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Cognitive Science 25 (2001) 775–818

COGNITIVE
SCIENCE

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The bicoherence theory of situational irony

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Abstract

Situational irony concerns what it is about a situation that causes people to describe it as ironic. Although situational irony is as complex and commonplace as verbal and literary irony, it has received nowhere near the same attention from cognitive scientists and other scholars. This paper presents the *bicoherence* theory of situational irony, based on the theory of conceptual coherence (Kunda & Thagard, 1996; Thagard & Verbeurgt, 1998). On this theory, a situation counts as ironic when it is conceived as having a bicoherent conceptual structure, adequate cognitive salience, and evokes an appropriate configuration of emotions. The theory is applied to a corpus of 250 examples of situational ironies gathered automatically from electronic news sources. A useful taxonomy of situational ironies is produced, new predictions and insights into situational irony are discussed, and extensions of the theory to other forms of irony are examined. © 2001 Cognitive Science Society, Inc. All rights reserved.

Keywords: Attribution; Coherence; Concepts; Emotion; Irony; Salience

1. Introduction

When someone says that they find a situation *ironic*, they mean that their conception of it defies the normal way in which situations fit with their repertoire of concepts, that this misfit is noteworthy in some way, that it evokes a particular kind of emotional response, and, perhaps, that it has a special, moral significance. Consider the situation of the firefighters of Station 20 in Las Vegas, who had a fire in their kitchen due to some chicken fingers left

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cooking while they went out to answer a fire alarm.¹ As the spokesman for the Clark County Fire Department puts it:

“It just shows that if it can happen to us, it can happen to anyone,” La-Sky said of the Nov. 10 fire. “The irony’s not lost in it.”

We usually think of firemen as people who put out fires, not as people who start them. The fact that these firemen did start a fire made the national Associated Press news feed, as have many similar incidents of firefighters causing fires, failing to keep their buildings up to the local fire code, *etc.* This situation evokes a particular emotional response, namely mirth, and conveys a cautionary moral message which La-Sky summarizes in the quotation given above.

Regrettably, no current theory of irony takes all these factors in to account. Of course, most current theories treat situational irony only in passing if at all, focusing instead on literary irony or verbal irony.² Theories of literary irony typically adopt a rhetorical or Aristotelean approach—that is, they define irony as some configuration of dramatic roles and plot structures and thus ignore its cognitive content. Muecke (1969, 1982), for example, takes irony to be a kind of distance between appearance and reality brought about by an ironist and perpetrated on a victim. Booth (1974) treats irony as the recognition or reconstruction of a literary device analogous to the recognition of figures of speech such as metaphors, allegories, and puns. Hutcheon (1995) defines irony as a strategy of “discursive politics” in the rhetoric of texts. In all of these accounts, it is assumed that literary irony is the paradigm case and that situational irony is a special case of life imitating art.

Theories of verbal irony take a more cognitively plausible approach but concentrate solely on irony as a conversational strategy. Grice (1975, 1977) characterizes irony as a particular kind of conversational implicature in which intended meaning is inferred from literal meaning by reference to maxims of conversation (see also Giora, 1995). Sperber (1984) and Wilson and Sperber (1981; 1992) treat irony as an expression having an “interpretive resemblance” to an unexpressed opinion, in accord the principle of relevance (see section 6.4.). These views enjoy some experimental support (see Clark & Gerrig, 1984; Jorgensen, Miller, & Sperber, 1984; Gibbs & O’Brien, 1991; Winner, 1988; Winner & Leekam, 1991) but apply solely to discourse and therefore omit situational irony altogether.

Only two attempts have been made to give cognitively plausible accounts of situational irony, namely those by Littman and Mey (1991) and Lucariello (1994). Littman and Mey adopt a view of human cognition as a plan-recognition system of the sort well known in artificial intelligence. Their theory combines elements from theories of literary and verbal irony: They propose that humans construe situations as twists in story plots (literary irony) from which thwarted intentions are inferred (verbal irony). Certain combinations of plot twists and thwarted intentions constitute irony. This account has at least three important drawbacks. First, it distinguishes only three types of situational irony based on the number of plot twists counted: zero, one, or two. No independent justification is given as to why the number of plot twists should be regarded as significant. Second, this account gives logical priority to literary and verbal irony by borrowing plot twists and communicative intentions from them. Littman and Mey simply do not consider any cognitive model *not* based on these

forms of representation. Third, Littman and Mey offer no evidence that their three categories of irony exhaust all the possibilities or are typical of situational ironies as a whole.

Lucariello adopts a view of human cognition as a schema-recognition system in which people comprehend events by fitting them to given schemata such as scripts (Schank & Abelson, 1977). Some schemata represent people's expectations about how events should unfold *normally*, whereas other schemata represent an alternative theory about how events may unfold ironically. Ironic schemata are activated when some combination of the following four features are detected in a situation: *unexpectedness*, *human frailty*, *outcome*, and *opposition*. A taxonomy of 28 ironic schemata is proposed, organized into eight basic groups. Lucariello presents experimental evidence that people do hold a concept of irony that might be realized as a collection of schemata, and that her taxonomy reliably covers that concept—that is, that her taxonomy includes ironic situations and excludes nonironic situations. This theory is richer and more plausible than Littman and Mey's and does a much better job of unpacking the concept of situational irony. However, by aiming solely at producing a taxonomy, Lucariello misses the opportunity to find any principled relationship between situational irony and other cognitive phenomena. Consider the following two problems with her theory. First, the relationship between the taxonomy and typical features of ironic situations is not clarified. The eight basic groups of ironies cannot be predicted from the four features given, neither can the features be explained by examination of the groups. Second, the theory fails to elucidate the difference between ironic and nonironic situations, other than to say that they happen to fit with different schemata. Overall, the theory fails to explain the distinctions among ironies and between irony and non-irony. What we want, ultimately, from any cognitive theory of situational irony is not simply a taxonomy that fits the data but a theory that also explains the data.

This aim is the goal of the bicoherence theory proposed below. On this theory, human cognition is viewed as system of concepts organized by maximal conceptual *coherence* (see Thagard, 1989; Thagard & Verbeurgt, 1998; Thagard, 2000). A situation is recognized as ironic when it activates concepts in a particular, submaximal or *bicoherent* pattern. Conceptual coherence involves maximizing constraint satisfaction on a set of elements in view of positive and negative constraints between pairs of those elements. In the bicoherence theory of situational irony, the elements are the concepts activated by a situation and the positive and negative constraints are relations of coherence and incoherence as specified below. In addition, the bicoherence theory takes account of the effects of the salience of and emotional reactions to situations. The bicoherence theory has several advantages. First, it does not characterize situational ironies in terms of literary or verbal ironies. Second, it explains the relation between irony and non-irony through use of the general theory of conceptual coherence in cognitive science and association with the theory of causal attribution in social psychology. Third, it enjoys empirical support from a corpus study of real-world examples of situational irony.

Section 2. presents the bicoherence theory. The general concept of bicoherence is defined in section 2.1., while the specific kinds of coherence and incoherence involved in it are described in sections 2.2. and 2.3. Salience and the role of ironic schemata in situational irony are outlined in section 2.4. The importance of emotions to situational irony is discussed in section 2.5. where *manner* is defined and used to describe how emotions are evoked in

certain ironic situations. The corpus study, in which the theory is used to explain a body of situational ironies gathered from news articles, is presented in section 3. Results of the corpus study are given in section 4. A discussion of further issues and predictions arising from the theory is provided in section 5., along with speculations concerning the extension of the theory to other forms of irony.

2. The bicoherence theory

Situational irony is recognized when the accepted interpretation of a situation displays a bicoherent conceptual structure, affords adequate cognitive salience, and evokes an appropriate configuration of emotions. These criteria are explained, in order, in this section.

2.1. Bicoherence

Bicoherence is most easily understood as the reverse of coherence, so this section begins with an explanation of coherence. In general, coherence constitutes the way in which a set of elements can be partitioned such that the positive and negative relations existing between pairs of the elements are maximally satisfied. Coherence may be informally defined as follows:

1. Elements are representations specific to the cognitive domain in question. Conceptual coherence, for example, concerns *concepts*.
2. Pairwise, elements can cohere (fit together) or incohere (resist fitting together). Conceptual coherence relations include *positive association* between concepts, that is, when there are several objects to which two concepts both apply. Conceptual incoherence relations between concepts include *negative association*, that is, when there are few or no objects to which two concepts both apply.
3. If two elements cohere, then a positive constraint holds between them. Conversely, if two elements incohere, then a negative constraint holds between them.
4. Elements are to be divided into two classes, namely *accepted* and *rejected*.
5. A positive constraint between two elements is best satisfied either by accepting both elements together or by rejecting both elements together. Conversely, a negative constraint between two elements is best satisfied only by accepting one element and rejecting the other one. In other words, positively constrained elements are best treated the same, whereas negatively constrained elements are best treated differently.
6. A coherence problem consists of dividing a class of elements into accepted and rejected sets in a way that best satisfies these constraints.

A formal, mathematical characterization of coherence is given in Thagard and Verbeurgt (1998), along with computational algorithms for solving coherence problems in the general case. Specific coherence theories in the explanatory, analogical, deductive, visual, and conceptual domains are discussed in Thagard (2000).

Bicoherence is the same as coherence but with the rule given in step 5 above exchanged for its reverse. Consider the two parts of this rule again:

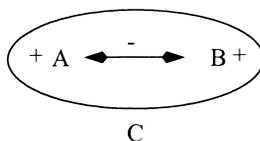


Fig. 1. The works of Anne O’Nymous as a bicoherent class. A = “Why would God allow evil?,” B = “Curious George goes ape!,” C = the works of Anne O’Nymous. The “+” signs indicate that A and B both cohere with C (to which they belong), and the “-” indicates that A and B incohere with each other.

- i. If two elements *a* and *b* cohere, then *a* and *b* belong to the same class (e.g., *accepted* or *rejected*).
- ii. If two elements *a* and *b* incohere, then *a* and *b* belong to different classes.

These rules stipulate (i) that any pair of elements in the same class should cohere with each other, and (ii) that any pair of classes that share the same element should cohere with each other. Now consider the reverse of these stipulations, in order, obtained by exchanging the roles of coherence and incoherence:

- i'. If the same class contains two elements, then those elements incohere with each other.
- ii'. If different classes contain the same element, then those classes incohere with each other.

Plug this rule into the informal description of coherence given above and you will get bicoherence.

Consider examples of elements and classes arranged according to this new rule. First, consider the class of books by one author, call her Anne O’Nymous. Anne’s opus includes the following titles: *The travail of life in an imperfect world*, *Why would God allow evil?*, and *Curious George goes ape!* The class of Anne’s books is bicoherent in the sense that it groups a light-hearted children’s book together with all her weighty works on existential alienation. Thus, the class of Anne’s books may be called a *bicoherent class* because it is a class that contains two elements that are incoherent with each other, in accord with rule i’ above. A visual representation of this situation is given in Fig. 1.

Second, consider Anne’s latest work, *Curious George seeks the Way*. This book is bicoherent in the sense that bookstores stock it in both the children’s section (because of its funny pictures and Curious George’s hilarious antics) and the philosophy section (because of the accessible manner in which it addresses important life issues). These two classes do not otherwise intersect, and therefore count as incoherent. Thus, Anne’s new book may be called a *bicoherent element* because it belongs to two classes that incohere with each other, in accord with rule ii’ above. A visual representation of this situation is given in Fig. 2.

In summary, bicoherence is simply coherence with the reverse rule for constraint satisfaction. Situational irony requires that concepts in the *accepted* set of a coherence solution (see rule 4 above) are activated in a bicoherent pattern. Having specified what is meant by bicoherence, it is necessary to specify what is meant by *conceptual* bicoherence. In other words, the coherence and incoherence relations that apply to conceptual bicoherence must be specified. These are outlined below.

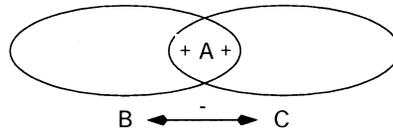


Fig. 2. “Curious George seeks the Way” as a bicoherent element. A = “Curious George seeks the Way,” B = children’s books, C = Philosophy books. The “+” signs indicate that A coheres with both B and C (to which it belongs), and the “-” indicates that B and C incohere with each other.

2.2. Conceptual coherence relations

A list of conceptual coherence relations is given in Table 1. The basic kind of conceptual coherence relation is positive *association* (Kunda & Thagard, 1996; Thagard, 2000). Two concepts are positively associated if there are objects to which both apply. For example, the concepts of politician and lawyer are positively associated because many politicians are also lawyers.

Similarity is a broad kind of positive association between concepts. Two concepts are similar if there are attributes in which both participate, that is, if they share some attributes. Beavers and muskrats are similar, for example, because, they are small, round, brown, aquatic rodents. There are a variety of more specialized or derivative forms of similarity that it is useful to distinguish. *Analogy* holds between two concepts when they participate in the same abstract relational structures (Gentner, 1983; Holyoak & Thagard, 1995). Despite their superficial dissimilarities, penguins and camels are analogous in the sense that they are both highly specialized for extreme climates. *Coincidence* holds between two concepts when there is a time during which both occur. A picnic and a thundershower may occur at the same time, which is therefore a coincidence (although it may not seem so to the picnickers). *Collocation* holds between concepts when there is a place in which they are both located, either

Table 1

The coherence relations in bicoherent ironies arranged according to types and subtypes.

Type	Subtypes	Causal attribution
similarity	analogy coincidence collocation	–
policy	intention	consistency
constitution type	role status title model	distinctiveness consensus

All coherence relations are different forms of positive association between concepts. The kind of causal attribution corresponding to each type of coherence relation is given in the rightmost column (see section 6.1.)

physically or metaphorically. Lions and zebras are positively associated because they are both found in the African savannahs.

Policy is a positive association between a person or an institution and a code of conduct adopted by them. A person and a policy are positively associated if there are actions done by the former in accord with the latter. Appeasement is the policy associated with Neville Chamberlain, especially because pursuing it caused him to sign the famous Munich accord with Hitler. *Intention* is a specialized form of policy in which a plan with specific steps is laid out in pursuit of a policy or goal.

Constitution is a positive association between a concept and the temperaments, traits, and dispositions that it possesses. A machine and a trait, say, are positively associated if there are events brought about by the machine that are caused by the fact that the machine has a particular trait. A subway locomotive may often stall in winter because it has a cooling fan that sucks snow into the engine, for instance (Ferguson, 1977).

Type is a positive association between two concepts due to the conceptual structure in which they exist. Whereas constitution associates a concept and its *intrinsic* qualities, type associates a concept and its *extrinsic* qualities. A concept often inherits a quality transitively because it is subsumed by another concept that possesses the quality.³ Thus, for example, philosophy professors are thought of as absent-minded—that is, as being absent-minded people—because philosophy professors are university professors and university professors are thought of as absent-minded people. *Role* holds between two concepts when one is a quality of the other in virtue of a position held by the other. For example, a person may be thought to be protective if he is seen to occupy the role of a father figure. *Status* holds between two concepts when one is a quality of the other by designation. A status is often, although not invariably, a kind of role for inanimate objects. For example, a mat may be considered welcoming simply because it is one of those objects with the expression “welcome” printed on it. *Title* is a specialized kind of status granted by a fixed, conventional designation. A person is associated with the title “President” simply because she is one of those people who have been elected president of a country, say. *Model* holds between two concepts if one possesses a quality because it is based on something else that possesses that quality. For example, the movie *Apocalypse Now* (Coppola, 1979) is positively associated with Joseph Conrad because it is modeled on the book *Heart of Darkness*, which was written by Conrad (Conrad, 1902).

2.3. Conceptual incoherence relations

A list of conceptual incoherence relations is given in Table 2. The basic kind of conceptual incoherence relation is *negative association* (Kunda & Thagard, 1996; Thagard, 2000). Two concepts are negatively associated if objects that fall under one concept usually do not fall under the other concept. So, for example, the concepts of book and stone are negatively associated because there are few books that are also stones.

Antisymmetry is a kind of negative association between two concepts. Two concepts are antisymmetric if there is a relation such that the first concept stands in that relation to the second concept, but the second concept stands in the opposite relation to the first one. In mathematics, a relation R is antisymmetric with a relation R' when $aRb \equiv bR'a$ and R' is the

Table 2

The incoherence relations in bicoherent ironies arranged according to types and subtypes.

Type	Subtypes
antisymmetry	symmetry + mutual exclusion antireciprocity
antonymy	
disproportion	
dissimilarity	

All incoherence relations are different forms of negative association between concepts.

inverse or opposite relation from R . For example, the greater-than “ $>$ ” relation is antisymmetric with the lesser-than “ \leq ” relation of arithmetic, as may be seen in expressions such as $5 > 4 \equiv 4 \leq 5$ where \leq is the inverse of $>$. Outside mathematics, consider the relations *is-taller-than* and *is-shorter-than* and two people, Greg and Phil, chosen at random from a large population such that Greg is taller than Phil. Clearly, Greg and Phil are related antisymmetrically in terms of height since Greg is taller than Phil and Phil is shorter than Greg. This relation is a negative association since few people who, like Greg, fall under the concept of *taller-than-Phil* are likely to also fall under the concept of *shorter-than-Greg*. *Symmetry plus mutual exclusion* is a weak form of antisymmetry in which two concepts are symmetrically related, but only under different circumstances. In mathematics, a relation R is symmetric when $aRb \equiv bRa$, as may be seen in arithmetical relations such as multiplication where, for example, $4 \times 5 = 5 \times 4$. Outside mathematics, consider the relation *is-meaner-than* as in *Darth Vader is meaner than a junkyard dog*. This relation holds true during the first two *Star Wars* movies (Lucas, 1977, 1980) but is not true by the end of the third movie (Lucas, 1983). In fact, by the end of the third movie, it is true that a junkyard dog is meaner than Darth Vader. So, Darth Vader and a junkyard dog occupy a symmetric relationship, each is meaner than the other, but only under mutually exclusive circumstances, that is, at different times. A relation of symmetry plus mutual exclusion can always be recast as a formal antisymmetry. For example, the above example can be recast as an antisymmetry by using the relations *is-first-meaner-than* and *is-then-meaner-than*, as in *Darth Vader is first meaner than a junkyard dog* and *A junkyard dog is then meaner than Darth Vader*. *Antireciprocity* is a specialized form of antisymmetry in which the antisymmetric relations are forms of *give* and *take*. Giving and taking are important forms of social interaction and failures to reciprocate, as when one person gives something to another but the other does not give anything back, are especially liable to attract notice and disapproval (see Ekeh, 1974).

Antonymy is a kind of negative association that holds between concepts that are opposite in meaning. The concepts of *good* and *evil* are antonymous and negatively associated since those things that are good are also not evil.

Disproportion is a kind of negative association between two concepts in which each concept has the magnitude usually associated with the other. Consider the situation in Robert Bolt’s play *A man for all seasons* (Bolt, 1962, p. 71) in which the Duke of Norfolk attempts to persuade his friend Thomas More to swear allegiance to Henry VIII as the head of the

Church of England, thereby giving up his allegiance to the Pope. More explains that he cannot give in because it would not be like him to do so; Norfolk then responds:

And who are you? Goddammit, man, it's disproportionate! *We're* supposed to be the arrogant ones, the proud, splenetic ones—and we've all given in! Why must you stand out?

In other words, it is disproportionate for a man of *low* birth like More to demonstrate such *great* probity when a man of *high* birth like Norfolk demonstrates such *little* probity. Disproportion may be viewed as a way in which one antisymmetry in magnitudes leads us to expect another. Consider one antisymmetry involving More: *Norfolk's birth is higher than More's birth* and *More's birth is lower than Norfolk's birth*. As Norfolk implies, we expect *Norfolk* and *More* to occupy the same places if *probity* is substituted for *birth* (because probity and nobility are positively associated). But the opposite is the case: *More's probity is greater than Norfolk's probity* and *Norfolk's probity is less than More's probity*. The double antisymmetry of *disproportion* and its reference to the metaphorical magnitudes of concepts makes it a very interesting form of incoherence.

Dissimilarity is a kind of negative association between two concepts simply because those objects that fall under dissimilar concepts tend themselves to be dissimilar to one another.

2.4. *Saliency and schemata*

Cognitive saliency is a measure of how important or noticeable something is in contrast to other things. The saliency of a situation varies according to the *contents* of the situation itself and how those contents *relate* to the individual conceiving them. As far as the contents of a situation are concerned, saliency is generally a result of our biological and cultural dispositions (Lyons, 1977, pp. 247–9). Biological saliency is exemplified in the color concepts employed across cultures, which systematically divide up the color spectrum according to a progressive set of universal distinctions among hues (see D'Andrade, 1995, pp. 106–15). Cultural saliency is exemplified in human kinship terms, which emphasize whatever distinctions are regarded as important in the culture at hand (see D'Andrade, 1995, pp. 19–30).⁴

The saliency of a situation is enhanced where a schema is readily applicable to it, and diminished otherwise (Higgins, 1996, p. 136). For instance, the story of a biker-gang member who stops by the side of a road to help push an old lady's Buick out of the ditch is salient partially because the man is behaving like the Good Samaritan described in the Gospel of Luke 10.30–7, in that he goes against a negative stereotype and helps someone in need. Indeed, he may be called a "Good Samaritan" for this very reason. Lucariello shows that the saliency of situational ironies is enhanced where ironic schemata are readily applied.⁵ The effects of schemata on irony recognition are discussed in section 3.

2.5. *Emotions and manner*

Emotional configuration is as central to situational irony as conceptual structure. This position may seem controversial because emotions are regarded as peripheral in the best-known theories of irony. Grice's account of irony omits emotions entirely, since conversa-

tional implicature is intended strictly as a theory of rational action in conversation. Similarly, emotions occupy a strictly peripheral role in Sperber and Wilson's account of irony. On this account, emotions are held to act through *weak implicature* (Sperber & Wilson, 1986, pp. 199–200) and poetic effects (Sperber & Wilson, 1986, pp. 222; see also Pilkington, 1992), which is to say that emotions are of secondary importance in normal language and characteristic of unusual language (see also Hutcheon, 1995, pp. 37–43). Leggitt and Gibbs Jr. (2000) show that this position does not accurately represent the role of emotions in everyday sorts of verbal irony.

Recent work in cognitive science (e.g., Oatley, 1992; Damasio, 1994) indicates that, unless there is specific evidence to the contrary, we should assume that emotions are an integral feature of any cognitive phenomenon. As of yet, work on integrating emotions into coherence theory is not far enough advanced (but see Thagard, 2000) to elucidate exactly how emotions and conceptual bicoherence interact in situational irony. Therefore, a simple framework for describing emotions and their eliciting conditions is adopted in this paper, based on the *communicative theory* of emotions proposed by Oatley (1992). Observations made here within this framework can be revised appropriately as work on emotions in conceptual coherence proceeds.

Emotions relate to situational irony in at least two ways. First, some kinds of situational irony may be associated with particular emotions only. Some kinds of irony may evoke only mirth and not sadness, for example. This issue is discussed further in sections 3. and 5.

Second, heightened emotional response tends to increase the salience of a situation and thus may increase the sense that the situation is ironic (section 2.4.). Emotional response, in turn, depends upon how the situation measures up to the cognizer's goals (Oatley, 1992), concerns (Frijda, 1986, pp. 335–40) or preferences (Damasio, 1994, pp. 198–200). Muecke (1982, p. 55) expresses this point nicely in an economic metaphor:

Other things being equal, ironies will be more or less forceful in proportion to the amount of emotional capital the reader or observer has invested in the victim or topic of the irony.

Consider the following example from a recurring sketch on the American television show *Mad TV*, broadcast 28 February 1998. In the sketch called *Talkin' American*, the pop singer Alanis Morissette is taken to task precisely for violating the emotional salience criterion for using "rain on your wedding day" as an example of irony in her song *Irony*. Mr. Dakai, a host of *Talkin' American*, castigates Morissette for this failing as follows:

And you do not even know what the word "irony" means. Let me tell you something: When it rained on *my* wedding day, and a mudslide washed away my hut, my two goats and my fourth spouse . . . Oh! now *that* is irony!

Humor is derived from the fact that Dakai is a non-native English speaker (he pronounces "irony" as eye-*RON*-ee) who is scolding a native speaker for her incompetence in the English language (and from the fact that Dakai's spouse figures *after* his hut and goats). The substance of Dakai's complaint is simply that rain falling during a wedding is not a sufficient departure from his goals, concerns, or preferences for a marriage to evoke his sense of irony. A much greater catastrophe is required.

For present purposes, *manner* is adopted as the main measure of the distance between a situation and the goals, concerns, and preferences that a cognizer applies to it. Manner consists of two, discretely valued scales, namely *physical* and *moral*. On the physical scale, an agent that achieves its goal dead on could be said to have acted *capably*. Take for example a salesman who meets his quota for the month. A goal may remain unachieved because the task aimed to achieve it is done (1) *improficiently*—left incomplete, (2) *incapably*—left utterly incomplete, or (3) *excessively*—taken too far. Similarly, on the moral scale, an agent that achieves its goal in a permissible way could be said to have acted *rightly*.⁶ Take for example a politician who gets elected without lying about his financial holdings. A goal may remain unachieved because someone pursues it (1) *licentiously*—outside the bounds of custom or authority, (2) *maliciously*—by voluntarily choosing to do wrong, or (3) *overzealously*—by applying a moral principle beyond its proper place.⁷

The connection between manner and the emotions that it elicits has not been systematically investigated by psychologists. However, some studies show, for example, that “people provoking anger [in others] were most often seen as doing something voluntarily that they had no right to do, or as doing something they could have avoided had they been more careful” Oatley (1992, p. 209). In other words, anger may be elicited when people see others acting licentiously or incapably. The emotional valuation of manners applied in this paper is made in accord with such evidence as currently exists in the literature on the psychology of emotions. Revisions may be necessary in future as circumstances warrant.

Emotions are important to situational irony because (1) some ironies are conditioned by particular emotions and (2) emotional arousal increases cognitive salience. Manner describes in what ways situations tend to elicit emotions as those emotions are relevant to irony.

3. The corpus study

A corpus of ironic situations was gathered electronically from newspaper articles that contain the term *irony* and its relatives. The object was to collect instances of situations described simply and briefly and labeled as ironic without the solicitation of the experimenter (i.e., the author). Situations were classified into a taxonomy based on the coherence and incoherence relations active in the representation of each situation. This taxonomy does not *embody* the bicoherence theory but rather serves as a convenient tool for analyzing ironic situations *according to* the theory. Illustrations from each category are discussed in order to show how the theory accounts for the variety of ironic situations commonly found in the real world.

3.1. Method

The corpus discussed here consists of newspaper articles containing the term *irony*, *ironic*, *ironical*, or *ironically*.⁸ These articles were collected each weekday morning by a program that searched the Internet sites of various press associations such as the Associated Press (AP) and Reuters for relevant articles posted within the previous 24 hr. The program, called

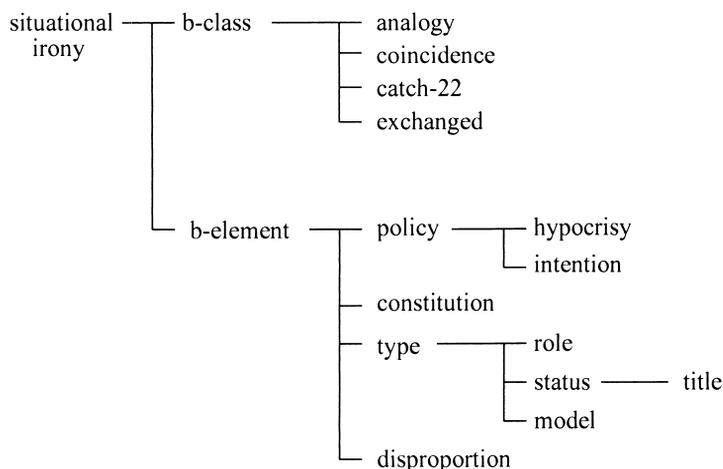


Fig. 3. The classification scheme for situational ironies. Ironies are divided into two basic types, bicoherent class (*b-class*) and bicoherent element (*b-element*). These types are then divide into subtypes according to tree structure displayed here.

ksearch, then retrieved the appropriate articles, labeled them, and emailed them to the experimenter for analysis. This search was carried out roughly from May 1997 through May 1998.

Articles that were duplicates or did not concern situational irony were discarded. So, for example, articles in which the term *ironic* was applied to remarks, commentary, speeches, music (not lyrics), demeanors, outlooks, persons, generation-X, corporations, nations, literary works and so forth were classified as non-situational and excluded from the corpus. Also discarded were articles whose sole use of *irony* was to offer a definition of it, as were articles that labeled something as *ironic* without providing clarification, discussion, or context.

The remaining articles were arranged by a dynamic *pile sort*. Each instance of irony was added to a pile containing only similar instances. Ironies were moved from pile to pile, and piles were created or destroyed, as necessary to keep similar ones together and dissimilar ones apart. The process was completed when no more shuffling had occurred for two months. The *ad hoc* nature of this procedure implies that the distribution of examples in the resulting corpus does not have precise statistical significance (see section 4.). However, this procedure has the advantage that the distinctions afforded by the examples themselves could be represented without difficulty by creating or amalgamating separate piles. Since the resulting taxonomy is intended only as an analytical convenience, this method is wholly appropriate.

The result is a collection of articles arranged into two groups according to the kind of bicoherence represented, namely bicoherent classes and bicoherent elements. Subgroups are given where specific coherence or (in the case of disproportion) incoherence relations are emphasized. Sixteen categories are given in all. This scheme is represented graphically in Fig. 3. An illustration of each kind of situational irony is discussed below in sections 3.2. and 3.3.

3.2. *Bicoherent class ironies*

3.2.1. *Basic*

A basic bicoherent class irony concerns things that are simply positively associated under one concept but are negatively associated in some way when considered pairwise. Consider the situation created by a court ruling in British Columbia, Canada, to the effect that immigrant representatives must be lawyers, unlike government representatives.⁹ The resulting inequity caused a private immigration advocate of 27 years experience, Mr. Mangat, to complain about an irony in the situation:

Mr. Mangat pointed out the irony in the court requiring an immigrant's representative to be a lawyer, although many of the adjudicators are not lawyers and often have minimal formal education.

Mr. Mangat, and others like him, are legally barred from their former occupation from the time of the ruling onward.

Mr. Mangat and the government adjudicators are positively associated in that both fall under the concept of advocates recognized in the B.C. immigration court. However, Mr. Mangat and the government adjudicators are related antisymmetrically to each other in that although the adjudicators should be at least as qualified as Mr. Mangat (to do the same job), Mr. Mangat is actually much more qualified than they are (in terms of experience).

The salience of this example is raised in two ways, first by the unfairness and undeservedness of the blow to Mr. Mangat and second by activation of the common schema of a large impersonal entity, the government, running roughshod over the little guy.

Beyond the surprise and perhaps shock of an unfavorable ruling, the dominant emotions of this irony are bitterness and anger. Bitterness is a complex form of disgust experienced when a joint plan or activity (joint in the sense of shared with other people) is discontinued by others (Oatley, 1992, pp. 212–3). In creating this antisymmetric situation, the B.C. court discontinued its standing relationship with Mr. Mangat, causing him to feel bitter. The anger apparent in Mr. Mangat's attribution of irony proceeds from the salience of being deprived of his livelihood. Anger typically arises from the "unattainability of a life goal" (Frijda, 1986, p. 338) and, where irony is concerned, results in a form of moral outrage. But bicoherent class ironies need not all involve bitterness and anger.

3.2.2. *Analogy*

An irony of analogy concerns elements that fall under one concept analogically but are nevertheless dissimilar. Consider the situation of Paul Valleli, a private citizen of Burlington, Massachusetts, who, with no special training, located the leak in a water main that several professional bodies had failed to locate over the span of the previous week.¹⁰ As an official of the Boston Sewer Commission puts it:

"The irony is that despite all our crews and help from the MWRA [Massachusetts Water Resource Authority] with all sorts of detection crews, it was a Town Meeting member who discovered the break and reported it to officials."

The article emphasizes that Valleli had no training as a plumber, but located the leak using

his skills as a Boy Scout leader (as indicated by the pun in the article's title) and within 20 min after leaving the Town Meeting where he resolved to try his luck on the problem. Mr. Valleli and the members of the MWRA, the Boston Sewer Commission and other local authorities all fall under the concept of plumbers by virtue of analogy of their activities. However, Mr. Valleli is very dissimilar to the other plumbers in their tools, training, and success. There is also a disproportion in the fact that Valleli took only 20 min to find the leak whereas the professional plumbers could not do so in a full seven days.

The salience of this example is raised by the *egg-on-the-face* schema that applies to the various Massachusetts authorities. Who does not enjoy seeing people in authority embarrassed in such an abject manner? All the examples of ironic analogy collected in this corpus are humorous, although those that involve the frustration of life goals present the relevant authorities in a very scornful light.

Irony of analogy is the complement of irony of model (see section 3.3.).

3.2.3. Coincidence

An irony of coincidence concerns elements that fall under one concept and are also positively associated in a second but surprising way. Consider the situation in which Joe Carter, a longtime designated hitter for the Toronto Blue Jays American League baseball team, made his 2,000th career hit at Veterans Stadium, home of the Philadelphia Phillies National League team. Carter describes the situation thus:¹¹

“It's ironic to get it here. I don't know when I'll be back.”

The preamble emphasizes that Carter also got his 1st and 1,000th professional hits in the same ballpark.

All three of these hits fall under the concept of signal career events. However, they are all collocated as well, that is, they occurred in the same ballpark, against all likelihood since Carter played in the American League and Veterans Stadium is a National League ballpark. So, the positive conceptual relation of collocation simulates a negative relation because of the negative valence of surprise attached to it.

The salience of this situation derives from the importance conventionally assigned to events attached to millennial numbers like 2000. In domains such as sports and finance, statistics are an important form of knowledge whether they are of practical or merely numerological significance.

Beyond surprise, ironies of coincidence appear to take on the emotional quality of their subject matter. Thus, the deaths of Gianni Versace and Princess Diana, two celebrity friends whom it also happens were killed within a few weeks of each other, is perceived as a sad or tragic irony of coincidence because that is the emotional quality attached to each occasion.¹² If an irony is extremely salient, then it may be perceived as completely *non-coincidental*. For example, a television producer described Tiger Woods' victory at the Masters golf tournament as “fate or irony.”¹³ Fate is the opposite of coincidence—the first describes the outcome of a grand design whereas the second describes the outcome of a mere accident—which underlines the importance of salience to the recognition of coincidences as ironies. Jung (1973) discusses this concept of ironic fate in terms of *synchronicity* or *meaningful coincidence*.

People sometimes express irritation with ironies of coincidence brought to their attention by others. For example, the *Pedantry hotline* received the following question:¹⁴

Why do people say “ironically” when they mean “coincidentally” or even “surprisingly”? A friend is forever saying things like, “I saw her last month at the Bar Marmont and ironically I ran into her a week ago at the Hot Tin Roof.” Should I try to correct her?

The reporter recommended correction but wisely avoided offering a definition of irony for the purpose. There are a number of reasons one might object to ironies of coincidence: (1) a positive association with a negative valence of surprise is not a proper negative association, or (2) the unlikelihood is not high enough to be salient. The first objection, exemplified by the *Pedantry hotline* example, is true but indeed pedantic in view of the commonness of ironies of coincidence in the corpus. The second objection reflects *egocentricity bias* (Falk 1989), a tendency for people to rate coincidences that involve themselves as being more salient than coincidences that do not. This bias would cause people to find coincidences involving others to be nonsalient and therefore nonironic, as is apparent from both examples given above.

3.2.4. *Catch-22*

A catch-22 irony concerns elements that fall under one concept, namely the fact that each is an ironic element irony (section 3.3.), and are negatively associated by antisymmetry. This kind of irony is really a meta-irony that has gained currency from the Joseph Heller novel of the same title. Consider the situation of prisoners under the supervision of the Massachusetts Department of Correction (DOC). In order to save money and alleviate overcrowding, the DOC has a contract with the Dallas (Texas) County Jail that allows DOC prisoners to be held in Dallas.¹⁵ Anthony Doniger, a Boston lawyer representing several Massachusetts prisoners in the Dallas County Jail who are challenging the constitutionality of sending them out of state, characterizes the policy in this way:

Doniger said the fact that the contract with Dallas says that only “model prisoners” will be accepted is “beyond ironic-it is punitive.”

“It’s a strange message for them to be sending,” said Doniger. “It’s like they are saying, ‘If you’re good you get exiled from your family; if you’re bad, you stay.’”

The article notes that prisoners who have access to education and family members while incarcerated have the lowest recidivism rate.

The “good” and “bad” prisoners fall under and exhaust the concept of DOC prisoners. The two groups of prisoners are related antisymmetrically in that the good prisoners deserve to receive better treatment than the bad ones but the bad ones actually receive better treatment than the good ones. In addition, each element is caught in a policy irony (section 3.3.) in the sense that being good results in punishment and being bad results in a (comparative) reward.

There are three sources of salience in this example. First, there is now a ready schema for such situations, derived from Heller’s novel (Muecke, 1982, p. 12). Second is the compounded nature of this irony. Not only is the whole situation ironic, but each of its components constitutes an irony in its own right. Third, the infrequency of catch-22 ironies

in the corpus also suggests that this kind of irony is highly unexpected and therefore grabs attention for this reason also.

The emotions attached to this situation are sadness and anger. These prisoners are losing important forms of encouragement, namely their familial support and their prospects for rehabilitation. Losses of this kind typically generate sadness (Oatley, 1992, p. 294–6). Anger is generated by the unfairness of the ruling and the recognition of the schema of a large, uncaring entity running roughshod over individuals. Some anger also results in the reward received by bad prisoners who are undeserving (see section 2.5.).

3.2.5. *Exchanged places*

An irony of exchanged places concerns two elements that fall under the same concept by collocation but are also related antisymmetrically. Consider the situation of members of “Generation X” as they turn 30 years old and begin to emulate their parents in finding jobs, spouses, and responsibility. Meanwhile, their parents have begun to pull up stakes, cohabit, and drive fast cars.¹⁶ Saul Wisnia of Brookline, for example, drives a Honda Accord, is engaged to be married, lives in the suburbs and edits business books for a living, whereas his 60-year-old mother drives sports cars and speedboats, lives with her boyfriend, and works out at the gym.

To understand this irony it’s crucial to know how most people who are turning 30 in the 1990s perceive the passage: as a time to buckle down and—yipes—become an adult.

As the article’s title suggests, members of Generation X and their parents have exchanged places.

The Generation Xers and their parents both occupy traditional, American family household or “nest.” However, exemplars of these two groups stand in an antisymmetric relation to each other: Saul Wisnia is acting more responsibly than his mother and his mother is acting less responsibly than he is.

The salience of this situation is raised by at least two factors. First, each element occupies the traditional household in successive and exclusive periods of time only. This succession through time is conceived as a “twist” in the course of events. A twist is a schema that readily evokes the sense of irony (see Lucariello, 1994). Second, the exchange of places between parents and children is a stock comic schema and is found, for example, in the movies *Freaky Friday* (Nelson, 1977), *18 Again!* (Flaherty, 1988), and *Vice Versa* (Gilbert, 1988).

Surprise is always conveyed in ironies of exchanged places, which seems to derive from the perceived unlikelihood of the turn of events. Ironies of exchanged places also typically evoke mirth, probably from the salience of the comic schema so frequently applied to them, one which emphasizes incongruous elements jockeying for each other’s positions in life.

3.3. *Bicoherent element ironies*

3.3.1. *Basic*

A basic bicoherent element irony concerns an element to which two concepts apply but which are negatively associated with each other. Consider the following example concerning Sanford Wallace, the Internet “Spam King” notorious for inundating millions of Internet

users with a flood of unsolicited electronic junk email (spam).¹⁷ In late October 1997, Wallace was disconnected by his Internet provider AGIS. Wallace's reaction was to sue for damages:

In reaction to AGIS's actions, Wallace said he will "aggressively pursue litigation against AGIS" for damages. Among the allegations he cited was, ironically enough, a "loss of reputation and good will."

Shabbir Safdar, of the Voters' Telecommunications Watch, is quoted describing Mr. Wallace as "the despised figurehead" of Internet spammers.

Sanford Wallace falls under two concepts, namely reputable people and despised people, which are related antonymously.

The salience of this situation is heightened by the patent absurdity of Wallace's presumption that he enjoyed any reputation and good will that could suffer damage.

There are two emotional qualities attached to this example, namely mirth and a feeling of moral superiority. Mirth derives from an enjoyment of the minor misfortune of others. The feeling of moral superiority to Mr. Wallace probably derives from what Bazerman (1998, pp. 94–9) calls the *positive illusions*, our tendency to see confirmation of our positive self-images when we observe the moral failings of others.

Basic bicoherent element ironies are essentially bicoherent element ironies that could not be fitted into any particular subcategory because the ironic situation could not have been anticipated simply from knowledge about the element. In this case, no one could have anticipated that Mr. Wallace would consider himself a reputable person. His predicament could have qualified as an irony of status had he declared this opinion himself in advance.

3.3.2. Policy

An irony of policy concerns an element, usually a person or institution, that falls under one concept due to a policy on its part and another concept due to its actions. Consider the situation of Paul Newman who obtains salsa for his brand of *Newman's Own* foods from a wholly-owned subsidiary named *Cantisano Foods*.¹⁸ Newman has a strict policy of not purchasing products made with child labor. But, it turns out that the company which supplies Cantisano with chili peppers routinely employs child labor in growing them.

Newman said the situation is ironic, considering that his company gave \$9 million to charities this year, much of it to help children.

Cantisano Foods falls under the two, antonymous concepts of those whose policy is to promote child welfare and those whose actions serve to exploit child labor.

The salience of this example is raised by its objectionable subject matter, namely child labor. Also, salience is increased by the commitment to the promotion of child welfare otherwise displayed by Cantisano Foods, to the tune of \$9 million.

The emotion most clearly associated with this example is disappointment with the failure of Cantisano to apply its policy of nonexploitation. Also, as is typical for policy ironies, this policy is shown to have completely failed to be applied exactly where the conditions for its application are met. Thus, the policy is applied incapably. Other ironies of policy display impotent or even excessive applications of the policies in question. A policy applied in

an excessive manner arises in examples such as the *Sharp* corporation's drop in profits due, ironically, to an *increase* in production that inadvertently caused an oversupply of LCD screens.¹⁹ Such examples are usually humorous.

3.3.3. *Hypocrisy*

An irony of hypocrisy is a special case of ironic policy in which a policy is exercised maliciously and in which the two concepts in question are related antisymmetrically. Consider the situation of Emilio Valdez and Alfredo Hodoyan, two hitmen for a notorious Mexican drug cartel, who were arrested by American authorities in California on charges of drug trafficking.²⁰ The Mexican Attorney General's Office (PGR) successfully launched an extradition request, which was subsequently appealed by Valdez and Hodoyan on the grounds that they had confessed only after torture and violations of their human rights. The California judges rejected the appeal.

“(One judge) added that it would be ironic to think that the appellants invoked claims to human rights when, in addition to linking them to an organization dedicated to drug trafficking, they are accused of being the executioners of the organization and don't respect the human rights of their victims,” the PGR said.

Valdez and Hodoyan (V&H) collectively fall under the concepts of those whose policy is to respect human rights and also those who egregiously violate human rights. As such, V&H place themselves in an antisymmetric relation with other people insofar as V&H believe that others need to respect the human rights of V&H but also believe that V&H need not respect the human rights of others.

The salience of this situation is increased by two factors. First is the high contrast between the characterization of V&H as perpetrators of extreme violence and their own characterization of themselves as the victims of violence. Second is the schema activated by V&H's appeal which fits the well-known stereotype of a lawyer baldly advancing any outrageous claim on behalf of even (or especially) the most despicable client.

This irony evokes disgust, a revulsion to V&H because they are murderers. Anger is also evident in the judge's description of their appeal, which amounts to nothing but an attempt to obstruct the legal process whereby they would get their just deserts. In other words, V&H's professed policy was practiced maliciously, deliberately aimed at avoiding a good outcome.

3.3.4. *Intention*

An irony of intention is a special case of an irony of policy in which the policy is deliberately put into effect (i.e., it constitutes a plan) and fails due to physical and *not* moral defects in manner of practice. Consider the situation of the Nile Perch, a hefty, carnivorous fish that was introduced into Lake Victoria by British officials in the 1950s in order to improve the local fishery.²¹ But the voracious perch has hunted half the native cichlid fishes to extinction. In the absence of these cichlids, the insects and algae they used to eat have boomed in population, creating a plagues of bugs around the lake and choking out other water plants, thus killing off more fish. Furthermore, the Perch must be cooked rather than

sun-dried, meaning that local forests have been denuded for firewood. The increased erosion from the absence of trees has filled the lake with sediment, creating still more problems.

Perhaps most ironic, as the Nile Perch destroyed species after species of cichlids, the perches no longer had the abundant food supply that they did initially. Without sufficient food, they stopped growing to the enormous and profitable sizes they had once attained.

As a result, the ecology of Lake Victoria and the fishery that depends on it are near a state of collapse.

The introduction of the Nile Perch into Lake Victoria falls here under two antonymous concepts, namely, promotion of the fishery on Lake Victoria and destruction of the fishery on Lake Victoria.

The salience of such situations is heightened by the law-like schema of futility into which they fit. The Nile Perch story is described by the reporter as an exemplar of the “Law of Unexpected Consequences.” Another reporter uses the term “Laurel-and-Hardiness.”²² Terms like *backfired* and *counterproductive* often occur in the description of intention ironies. Littman and Mey (1991, p. 137) point out that the salience of this kind of irony (which they call *intentional* irony) also depends upon the initial reasonableness of the intention before it is disastrously played out. So, for example, the introduction of the Nile Perch into Lake Victoria is all the more ironic because it appeared to be such a reasonable move at the time. Although there are no examples in the corpus, it is possible that plans which are initially unreasonable and work out very well could also be seen as ironies of intention. Perhaps all that is required is sufficient contrast between the reasonableness of the plan and the desirability of its actual outcome.

Ironies of intention evoke mirth at the folly of people fumbling to control situations that they do not comprehend. This emotion could be regarded as a kind of Schadenfreude or shameful joy in the misfortune of another. Not surprisingly, ironies of intention are always viewed as the result of actions carried out incapably, which is associated with a sense of superiority on the part of the person reviewing the intention. Mention of metaphysical principles like the “Law of Unexpected Consequences” suggest a belief, if only jokingly, in the idea that the cosmos rewards the deserving and, more importantly, punishes the overconfident. In this respect, irony of intention resembles some of the examples of irony of coincidence (section 3.2.).

3.3.5. *Constitution*

An irony of constitution concerns an element that falls under one concept because of its intrinsic qualities and another concept because of actions. Consider the situation of Timothy McVeigh who was put on trial for first degree murder in the bombing of the Murrah Federal Building in Oklahoma City on 19 April 1995.²³ As his trial drew to a close, the main uncertainty of the outcome was whether or not McVeigh would be sentenced to death. Scott Robinson, a Denver trial attorney who had been analyzing the trial, made the following comment:

“This case is so fraught with irony. Unlike most first degree murder cases where the defendant is someone utterly without redeeming social values . . . Here we have someone who was a helpful

student, not a bully, had a sense of humor. They have enormous mitigation, but the aggravation is so overwhelming that it doesn't matter," Robinson said.

McVeigh also had an excellent service record in the U.S. Army.

Timothy McVeigh falls under the antonymous concepts of people of good social character (the mitigation) and people guilty of first degree murder (the aggravation).

This situation is salient for at least two reasons. First is the spectacular nature of the crime, resulting in a huge loss of life and damage to property. Second is, as Robinson mentions, the high contrast between McVeigh's character as portrayed by his record and his character as reflected in his crime. In addition, the article raises the issue of the death penalty, which is contentious and apt to raise salience as well.

The emotion portrayed in this example is a combination of puzzlement and disgust that might be called chagrin. How could someone of apparently good character turn around and decide on such a villainous course of action? From his track record, we can only assume that McVeigh realized the vicious nature of his attack and chose to go through with it anyway. Unquestionably, McVeigh acted maliciously. Anger is generated in considering this fact, and is evident in the death sentence that McVeigh ultimately received.

Constitution ironies appear to be highly generalized in nature, having no configuration of affect or subject matter peculiar to themselves. Anything possessing intrinsic characteristics, people, institutions, and also animals, may be the subject of these ironies, as the following example about horse evolution shows (Prothero & Schoch, 1989):

In terms of numbers of individuals, number of species, or ability to spread geographically, *Equus* is undoubtedly the most successful perissodactyl²⁴ that ever lived. Ironically, it became extinct in its homeland, North America, during the megafaunal extinctions at the beginning of the Holocene.

In this case, the modern horse *Equus* went extinct in the very location for which its evolutionary history suited it. In this case, the modern horse would seem to have incapably exercised the adaptations it had acquired for living in North America.

3.3.6. Type

An irony of type concerns an element that falls under one concept due to its being of a particular kind and falls under a second concept due to circumstances. Consider the aftermath of the death of Johnathan Melvoin, keyboardist of the rock band *Smashing Pumpkins*, who was found dead of a heroin overdose in a New York City hotel room in July 1996.²⁵ News of the death had at least one odd consequence:

Ironically, New York City police reported that Melvoin's death has spurred a rise in demand for the brand of heroin that killed him.

Melvoin's death falls under two concepts, namely warnings against the use of heroin and inducements for the use of heroin. These two concepts are related antisymmetrically in the sense that Melvoin's death shows that heroin kills people, while it also shows that people like heroin.

The salience of this situation is enhanced by two schemata that it activates. First there is the schema of *sex, drugs, and rock 'n roll*, as the article's title suggests. Second, the situation

reveals a rule-like perversity in people's behavior as triggered by their attitudes towards celebrities: What celebrities do is desirable to do, no matter how stupid it is.

This situation evokes sadness at the folly of New Yorkers. In a literal sense, Melvoin's death has acted incapably as a type of warning against the use of heroin. But in a metaphorical, personified sense, his death has acted maliciously in advertising heroin rather than cautioning against it. There is also a kind of amusement at the automatic nature of the reaction of those New Yorkers who flock to heroin like the proverbial lemmings to the ocean just because a celebrity did so. Bergson (1913) notes that inappropriately in flexible behavior in others is often the cause of mirth.

Beyond a general tendency to be funny for this reason, ironies of type take on the affect suggested by their subject matter. For example, Marc Philippoussis acted improficiently as an Australian at the 1997 Wimbledon Tennis Championship by being the only one of five Australians defeated in the first elimination round; a slight irony of little salience. If four other Australians could do it, then why couldn't he?²⁶ Watergate, although it should have served as an affirmation that "the system worked," was instead the event that fixed distrust of government in the public mind; a very unhappy irony for government observers.²⁷

3.3.7. Role

Ironies of role are essentially the same as ironies of type except for the fact that the type in question is specialized to an office, position or rank (e.g., professor, author, president). Consider the Mexican artist Diego Rivera, famous for his murals relating to the Mexican Revolution:²⁸

Ironically, Rivera spent most of the 1910–19 Mexican Revolution in Paris, but he is the artist most commonly associated with the agrarian uprising. In the years after his return to Mexico, his murals celebrated socialist ideas, workers and indigenous peoples.

Diego Rivera is regarded as an icon of the Mexican Revolution, although he worked as a Parisian painter during the Revolution and took no part in it. There are a number of incoherence relations that could be applied to this situation depending upon which aspect of it is emphasized. The most obvious incoherence relation is a simple negative association: people who are symbols of a movement would usually also be participants in it. This reading emphasizes the defeated expectation generated by Rivera's role as a symbol of the Revolution. The situation could also be read as antireciprocal: Whereas Rivera's work did not advance the Revolution, the Revolution did advance Rivera. This reading emphasizes the costs and benefits arising from the situation. Finally, the situation could also be read as a disproportion: although Rivera was of *little* help to the Revolution, the Revolution was of *much* help to Rivera.

The salience of this situation depends on which reading is represented cognitively. None of these readings alone produce a particularly high salience, except perhaps for art history buffs. However, multiple readings could act collectively to heighten its salience enough so that the situation is recognized as ironic. But, by the same token, multiple readings tend to confuse the conceptual structure assigned to this situation and would thus prevent it from easily matching any particular ironic schema. This inhibitory effect should then lower the

saliency of the situation. The bicoherence theory, then, predicts that although this situation may be acceptable as an irony, few people would describe it as a good or strong example.

This situation evokes some mirth. On the simple incoherence reading, Rivera would be said to have improficiently fulfilled the role of symbol of the Revolution, in view of his inactivity in that regard. On the antireciprocal reading, Rivera would be said to have licentiously profited from the Revolution, since he did not contribute directly to it. Ironies of role are generally amusing and may be exploited for comic effect, as in the following example from *Saturday Night Live*:²⁹

Famed anthropologist Mary Leakey died last Monday at the age of 83. Leakey was buried near her home, where she will rest in peace, until some nosy anthropologist digs her up.

This situation is clearly antisymmetric and also portrays Leakey as acting licentiously as an anthropologist, just like her “nosy” tormentor.

3.3.8. *Status*

An irony of status concerns an element that falls under one concept because of some declaration or commitment to that effect and falls under another concept because of its actual performance. It functions similarly to an irony of role but for inanimate objects. Consider the crash of an Aerosweet Yakovlev-42 passenger jet on a regular run from Kiev to Odessa to Salonika in the mountains of northern Greece on 17 December 1997.³⁰ Aerosweet First Deputy Director Mykola Nykytenko commented that the route is normally serviced by their western-built aircraft, but that the Boeing 737 in use on that day had to be grounded at Odessa due to technical problems:

“We decided not to continue the flight with the Boeing because of safety considerations, so we called up a Yakovlev 42 from (the western Ukrainian city of) Lviv to continue the flight,” Nykytenko said.

“Who could have foreseen such a terrible irony?” he said.

The Yak-42 aircraft falls under the antonymous concepts of aircraft judged able to provide a safe flight and of aircraft that crash.

The saliency of this situation is high for at least three reasons. First, the loss of life was high, thus making this flight stand out. Second, the issue of flight safety is thrown into high relief by the fact that the Yak-42 was chosen over a Boeing 737 for precisely this reason. Third, the situation follows a version of Murphy’s Law: Anything that can go wrong will go wrong, and under the worst possible circumstances. The plane crashed in a mountainous area that made rescue efforts especially difficult.

The emotion most obvious in this situation is sadness. Much of this emotion results from the loss of life involved, but some also seems to result from being frustrated in the goal of providing a safe flight. The Yak-42 incapably lived up to its end of the bargain, as it were, which it entered into when it was given its flight-ready status. If we take this personification more seriously, the Yak-42 might be considered to have acted maliciously, deceiving officials into declaring it flight-ready and then betraying them on that count. This reading

would be confirmed if Nykytenko and other Aerosweet officials felt bitter or angry after the crash.

Ironies of status are typically tragic, evoking emotions of sadness and bitterness. The sadness may be a result of the fact that ironies of status often expose the defeat of deliberate declarations, presumptions, and announcements. This situation gives rise to a depressing sense of futility or what Frijda (1986, pp. 211–2) refers to as loss of *controllability*. Ironies of status often appear to encourage inanimate objects to be personified, which makes their situations more concrete and easier to understand (Lakoff & Johnson, 1980, pp. 33–4), in this case by construing a physical misfortune as a social letdown. However, where the salience remains sufficiently low, status ironies may be humorous, as in the case of Robbie Fowler, the Liverpool soccer player who was condemned by UEFA (the European soccer association) and praised by FIFA (the world soccer association) at one and the same time, albeit for different reasons.³¹

3.3.9. Title

An irony of title is an irony of status in which the status of an element is fixed simply by a name other institutionalized description. Consider the situation of Susan John, a representative in the New York State Assembly and, until May 1997, chair of the Assembly's Alcohol and Drug Abuse Committee.³²

In Albany, N.Y., Susan John has been asked to resign as chairwoman of the State Assembly's *Alcohol and Drug Abuse Committee* following her arrest on drunk-driving charges. On the bright side for John, she has been asked to chair the Assembly's Committee on Irony.

The Committee on Irony is, of course, fictitious.

Susan John falls under two antonymous concepts, namely a prominent official who opposes alcohol abuse and a prominent person who indulges in alcohol abuse.

The salience of this situation is increased by the egg-on-the-face effect above (section 3.3.). John also readily fits the stereotype of the duplicitous government official saying one thing and doing its opposite. Also, Littman and Mey (1991, p. 138) note that the salience of title ironies (which they call *competence* ironies) is increased where the element is not impelled or pushed into an incoherent situation but rather goes of its own accord.

The emotion of mirth is associated with this situation. This quality may be explained by our reaction to the automatism displayed by the element which puts itself into an ironic situation, as with the example of a type irony discussed above. Because title ironies involve an incoherence between an element and its institutional description, the element is conceived as acting licentiously. Title ironies are always humorous and often rely on puns. Title ironies may be imposed upon sad or tragic situations, but have a forced or made-up feel as a result. Ironies of title resemble ironies of policy and role in some respects, except that a title is a much more tenuous way than a policy or role for an element to fall under a concept. If we were to examine Susan John's situation more closely we might find that she expressed an explicit policy of eliminating drunk driving, or that her role as Chair formally compels her to condemn her own actions. These things may be true and ironic, but they are not raised in the story above. It is sufficient that she has a particular title associated with her name.

3.3.10. *Model*

A model irony is a special form of type irony in which an element derives its type from being modeled on something else. Consider the *Native American Graves Protection and Repatriation Act* (NAGPRA), a federal American law which requires museums and other institutions to return artifacts and skeletal remains to the appropriate Native American bands.³³ This act was modeled on a Massachusetts state law brought into existence through the efforts of John Peters, the supreme medicine man of the Mashpee Wampanoag tribe. Shortly after John's death, his brother made the following observation about the NAGPRA:

“Ironically, it excluded [the Mashpee Wampanoags] because we're not federally recognized,” said Russell Peters.

The NAGPRA falls under the antonymous concepts of legislation modeled on the Massachusetts law and legislation significantly dissimilar to the Massachusetts law. But, as suggested by the content of Russell Peters' quotation, the situation can also be understood metaphorically as follows: The Mashpee Wampanoags helped bring the NAGPRA into existence but the NAGPRA failed to help bring the Mashpee Wampanoags into existence—as a federally recognized entity.

The salience of this irony is increased by the fact that it concerns the legacy of a recently deceased person whose life project, authorizing the claim of Native Americans to their artifacts, failed in a personally important respect due to an arbitrary difference in state and federal laws.

The dominant emotion attendant on this situation is sadness. The modeling process which produced the NAGPRA from the Massachusetts legislation appears therefore to have been flawed, which is to say that it was carried out improficiently. On the metaphorical reading, the relation the Mashpee Wamanoags and the NAGPRA is antireciprocal, and the modeling process was carried out licentiously. There might also be some *dark humor* in this reading in the sense that this licentious behavior on the part of the NAGPRA was the result of a mechanical kind of legal problem, and mechanical failures in behavior tend to be funny (see the discussion of type irony above).

Model irony is the complement of analogy irony (section 3.2.). In other words, ironies of one kind may be re-represented as ironies of the other kind through a process of *irony shift* (see section 6.3.). In this case, the model irony could have been represented as a class of laws regarding Native Americans, two elements of which are ironically dissimilar. However, the emphasis in this example, to judge from the phrasing chosen by Russell Peters, is primarily on the NAGPRA itself.

3.3.11. *Disproportion*

An irony of disproportion concerns an element that has the magnitude usually associated with some other element. This category is very different from the others discussed above as it features an incoherence relation, namely *disproportion*, rather than a coherence relation such as *type*. Ironies of disproportion seem to stand out in the corpus, however, so the creation of a special category seems warranted. Consider, for example, the fact that heart disease is the number one killer of women in the United States, a fact that most American

women do not appreciate.³⁴ The National Council on the Aging and the Center for Risk Communication, which uncovered this fact in a study, made the following remark about it:

“When asked which disease they fear most, more than half the women in the survey (61%) cited cancer,” the Council said in a statement. “Ironically, only 9% said they feared heart attack, the No. 1 killer of women.”

Heart disease here falls under two concepts, namely the top cause of death among American women and the also-ran causes of concern among American women. Obviously, the two concepts are related by disproportion. Since heart disease is the top killer of women, it should be the most feared, but cancer, which is not the top killer, generates that level of fear instead.

The salience of this irony comes from at least two sources. First, it concerns life-threatening diseases, so fundamental health issues are at stake. Second, women’s ignorance about heart disease increases their vulnerability to it.

The emotions conveyed by this example are sadness and frustration. Sadness stems ultimately from the lack of controllability (see the discussion of status irony above) inherent in the fact that although we expect things to be proportioned in one way, they come proportioned in a contrary way. Frustration results from difficulties in correcting the situation. The National Council on the Aging shows this frustration by blaming doctors and the media for not effectively communicating the facts about heart disease to women.

But, beyond an initial tendency to sad affect, disproportions take on the emotional tone imposed by their subject matter. Some ironies of disproportion may be humorous, as in well-known T-shirt slogans such as “My brother went to Disneyland, and all I got was this lousy T-shirt.”

This example could have been classified as a type irony on the basis that, being a No. 1 killer, heart disease is exactly the type of thing that American women should fear most. While this assignment would be valid, it would only capture half of the irony. It is not only important that women’s fear of heart disease is out of proportion to its threat, but that heart disease and cancer seem to have *each other’s* proportion of that fear. This fact points to the conclusion that irony of disproportion is the complement of irony of exchanged places (section 3.3.). So, the irony could be described as applying to a class, fatal diseases, of which heart disease exceeds cancer in real fatalities, but of which cancer exceeds heart disease in imagined fatalities.

4. Results

4.1. The taxonomy

A total of 217 articles, containing a total of 250 separate instances of irony were collected over the course of the study. A taxonomy of 16 categories of situational irony was generated from pile-sorting every instance in the corpus. Each category is defined by a unique combination of coherence relations, incoherence relations, and manner consistent with the

Table 3

The distribution of ironies in the study corpus is given according to category.

Type and subtype	<i>N</i>
b-class/basic	23
analogy	6
coincidence	32
catch-22	2
exchanged	22
Subtotal	85
b-element/basic	11
policy	21
hypocrisy	16
intention	14
constitution	20
type	26
role	7
status	9
title	23
model	3
disproportion	15
Subtotal	165
Total	250

A total of 250 ironies were counted in 217 news articles. Ambiguous ironies and complement ironies were counted only once.

bicoherence theory. Five categories of bicoherence class ironies (including the basic class) and eleven categories of bicoherent element irony (including the basic class) were generated.

4.2. *The distribution of ironies*

The distribution of ironies into each category is given in Table 3. The distribution highlights the class/element distinction that is fundamental to the conceptual structure of ironies according to the bicoherence theory. There are roughly twice as many bicoherent element ironies (165) as there are bicoherent class ironies (85). This roughly 2-to-1 ratio is probably explained by the similar ratio of *categories* of element ironies (11) to class ironies (5). Roughly speaking, there are twice as many element ironies than class ironies in the corpus because there are twice as many ways to find an element irony in a situation than there are ways to find a class irony in it.

But it is not clear why there are twice as many categories of bicoherent element ironies as bicoherent class ironies. In fact, the reason for this disparity may rest outside the purview of the bicoherence theory. The cognitive resources at work in finding a situation ironic are also recruited for other purposes, such as causal attribution (see section 6.1.). All the cognitive functions, including situational irony, that share or compete for these resources do therefore affect each other indirectly. Thus, there are undoubtedly facts about situational irony that are not explicable within any theory of situational irony, properly speaking, but only within a more general cognitive theory. The 2-to-1 ratio in categories of irony may well be one such fact.

Table 4

The distribution of ironies according to subcategory, in order of descending frequency

Subgrouping	<i>N</i>
type	70
similarity	62
policy	51
constitution	20
disproportion	15

4.3. *Typicality and representativeness*

Certain kinds of irony stand out as typical in relation to the corpus as a whole. Ironies of coincidence comprise approximately 38% of the total number of bicoherent class ironies. Ironies of policy, type, and title comprise 13%, 16%, and 14% of bicoherent element ironies, respectively. These forms of irony appear to typify the subgrouping of irony in which they each occur. The distribution of ironies into these subgroupings is given in Table 4. This table indicates that ironies depending on various forms of similarity, policy, and type are fairly evenly represented in the corpus as a whole, whereas ironies featuring the constitution coherence relation and the disproportion incoherence relation are much less frequent.

This notable division in frequency may be explicable by the particular demands made by ironies of constitution and disproportion. First, disproportion is a fairly complex coherence relation (see section 2.3.) that might not be applied to a situation when it is sufficient for a simpler relation to be applied. In other words, where different representations compete to be applied to a situation, complex representations including disproportion are at a disadvantage and may lose out. Second, constitution usually implies knowledge of how someone or something has behaved in the past (see section 2.2.). A reporter describing an ironic situation may decide, for the sake of brevity, to omit any description of someone's past history in favor of, say, a remark on what type of person that person is. So, it is often quicker to describe someone as "lazy" than to state that she leaves work early most days, drives rather than walks to the end of her block to get to the convenience store, and likes porridge because she doesn't have to chew it. Space is often at a premium in news articles, so there may well be a tendency among reporters to avoid describing constitutions where shorter descriptions based on types, for example, are available.

This potential source of bias raises the issue of the representativeness of the corpus as a whole. That is, how well does the distribution of ironies, as given in Tables 3 and 4, represent the true distribution of situational ironies in the minds of people at large? The question is impossible to answer since the true distribution of ironies is not known. Comparison with future corpus studies would seem to be the most promising way to address this issue.

Of course, the representativeness of the current study could be questioned by taking sources of reporter bias into account. Reporters and editors do not select stories at random for distribution. Harriss, Leiter, and Johnson (1992, pp. 27–33) state that newsworthy situations are those that display at least some of the following "values": conflict, progress, disaster, consequence, prominence, novelty, human interest, timeliness, proximity, sex, and

animals. It may be that sensitivity to these values introduces a bias in the sample that reporters take of the overall population of ironic situations. It is also possible that people in general are sensitive to the same values in their view of situations so that the reporters' sampling is really unbiased after all.

4.4. *Exhaustiveness*

In addition to representativeness, there is the issue of the exhaustiveness of the taxonomy discussed in section 3. It is possible that there are categories of situational irony that simply did not turn up in the collection of the present corpus. Without denying this possibility, there are good reasons to believe that the corpus is comprehensive.

At 250 ironies, the corpus is extensive and was collected over an entire year from a broad variety of sources and covers many, varying situations. The expectations of the experimenter exerted no influence over the generation or collection of the ironies. Most appear to have been generated spontaneously either by the reporter or a person quoted by the reporter.

Finally, as noted in section 3.1., collection of new examples had continued for two months prior to the end of the experiment without requiring the addition or deletion of any taxonomic categories.

All this evidence suggests that the taxonomy is exhaustive. It should also be remembered, as pointed out at the outset of section 3., that the taxonomy is *not* identical with the bicoherence theory, but is an analytical convenience defined in accordance with the theory. Revisions to the taxonomy need not be injurious to the theory, provided they can be made within the framework laid out in section 2. Thus, although the exhaustiveness of the taxonomy is an important issue, it is not paramount for current purposes.

4.5. *Reliability*

A modest study of interrater reliability was undertaken to assess the clarity of the taxonomic categories. A pilot study indicated that training subjects in the entire theory is too onerous a task for this purpose. So the study was broken into five independent substudies in which the subject was trained to make a single distinction between two types of situational irony and asked to apply this distinction to five examples drawn from the corpus described above. The nine most populous, nonbasic categories were chosen for this purpose. Coincidence was used twice in hopes of contrasting its repeated appearances. Categories were paired to represent a full range of taxonomic distances, with distance calculated as the number of branchings separating two categories in the hierarchy given in Fig. 3. Other things being equal, greater distance should imply greater ease of making the distinction in question.

The study was constructed as a set of Web pages so that volunteers could be solicited over the Internet. (The experimenter does not have access to a pool of subjects.) Efforts were made to maximize the likelihood of casual participation: subjects were asked to undertake only as many of the substudies as they wished; in each substudy, one example of two kinds of situational irony (drawn from the examples covered in section 3.) were described in non-theoretical terms; the subjects were asked to categorize five further examples into one or the other training category; these five examples were selected randomly from the corpus,

Table 5
 Rater agreement as a function of taxonomic distance.

distance	distinction	respondents	agreements/response	
			ratio	percent
1	policy vs. hypocrisy	10	38/47	81%
2	coincidence vs. exchanged	16	75/78	96%
3	constitution vs. intention	10	42/46	91%
4	disproportion vs. title	12	45/57	79%
4x	coincidence vs. type	10	43/47	91%

The distance 4x denotes a distance of 4 that stretches across the element/class branches of the taxonomy. Each study (row of the table) contained 5 examples for categorization.

provided only that they occupied no more than one, brief paragraph. Respondents were solicited by ‘word-of-mouth’ through email and postings to Internet newsgroups. None of the respondents had any prior knowledge of the bicoherence theory. Responses consisted of a list of categorizations of the examples in each substudy and were emailed by the respondent directly to the experimenter. The study was conducted during November 2000. The results are summarized in Table 5.

The table shows strong agreement between the experimenter and the respondents. Agreement of the respondents with the experimenter in each substudy was typically on the order of 90%. (The 79% agreement of the disproportion vs. title substudy is attributable to a single example for which only 4 of 11 responses agreed with the categorization of the experimenter.) This result indicates that the contrasts between categories of situational irony offered by the bicoherence theory are robust and reliable. The expected correlation between agreement and categorical distance, however, is not evident. It may be that the number of respondents was simply too low for this effect to appear, or it may be that the restriction of problem examples to short excerpts confounded it. The shortest examples are often the most stereotyped, leaving little opportunity for the details of their conceptual structure to affect how they are processed.

Respondents’ comments revealed other interesting aspects of this study that should be taken into consideration in further studies of this kind. First, some respondents have strong ideas about irony that they brought into the study. Some effort should be made to assess and adjust for this fact in future. Second, as predicted in section 2.4., respondents are reluctant to categorize as ironic situations that they do not perceive to be salient. It might be more informative to compare ironic situations that are perceived as equally salient, or to adjust for assessments of salience. Third, respondents sometimes have strong notions of hypocrisy or coincidence, so that it would be best to avoid using these terms in labeling categories of irony for study purposes.

4.6. *Manner and rhetoric*

The distribution of manners into the specific kinds of element ironies (excluding basic and disproportion) is given in Table 6. The table gives an indication of how the various forms of

Table 6

The joint distribution of manners in specific bicoherent element ironies.

Irony	Manner				
	improficiently	incapably	excessively	licentiously	maliciously
policy	7	5	6	2	0
hypocrisy	0	0	0	0	16
intention	5	8	2	0	0
constitution	5	2	0	6	3
type	7	13	1	9	8
role	1	0	1	5	0
status	3	5	1	1	5
title	1	0	0	20	0
model	1	0	0	1	1
Total	30	33	11	44	33

Ironies with metaphorical readings have been counted for both literal and personified senses.

irony relate to the manners considered. Some ironies, such as hypocrisy and title, seem directed mostly toward moral failings, whereas policy and intention relate mostly to physical failings and the rest show a fairly even distribution. The manners are fairly evenly distributed overall, but with *licentiously* as a clear favorite and *excessively* by far the least represented.

Manner is key to understanding the emotional responses of people to the perceived physical and moral qualities of situational ironies (see section 2.5.). As such, manner is key to understanding the rhetoric of irony—that is, the study of how ironies affect or bring about persuasion. Accusing someone of hypocrisy, for example, can be an effective rhetorical device to persuade others that that person deserves punishment. A study of the rhetoric of irony would go a long way in answering the need for research on how bias affects the reporting of ironies noted in section 4.3.

5. Discussion

The corpus study provides empirical support for the bicoherence theory of situational irony. The theory explains why the situation described in each article is labeled as *ironic*. The term *irony* and its lexical relatives, when used spontaneously by reporters to describe a situation, signal the activation of a bicoherent conceptual structure, a certain level of cognitive salience accompanied by a particular configuration of emotions, and often a physical or moral evaluation.

A comprehensive classificatory scheme for situational ironies was derived from the bicoherence theory by grouping ironies according to the coherence or incoherence relations prominent in each case. This scheme shows not only that the theory applies well to the data collected in the corpus, but that it provides a tool useful for analyzing the kinds of ironies that crop up under a variety of circumstances. In order to analyze a situational irony, the following questions need to be addressed: Is the emphasis on one thing (bicoherent element)

or two things and the contrast between them (bicoherent class)? Which incoherence relation is involved? What makes this irony salient? Which emotions are attached to it? Which moral or physical evaluation is placed on the irony? Finding answers to these questions is guided by the theory and provides a thorough understanding of the irony in question.

The study revealed a number of issues not anticipated in the initial statement of the bicoherence theory. Ironies of coincidence, for example, do not include an incoherence relation from the list given in section 2.2. In addition to a coherence relation, however, they do include a second coherence relation accompanied by the emotion of surprise. In order to apply the bicoherence theory to these examples, it must be assumed that a coherence relation accompanied by surprise can simulate or act in place of a real incoherence relation. It is supposed that the negative valence attached to surprise allows a surprising coherence relation to activate the concept of irony. This additional hypothesis saves the bicoherence theory but enjoys, as yet, no independent empirical support. If this solution seems *ad hoc*, it might by the same token explain the common view that ironies of coincidence are not proper ironies.

As far as emotional configurations are concerned, situational ironies may be divided up into two types. First are the *opaque* types that are usually associated with one or two particular emotions. Hypocrisy, for example, is generally accompanied by emotions of disgust and anger, and a manner of being maliciously brought about. Second are the *opaque* or transparent types of irony that usually take on the emotional qualities suggested by the situation itself. Ironies of constitution are of this type: Such ironies about funny situations evoke mirth whereas such ironies about tragic situations evoke sadness. The emotional opacity or opaqueness of situational ironies has not been considered by previous researchers. Some researchers have simply used emotions to distinguish taxonomic categories, effectively assuming that all ironies must be opaque in the sense that a particular emotion is invariably attached to each category. The bicoherence theory indicates that this assumption is unfounded.

The study also offers a solution to the problem of defining hypocrisy, a concept that has resisted such attempts since Aristotle (Szabados & Soifer, 1998). Traditionally, hypocrisy has been defined as a kind of moral defect of character and has not been connected with situational irony. This study suggests a connection and the following definition: Hypocrisy, as a character trait, is that disposition which causes a person to put himself in a particular kind of ironic situation by maliciously applying a policy. Although this definition does not clarify the whole issue, it does offer a way of connecting the concept of hypocrisy as a character trait with current theories of human cognition via the bicoherence theory.

Muecke (1982, p. 1) states that the kind of irony described in news articles, which he calls folk irony, “generally offers no great challenge.” The corpus study shows that this view could not be further from the truth. The explanation of folk irony requires, at least, the use of cognitive theories like the coherence theory, psychological theories like the communicative theory of emotions, along with accounts of cognitive salience and new theoretical apparatus such as manners. Clearly, folk irony offers challenges great enough to merit serious consideration.

6. Further issues

6.1. Irony and causal attribution

The bicoherence theory of situational irony enjoys a number of connections with theories of social psychology. It is based on the theory of conceptual coherence used by Kunda and Thagard (1996) to give a model of social impression formation. Their model shows how stereotypes and other sources of information constrain each other during the process through which people evaluate each other's traits and characters.

The bicoherence theory enjoys another connection with social psychology in the form of the *principle of causal attribution* (see Nisbett & Ross, 1980, pp. 113–5). This principle states that people use three kinds of information in order to explain the behavior of others, namely *consistency*, *distinctiveness*, and *consensus*. These sources map exactly onto the three main subgroups of bicoherent element ironies, namely policy, constitution, and type.

People apply the consistency criterion when they judge someone in one situation by comparison with how that person has behaved in the *same* situation in the past. This criterion corresponds to the policy coherence relation in the bicoherence theory. A policy is, after all, a way people have of making their behavior consistent over time. If someone has a policy of helping little old ladies across the street, then she will do so on each appropriate occasion. Departures from one's policy are counted as inconsistencies in one's behavior.

People apply the distinctiveness criterion when they judge someone in one situation by comparison with how that person has behaved in *similar* situations in the past. This criterion corresponds to the constitution relation in the bicoherence theory. Having a particular constitution or temperament means that a person will behave in a similar manner in a broad class of similar situations. If we observe that someone becomes nauseous in courtyards and in parking lots, for example, we may conclude that he has agoraphobia, which would also cause him to become queasy in a baseball stadium.

People apply the consensus criterion when they judge someone in one situation by comparison with how *other* people have behaved in the same situation in the past. This criterion corresponds to the type relation of the bicoherence theory. Knowing what type of person someone is means knowing how everyone of the same type is apt to behave. If we know that someone is a thrill-seeker and we have seen that other thrill seekers enjoy bungee-jumping, then we may conclude that she will also enjoy bungee-jumping.

Both the principle of causal attribution and the bicoherence theory describe ways in which people explain behavior in a given situation. Their congruence, then, suggests that the bicoherence theory is consistent with the account of causal reasoning given by the principle of causal attribution. Indeed, the bicoherence theory may suggest refinements for the principle, since it makes finer distinctions among sources of information and covers not only people, but objects, institutions, and events.

This congruence also produces a prediction about cultural variation in situational irony. The principle of causal attribution has been shown to be applied differently in different cultures (see Ross & Nisbett, 1991, pp. 184–6). Similarly, people in different cultures should have different concepts of situational irony. This matter is clearly one for further investigation.

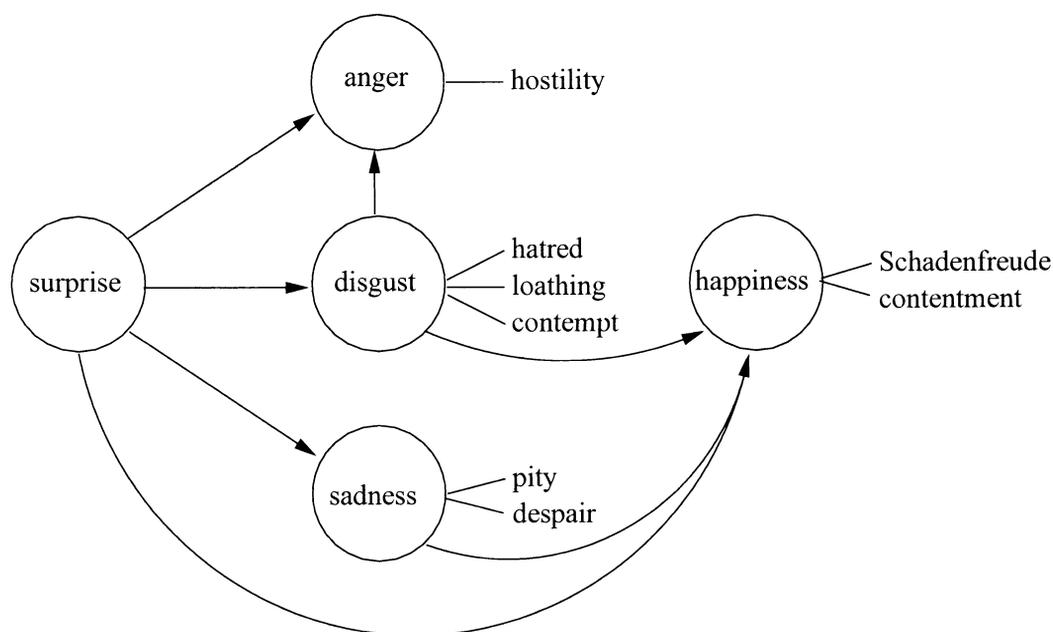


Fig. 4. A transition diagram displaying the possible developments in emotions from surprise over the course of considering a situational irony.

There is one incongruity between the principle of causal attribution and the bicoherence theory. The bicoherence theory includes a group of similarity relations comprising the bicoherent class ironies. There is no corresponding criterion of causal attribution. Social psychologists do, however, recognize a corresponding *departure* from causal attribution called the *fundamental attribution error* (see Ross & Nisbett, 1991, pp. 125–39), the tendency of people to explain the misfortunes of others as the results of some personal defect rather than simple coincidence. So, for example, if someone stumbles, then we are apt to attribute it to clumsiness rather than to an innocuous lump in the rug. There is a curious analogy here: Just as people devalue coincidence as a kind of situational irony, they devalue coincidence as an explanation of the behavior of others. Coincidence, at least, appears to hold a similar position in both theories.

6.2. Irony and the course of emotions over time

Situational ironies are accompanied by some configuration of emotion or affect. This fact is not the end of the story, however. The emotions evoked by an irony tend to develop in particular ways over the time the irony is considered, a fact that shows up occasionally in the news articles in the corpus. The course of emotions over this time is shown in Fig. 4 and is outlined in this section.

Ironies tend to begin with surprise. Lucariello (1994) shows that unexpectedness is the feature most reliably associated with situational ironies. This fact is explicable in the

bicoherence theory by noting that bicoherence represents a pattern of concept activation diametrically opposed to coherence, the pattern that arises when our concepts fit well with the world. A pattern of concepts that show the worst fit with the world is naturally unexpected.

Although surprise is ubiquitous in situational ironies, this fact does not mean that surprise and irony can be equated. For a surprising situation to be ironic, the surprise must be due to conceptual incoherence and not some other factor, and the situation must be sufficiently salient. You might be surprised to notice a square manhole cover on a manhole but this situation is not ironic unless it was important to you that the cover be round as usual.

Ironies frequently proceed from surprise to sadness, a state of affairs often pointed out in news articles by the adjectives *sad*, *tragic*, and *grim*. Complex emotions such as pity and despair typically result: pity for those persons caught in a sad situation, and despair that situations such as the one in question may often turn out contrary to expectation.

Other ironies are disagreeable and proceed from surprise to disgust. These ironies are often described as *bitter*. The complex emotions related to disgust, such as hatred, loathing, and contempt may be felt by a person towards an offending object or situation from which he desires to distance himself. Expressions of disgust in the corpus indicate the wish of the person affected for the ironic situation to simply go away or cease to exist.

Some ironies go from surprise to anger in the form of accusations of negligence, wrong-doing, and immorality. The complex form of anger aimed at a particular target could be called hostility. Hostility is especially evident in ironies of hypocrisy, in which a person or institution is reviled. Some cases of hostility seem to arise not directly from surprise but as a development of disgust when a disagreeable situation persists and thereby frustrates the desire that it should go away. In this case, the disagreeable entity becomes not something to be avoided but something to be removed.

A few ironies result in a feeling of happiness or satisfaction. There are three different routes that lead to this result. First, happiness may result from a kind of *Schadenfreude* or shameful joy in the misfortunes of another, especially an enemy. Second, contentment may follow from the appearance of *poetic justice*, when a disagreeable situation reaches a satisfactory outcome. Third, happiness occasionally appears to follow directly from surprise in the form of a *happy coincidence*. Some happy coincidence ironies are described as delicious, which suggests that they are happy partly because the anticipated feeling of disgust has been thoroughly reversed.

Fear is the basic emotion conspicuous by its absence from situational irony. No clear indications of fear or related emotions occur in the corpus. There are two possible explanations for the absence of fear. First, it may be that fear is incompatible with irony. Frijda (1986, p. 350) argues that unusual or unfamiliar situations tend to elicit fear if we feel that we have no ways of coping with them. (Otherwise, unusual situations tend to produce interest or curiosity.) Finding an unusual situation to be ironic may count as a way of coping with it, in which case fear is inhibited. Reacting fearfully to a situation likewise results in irony being inhibited.

Second, Ortony, Clore, and Collins (1988, p. 109) point out that fear is primarily a prospect-based emotion—that is, a reaction to a future situation that we expect to be unpleasant and unavoidable. Situational irony is primarily retrospective—that is, a reaction

to a past situation. Because fear is prospective whereas irony is retrospective, it may simply be the case that irony and fear develop from incompatible circumstances. The second explanation seems more forceful than the first, but further research is needed to clarify the relation between fear and situational irony.

6.3. Changes in conceptual structure

The relationship in conceptual structure between class and element ironies suggests a novel prediction about situational ironies, namely that class and element ironies are interconvertible. Consider again the following descriptions of bicoherent elements and classes:

- *Bicoherent element*: an element that belongs to two incoherent classes, and
- *Bicoherent class*: a class that includes two incoherent elements.

Note that each description is the *dual* of the other—that is, each description may be obtained from the other by transposing the terms *element* and *class*, and *belong to* and *include*, respectively. This duality implies that element and class ironies may be interconverted by a similar transposition. Of course, the duality of conceptual structure is no guarantee that salience or emotional quality will be preserved in the process.

This section lays out manipulations of the conceptual structure of ironies consistent with the bicoherence theory. The workability of these manipulations, which may be called *irony shift* and *irony elimination*, helps to confirm that the theory correctly describes the conceptual structure of situational ironies.

6.3.1. Irony shift

The process of shifting from one form of irony to another, *irony shift*, is easily understood graphically as shown in Fig. 5. The procedure for class-to-element shift may be described as follows:

1. Select one of the two class elements to concentrate on;
2. Remove the unselected element and its attendant incoherence relation from the description of the given situation;
3. Add the description of a class to which the unselected element does not belong but to which the selected element does belong, such that the two classes incohere.

The procedure for element-to-class shift is simply the reverse of the above procedure.

For example, consider the case of Mr. Mangat described as a basic, bicoherent class irony (section 3.2.). The irony concerned the fact that immigrant representatives like Mr. Mangat were required to be lawyers, although the government adjudicators—who belonged to the same class of immigration court advocates—were not so required. This irony may be shifted to an element irony as follows:

1. Concentrate on Mr. Mangat,
2. forget about the government adjudicators, and
3. note that Mr. Mangat remains a court advocate and must *also* be a lawyer.

Read in this way, Mr. Mangat is caught in a type irony (section 3.3.) since, as an immigration

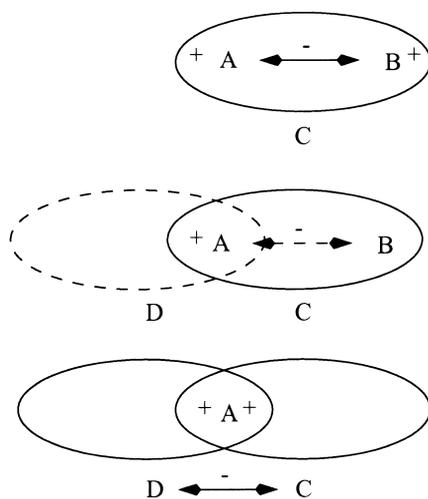


Fig. 5. The procedure for irony shift. The shift class-to-element is shown top-down, and the element-to-class shift is shown bottom-up.

court advocate, he can only function improficiently as a lawyer. Put another way, it would be ironic for Mr. Mangat to go to law school and become a lawyer only to perform a job for which his special skills make him grossly overqualified. When represented as an element irony, the situation is less salient as it does not enjoy the sharp contrast between Mr. Mangat and the government adjudicators nor a particularly sad affect. Undoubtedly, the maximization of salience is a major reason why the situation is described as a class irony by Mr. Mangat himself.

It is evident that irony shift, which depends primarily on the conceptual structure of irony, does not necessarily preserve salience or affect. The fact that irony shift is possible as the bicoherence theory predicts offers further support for the conceptual structure of irony proposed in the theory. The fact that salience and affect are not preserved underlines the importance of their place in the theory as well.

6.3.2. Irony elimination

A different implication of the conceptual structure of situational irony is that irony may be eliminated by changing the conceptual representation of a situation so that no incoherence is apparent. A bicoherent element irony, for example, may be eliminated by replacing the two incoherent concepts which the element falls under with a single concept which it falls under. This procedure of *irony elimination* is displayed graphically in Fig. 6. The procedure of *irony introduction* is simply the reverse of elimination.

Consider the case of Jimmy Bulger, a mobster who was used by the FBI as an informant on organized crime in Boston.³⁵ As a mob informant, Bulger obtained more information from his handlers about local FBI activity than he ever gave out about mob activity. He sometimes even wore a wire to his FBI meetings and recorded the proceedings on tape. Needless to say, the fact that Bulger was able to exchange places with his FBI handlers was

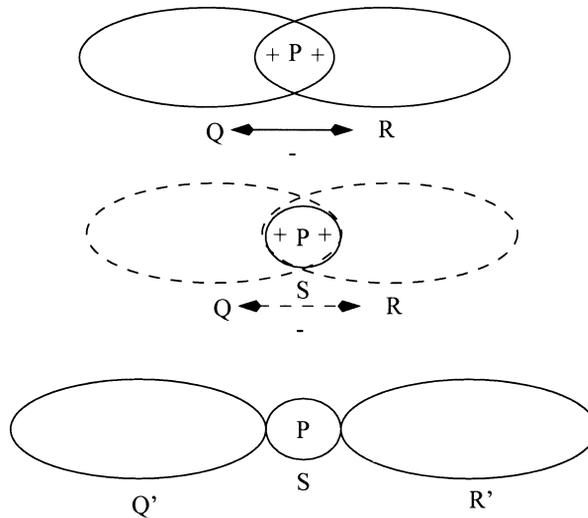


Fig. 6. The procedure for irony elimination. The classes Q and R are eliminated in favor of Q' and R', and the class S is introduced such that it contains P but excludes classes Q' and R'. The procedure for irony introduction would be the reverse procedure.

an embarrassing irony for the FBI. But, more basic even than this irony is the fact that Bulger was a known criminal in the employ of the FBI, a federal law-enforcement agency. It is ironic, in general, for someone who earns a living from organized crime to draw a paycheck from the police in virtue of this same fact. However, this irony plays no immediate role in the situation as presented above precisely because Bulger is described as a *mob informant*. The fact that he is represented under this concept makes Bulger appear to fall under the concept of mob informants, rather than a person at the intersection of the concepts mobster and law-enforcement personnel. In effect, the overlap and the attendant irony have been eliminated by replacement with a new concept, as shown graphically in Fig. 6.

Situational ironies appear to depend upon details of conceptual representations as the bicoherence theory predicts. Ironies may be created or destroyed through manipulations of the concepts applied to represent a situation. The details of irony shift and irony elimination need to be further investigated by experiment.

6.4. Irony and modality

The bicoherence theory gives a solid account of situational irony. Naturally, it is interesting to consider how the bicoherence theory might be applied to other kinds of irony, such as verbal or dramatic irony. This section presents a cursory examination of irony in nonsituational modalities to assess the prospects for applying or extending the bicoherence theory to account for them. Extending the theory and thus unifying the different kinds of irony is left as a project for another time.

In addition to situations, irony also occurs in the visual modality in terms of ironies conveyed by pictures. Consider the irony conveyed in a picture taken by photographer James Nachtwey:³⁶

Irony abounds in his work. The foreground of one photo shows a young couple strolling casually, engrossed in quiet conversation, the woman pushing a stroller in which a baby sleeps. The child's mouth is plugged by a pacifier, a gadget whose very name means "peace." In the background the skeleton of a fire-bombed truck still burns. This is Northern Ireland.

This photograph is ironic in the sense that it depicts a basic element irony: a single scene (element) combining components coherent with peaceful and violent activities (concepts), parceled out into foreground and background. The elaboration on pacifier hints at a congruent title irony. The irony of the photograph falls nicely under the bicoherence theory when its contents are given as the description of a situation.

There are also ironic gestures and expressions. Consider the facial expression that Ekman (1984, pp. 323–4) calls a miserable smile. Such a smile is one that a person fakes in order indicate that they feel miserable rather than happy (Ekman, 1984, p. 323):

Suppose the dentist tells a patient that a root canal is needed, which is going to hurt a lot and cost a lot of money. A good patient will greet such news with a miserable smile. It is a "grin and bear it" smile. It lets the other person know one is not going to show the distress or fear that one feels. It acknowledges one's misery.

The miserable smile may be considered as the element in a model irony—that is, it is an expression modeled on a genuine smile, but also including elements of a distress grimace sufficient to show that it is not a genuine expression of pleasure. Normally, a smile and a grimace express antonymic emotions. As Ekman notes, the smile bears a resemblance to the verbal irony of stating something contrary to what one means, in this case a verbal assurance like "A root canal? Oh great!"

Irony is also present in music. Monson (1994), for example, discusses several instances of musical irony which are characterized, interestingly, in terms of "doubleness" or "repetition with a difference." For example, Monson cites John Coltraine's rearrangement of Rodgers and Hammerstein's *My favorite things*, otherwise canonically associated with Julie Andrews' performance of it in the movie *The sound of music* (Wise, 1965). Coltraine's swinging jazz version seems to mock the "vapid" rendition given by Andrews (Monson, 1994, p. 292n26). In fact, the mere *selection* of a song whose lyrics concern so many white things, for example, girls in white dresses, snowflakes on eyelashes, silver white winters, and cream-colored ponies, by a black musician seems ironic in itself (Monson, 1994, p. 298). The description of this irony as "repetition with a difference" suggests that this irony is a model irony in which Coltraine's arrangement is the target element that takes *The sound of music's* arrangement for its source.

The notion of repetition with a difference recalls the interpretive resemblance theory of Wilson and Sperber (1992), on which an utterance counts as ironic if the speaker uses it to (a) implicitly attribute an opinion to someone while (b) expressing an attitude of dissociation or disapproval towards that opinion. The implicit attribution of (a) is evidenced by the resemblance of the content of the utterance to the content of the opinion in question. So, for

example, if Bill is described to Mary as “an officer and a gentleman” and Bill subsequently behaves like a jerk towards her, then Mary might be apt to remark “An officer and a gentleman, indeed” (Wilson & Sperber, 1992, p. 60). The remark counts as ironic because Mary uses it to refer to an opinion previously stated to her which, we may infer, she has found to be misleading.

In terms of the bicoherence theory, this characterization of verbal irony could be recast as follows: condition (a) identifies the source of a concept that applied bicoherently to the situation in question, while (b) registers a negative emotional reaction from the speaker. On this view, a verbal irony counts as ironic because it draws attention to an irony in some situation. Consider the Bill-and-Mary example. Mary’s remark refers to a type irony: She expected Bill to be the polite and gallant type but discovered him to be a jerk instead. Mary’s remark, then, is ironic because it draws attention to the fact that Mary finds the situation to which it refers to be an ironic one. Perhaps, as Littman and Mey (1991, p. 134) speculate, all verbal ironies presuppose an ironic situation in this sort of way.

There are a couple of things to note about this characterization of verbal irony. First, the remark is not ironic if it explicitly identifies its subject as ironic. For example, if Mary had said, “Ironically, the ‘officer and a gentleman’ turned out to be a big jerk!” then this remark itself would not count as an ironic one, in spite of the fact that it describes that same situation as the alternative, “an officer and a gentleman, indeed.” Apparently, the remark itself is ironic only if it does *not* directly indicate that the relevant situation is ironic in the speaker’s view. Perhaps this condition is what Sperber (1994) refers to when he describes irony as metarepresentational—that is, inferred from an utterance and its context. Second, not all ironic remarks express dissociation or disapproval. After all, some ironies are happy ones. Consider an understatement such as “Tiger Woods had a pretty good day” by an approving TV producer to describe Woods’s win in the 1997 Masters golf tournament (see the discussion of coincidence in section 3.2.). Obviously, this remark would not be wholly consonant with the producer’s reaction to Woods’s victory, but there is no dissociation or disapproval. Instead, the use of understatement apprises the hearer of the high salience that the speaker perceives so acutely in this satisfying situation. Here, the speaker of an ironic remark simply expresses an appropriate emotional reaction to the situation remarked upon. Since most situational ironies involve negative emotional reactions, most ironic remarks do so as well.

Probably, however, the relationship between emotions and types of verbal ironies is more complex than this statement suggests, resembling the relationship between emotions and types of situational ironies. In other words, types of verbal ironies are probably opaque or opaque to particular emotions, a situation that appears to be consistent with the results of Leggitt and Gibbs Jr. (2000).

Discussing verbal ironies in terms of the bicoherence theory would appear to provide a detailed and cognitively plausible way of understanding ironic remarks. The example above suggests that verbal ironies are constituted by qualitative reattachment—that is, the ironic quality of a situation is remarked upon in such a way that this quality is detached from the situation and attached instead to the remark itself. Thus, this account explains the ironic quality of verbal irony by linking it systematically to situational irony.

7. Conclusions

The bicoherence theory of situational irony provides a reasonably clear explanation of what it is about some everyday situations that leads people to call them ironic. Ironic situations activate concepts in a bicoherent pattern in a way that is adequately salient and produces a fitting emotional response.

Empirical support for the theory comes from the corpus study described above, in which the theory was applied to 250 unsolicited instances of situational irony. By sorting these instances into piles sharing similar coherence and incoherence relations, a comprehensive taxonomy has been generated. The taxonomy demonstrates the application of the theory and provides a useful tool for further analysis of situational ironies.

The bicoherence theory also introduces novel concepts into irony theory in general, such as manner, the emotional opacity or opaqueness of irony, and the possibilities for irony shift and elimination. These aspects of irony suggest the fecundity of the bicoherence theory and also directions for experimental investigation of situational irony.

The bicoherence theory relates situational irony to other theories of human psychology and cognition, such as the communicative theory of emotions, conceptual coherence theory, and causal attribution theory. These connections show that situational irony is simply part of the way in which humans evaluate and deal with situations, particularly those that do not fit with their normal expectations.

This fact also addresses perhaps the most basic question about irony: Why irony at all? Why is there irony instead of nothing? This question has dogged research in irony. Verbal irony, for example, is puzzling because it seems simply perverse to use an ironic expression where a literal one might always be used instead (Morgan, 1990, pp. 192-3). The bicoherence theory suggests that, in the case of situations, a sense of irony informs us when our concepts and the world to which they apply are saliently out of sync. Our emotions are engaged to prepare us to respond to the problem. Coherence tells us when our concepts mesh with the world, bicoherence tells us when they do not. This kind of problem is one that any cognitive agent might need drawn to its attention, in order to expend special efforts in dealing with the situation, or by revising its conceptual repertoire. Irony, then, is as useful a part of cognition as a smoke alarm is of a fire station.

Notes

1. From untitled article, 19 November 1998, Associated Press.
2. Muecke (1969, pp. 99–115) discusses situational irony from a literary standpoint. For criticism of Muecke's approach, see Knox (1972, pp. 56–7). On the history of irony in general, see Muecke (1982, pp. 14–32) and O'Connor and Behler (1993).
3. Think of the inheritance of features in the network memory model of Quillian (1968).
4. Higgins (1996, pp. 135–6) argues that *salience* should be restricted to comparative distinctiveness among percepts, e.g., the tendency of a black sheep to grab attention when seen in a field of white sheep, independently of which concepts a perceiver happens to apply to those percepts. The term *salience*, or *cognitive salience*, is used

here to designate an analogous quality concerning the readiness with which certain concepts tend to stand out when active.

5. Lucariello then *identifies* irony with ironic schemata, which this study shows to be an error (section 1.).
6. Experimental evidence suggests that children learn to make moral or “deontic” evaluations of situations by analogy with physical evaluations of them. It is therefore reasonable to treat both kinds of manner in the same way. See Sweetser (1990, pp. 49–68) for discussion of this topic.
7. The manner *overzealously* does not happen to figure in the corpus described in section 3., although there is no reason why it should not.
8. Cf. the corpus studies of Knox (1961) and Lucariello (1994).
9. From *B.C. court ruling halts hearings on immigration: Decision bars non-lawyers who charge a fee from representing foreigners*, Robert Matas, 20 August 1997, Globe and Mail.
10. From *Resident scouted out water break: He found what agencies couldn't*, Jennifer Mcmenamin, 25 June 1997, Boston Globe.
11. From *Quote of the Day for Monday, June 16th*, 16 June 1997, Reuters.
12. From *Donatella And Naomi Weep For Versace*, Kathryn Hone, 9 October 1997, Reuters.
13. From *Woods' showing sends television ratings soaring*, Howard Manly, 15 April 1997, Boston Globe.
14. From *Pedantry hotline*, Diane White, 28 July 1997, Boston Globe.
15. From *25 more convicts are going to Texas*, Alisa Valdes, 29 April 1997, Boston Globe.
16. From *Who's the grown-up now? Trading places with their parents, 30-somethings settle down just as Mom and Dad are fleeing the nest*, Nathan Cobb, 19 November 1997, Boston Globe.
17. From *Spam king unplugged from Internet*, Jennifer Eno, 20 October 1997, Reuters.
18. From *America's secret world of child labor*, David Foster and Farrell Kramer, 15 December 1997, AP.
19. From *Sharp Seen Posting Its First Profit Drop In 5 Years*, Miki Shimogori, 24 September 1997, Reuters.
20. From *California to extradite alleged drug hit men to Mexico*, 18 January 1998, Reuters.
21. From *The cautionary tale of the Nile Perch*, Mitzi Perdue, 13 May 1997, Scripps Howard News Service.
22. From *Chuck the 'reforms'*, Martin F. Nolan, 3 March 1997, Boston Globe.
23. From *Oklahoma Bombing Trial Goes to Summations*, Judith Crosson, 12 June 1997, Reuters.
24. A perissodactyl is a hooped mammal with an odd number of toes.
25. From *Sex, drugs and rock 'n roll*, 18 July 1996, Reuters.
26. From *Sampras, Hingis Win; Chang Ousted at Wimbledon*, 25 June 1997, Robert Kitson, Reuters.
27. From *Watergate's hangover*, 13 June 1997, David Shribman, AP.

28. From *Getty Not The Only Art Show In L.A.*, Steve James, 9 December 1997, Reuters.
29. From *Weekend Update*, Norm MacDonald, 14 December 1996.
30. From *Foul Weather Hampers Search for Plane*, George Georgiopoulos, 18 December 1997, Reuters.
31. From *UEFA fines Fowler \$1,400*, 27 March 1997, Reuters.
32. From *Weekend Update*, Norm MacDonald, 10 May 1997, Saturday Night Live.
33. From *John Peters*, 29 October 1997, Associated Press.
34. From *Too few women aware of their heart risk, study finds*, 19 November 1997, Reuters.
35. From *Jimmy Bulger: fox in FBI coop*, Mike Barnicle, 24 June 1997, Boston Globe.
36. From *Eloquent witness*, Christine Temin, Boston Globe, 19 September 1997.

Acknowledgments

Thanks to Ray Gibbs, Paul Thagard and the anonymous reviewers for comments on earlier versions of this paper, and to Colleen Seifert for her encouragement and advice with this project. This research is supported by the Social Sciences and Humanities Research Council of Canada.

References

- Bazerman M. H. (1998). *Judgment in managerial decision making*. 4th ed.; New York: John Wiley & Sons.
- Bergson H. L. (1900). *Le rire: Essai sur la signification du comique*. Paris: F. Alcan.
- Bergson H. L. (1913). *Laughter, an essay on the meaning of the comic*. London: Macmillan. Authorized translation by C. Brereton and F. Rothwell of Bergson (1900).
- Bolt R. (1962). *A man for all seasons*. New York: Random House.
- Booth W. C. (1974). *A rhetoric of irony*. Chicago: University of Chicago Press.
- Clark H. H., & Gerrig R. J. (1984). On the pretense of irony. *Journal of Experimental Psychology: General*, 113 (1):121–126.
- Conrad J. (1902). *Youth, a narrative, and two other stories*. London: W. Blackwood and Sons.
- Coppola, F. F. (1979). *Apocalypse now*. Zoetrope Studios.
- Damasio A. R. (1994). *Descartes' error: Emotion, reason, and the human brain*. New York: G. P. Putnam.
- D'Andrade R. (1995). *The development of cognitive anthropology*. Cambridge: Cambridge University Press.
- Ekeh P. P. (1974). *Social exchange theory: The two traditions*. London: Heinemann Educational.
- Ekman P. (1984). Expression and the nature of emotion. In K. R. Scherer P. Ekman (Eds.) *Approaches to emotion*. (pp. 319–343). Hillsdale, NJ: Lawrence Erlbaum Associates.
- Falk R. (1989). Judgment of coincidences: Mine versus yours. *American Journal of Psychology*, 102 (4):477–493.
- Ferguson E. (1977). The mind's eye: Nonverbal thought in technology. *Science*, 197 (4306):827–836.
- Flaherty, P. (1988). *18 again!* New World Entertainment.
- Frijda N. (1986). *The emotions. Studies in emotion and social interaction*. Cambridge: Cambridge University Press.
- Gentner D. (1983). Structure-mapping: A theoretical framework. *Cognitive Science*, 7 (2):155–170.
- Gibbs J. R. W., & O'Brien J. (1991). Psychological aspects of irony understanding. *Journal of Pragmatics*, 16 (6):523–530.
- Gilbert, B. (1988). *Vice versa*. Columbia Pictures.

- Giora R. (1995). On irony and negation. *Discourse processes*, 19 (2):239–264.
- Grice H. P. (1975). Logic and conversation. P Cole J. L. Morgan (Eds.) *Syntax and semantics: Speech acts Number 3 in Syntax and semantics series*. 41–58. New York: Academic Press.
- Grice H. P. (1977). Further notes on logic in conversation. J. L. Morgan (Ed.), *Syntax and semantics: Pragmatics Number 9 in Syntax and semantics series*. 113–127. New York: Academic Press.
- Harriss J., Leiter K., & Johnson S. (1992). *The complete reporter: Fundamentals of news gathering, writing, and editing*. 6th ed.; New York: Macmillan Publishing.
- Higgins E. T. (1996). Knowledge activation: Accessibility, applicability, and salience. In E. T. Higgins A. W. Kruglanski (Eds.) *Social psychology: Handbook of basic principles* New York: Guilford Press.
- Holyoak K. J., & Thagard P. (1995). *Mental leaps: Analogy in creative thought*. Cambridge, MA: MIT Press.
- Hutcheon L. (1995). *Irony's edge: The theory and politics of irony*. New York: Routledge.
- Jorgensen J., Miller G. A., & Sperber D. (1984). Test of the mention theory of irony. *Journal of Experimental Psychology: General*, 113 (1):112–120.
- Jung C. G. (1973). *Synchronicity: An acausal connecting principle*. Princeton: Princeton University Press.
- Knox N. (1961). *The word "irony" and its context, 1500–1755*. Durham: Duke University Press.
- Knox N. (1972). On the classification of ironies. *Modern Philology*, 70 (1):53–62.
- Kunda Z., & Thagard P. (1996). Forming impressions from stereotypes, traits, and behaviors: A parallel-constraint-satisfaction theory. *Psychological Review*, 103 (2):284–308.
- Lakoff G., & Johnson M. (1980). *Metaphors we live by*. Chicago: University of Chicago Press.
- Leggitt J. S., & Gibbs R. W. Jr., (2000). Emotional reactions to verbal irony. *Discourse processes*, 29 (1):1–24.
- Littman D. C., & Mey J. L. (1991). The nature of irony: Toward a computational model of irony. *Journal of Pragmatics*, 15 (2):131–151.
- Lucariello J. (1994). Situational irony: A concept of events gone awry. *Journal of Experimental Psychology: General*, 123 (2):129–145.
- Lucas, G. (1977). *Star Wars*. Lucasfilm Ltd.
- Lucas, G. (1980). *The empire strikes back*. Lucasfilm Ltd.
- Lucas, G. (1983). *Return of the Jedi*. Lucasfilm Ltd.
- Lyons J. (1977). *Semantics*. Cambridge: Cambridge University Press.
- Monson I. (1994). Doubleness and jazz improvisation: Irony, parody, and ethnomusicology. *Critical Inquiry*, 20 (2):283–313.
- Morgan J. L. (1990). Comments on Jones and Perrault. In P. R. Cohen J. L. Morgan M. E. Pollack (Eds.) *Intentions in communication Systems Development Foundation benchmark series*. Cambridge, MA: MIT Press.
- Muecke D. C. (1969). *The compass of irony*. London: Methuen.
- Muecke D. C. (1982). Irony and the ironic. *The critical idiom 2nd ed*. London: Methuen.
- Nelson, G. (1977). *Freaky Friday*. Walt Disney Productions.
- Nisbett R. E., & Ross L. (1980). *Human inference: Strategies and shortcomings of social judgment*. *Century Psychology series*; Englewood Cliffs, NJ: Prentice-Hall.
- Oatley K. (1992). Best laid schemes: The psychology of emotions. *Studies in emotion and social interaction* Cambridge: Cambridge University Press.
- O'Connor W. V., & Behler E. H. (1993). Irony. In A. Preminger T. V. F. Brogan (Eds.) *The new Princeton encyclopedia of poetry and poetics* Princeton: Princeton University Press.
- Ortony A., Clore G. L., & Collins A. (1988). *The cognitive structure of emotions*. Cambridge: Cambridge University Press.
- Pilkington A. (1992). Poetic effects. *Lingua*, 87 (1/2):29–51.
- Prothero D. R., & Schoch R. M. (1989). *The evolution of perissodactyls. Volume 15 of Oxford monographs on geology and geophysics*; New York: Oxford University Press.
- Quillian M. R. (1968). Semantic memory. In M. Minsky (Ed.), *Semantic information processing* (pp. 216–260). Cambridge, MA: MIT Press.
- Ross L., & Nisbett R. E. (1991). *The person and the situation: Perspectives of social psychology*. Philadelphia: Temple University Press.

- Schank R. C., & Abelson R. (1977). *Scripts, plans, goals and understanding*. Hillsdale, NJ: Erlbaum.
- Sperber D. (1984). Verbal irony: Pretense or echoic mention? *Journal of Experimental Psychology: General*, 113 (1):130–136.
- Sperber D. (1994). Understanding verbal understanding. In J. Khalfa (Ed.), *What is intelligence?* (pp. 179–198). Cambridge: Cambridge University Press.
- Sperber D., & Wilson D. (1986). *Relevance: Communication and cognition. The Language and Thought series*; Cambridge: Harvard University Press.
- Sweetser E. E. (1990). *From etymology to pragmatics: Metaphorical and cultural aspects of semantic structure. Volume 54 of Cambridge Studies in Linguistics*; Cambridge: Cambridge University Press.
- Szabados B., & Soifer E. (1998). Hypocrisy after Aristotle *Dialogue*, 37 (3):545–570.
- Thagard P. (1989). Explanatory coherence. *Behavioral and Brain Sciences*, 12, 435–467.
- Thagard P. (2000). *Coherence in thought and action*. Cambridge, MA: MIT Press.
- Thagard P., & Verbeurgt K. (1998). Coherence as constraint satisfaction. *Cognitive Science*, 22 (1):1–24.
- Wilson D., & Sperber D. (1981). Irony and the use-mention distinction. In P. Cole (Ed.), *Radical Pragmatics* (pp. 295–318). New York: Academic Press.
- Wilson D., & Sperber D. (1992). On verbal irony. *Lingua*, 87 (1/2):53–76.
- Winner E. (1988). *The points of words: Children's understanding of metaphor and irony*. Cambridge, MA: Harvard University Press.
- Winner E., & Leekam S. (1991). Distinguishing irony from deceptive understanding of the speaker's second-order intention. *The British Journal of Developmental Psychology*, 9 (2):257–270.
- Wise, R. (1965). *The sound of music*. 20th Century Fox.