

3

Irony and Cognitive Operations

Francisco José Ruiz de Mendoza Ibáñez*

Introduction

In Shakespeare's *Julius Caesar*, Mark Antony gives a speech over Caesar's corpse. In the speech, he repeatedly refers to Brutus, one of the conspirators in the ruler's assassination, as "an honorable man," in apparent approval of Brutus' deed. However, each of Mark Antony's apparently laudatory remarks is followed by some evidence of Caesar's virtuous acts. In this way, Mark Antony manages to turn public opinion against Brutus and the other assassins. Evidently, the description of Brutus as "an honorable man" is ironical since it clashes with what the orator treats as evidence: Caesar did not deserve to be killed and his assassination had been but a treacherous act. This use of irony by Mark Antony, as noted by [MacDonald \(2001: 126\)](#), "implies a silent background of agreed knowledge," which gears the audience into realizing that the epithet "honorable" is twisted when applied to Brutus, who he is actually a traitor. This analysis of the ironic use of Mark Antony's words is largely consistent with the consensual definition of irony as "the replacement of an expression that is meant by its opposite" ([Bussmann, 1996: 596](#)), which borrows heavily from the literary theory tradition (e.g., [Booth, 1974](#); [Muecke, 1982](#); [Handwerk, 1986](#)). "Honorable" is thus used to mean "deplorable," which is the intended meaning. However, MacDonald's analysis contains a significant additional ingredient: the

epithet “honorable,” which would justify Brutus’ action, contrasts with the crowd’s awareness of Caesar’s own good deeds in favor of his people (what MacDonald describes as the “silent background of agreed knowledge”). Mark Antony’s strategy simply consists of reminding his audience about what they already know. Irony is thus more than saying the opposite of what is meant; it is saying or implying the opposite of what the speaker assumes someone else thinks.

Nevertheless, MacDonald’s analysis still fails to note two other ingredients of irony. First, the contrast is not one between either information or beliefs in general, but between what the speaker treats as a false target assumption and as evidence that such an assumption is false. Second, by treating the assumption as false, the audience is expected to infer that the speaker ostensibly dissociates himself from the target assumption. In terms of speaker–hearer’s (S–H) interaction, what Mark Antony (S) communicates to the credulous crowd (H) is:

- (a) That Brutus is not an honorable man.
- (b) That Caesar did good to his people.
- (c) That Brutus and the other plotters are traitors.
- (d) That (a), (b), and (c) should be just as evident to H as it is to S.
- (e) That S dissociates himself from the belief expressed in (a) and from any implication arising from that belief.

What we call ironic meaning is captured by (e). It is the outcome of the inferential process triggered by the contraposition between S’s pretended agreement with H and the evidence as manifest to S. Central to this process is H’s detection that S only pretends to agree. There are many potential clues which can assist H for this purpose. In Mark Antony’s speech, a basic clue is the repeated contrast between what Mark

Antony apparently claims and the reality which he subsequently puts forward to counteract each claim. The repetition serves to increase H's chances to detect the error in the claim thereby producing a cumulative effect which makes the general ironic tone of the speech more impacting. Other potential clues have been discussed by scholars. [Attardo \(2000\)](#) points to some of them, under the label *indices of irony*: special intonational contours (e.g., a slight edge to the voice), exaggerated stress prominence, and what he calls "morphological devices," which are but extra-clausal constituents highlighting different aspects of the speaker's pretended agreement (*so to speak, everybody knows, one might say*).

In any case, even this "communication-oriented" explanation on irony, although broader than the traditional account, only supplies a partial view of this phenomenon. A complementary picture of the cognitive activity involved in the generation of such assumptions is needed too. The preceding explanation has been couched in such terms that some of this cognitive activity has become evident. Thus, there is contrast between assumptions and the substitution of the ones with greater evidential support for the less evidenced ones. But more significantly, we have found that the reference to Brutus as "an honorable man" acts as a trigger to the contrast and substitution processes, which gives this expression a central status. This expression, which captures the essence of what the crowd thought about Brutus, is an example of what proponents of Relevance Theory (e.g., [Wilson & Sperber, 2012](#)), within inferential pragmatics, have recognized as a case of "echoic mention," or an echo, for short. However, the notion of echoic mention only designates the result of the underlying mental activity involved in producing such a representation. It is thus necessary to study the cognitive activity itself. The same holds for contrast and

substitution.

As can be observed from our preceding discussion, a starting point for the study of the cognitive import of such cognitive activity is language itself. As has been done in much of Cognitive Linguistics, initial linguistic evidence allows the analyst to formulate generalizations (Goldberg, 2002, 2006), which can be the object of falsifiability tests in experimental work (cf. Gibbs, 2006). This chapter is thus intended as a preliminary, qualitative, nonexperimental examination of the possible cognitive activity, under the label of *cognitive operations*, underlying (at least a relevant part of) the inferential activity involved in ironic meaning. To the extent that the observations of patterns and the derivation of generalizations has been made correctly, the proposals contained in this chapter may become the object of productive testing and potential developments and refinement on empirical grounds. It is with this view in mind that the present research has been carried out.

Because of its central status as an inferential trigger, the present study is focused on ironic echoing, which is examined from the point of view of its formal expression, its complexity, and its communicative effects. To set the stage for this exploration, this chapter starts with an overview of the principles of cognitive modeling, which are necessary for the understanding of the cognitive operations involved in irony. There follows an in-depth analysis of the interpretive role of echoing as a way to express pretended agreement or a presumed expectation. This part of the chapter discusses structural echoing (based on analogical reasoning) and implicit echoing, as an expressive choice which draws attention to the situation that provides evidence against the expected belief. The following section treats echoic complexity. It distinguishes three types of complex echo, their communicative impact,

and the grounding of such an impact in cognitive principles which arise from our experience. Finally, the chapter offers a brief examination of other less central cognitive operations, besides echoing and contrasting, which can contribute to the effects of irony on the hearer.

Cognitive Operations in Cognitive Modeling

Ever since [Bartlett \(1932\)](#) introduced the notion of *schema* to capture the idea that preexisting knowledge structures influence comprehension and recall ([Rumelhart, 1980](#)), there has been growing evidence that the human mind stores knowledge in a way that is ready to be used effectively for any cognitive activity ([Van Kesteren et al., 2012](#); [Van Kesteren & Meeter, 2020](#)). Possible cognitive activities affecting linguistic communication range from text comprehension ([Graesser, 1981](#)) to local inferencing tasks such as the adjustment of lexical meaning ([Žegarac, 2006](#)) and the derivation of idiomatic meaning through intuition ([Ramonda, 2019](#)). To the inferential range of cognitive tasks belong *representational cognitive operations* ([Ruiz de Mendoza & Galera, 2014](#); [Ruiz de Mendoza, 2017a](#)). These operations are involved in making meaning out of linguistic expressions in cooperation with textual and contextual clues. [Ruiz de Mendoza and Galera \(2014\)](#) provide extensive illustration of such operations in various domains of linguistic enquiry. The next two subsections first contextualize and then define and briefly illustrate a selection of cognitive operations.

Structuring Knowledge

The notion of representational cognitive operation is a development of [Lakoff's](#)

(1987) seminal discussion of *idealized cognitive models*, or ICMs, which are internally coherent conceptual structures that we use to represent and reason about the world. [Lakoff \(1987\)](#) distinguishes the following kinds of ICM:

- *Frames* ([Fillmore, 1985](#)) are structured in terms of propositional structure (basically specifying entities, their properties, and relations among them).
- *Image schemas* ([Johnson, 1987](#)) are based on perceived spatial organization (e.g., the perception of three-dimensional space gives rise to the “container” image schema which consists of an interior and an exterior separated by boundaries).
- *Metaphor* ([Lakoff & Johnson, 1980](#)) is a conceptual mapping (a set of correspondences) across discrete conceptual domains (e.g., we can see difficulties in achieving a goal as impediments to motion to a destination).
- *Metonymy* ([Lakoff & Johnson, 1980](#)) is a domain-internal mapping featuring a “stands for” relation (*kettle* stands for “the water in the kettle” in *The kettle is boiling*).

A highly attractive aspect of [Lakoff's \(1987\)](#) proposal was that, unlike much previous scholarship on figures of speech, metaphor and metonymy were considered to be on a par with frames and image schemas as types of ICM. Over the years, this idea has received support from empirical findings according to which the ability to understand central aspects of both figurative and nonfigurative language develop at the same time ([Gibbs & Colston, 2012: 265 ff](#)). However, treating the various figures of speech as analytical categories may not provide the best explanatory picture. There

is linguistic evidence that figures of speech can be explained in terms of combinations of more basic cognitive processes, which, in their application to human meaning-making activity, take the form of what we have termed representational cognitive operations ([Ruiz de Mendoza & Galera, 2014](#); [Ruiz de Mendoza 2017a](#)). The notion of cognitive operation is introduced in the next section.

Cognitive Operations

A cognitive operation is any mental activity, or cognitive process, which has an identifiable effect resulting from the brain's response to human interaction with the world. As cognitive processes, cognitive operations connect informational inputs to behavioral outputs ([Anderson, 2010](#); [Newen, 2017](#)). Some cognitive operations relate to memory encoding and retrieval, others to sensorimotor experience, and others to the creation of concepts; still others are what we call “representational,” defined here as involving people's ability to make meaning through language-based inferences, that is, they relate to our ability to derive meaning by working on preexisting conceptual materials such as frames and image schemas. Such operations involve either the formal manipulation of conceptual structure or its adaptation to contextual requirements. The result is a conceptual representation, that is, a meaningful arrangement of concepts. Metaphor can illustrate this last kind of operation. Take *Her skin is silk*. To find similarities between a person's skin texture and silk, it is necessary to derive generic-level conceptual structure common to both. This happens through an *abstraction* cognitive operation. Then, *selection* of structure, another cognitive operation, is a prerequisite for the comparison operation, since not every attribute of silk maps onto the notion of skin, but only those referring to its texture. Selection of

structure is, in turn, the consequence of conceptual cues provided by the relationship between the linguistic expression and our world knowledge store, according to which silk is smooth and lustrous. Hence, *cueing* for the selection of conceptual structure is another cognitive operation. These three operations – cueing, selection, and abstraction – are *formal operations*, since they involve the manipulation of conceptual structure. By contrast, *comparison* results in the creation of meaning representations through inference and meaning adjustments arising from linguistic cues. We classify comparison as a nonformal or *content* operation. Another case of content operation is provided by the *correlation* of experiences. This content operation is found in what [Grady \(1999\)](#) and [Lakoff & Johnson \(1999\)](#) have termed *correlation metaphor*. A correlation metaphor is one grounded in the frequent co-occurrence of experiences. An example is the tendency of similar objects to cluster together, such as a flock of birds, a bunch of grapes, and a swarm of bees. This tendency licenses metaphorical expressions like *Purple is closer to blue than to red*, where *closer* means ‘more similar’. Another example of correlation which gives rise to metaphor is that between states and locations (e.g., we feel comfortable in a sofa, warm in bed, safe in a shelter). This correlation underlies metaphorical expressions such as *be in love/trouble/awe*. Both resemblance and correlation metaphors involve a reasoning process whereby the structure and logic of the source concept applies to the target. This is what they have in common. The difference is to be found in the grounds for the reasoning process, which is a matter of finding relevant similarities or correlating experiences.

There are other content operations, which, either alone or in combination, can account for the central meaning conveyed by other figures of speech ([Ruiz de](#)

[Mendoza, 2021](#)). We will only discuss a few more by way of illustration. More complete accounts can be found in [Ruiz de Mendoza & Galera \(2014\)](#) and [Ruiz de Mendoza \(2017a\)](#).

Strengthening and *mitigation* are converse cognitive operations which underlie the production and comprehension of hyperbole and understatement. Strengthening is used to construct a stronger meaning representation. In its application to hyperbole, in combination with substitution, it creates a strengthened conceptual item (located at an upper point in a scale) which stands for a mitigated version of the same item (located at a lower level in the same scale). For example, in the sentence *That must weigh a ton!*, a *ton* is a reinforced version of the real weight of the object referred to.

Similarly, a *thousand* times can mean “many times,” *an eternity* “(too) much time,” and *torturing* people “bothering” them. The construction of understatement requires the opposite process based on a mitigated representation: a *scratch* can refer to a bad wound, a *bit* more can mean “a lot more,” *just chilly* can be “very cold”, and so on.

Domain *expansion* and *reduction* relate to metonymy, in combination with substitution. In a metonymic mapping, one concept acts as a point of access to another concept with which it is related in terms of domain inclusion (cf. [Kövecses & Radden, 1998](#); [Ruiz de Mendoza, 2000, 2014](#)). In the previous example, *The kettle is boiling*, the target domain (the water) is a subdomain of the source domain (the kettle). Here, the mapping involves reducing the scope of the domain that acts as a point of access (the kettle), termed the matrix domain, into one of its subdomains (the water in the kettle). By contrast, the metonymy in *A hundred souls attended the service* (meaning “a hundred churchgoers”) requires expanding the scope of the point of access (souls) into its corresponding matrix domain (the churchgoers), which acts as the metonymic

target.

Conceptual representations can also be contrasted. *Contrasting* is a cognitive operation whereby one conceptual representation is the opposite of some aspects of another such representation. Paradox provides some illustration. Consider the advice involved in *You can save money by spending it*. Saving and spending are in extreme contrast, that is, they are clashing representations, since they are opposites. However, what makes a paradox such is that the clash involved in it can be resolved through a nondefault re-construal of the scenarios in which the clashing concepts are embedded. In this case, we can reason that spending money on high-quality more durable objects may in the long run pay off.

Evidently, like paradox, verbal irony also involves a clash between concepts. As noted in the introduction, this feature of irony is one of the hallmarks of traditional approaches. However, the incongruency of irony is not resolved like the one of paradox. The speaker's intent is not to reconcile two opposing views or perspectives, but to substitute one for another. Imagine two friends are in agreement about the impossibility of a candidate getting elected as city mayor. When, unexpectedly, the candidate gets elected, one of the two friends remarks with astonishment: *So, he couldn't possibly win!* This remark, which clashes with the fact that the candidate has won the election, has a twofold purpose: one is to convey the speaker's attitude (astonishment), and the other is to question what is literally conveyed by the utterance. The implication is that the speaker now realizes that he was wrong and that, given the new evidence, the hearer is to substitute a meaning representation containing this new evidence for the erroneous belief. Therefore, this initial explanation has identified two cognitive operations. One is a contrasting operation,

which results in a clash between what is said and observable reality. The other is a substitution operation, which replaces what is said by an assumption reflecting the new evidence. There is still one more operation, which, as noted in the introduction, we call *echoing*, consisting of the total or partial reproduction of a previous utterance or thought. The expression *So, he couldn't possible win!* attempts to capture and reproduce the central aspects of the meaning implications of the two friends' conversations about the impossibility of the candidate winning the election. It thus qualifies as an echoic utterance. It should be emphasized that an echo is not necessarily an exact repetition of what someone has said. It can be any expression which contextually affords access to a meaning representation containing relevant meaning aspects of an utterance, a set of related utterances, or a belief (whichever its complexity), whether individual or interpersonal. In Relevance Theory, an echoic utterance is constrained by the relevance criteria of contextual consistency and communicative efficacy ([Sperber & Wilson, 1998](#); [Wilson & Sperber, 1992, 2012](#); [Wilson, 2013](#)). In this chapter, ironic echoes, besides being a pragmatic phenomenon, are seen as the product of the underlying cognitive activity of totally or partially repeating a real or attributed meaning representation. We deal with this topic in detail in the next section.

Echoing, Explicit Agreement, and Implicit Presumed Expectations

The application of the notion of echo to verbal irony has given rise to some controversies, especially with proponents of Pretense Theory (see [Popa-Wyatt, 2014](#), for a discussion of positions). Lack of space prevents an examination of approaches in

this chapter (cf. [Colston & Gibbs, 2007](#); [Dyner, 2014](#)). However, in the course of our discussion, it will become evident that the study of verbal irony in terms of cognitive operations can help us reconcile various insights into this figure of speech. It can also help us to embed the resulting explanation within a more general account of meaning construction (cf. [Ruiz de Mendoza & Galera, 2014](#)).

[Ruiz de Mendoza \(2011\)](#) first proposed the treatment of echoic mention as the result of an echoic operation, consisting of repeating fully or partially an utterance or of wording a meaning representation which arises from an attributed thought. [Ruiz de Mendoza & Galera \(2014\)](#) took over this treatment to account for irony within the context of a broad account of meaning construction which includes nonfigurative language (see also [Galera, 2020](#), for a detailed study of nonironic echoes). [Ruiz de Mendoza \(2017b\)](#) further develops ironic echoing (i) by accounting for the differences in meaning between using full or partial echoes and (ii) by introducing the notion of *structural echoing*. The following subsections offer a more detailed account of these issues. In addition to full and partial echoing, they note the existence of inaccurate forms of echoing and examine their role within the context of the strongly interpretive (rather than descriptive) nature of this cognitive operation in the production of verbal irony. Echoing is discussed as a form of either showing or reinforcing agreement; then, pretended agreement is posited as a central element in verbal irony, and structural echoing as a special form of interpretive echoing. The last subsection examines the role of implicit echoing in pointing to presumed expectations. The overall treatment of echoing thereby provided is expected to represent a step forward into a unified account of verbal and situational irony.

The Interpretive Role of Echoing

There are multiple reasons why an utterance echoes another or is presented as resembling a thought. An evident case, noticed by [Sperber & Wilson \(1995\)](#), is indirect speech, which has the pragmatic function of reporting or introducing information that was provided previously. This is a descriptive use of echoing. However, there are nondescriptive or interpretive uses of irony. One example, discussed in detail in [Ruiz de Mendoza & Galera \(2014: 188–194\)](#), is supplied by the *Don't X NP* construction. The sentence *Don't you daddy me!*, uttered by an angry father to his daughter who uses the appellative *daddy* to get what she wants, can illustrate the use of this construction. The echoic use of *daddy* in this sentence contributes to its overall pragmatic value. It can be roughly paraphrased as “don't use the appellative *daddy* to persuade me.” That is, the construction is used to deny the persuasive pragmatic value of the appellative.

In irony, echoing also has an interpretive dimension characterized by a pragmatic function, which is essentially that of showing agreement with the echoed utterance or thought. There are nonechoic ways of showing agreement. This can be done by means of adverbials directly expressing acquiescence or accord, such as *sure*, *yes*, and *right*, or by means of interjections like *Great!*, which, in an ironic utterance, conveys pretended delight over a situation which is less than delightful. An echo shows agreement precisely because of its nature as a case of repetition. Repetition can convey agreement. In classical Latin, for example, where there was no clear adverbial conveying the notion of positive confirmation captured by English *yes*, repetition of the verb fulfilled this pragmatic function:

(1)	A: Valesne? (“Are you well?”)
-----	-------------------------------

	B: Valeo (“I am well”)
--	------------------------

In present-day English, it is not infrequent to answer polar questions affirmatively in a similar way, to endow the response with greater reassurance:

(2)	A: Will you attend the whole meeting?
	B: I will attend the whole meeting.

The kind of agreement shown in irony, however, is a pretended one. One well-known approach to irony, called Pretense Theory, was offered by [Clark & Gerrig \(1984\)](#), who observed that the ironic speaker is like an actor who performs a role. In *So, he couldn't possibly win!*, the speaker pretends (i.e., acts as if) he actually believed that the candidate could not win, while the evidence points in the opposite direction. This pretense element is combined with the echoic expression intended to convey agreement. The result is *pretended agreement*, which we can consider a definitional feature of irony. Because of this, it is often possible to convey irony by means of agreement adverbials without the presence echo, as in [\(3a\)](#):

(3)	(a)	A: John will surely apologize.
		B: Yeah, sure.
	(b)	A: John will surely apologize.
		B: Yeah, sure. John will surely apologize.

When the adverbials combine with an echo, they act as an intensifier of the ironic impact of the utterance, as in [\(3b\)](#).

Basically, a partial echo is the partial repetition of a conceptual representation. One could think that a partial echo is nothing but a more economical way of producing an echo when there are enough textual and contextual clues to retrieve the implicit meaning, thus optimizing relevance (the balance between economy and effects). However, this is not exactly the case. A partial echo conveys different meaning implications, especially in terms of attitude. Consider a situation in which

Fred borrows a large sum of money from a close friend, John, with the assurance that he will pay back before the specific date in which John needs the money to make an important payment himself. Fred does not pay back before the appointed date and John feels he has been deceived. He vents his feelings out on another common friend and echoes Fred's false promise:

(4) Don't be concerned, John, you will have every cent back before next month. Yeah, right!

This is a case of full echo. Its strength lies in the repetition of all of Fred's words.

Now, compare the following partial echo of the same utterance:

(5) Every cent back, sure! Before next month. Yeah, right!

A partial echo is not only more economical. It can also make the selected aspects of the original thought more impactful than in a full echo thus endowing them with a greater emotional load. In (5) this effect is achieved by the manipulation of the prosodic contour of the utterance, which is divided into two segments, each drawing attention to the speaker's feelings of disappointment. Other partial echoes are possible, each focusing on the elements of the original utterance or thought which the ironist wants to draw attention to:

(6)	(a) Don't be concerned, John! Yeah, sure.
	(b) Every cent back. Sure!
	(c) Yeah, right. Before next month!

The focus of example (6a) is on Fred's reassurance to John that he should not be concerned; (6b) is focused on the Fred's emphatic promise for a full return of John's money; and (6c) on the deadline for the return.

An echo can also be a nonexact repetition of what was presumably said or thought. This allows for varying degrees of elaboration, with potential changes

(whether intended or not) in the kind of meaning implications conveyed:

(7)	(a) Yeah, right, no worries!
	(b) Yeah, right, all my money is back, as you promised!
	(c) Great! A trustworthy fellow. Every cent is back!

Like (6a), example (7a) is focused on Fred's reassurance to John. It differs from (6a) in its more informal wording, which can capture Fred's friendly and reassuring overtones. Example (7b), like (6b) is focused on Fred's strong promise. However, it differs from (6b) in highlighting the strength of the promise by making explicit the nature of the illocutionary value of the corresponding part of (4); in addition, while *every cent back* in (4) was presented as a future act, *all my money is back* is presented in resultative terms, endowing the speaker's complaint with a stronger impact. Finally, example (7c) makes explicit the idea that Fred was actually not worthy of John's trust. Other elaborations are possible, of course. What is important for us at this point is to realize that ironic echoes can be *full* or *partial*, and *accurate* or *inaccurate*, in various degrees and combinations. The echoes in (7) are all partial and inaccurate. But speakers may also provide inaccurate representations of full echoes. The elaboration of (4) into (8) is one possibility:

(8) So, you shouldn't worry, John, because I'm a good guy, I will stick
to my word and you will have every cent back with you before
next month. Yeah, sure.

The interpretation of (4) provided by (8) is based on relevant meaning implications, related to Fred's failure to stick to his word and his trustworthiness, which the speaker derives from his friend's words of promise.

In sum, full echoes, in spanning over what the speaker believes is the complete utterance or thought, do not single out any aspect of it for special attention. They thus

differ from partial echoes, which have the function of emphasizing the parts of the original utterance or thought which have greater relevance in communicative terms. A full or a partial echo can be inaccurate for various unintentional reasons, including poor recall, but, when intended, they can be used to introduce shades of meaning which impinge on the impact of the attitudinal ingredient of irony.

Structural Echoing

Accounting for the interpretive nature of ironic echoes is important in understanding some ironic uses. An interesting case is ironic utterances based on structural echoing, which is in turn built on analogical thinking:

(9)	Ted: You know what it's like, Francisco. Spaniards party all night and sleep all day.
	Francisco: Yeah, right, Ted, and Americans only eat junk food!

Example (9) is based on cultural stereotypes, which take the form of sweeping generalizations based on the extrapolation of limited observations. Strictly speaking, both Ted, an American, and Francisco, a Spaniard, commit the same kind of logical fallacy. However, there is an important difference. Francisco constructs his fallacious statement with the purpose of making Ted aware of the weakness inherent in his statement on Spaniards. Francisco's statement is ironic of Ted's belief as expressed in his initial derogatory remark. The point is that it could be argued that Francisco's statement is not echoic and that the brunt of the irony in what he says is borne by the adverbs *yeah, right*, which express pretended agreement. However, this is not necessarily the case, since Francisco's response could also be interpreted as ironic without any overt agreement marker provided that there is some way for Ted to know that Francisco disagrees with him:

(9') Francisco: And, by the same token, Americans only eat junk food,
Ted.

In Francisco's reaction there is an implicit echo of Ted's statement:

(9'') Francisco: Spaniards party all night and sleep all day and, by the
same token, Americans only eat junk food, Ted.

The best explanation for Francisco's contribution to the exchange in (9) is to recognize the underlying analogical reasoning of the 'A is to B what C is to D' kind (with the conclusion that A is comparable to C and B to D in their corresponding domains). Note that the behavioral attribute of 'partying all night and sleeping all day' is metonymic for 'being lazy' (and its associated consequences in terms of industry, productivity, and economic growth) and 'eating only junk food' is metonymic for 'leading an unhealthy lifestyle' (plus the associated consequences in terms of obesity, poor health, and so on):

(10) A Spaniard (A) is to laziness (B) what an American (C) is to an
unhealthy lifestyle (D)

Being lazy and leading an unhealthy lifestyle are both comparably undesirable characteristics of people. The logical conclusion of this reasoning process is that a Spaniard is comparable to an American in terms of undesirable behavioral characteristics.

The analogy in (10) is grounded in double echoic thinking: the statements made by Ted and Francisco are each echoic of a cultural stereotype and their conceptual associations; but Francisco's statement is also structurally echoic of Ted's. This makes what Francisco says doubly ironic. Francisco ironizes both on Ted's assertion and on the cultural stereotype about American eating habits, which he does

not endorse either. From a pragmatic perspective, structural echoes are used to counterargue, which, from a discourse perspective, is the basis for a rebuttal strategy. It is only natural that irony can be used in this way, since, in general, underlying the ironic attitude is someone's realization about the true nature of a state of affairs in the face of rising evidence. This can easily involve criticism of others' previous beliefs or even one's own.

In connection to irony-based rebuttal, it is interesting to consider prolepsis. Prolepsis offers a type of rebuttal strategy which readily lends itself to conveying ironic meaning (Ruiz de Mendoza, 2020: 31). The strategy consists in the speaker first raising an objection to his or her own argument and then answering the purported objection (Walton, 2007: 106):

(11)	(a) It's hard to see how corruption can be eradicated unless an independent attorney general takes determined action.
	(b) It's hard to see how corruption can be eradicated without the determined action of an independent attorney general.

The objection is found in the anticipatory *it* part, which makes a nearly universally valid statement which should leave little room for exception. However, the exception is immediately supplied by means of a negative conditional, as in (11a) or any functional equivalent, as in (11b). The potential objection questions the echo of an attributed thought (in this case the belief that corruption can be eradicated) in the face of the clashing evidence the speaker can provide (here, the observed situation that there is an independent attorney general taking a certain action). In irony, speakers dissociate themselves from a belief which clashes with rising evidence. The dissociation is implicit. However, in proleptic constructions, it is explicit, which leaves the pretense ingredient out of the picture. For this reason, prolepsis is not a pure variant of irony. But, since it contains three essential ingredients of irony (an

echoed thought, a clash, and the speaker's attitude of dissociation), it is highly sensitive to being used with ironic overtones, as revealed by the compatibility of proleptic constructions with pretended agreement indicators:

(11a') Yeah, sure. It's hard to see how corruption can be eradicated unless an independent attorney general takes determined action.

In fact, the agreement indicators reveal the existence of an implicit echo, which is questioned by the proleptic construction. This is evidenced by the following elaboration of (11a'), which makes the echo explicit:

(11a'') Yeah, sure, corruption can be eradicated. But it's hard to see how corruption can be eradicated unless an independent attorney general takes determined action.

We now turn our attention to the role of implicit echoing in the production of ironic meaning.

Implicit Echoing

Consider the following example taken from [Giora et al. \(2015: 290\)](#):

(12) He's not the most organized student

This is an example of a humorous (but not contemptuous) ironic remark, in which the speaker tries to raise the hearer's awareness on an inherently negative student's attribute (lacking organization). What sentence (12) provides is not the ironic echo but what the speaker believes to be the real situation, which contrasts with what the speaker thinks is the hearer's (erroneous) belief. The echo, which is implicit, can be inferred thanks to constructional cues based on the negation of the superlative adverb, which results in an absolute hyperbolic expression (what the literature calls an

extreme case formulation; cf. [Norrick, 2004](#)). Now, note the following two elaborations of (12). The first one provides an explicit echo but omits explicit reference to the real situation. The second one keeps a full level of explicitness in both parts of the ironic sequence, which has interesting communicative effects:

(13)	(a) (Yeah, right), clean and orderly.
	(b) (Yeah, right), clean and orderly. (Well), he's not (precisely/ exactly) the most organized student in the world.

This echo (*clean and orderly*) tries to capture what the speaker thinks that the hearer has in mind; that is, like all ironic echoes, it is interpretive. It is also a case of pretended agreement. But this quality of the echo is only sustained in (13a). In (13b) this pragmatic function is canceled out by the explicitation of the observable situation. This is an interesting feature of ironic utterances of this kind, which is shared with those like (12), where the echo is implicit and only the observable situation is explicit. There is no pretense act. However, there is still a clash between the hearer's presumed expectations and what the speaker thinks is the real situation. What is more, the speaker's explicit endorsement of the observable situation serves as evidence of the speaker's dissociation from the hearer's presumed expectation.

The analysis of implicit echoes reveals the need to expand the picture of verbal irony to one which considers ironic meaning as the expression of an attitude of dissociation by means of a clash between an expected belief (or set of beliefs) and rising evidence. In this expanded picture, the role of ironic echoing is to point to someone's presumably erroneous expectations. When the echoing operation results in an explicit echo, the operation serves the function of showing pretended agreement with the echoed conceptual representation. By contrast, when the echoing operation does not produce an explicit echo, but an inferred one, the operation serves the

function of pointing to a presumed expectation. Since showing agreement, even if pretended, is a way of endorsing an opinion, it follows that this pragmatic function is subordinate to the general function of sharing expectations.

This observation is important since it provides the grounds for a broad account of irony which brings together both its verbal and situational manifestations, an aim which has been recently defended in [Ruiz de Mendoza & Lozano \(2021\)](#). There are everyday situations which are intrinsically ironic: a mathematics teacher whose children cannot add; a police station which is burgled; a marriage counselor who files for divorce. Some are captured by popular wisdom in the form of sayings or proverbs, as in *The cobbler's children are the worst shod*. Others have been depicted in narratives or performed in theater plays. For example, in Moliere's comedy *Tartuffe*, Tartuffe, the scheming hypocrite, contrives to get his former host, Orgon, arrested. However, to his astonishment, the arresting officer takes Tartuffe prisoner instead since his treachery has been discovered. In all these examples, there is an expectation that is canceled out by reality: we expect teachers to teach their own children, police stations to be safe from thieves, marriage counselors to have strong marriages, and cobblers to provide their children with good shoes. In Moliere's *Tartuffe*, the audience is as surprised as Tartuffe by his arrest. As we become aware of the clash between what we ideally expect and what is the case, if we dissociate ourselves from our initial assumption, irony arises and we can refer to such a situation as ironic. In the case of verbal irony, we are made aware by means of verbal clues providing us with an interpretive echo of the misled assumption or with access to the relevant aspects of the real situation.

Echoic Complexity

[Ruiz de Mendoza & Lozano \(2019a\)](#) have studied echoic complexity. This can be achieved by increasing the sophistication of sociocultural references. However, this approach to complexity is based on the content of the cognitive models exploited ironically rather than to the cognitive operation itself, which puts it outside our present field of interest (the interested reader may refer to [Ruiz de Mendoza & Lozano, 2019b](#), for insights into the role of sociocultural references in irony). There are three other strategies to increase the complexity of an echo: lexical, syntactic, and discursive. Let us describe and assess each of them in terms of its potential communicative impact.

The first strategy, called *echoic cumulation*, is based on the consecutive appearance of echoic expressions which refer to the same aspect of the target. Often, the aggregation of expressions is made in such a way that each involves an increase in intensity over the previous one. This feeling of increase is iconic with a corresponding increase in the speaker's emotional reaction to the erroneous belief.

(14)	(a) Yeah, right. You sister is kind and generous, a heart of gold, all love.
	(b) Yeah, right. You sister is pure love, a saint, a real angel, the epitome of virtue.

Echoic cumulation is intended to increase the impact of irony. This can happen in two ways which are not exclusive of each other. One takes place through the aggregation of roughly synonymic expressions addressing the same aspects of the referent. This is exemplified in (14a). The other, which is illustrated by (14b), is based on the successive aggregation of increasingly more intense synonymic expressions. In (14a) the greater communicative impact arises from mere cumulation, whereas in (14b)

cumulation is enhanced by the intensification in meaning (through hyperbole) of each of the successively cumulated expressions.

The second strategy, called *echoic compounding*, consists of combining echoes syntactically to make each echo refer to parts of a single ironic event:

(15) Yeah, sure. You are the fastest swimmer, and the rest of us are
slow as turtles. Some things never change.

Take (15) in a context in which the hearer is a fairly good swimmer, but not as good as he thinks, and the speaker and his colleagues are considered very slow swimmers by other people, a situation which they resent. In uttering (15), the speaker brings together two echoes, from different sources, into a single echoic complex by means of paratactic coordination based on the conjunction *and*.

The third strategy is *echoic chaining*. Through chaining, an ironic echo is constructed on a previous echo. The simplest case consists of a simple total or partial repetition of someone's previous echo. Imagine Carla is impressed by the delicacy of the embroidery of a shawl worn by Jane, one of her friends. Another common friend, Julia, finds the embroidery tasteless, so, when alone with Carla, with an ironic tone of voice, she produces an echo of Carla's admiring remark:

(16)	Carla: Oh, wow, what really delicate embroidery!
	Julia: Yes, Carla, no doubt. What really delicate embroidery!

On another occasion, Jane, who wears her shawl, meets again with Carla and Julia for coffee. This time, another common friend, who runs a successful stitch craft business, when noticing Jane's shawl, expresses her admiration for the careful needlework in it. Carla takes advantage of the situation to echo Julia's past ironic echo:

(17) Carla: Yes, Carla, no doubt. What really delicate embroidery!

Utterance (17) contains Carla's echo of Julia's previous echo of what Carla had first

said. Echoic chains, like cumulative echoes, are designed to have greater meaning impact than simple echoes. They make use of what we can regard as a variant of the iconic *principle of quantity* (Givón, 1995: 49). In Givón's formulation, less predictable information is given more coding material (e.g., zero anaphora happens when there is a high informational predictability). However, greater quantity also correlates with an increase in intensity, as found in reduplication and, in general, in repetition (e.g., *No, no, no, no!*). This form of iconicity can be postulated to arise from real-life experience where greater quantity correlates with greater weight, size, height, and so on, hence with greater impact.

There are more complex cases of echoic chaining. Let us consider the implicit analogy involved in the use of the construction *And X might/could Y* (e.g., *And pigs might fly!*, *And I could be the next King of England!*) together with what we can postulate to be the intended reasoning process arising from it. This construction is a conventional specification of the analogical constructions used for rebuttal which we examined in the subsection "Structural Echoing." Imagine two teenagers, David and Trevor, engaged in a friendly conversation about their common friend Pete. David devotedly admires Pete, although Pete is less than brilliant in many respects. At one point, David boasts that Pete could for sure win a high-level chess competition. Trevor responds:

(18) Yeah, right! And I could be the King of England!

This utterance is meant to question David's belief. Note that it contains an implicit echo, which can be made explicit by the following elaboration:

(18') Yeah, right! Pete could win a chess championship. And I could be
the King of England!

The analogy and subsequent (naïve) cause-consequence reasoning process supporting Trevor's reaction can be spelled out as follows:

(19) Pete is as likely to win a chess championship as Trevor is likely to become the King of England. Since it is virtually impossible for Trevor to become the King of England, it is likewise virtually impossible for Pete to win a chess championship.

The nonechoic part of (18) is used by way of contrast with the implicit echo, spelled out in (18'), from whose content the speaker dissociates himself. Now, imagine that, one week later, Trevor is assigned to participate in a school play where he has the role of the King of England. His friend takes advantage of this funny situation and says:

(20) Yeah, right, and you could be the King of England!

With (20) David strikes back by jokingly pretending to have real reasons to attack the foundations of the probability judgment involved in the nonechoic part of (18), thus vindicating his original belief. In this sense, (20) contains an implicit echo which is cued by the expression *and you could be the King of England!* This echo is made explicit in (21):

(21) Yeah, right! Pete could win a chess championship, and you could be the King of England!

The statement *Pete could win the championship* echoes Trevor's echo of David's original thought, now playfully vindicated. This analytical situation is more complex for two reasons. First, it involves echoing an implicit, rather than an explicit, echo. Second, the cancelation of the first echo is undone by the second echo only with the support of an implicit analogy which is called upon on the basis of constructional requirements: the *and* conjunction prompts for the activation of a proposition

containing the implicit echo.

Other Cognitive Operations Involved in Irony

There is empirical evidence that ironic thinking is more elaborate than metaphorical thought ([Colston & Gibbs, 2002](#)). One possible reason is its metacognitive nature as a second-order phenomenon based on epistemic vigilance (the capacity to assess the reliability of what we think is other people's information) (cf. [Sperber et al., 2010](#)). Another possible reason is the number of cognitive operations which it can involve (even without considering the cases of echoic complexes).

The previous sections have focused on ironic echoing. The role of contrasting has also been addressed. These are content operations. However, there are noncontent (or formal) operations that cooperate with echoing and contrasting. These include at least cueing and selection of structure as is the case of other figures (see subsection "Cognitive Operations"). However, there is one formal operation that is distinctive of irony. A simple example will be enough to detect its presence and examine its role in irony. Take a context in which someone suspects that his neighbor next door, Mr. Tanner, mistreats his dog. One day, he overhears words of praise from Ms. Clark, another neighbor, on Mr. Tanner's love for his dog. He turns around and repeats the words of praise back to Ms. Clark with puzzled complaint:

(22) Yes, sure. Mr. Tanner spoils his dog more than his children

The echo in (22) is intended to question Ms. Clark's statement. The speaker holds in his mind both his own belief and Ms. Clark's belief, which contrast. However, Ms. Clark only holds her belief, so (22) is designed for her to think that she might have to cancel it out on the grounds of some information which is available to the speaker but

not to her. Irony theorists have long noted that there are intonational and constructional cues which prompt for an ironic interpretation. In this connection, recall Attardo's (2000) indices of irony listed in the introduction. To these indices, we can add agreement-marking devices (e.g., *yeah*, *right*, *sure*, usually in combination), as noted earlier, and some constructions with a high ironic potential, like *X is not the most Y*, *And X might/could Y*, briefly examined previously, and still others discussed in the literature, such as *I love it when X* (e.g., *I love it when people signal*; Coulson, 2005) or *X is about as Y as Z* (when Y and Z are in a contrasting relationships, as in *That's about as useful as buying one shoe*; Veale, 2012: 121).

The cancelation of a previously held assumption gives way to the addition of a new relevant assumption through substitution, an operation which was briefly mentioned in the introduction. To interpret (22) as irony, Ms. Clark is to substitute the assumption that Mr. Tanner actually mistreats animals while pretending to do the opposite for the literal content of the utterance. To produce this assumption, Ms. Clark may need further conversational interaction or simply a more inquisitive examination of the state of affairs which has been questioned. This analysis thus suggests that the understanding of irony requires a substitution operation, which follows the echoing and contrasting operations. This substitution operation has no "stands for" value, unlike substitution in other figurative uses of language, such as metonymy (e.g., *He hired a new hand*, where 'hand' stands for 'worker'), referential metaphor (e.g., *My rose is my love*, where 'my rose' stands for the speaker's loved one), and euphemism (e.g., *He's ample*, where 'ample' stands for 'fat'). In these uses, saying that A stands for B is tantamount to saying that if A is the case then B is the case too; that is, both A and B are pragmatically equivalent by virtue of the kind of conceptual relationship

that holds between them (e.g., in metonymy A and B are in a domain-inclusion relationship, whereas in metaphor A and B either correlate in experience or they resemble each other). By contrast, in irony, the function of substitution is the cancelation of a purportedly erroneous assumption (or set of assumptions) to be replaced by a new assumption (or set of assumptions) which are consistent with what the speaker considers rising evidence. In irony, if A is the case, B cannot be the case, and the other way around. However, whether this substitution operation takes place or not depends on the hearer's acceptance of such rising evidence.

Conclusions

This chapter has accounted for the essential aspects of ironic meaning in terms of cognitive operations. In Relevance Theory irony has been described as a form of echoic mention associated to an attitude of dissociation from the echoed thought. Echoic mention is but the result of a cognitive operation applied to relevant conceptual material conveying one or more related assumptions. It cooperates with other cognitive operations like contrasting and a modality of substitution which involves the potential cancelation of the assumptions contained in an echo. The chapter has examined echoing in some detail. It has addressed its interpretive role by assessing its pragmatic value along two dimensions: its completeness and its accuracy. The chapter argues that a partial echo allows for emphasis on selected aspects of the echoed thought. An inaccurate echo, in turn, goes beyond the echoed thought itself into some of its relevant meaning implications, which thus become the object of greater attention. Echoing has been additionally treated from the perspective of its role in sustaining reasoning. Structural echoing has been discussed in this

respect. This is a form of analogical reasoning used to counterargue and can thus be made part of rebuttal strategies. A discussion of implicit echoing has followed. In this situation, the echoic operation serves the function of pointing to a presumed expectation, which aligns verbal irony with situational irony. The chapter has also addressed echoic complexes. It has distinguished three strategies to create complex echoes: cumulation, compounding, and chaining. It has supported the view that these strategies offer different ways to enhance the intensity of the meaning effects of an ironic echo and it has traced the motivation for them to a variant of the iconicity principle of quantity. The chapter has ended with an exploration of the role of substitution, a formal operation, in ironic meaning. It has been noted that this operation is fully operational only after the hearer has captured the ironic intention of the utterance and has been persuaded to cancel out previously held assumptions.

All in all, this chapter has provided linguistic evidence of the possible cognitive activity underlying ironic interpretation. It has been argued that an account of irony in terms of cognitive operations allows the analyst to detect complex forms of cognitive activity which can be associated to different kinds of communicative impact. Echoing has proved decisive in this respect. While cancelation of structure has been emphasized and even made definitional of irony in traditional studies, the data show that it is the expression of pretended agreement, usually through echoing, that shapes ironic meaning. Furthermore, the different simple and complex ways of creating ironic echoes is what allows for the richness of irony-conveying strategies. In this connection, irony is not any different from metaphor or metonymy, which also combine to produce metaphoric and metonymic complexes ([Ruiz de Mendoza & Pérez, 2011](#); [Ruiz de Mendoza, 2017a](#)). What does differ between these figures and

irony is the nondenotational nature of the latter. While metaphor and irony, in all their varied forms and combinations, are intended to provide different kinds of construal of the world, irony is used to express speaker's dissociation which can be parameterized in context into different kinds of nondenotational attitudinal values (e.g., mockery, skepticism, wryness). An analysis carried out along the lines of the present study allows us to understand the potential meaning impact of the different manifestations of echoing in the construction of ironic meaning.

References

- Aguert, M., Le Vallois, C., Martel, K., & Laval, V. (2018). "That's really clever!" Ironic hyperbole understanding in children. *Journal of Child Language*, 45(1), 260–272. <https://doi.org/10.1017/S0305000917000113>
- Anderson, J. R. (2010). *Cognitive psychology and its implications*. Worth Publishers.
- Attardo, S. (2000). Irony markers and functions: Towards a goal-oriented theory of irony and its processing. *Rask – International Journal of Language and Communication*, 12(1), 3–20.
- Banasik-Jemielniak, N., & Bokus, B. (2019). Children's comprehension of irony: Studies on Polish-speaking preschoolers. *Journal of Psycholinguistic Research*, 48, 1217–1240. <https://doi.org/10.1007/s10936-019-09654-s>
- Bartlett, F. C. (1932). *Remembering: A study in experimental and social psychology*. Cambridge University Press.
- Booth, W. C. (1974). *A rhetoric of irony*. University of Chicago Press.
- Bussmann, H. (1996). *Routledge dictionary of language and linguistics*. Routledge.

- Clark, H. H., & Gerrig, R. J. (1984). On the pretense theory of irony. *Journal of Experimental Psychology*, 1, 121–126. <https://doi.org/10.1037/0096-3445.113.1.121>
- Colston, H., & Gibbs, R. W. (2002). Are irony and metaphor understood differently? *Metaphor and Symbol*, 17, 57–60. https://doi.org/10.1207/s15327868ms1701_5
- Colston, H., & Gibbs, R. W. (2007). A brief history of irony. In R. W. Gibbs, & Herbert Colston (Eds.), *Irony in language and thought: A cognitive science reader* (pp. 3–21). Lawrence Erlbaum.
- Coulson, S. (2005). Sarcasm and the space structuring model. In S. Coulson, & B. Lewandowska-Tomasczyk (Eds.), *The literal and the nonliteral in language and thought* (pp. 129–144). Peter Lang.
- Dynel, M. (2014). Linguistic approaches to (non)humorous irony. *Humor*, 27(4), 537–550. <https://doi.org/10.1515/humor-2014-0097>
- Falkum, I. L., Recasens, M., & Clark, E. V. (2017). “The moustache sits down first”: On the acquisition of metonymy. *Journal of Child Language*, 44(1), 87–119. <https://doi.org/10.1017/s0305000915000720>
- Fillmore, C. J. (1985). Frames and the semantics of understanding. *Quaderni di Semantica*, 6, 222–255.
- Galera, A. (2020). The role of echoing in meaning construction and interpretation. *Review of Cognitive Linguistics*, 18(1), 19–41. <https://doi.org/10.1075/rcl.00049.mas>
- Gibbs, R. W. (2006). Introspection and cognitive linguistics: Should we trust our

- intuitions? *Annual Review of Cognitive Linguistics*, 4, 135–152. <https://doi.org/10.1075/arcl.4.06gib>
- Gibbs, R. W., & Colston, H. L. (2012). *Interpreting figurative meaning*. Cambridge University Press. <https://doi.org/10.1017/cbo9781139168779>
- Giora, R., Givoni, S., & Fein, O. (2015). Defaultness reigns: The case of sarcasm. *Metaphor and Symbol*, 30, 290–313. <https://doi.org/10.1080/10926488.2015.1074804>
- Givón, T. (1995). Isomorphism in the grammatical code. In R. Simone (Ed.), *Iconicity in language* (pp. 47–76). John Benjamins.
- Goldberg, A. (2002). Surface generalizations: An alternative to alternations. *Cognitive Linguistics*, 13(4), 327–356. <https://doi.org/10.1515/cogl.2002.022>
- Goldberg, A. (2006). *Constructions at work: The nature of generalization in language*. Oxford University Press.
- Grady, J. (1999). A typology of motivation for conceptual metaphor: Correlation vs. resemblance. In R. W. Gibbs, & G. Steen (Eds.), *Metaphor in cognitive linguistics* (pp. 79–100). John Benjamins. <https://doi.org/10.1075/cilt.175.06gra>
- Graesser, A. (1981). *Prose comprehension beyond the word*. Springer.
- Handwerk, G. J. (1986). *Irony and ethics in narrative: From Schlegel to Lacan*. Yale University Press.
- Johnson, M. (1987). *The body in the mind: The bodily basis of meaning, imagination, and reason*. University of Chicago Press. <https://doi.org/10.7208/chicago/>

9780226177847.001.0001

Kövecses, Z., & Radden, G. (1998). Metonymy: Developing a cognitive linguistic view. *Cognitive Linguistics*, 9, 37–77. <https://doi.org/10.1515/cogl.1998.9.1.37>

Lakoff, G. (1987). *Women, fire, and dangerous things: What categories reveal about the mind*. University of Chicago. <https://doi.org/10.7208/chicago/>

9780226471013.001.0001

Lakoff, G., & Johnson, M. (1980). *Metaphors we live by*. University of Chicago Press. <https://doi.org/10.7208/chicago/9780226470993.001.0001>

Lakoff, G., & Johnson, M. (1999). *Philosophy in the flesh*. Basic Books.

McDonald, Russ (2001). *Shakespeare and the arts of language*. Oxford University Press.

Muecke, D. C. (1982). *Irony and the ironic*. Methuen.

Newen, A. (2017). What are cognitive processes? An example-based approach.

Synthese, 194, 4251–4268. <https://doi.org/10.1007/s11229-015-0812-3>

Norrick, N. R. (2004). Hyperbole, extreme case formulation. *Journal of Pragmatics*, 36(9), 1727–1739. <https://doi.org/10.1016/j.pragma.2004.06.006>

Popa-Wyatt, M. (2014). Pretence and echo: Towards and integrated account of verbal irony. *International Review of Pragmatics*, 6(1), 127–168. <https://doi.org/10.1163/18773109-00601007>

10.1163/18773109-00601007

Pouscoulous, N. (2014). The elevator's buttocks: Metaphorical abilities in children. In D. Matthews (Ed.), *Pragmatic development in first language acquisition* (pp.

239–259). John Benjamins. <https://doi.org/10.1075/tilar.10.14pou>

- Ramonda, K. (2019). The role of encyclopedic world knowledge in semantic transparency intuitions of idioms. *English Language and Linguistics*, 23(1), 31–53. <https://doi.10.1017/S1360674317000284>
- Ruiz de Mendoza, F. J. (2000). The role of mappings and domains in understanding metonymy. In A. Barcelona (Ed.), *Metaphor and metonymy at the crossroads* (pp. 109–132). Mouton de Gruyter.
- Ruiz de Mendoza, F. J. (2011). Metonymy and cognitive operations. In R. Benczes, A. Barcelona, & F. J. Ruiz de Mendoza (Eds.), *Defining metonymy in cognitive linguistics: Towards a consensus view* (pp. 103–123). John Benjamins. <https://doi.org/10.1075/hcp.28>
- Ruiz de Mendoza, F. J. (2014). On the nature and scope of metonymy in linguistic description and explanation: Towards settling some controversies. In J. Littlemore, & J. Taylor (Eds.), *Bloomsbury companion to cognitive linguistics* (pp. 143–166). Bloomsbury.
- Ruiz de Mendoza, F. J. (2017a). Metaphor and other cognitive operations in interaction: From basicity to complexity. In B. Hampe (Ed.), *Metaphor: Embodied cognition, and discourse* (pp. 138–159). Cambridge University Press. <https://doi.org/10.1017/9781108182324.009>
- Ruiz de Mendoza, F. J. (2017b). Cognitive modeling and irony. In H. Colston, & A. Athanasiadou (Eds.), *Irony in language use and communication* (pp. 179–200). John Benjamins. <https://doi.org/10.1075/ftl.1.09dem>
- Ruiz de Mendoza, F. J. (2020). Understanding figures of speech: Dependency relations and organizational patterns. *Language & Communication*, 71, 16–38.

<https://doi.org/10.1016/j.langcom.2019.12.002>

- Ruiz de Mendoza, F. J. (2021). Ten lectures on cognitive modeling. In *Between Grammar and Language-Based Inferencing*. Brill. <https://doi.org/10.1163/9789004439221>
- Ruiz de Mendoza, F. J., & Galera, A. (2014). *Cognitive modeling: A linguistic perspective*. John Benjamins. <https://doi.org/10.1016/j.langcom.2019.12.002>
- Ruiz de Mendoza, F. J., & Lozano, I. (2019a). A cognitive-linguistic approach to complexity in irony: Dissecting the ironic echo. *Metaphor and Symbol*, 34(2), 127–138. <https://doi.org/10.1080/10926488.2019.1611714>
- Ruiz de Mendoza, F. J., & Lozano, I. (2019b). Unraveling irony: From linguistics to literary criticism and back. *Cognitive Semantics*, 5, 147–173. <https://doi.org/10.1163/23526416-00501006>
- Ruiz de Mendoza, F. J., & Lozano, I. (2021). On verbal and situational irony: Towards a unified approach. In A. Soares da Silva (Ed.), *Figurative language: Intersubjectivity and usage* (pp. 249–276). John Benjamins.
- Ruiz de Mendoza, F., & Pérez, L. (2011). The contemporary theory of metaphor: Myths, developments and challenges. *Metaphor and Symbol*, 26, 161–185. <https://doi.org/10.1080/10926488.2011.583189>
- Rumelhart, D. E. (1980). The building blocks of cognition. In R. J. Spiro, B. C. Bruce, & W. F. Brewer (Eds.), *theoretical issues in reading comprehension* (pp. 33–58). Lawrence Erlbaum.
- Sperber, D., & Wilson, D. (1995). *Relevance: Communication and cognition* (2nd ed.). Blackwell. <https://doi.org/10.1017/s004740450001318x>

- Sperber, D., & Wilson, D. (1998) Irony and relevance: A reply to Seto, Hamamoto and Yamanashi. In R. Carston and S. Uchida (Eds.), *Relevance Theory* (pp. 283–293). John Benjamins.
- Sperber, D., Clément, F., Heintz, C., Mascaro, O., Mercier, H., Origgi, G., & Wilson, D. (2010). Epistemic vigilance. *Mind & Language*, 25(4), 359–393. <https://doi.org/10.1111/j.1468-0017.2010.01394.x>
- Van Kesteren, M. T. R., & Meeter, M. (2020). How to optimize knowledge construction in the brain. *npj Science of Learning*, 5(5). <https://doi.org/10.1038/s41539-020-0064-y>
- Van Kesteren, M. T. R., Ruiters, D. J., Fernandez, G., & Henson, R. N. (2012) How schema and novelty augment memory formation. *Trends in Neurosciences*, 35, 211–219. <https://doi.org/10.1016/j.tins.2012.02.001>
- Veale, T. (2012). *Exploding the creativity myth. The computational foundations of linguistic creativity*. Bloomsbury Academic. <https://doi.org/10.5040/9781472541659>
- Walton, D. N. (2007). *Dialog theory for critical argumentation*. John Benjamins. <https://doi.org/10.1075/cvs.5>
- Wilson, D. (2013). Irony comprehension: A developmental perspective. *Journal of Pragmatics*, 59, 40–56. <https://doi.org/10.1016/j.pragma.2012.09.016>
- Wilson, D., & Sperber, D. (1992). On verbal irony. *Lingua*, 87, 53–76. [https://doi.org/10.1016/0024-3841\(92\)90025-e](https://doi.org/10.1016/0024-3841(92)90025-e)
- Wilson, D., & Sperber, D. (2012). Explaining irony. In D. Wilson, & D. Sperber (Eds.), *Meaning and Relevance* (pp. 123–145). Cambridge University Press.

<https://doi.org/10.1017/cbo9781139028370.008>

Žegarac, V. (2006). Believing in: A pragmatic account. *Lingua* 116, 1703–1721.

<https://doi.org/10.1016/j.lingua.2006.02.005>