on walls (especially if those walls belong to buildings that we call museums, or some other institution, but not only – they may also be in a private home) are supposed to be there to adopt precisely this attitude. As Pratt (1977) indicated, the result of so displaying them to the perception of others seems to carry the injunction to consider them as having a special significance, apart from the material one they necessarily have as visual stimuli – *i.e.*, they are considered worth the while to be processed in two contexts: the one that makes us aware that they are objects (canvasses, photographs, wall paintings, etc.) and, at the same time, that other one that extracts a different and more abstract information about it, about what it represents. When we watch, say, Velazquez' *The Rokeby Venus*, we are aware that we are not really watching a nude woman's back, but a material thing called a canvas. However, at the same time, as in playing (*cf.* Walton 1973) we consider it to be the somehow perfect back of a naked lady all the same.

The same is true of any other art implementation. In books, for instance, we are able to achieve a similar attitude, if culturally they are considered to be within a certain set of very extended social representations. So, in our culture, when we read a text, we may normally be able to consider it a novel, a poem, a story, a biography, etc., and this affiliation, as happens with walls for paintings, is enough to prepare us to adopt the necessary attitude towards our interpreting it. However,

we do not normally think of a social kind with these characteristics when we think about personal names. It comes as a surprise to us that in some alien societies, family names are also institutionalized to achieve these ART attitudes from those perceiving them.

It would be unnecessarily tiresome to enter into more detailed descriptions in this chapter. I believe that, with those loose approximations, we will be able to interpret how ART is implemented in other social frames that we may have represented culturally (theatre, music, sculpture, cinema, etc.). It should be clear, however, that the fact that some unlikely object (say, an 'urinoir') is displayed in a socially art-implementing place, immediately begs for the simultaneous processes here described. As is well known, in the New York exhibition of 1917 Marcel Duchamp did exactly that and thereby started a famous scandal¹⁸. People at that time found it tough to have to accept this double processing to which they were driven at by Duchamp's action. To extract *art information* from such an object seemed to them preposterous. However, when the injunction was followed by some, and then by others, eventually the *urinoir* entered the realm of art and has stayed there ever since. The evident conclusion is that it is the displaying action that tries to constitute the ART experience. Elaborativity, beauty, magic, and what not are really not crucial in determining it, although sometimes they are used to trigger the basic reaction.

2.4. *Propositions that try to reach the level of explanatory adequacy*

This is the least developed level of my presentation, for the previous ones have to be better specified and not in such a sketchy way as they have been until now. However, there are a few general lines that we may mention in order to elaborate a scientific methodology in these matters that might look useful and to the point.

18 Duchamp did it facetiously in order to shock the pedant people that used to visit the Arensbergs' salon, of which he was also a steady visitor. He did not know at that time that he was creating a real art work by this joke. Many people (in fact, a vast majority) still do not know what it really is to become an art object. I do hope that, from now on, the notion will be somewhat clarified.

2.4.1. *Can we explain beauty?*

As I have pointed to above, the mental machine that humans possess has some perceptive devices that work at very primary and deep levels. The way to trace those primitive devices seems to be somewhat tentative, but there are some evidences that make us think there are chains of perceptual codes which may branch at more superficial levels into differing codes related to specific stimuli. If this were indeed so, we could perhaps hypothesise that, at the deepest level, there are such abstract decoding means that sieve away all stimuli which are not interesting to the organism, thereby concentrating on those that may attract some of its attention for one reason or another. Consider the case of sweetness. Human organisms, in general, feel attracted to it for an evolutionary reason: this taste, in effect, guided our ancestors to consume food which was rich and energy producing. It so happens that nowadays, in some cultural environments, the food problem is no longer the same as it used to be, and sweet things seem to be blamed for creating rather than for solving food problems. However, the strong appeal of sweetness is still very much extended, no matter how negative its effects may be on our organisms. On another scale, sexual attraction is also a probable case in point. Some bodily traits of our fellow human beings seem to achieve this sort of effect in our perceptions, because of some types of relationships between their constituent parts which are programmed to do so. This does not mean that we all like the same sexual mates. As I said before, it is probable that, although basic characteristics may trigger our attraction, the way they are re-decoded at higher levels of perception might well make us attracted to totally different stimuli in the end.

The problems that we have to solve before we may find a serious explanation for the existence of BEAUTY in our minds seem to be twofold: (1) How many *BEAUTIES* result from the (possible) different processing codes that constrain our perceptions? Can we really believe that the sexual drive, the sweet drive, the musical harmony drive, and so on, stem all from one basic deep code which is meant to sort out all the attractive stimuli that may be found, or would it rather be more sensible to differentiate between visual and sound beauty on the one hand, and the attraction for food, odours, sex, etc.? My opin-

ion is that there could be a universal innate basic code in all humans that may be responsible for it, and which specifies the fields of attraction as the decoding processes climb up to the surface. (2) How (and when) do these superficial codes branch into dedicated devices for any such fields?

I have no clear answers to all these potential problems, and I am aware that I may have to change my whole present explanation if I become aware of new and accurate facts about the processes involved.

2.4.2. *Can we explain art?*

There have been several attempts to explain the importance of ART in humans using a so-called evolutionary approach. From my point of view, the problem with almost all of them is that they believe this phenomenon may be considered as a special kind of communication. I doubt that this is the real object to point to when using the term *art*, as I have tried to show above. Of course I admit that we are able to communicate the *art attitude*, as we may communicate any other attitude, say, the ironic attitude, for instance. But, as with irony¹⁹, it seems unlikely that we may fully explain the origin and functioning of art by considering it merely a type of human communication. In other words, it seems logically probable that, first, there is an attitude (which has to be explained) and, secondly, we may analyse how this already explained attitude may be communicated by humans. In this chapter, as already stated, I will concentrate on the explanation of the attitude.

There are two steps to climb in this respect. The first one is to try and explain the beneficiary role of attitudes for the organism. The second, naturally, is to specifically explain what advantage the art attitude may have for humans. If we consider that attitudes are really cases of recursive processing, then the first question would be what made this processing possible in evolution. It so seems that recursion is an asset that helps to store mental representations in the mind which help us in reacting before external stimuli really appear. If you have a general representation of, say, *danger* and you insert in it another representation, say, *fire*, whenever you perceive fire you will take some

19 Cf. Guijarro (2005).

care not to get burned. This, of course, is a faculty that many species have; in brief, I would say that all animals that may be trained by humans have this recursive power. For instance,

[Danger (not to come when called)]

[Prize (finding an object)]

and so on.

Humans, on the other hand, seem to have this faculty with an enormous power of embedding, thus achieving very many levels of deepness²⁰ which help us characterize thought processes in one way or another²¹. I think the important mutation is not that we may have recursive chains of thought, for this may be found in other species. The tiny mutation that made us human was rather the inexplicable and sudden unbounded power of this human faculty²².

Be it as it may, we have also widened the types of first order representations that may recursively store other (chains of) representations. One of them is the [*I evaluate (whatever)*], which has many possibilities of actualisation, from the economic, to the cultural, and even (and this is the crucial one for us), the evaluation of life – which, contrary to the other evaluating processes, is a universal and mandatory evaluation that we are all bound to make during our life time²³.

If that is so, I will have to show that the ART attitude of evaluating has a very tight relationship with the positive evaluation we do about life, be it as a general concept, an individual process, or even a solidarity move in favour of some members of our species. This is not an easy task, for there have been very few approaches that could be adapted as an explanation of this fact, since, as far as I know, almost

20 Cf., for instance, Noh (2000) among many others.

21 Cf., Curçó (1996).

22 In another paper (Guijarro 2009), I argue that the naturalisation of the human soul lies precisely in accounting for that unbounded recursive faculty.

23 As Van Cleave (2000) says, “Epistemologically, the concept of ‘value’ is genetically dependent upon and derived from the antecedent concept of ‘life.’ To speak of ‘value’ as apart from ‘life’ is worse than a contradiction in terms. It is only the concept of ‘Life’ that makes the concept of ‘Value’ possible.”

nobody has ever before thought of ART in terms of this sort of evaluating attitude²⁴.

Although I have described my ideas on this matter at length in Guijarro (2005), I will attempt a short and sketchy account here. There seems to be a mental equivalent to the biological process called *pae-dogenesis*, where the normal evolutionary history of a species would take it to a biological dead-end, and which, through this process, is therefore stopped and, as it were, reset so that it may go on living. Our mental process of becoming a full person is achieved by processing incoming information, storing it and manipulating it whenever needed. As is generally known, the intake of information depends heavily on the mental context we are able to use to interpret it and make it worth the while. At times, however, processing new coming information in this 'normal' way may not be sufficient. Some individuals have striven to return to the primary state of our minds by consciously erasing whatever acquired representations they may have stored in it. They arrive at that primary state by forcing the mind not to work, either by filling it up with meaningless representations (some schools call them *mantras*, *koans* or even chains of repeated *prayers* which, after a while, become devoid of useful information, and therefore, put the interpreting mind at rest), or by physical strains that may eventually stop mental activity, such as turning incessantly around, fasting and getting little sleep, having drugs, doing some sorts of exercises, etc. When this sort of preparation is successful, people are reported to be in *trance*, which would be what is known as the mystic experience which is supposed to be very highly valued.

A related, though different experience would be the one achieved by using two contexts of interpretation instead of one, as in the normal course of making sense of information. Whenever you adopt the ART attitude, that is, you immediately have a *normal* interpretation of it (*i.e.*, it is a painted canvas, or a piece of stone, a written or oral text, a collection of successive shadows on a screen, a bunch of actors performing, etc.) and another sort of *imagined* interpretation (*i.e.*, it is the Gioconda, or the Milo Venus, the life and adventures of Huck Finn, *Casablanca*, or the problems of Hamlet, Prince of Denmark, etc.).

24 A notable exception is Pratt (1977) who has influenced my thought on these matters, although I work in a different frame from the one she favours.

The highest value is then attributed to those instances where the normal context is, as it were, subsumed in the imagined one, forming thereby a new set of representations which transcends the normal interpretation and the imagined interpretation. My proposal, for the time being, is that the more coherent that double interpretation becomes, the more artistic we find an experience. If that is so, the first steps in explaining what ART is have to be considered in that direction.

3. Conclusions

As my main goal has been to show how we may abide by Machado's quote in Spanish at the beginning of this chapter (*i.e.*, *We lie too much / for we lack fantasy. / Truth can also be invented*) and become seriously scientific, provided we establish an explicit causal chain of reasoning that may be implemented by everyone when they so decide, the crucial import of my effort is not the quality of the representations proposed (which may well change for the better if properly integrated in a casual frame), but rather the way they are related and the conclusions they already permit us to draw. Let me summarize them in a table to pinpoint the most salient aspects of my endeavour:

Table 2. Possible differences between the concepts of beauty and art along the three levels of adequacy proposed.

REPRESENTATIONS	LEVEL OF OBSERVATIONAL ADEQUACY	LEVEL OF DESCRIPTIVE ADEQUACY	LEVEL OF EXPLANATORY ADEQUACY
BEAUTY	Code	Innate and acquired	Attractive features
ART	Attitude [R (r)]	[Value A (X)]	Mental resetting

References

- Barkow, J. H., L. Cosmides and J. Tooby 1992 (eds): *The Adapted Mind. Evolutionary Psychology and the Generation of Culture*. Oxford: Oxford University Press.
- Boyer, P. 1990. *Tradition as Truth and Communication. A Cognitive Description of Traditional Discourse*. Cambridge: Cambridge University Press.
- Boyer, P. 2009. *Paleolithic art: awesome – but not religious*. <<http://www.cognitionandculture.net/home/blog/35-pascals-blog/416paleolithic-art-awesome--but-not-religious>>.
- Casati, R. and A. Pignocchi 2008. “Communication advantages of line drawings”. In Mora Millán, M. L.: *Cognición y Lenguaje. Estudios en homenaje a José Luis Guijarro Morales*. Cádiz, Spain: University of Cádiz, Servicio de Publicaciones: 75-94.
- Carruthers, P. and A. Chamberlain (eds) 2000. *Evolution and the Human Mind: Language, Modularity and Social Cognition*. Cambridge: Cambridge University Press.
- Chomsky, N. 1981. “Principles and parameters in scientific theory”. In Hornstein, N. and D. Lightfoot (eds): *Explanation in Linguistics: The logical problem of language acquisition*. London & New York: Longman: 32-75.
- Cleave, K. van 2000. *Evolution and Philosophy*, <<http://ourworld.compuserve.com/homepages/KVC/evolphi.htm>> (p.10).
- Cullick, J. 2009. “Science or humanities (art)?” In Whitehouse, H.’s blog *Anthropology in crisis – what, still?* <<http://www.cognitionandculture.net/Harvey-Whitehouse-s-blog/anthropology-in-crisis-what-still.html>: June 10, 2009>.
- Curçò, C. 1996. “The implicit manifestation of attitudes, mutual manifestedness, and verbal humour”. *UCL Working Papers in Linguistics*, 8: 89-99.
- Fodor, J. 1985. “Précis of Modularity of Mind”. *Behavioral and Brain Sciences*, 8: 1.
- Fodor, J. 1989. *The Modularity of the Mind*, Cambridge: MIT Press.

- Guijarro, J. L. 2005. "Imagine a likely way to find *Art and Literature* wherever they may hide". In *Consciousness, Literature and the Arts*: 6, 3. <<http://blackboard.lincoln.ac.uk/bbcswebdav/users/dmeyerdinkgrafe/archive/guijarro.html>>.
- Guijarro, J. L. 2009. "A possible way to naturalize the human soul." *Pragmalingüística* 17: 40-51.
- Hollis, M. and S. Lukes 1982. *Rationality and Relativism*. Oxford: Basil Blackwell.
- Hornstein, N. and D. Lightfoot 1981. *Explanation in Linguistics: The Logical Problem of Language Acquisition*. London and New York: Longman.
- Horton, R. 1982. "Tradition and modernity revisited". In Hollis, M. and S. Lukes: *Rationality and Relativism*. Oxford: Basil Blackwell.
- John, Y.: "Our evolutionary endowment?" In Whitehouse, H.'s blog *Anthropology in crisis – what, still?* June 10, 2009. <<http://www.cognitionandculture.net/Harvey-Whitehouse-s-blog/anthropology-in-crisis-what-still.html>>.
- Koestler, A. 1967. *The Ghost in the Machine*. London: Pan Books.
- Kuhn, T. 1962. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press. Second edition (1970) with Postscript.
- Lewis-Williams, D. 2002. *The Mind in the Cave*. London: Thames and Hudson Ltd.
- Marr, D. 1982. *Vision*. New York: W.H. Freeman.
- Millikan, R. 1984. *Language, Thought and Other Biological Categories*. Cambridge, Mass: MIT Press.
- Millikan, R. 1993. *White Queen Psychology and Other Essays for Alice*. Cambridge: MIT Press.
- Mora Millán, M. L. 2008. *Cognición y Lenguaje. Estudios en homenaje a José Luis Guijarro Morales*. Cádiz: Servicio de Publicaciones de la Universidad de Cádiz.
- Noh, E.-J. 2000. *Metarepresentation. A Relevance-Theory Approach*. Amsterdam/Philadelphia: John Benjamin's Publishing Company.
- Origi, G. and D. Sperber 2000. "Evolution, communication and the proper function of language". In Carruthers, P. and A. Chamberlain, (eds): *Evolution and the Human Mind: Language, Modularity and Social Cognition*. Cambridge: Cambridge University Press: 140-169.

- Phylyshyn, Z. 2004. "Visual indexes, objects, and nonconceptual reference". Draft presented to the Summer School held at Oléron (France): *La référence aux objets / Reference to Objects*. Director: R. Casati. CNRS, Réseau des Sciences Cognitives d'Ile de France, EUROCORES, Maison des Sciences de l'Homme, Institut Nicod.
- Pratt, M. L. 1977. *Towards a speech act theory of literary discourse*. Bloomington: Indiana University Press.
- Saussure, F. 1966. *Course in General Linguistics*. McGraw-Hill Paperbacks.
- Sperber, D. 2001. "In defense of massive modularity". In Dupoux, E. (ed.): *Language, Brain and Cognitive Development: Essays in Honor of Jacques Mehler*. Cambridge, Mass: MIT Press.
- Sperber, D. 2005. "Modularity and relevance: How can a massively modular mind be flexible and context-sensitive?" In Carruthers, P., S. Laurence and S. Stich: *The Innate Mind: Structure and Content*. New York: Oxford University Press.
- Sperber, D. and D. Wilson 1986. *Relevance. Communication & Cognition*. Oxford: Blackwell. Second Edition (1995) with Postface.
- Tooby, J. and L. Cosmides 1992. "The psychological foundations of Culture". In Barkow, J. H., L. Cosmides and J. Tooby: *The Adapted Mind. Evolutionary Psychology and the Generation of Culture*. Oxford: Oxford University Press.
- Walton, K. L. 1973. "Pictures and make-believe". *The Philosophical Review*, 82, 3: 283-319.