Optimal Innovation and Pleasure

Rachel Giora*
Linguistics
Tel Aviv University
Tel Aviv 69978
Israel
giorar@post.tau.ac.il

1 On the Role of Salience and Novelty in Aesthetics: The Optimal Innovation Hypothesis

When asked which of the stimuli in (context-less) quartets like (1-4) they liked best, subjects selected the third option as most pleasing. Next came the first, followed by the second. Least likable was the fourth (Kronrod, 2001; Kronrod et al. 2000):

(1) Body and soul.
(2) Bodies and souls
(3) Body and sole
(4) Bobby and Saul

When asked which of the pairs (in 5) they liked best, subjects rated (5a/c) as more pleasing than (5a/b) (Elnatan, 2000, 2002; Giora, Kronrod, Elnatan and Fein, 2001):

(5a) You don't know your right from left?
(5b) *The Comprehensive Lexicon* will teach you whatever you don't know
(5c) Buy *The Comprehensive Guide for the Political Factions in Israel.*

How do (1-4) and (5a/b-a/c) differ? What could account for the gradability in their likability and pleasurability? As shown by Kronrod (2001), Kronrod et al. (2000), and Giora et al. (2001), and see also Giora (in press, Chapter 7), the factor that accounts for their pleasurability is optimal innovation: novelty that allows for the recoverability of the familiar. Pleasure, it seems, hinges on recognizing the familiar in the novel (see also Freud, 1905; Mukarofský, 1932/64, 1978; Shklovsky, 1917/1965).

Indeed, the various stimuli vary on a familiarity scale: (1) was rated as most familiar: it is a common, fixed expression. (2) was rated as second most familiar: it is a variant version of (1), but such that preserves its meaning. Third came (3), which will be termed 'optimally innovative': like (2), it feeds on the familiar (1), but it also conveys an extra, unfamiliar sense. The item in (4), however, was rated least familiar: it is, in fact, entirely new. Though akin to (1) in rhythm, shape, and sound, meaning-wise it is a drastic diversion. Unlike (2) and (3), it does not echo the familiar stimulus[1]. Similarly, (5a/b) was rated as most familiar: it instantiates the salient, idiomatic interpretation; (5a/c), however, was rated as less familiar: it is optimally innovative (see 7): it invites a less salient, literal interpretation, without dispensing with the

*I am grateful to Mira Ariel, Salvatore Attardo, Albert Katz, Orna Peleg, and Noa Shuval for their very helpful comments.

[1]Indeed, the quartets were constructed in such a way so as to contain a familiar source (1) and variations (2-4) diverging from the source in varying degrees. As confirmed by readers' ratings, (2) is the variation most similar to (1), involving just a minimal change. Mid-position is occupied by (3). Least similar to (1) is (4), involving two changes (see Kronrod, 2001; Giora, Kronrod et al., 2001)

salient interpretation. Contra the received view (Brinker, 1988), then, it is not pure novelty (4) that accounts for pleasure, but optimal innovation–innovation that resides in familiarity (3, 5a/c):

(6) The optimal innovation hypothesis

If a stimulus is optimally innovative it would be rated as more pleasurable than either a familiar stimulus or a purely innovative stimulus.

(7) Optimal innovation
What stimulus would count as optimally innovative?
A stimulus would be optimally innovative if it involves
(a) a novel response to a familiar stimulus,
but
(b) such that would also allow for the automatic recoverability of a salient response related to that stimulus so that the similarity and difference between the novel and the salient would be assessable (see also Giora, in press, Chapter 7).

For a response (e.g., a meaning) to be salient, it should be foremost on our mind due to factors such as experiential familiarity, frequency, conventionality, or prototypicality (see Giora, 1997, in press, Chapter 2). Salient responses get activated automatically upon encounter of a familiar stimulus, regardless of context fit. To the extent that a linguistic innovation (*body and sole*) allows the comprehender an insight into some salient meanings (*body and soul*) while promoting new ones, it is optimally innovative.

By definition, then, the notion of optimal innovation excludes familiar stimuli (1, 5a/b): familiar stimuli do not meet any of the requirements in (7). However, it also excludes innovations such as variants of such stimuli (2) as well as pure innovations (4). Variations and variants (*A single piece of paper,* which stems from *A piece of paper*) do not meet the first requirement (7a above). Though they involve a slight change, this modification does not result in a novel response (as opposed to e.g., *A peace of paper*). Neither are pure innovations optimal, as they do not meet the second requirement (7b above): no familiar response is recoverable so as to become instrumental in constructing the novel response (*Y2K, fax, grok; spandy-wear*).

As illustrations of optimal innovations, consider the following examples. *Sofa so good*–the name of a London shop–constitutes a literal pun. It introduces a novel meaning that recommends its goods (furniture). Yet it does not dispense with the salient meaning of the string (So far so good). Similarly, the stimulus *Her wedding ring is a "sorry we're closed" sign* conveys a novel, metaphoric meaning (non-receptiveness to courtship). This, however, involves the salient, literal meaning that gets activated automatically (Pexman, Ferretti & Katz, 2000). A novel irony such as *read my lipstick* is optimally innovative too. While allowing for a new meaning to emerge, ridiculing the speaker on account of her femininity, it still invokes the salient (suspicion/lie) meaning of the familiar irony *Read my lips.* Jokes such as *How do you get holy water? Boil the hell out of it* are also optimally innovative. They are instances of novelty that resides in salience. They harp on old, salient strings (curse), involving a slight twist (see Attardo, 2000) that results in a novel interpretation of the salient (nonliteral) meaning. In the same way, the interplay between the salient (*body and soul*) and the innovative (*body and sole*) accounts for the optimal innovation. Or consider a visual example: Ariel Sharon's portrait ((8) by Piven (1999), carving the current Israeli prime minister (salient response) out of bloody minced meat (novel response), thus alluding to his murderous and voluptuous nature.

Note that according to the optimal innovation hypothesis, it is neither literality nor figurativeness that accounts for the pleasure induced, but some salience imbalance: the surprising discovery of the novel in the salient or the salient in the novel. It is not a sheer surprise, then, that is pleasing, but a somewhat novel response that could evoke a salient response or could be assigned to a salient response though it did not come to mind immediately (see also Giora, 1991).

(8) "Arik Sharon": An optimally innovative visual stimulus

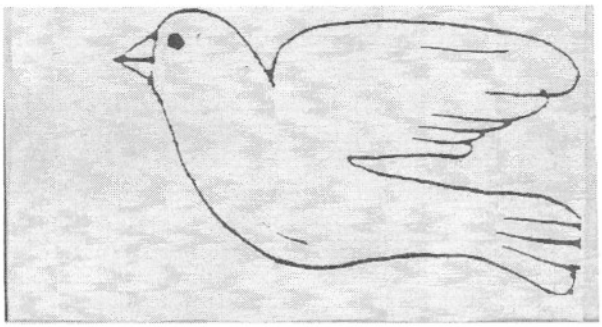
2 Testing the Optimal Innovation Hypothesis

In our lab, we further examined aspects of the optimal innovation hypothesis (Elnatan, 2002; Giora et al., 2001; Kronrod et al., 2000). We demonstrated that stimuli rated most pleasurable (3) were indeed optimally innovative: they involved processing the familiar stimuli from which they derive (7b) and more (7a). Using reading times, we showed that familiar stimuli (1) took less time to read following the most pleasurable innovation (3) than following the least pleasurable innovation (4), suggesting that the most pleasurable innovations meet requirement (7b) while least pleasurable innovations do not, attesting to the role of salience in inducing pleasure. Complementarily, we showed that innovative interpretations (9d) rated online as highly pleasurable following the idiomatic expression (9a) also took longer to read following this context than following a context that does not require such an interpretation (9b), but somewhat shorter than following an unrelated control context (9c). Compared to deriving the salient interpretation only, the innovative interpretation (9d) is more effortful, apparently because it involves accessing the salient response and more, thus meeting the optimal innovation criteria (7a-b). It is, however, less effortful than trying to make sense of an interpretation that is incoherent and does not involve any familiar meaning (9c) and does not induce pleasure:

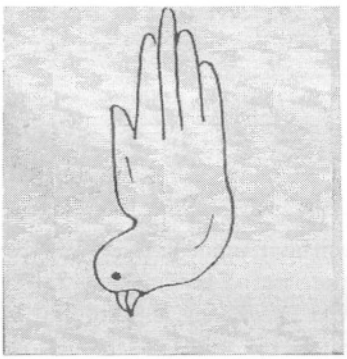
(9) a. You don't know your right from left?
b. If you want to familiarize yourself with the political situation in Israel,
c. If you are the type that sings in the shower,
d. Buy *The Comprehensive Guide for the Political Factions in Israel.*

In Giora, Zur & Fein (in prep), we tested the optimal innovation hypothesis with regard to visual stimuli. We showed that visual stimuli rated most pleasurable (11) occupied mid position on the familiarity scale and involved the familiar (7b) and more (7a). Least pleasurable were stimuli rated as least familiar (12). Mid position on the pleasurability scale was occupied by stimuli rated as highly familiar (10). It is salience then that accounts for pleasurability, and recognizing the salient in the innovative is most pleasurable.

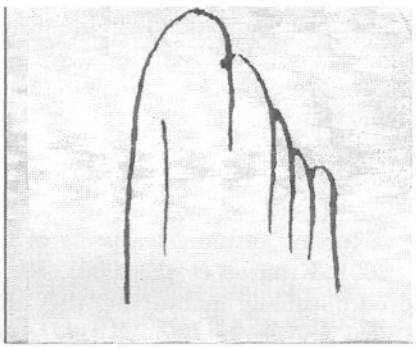
Taken together, such findings support the view that it is neither pure innovation nor familiarity alone that account for aesthetic judgments. Rather, it is optimal innovation–novelty that allows an insight into some salient response–that is most pleasurable. Indeed, optimal innovations (3, 9a/d, 11) are more pleasurable than familiar stimuli (1-2, 9b/d, 10). Though they share similar familiar responses, they also involve unfamiliar responses. Optimal innovations (3, 11) are also



(10) Familiar visual stimulus



(11) Optimally innovative visual stimulus



(12) Highly innovative visual stimulus

more pleasurable than pure innovations. Though both involve novel responses, only optimal innovations further involve familiar responses. Pleasure, then, is a function of both salience and innovativeness. It is the surprise experienced in suddenly discovering some novelty where it is least expected, or the gratification in discovering the familiar in the novel.

Indeed, familiarity (though less so excessive familiarity) is known to be a factor in pleasure or liking (on the various aesthetic effects of mere exposure, see Bornstein & D'Agostino, 1992; Harrison, 1977; Kunst-Wilson & Zajonc, 1980; Zajonc, 1968, 1980, 2000, and see also our findings above). It is not the most familiar, then, that is least enjoyable, but rather the most novel that is least pleasing. Pleasure, however, resides half way between high salience and high novelty.

3 On Recognizing the Novel in the Salient: The Case of Jokes

Jokes are considered paradigmatic in inducing affect. Are they optimally innovative? Consider the following example:

(13) War doesn't determine who's right but who's left.

The text in (13) meets the requirements in (7). It involves an innovative sense (just-survive) of the collocation *right-left* while invoking salient meanings (just, political orientations). It is quite plausible to assume that upon encountering *right*, the comprehender accesses the salient meaning (just) which, when *left* is encountered, is reinterpreted as political orientation. Eventually, the less salient meaning of *left* (survive) of *right-left* is accessed, ridiculing the previous responses.

The structure of most jokes is such that it keeps us attending to the salient response until the punchline point where a reversal is enforced allowing for the recognition of the novel. The pleasure derivable from this joke hinges on recognizing the innovative in the salient.

3.1 Theoretical background

Jokes are probably among the most amusing, funny, and laughable texts. Most theories of joke comprehension focus on one type of jokes–semantic jokes that involve double entendre[2]. Looking into this genre, most theorists discussed jokes in terms of contextual incompatibility, which triggers a search for the resolution of that incongruity. According to Attardo (1994, 1996a,b, 2000, 2001), Attardo, Attardo, Baltes and Petray (1994), processing a joke begins with processing one sense (the 'just' meaning of the ambiguous word *right*) which is retained up to the point (*left)* at which the initial interpretation no longer makes sense. At this point, termed the disjunctor, the interpretation process is disrupted. If the disruption is minimal, it affects reinterpretation of the initial sense, resulting in a different/opposed sense (which would now be 'a political orientation and then 'just and alive'). If it is more than minimal, the comprehender may dismiss the text as ill formed. Attardo and his colleagues assume Raskin's (1985) view of jokes as centering on opposition relations obtaining between two senses/scripts.

For Coulson and Kutas (1998a,b, and see also Coulson, 2001: 77-82), it is script-shifting (termed 'frame-shifting') that accounts for joke comprehension (see below). Compared to alternative surprise endings that do not involve script or frame shifting, jokes' endings are costly processing-wise precisely because of the need to switch from one script or frame to another.

Curcó (1995, 1996a,b, 1998) assumes a different processing model whereby a key assumption that is weakly manifest (involving the 'political orientation' meaning of *right & left*), becomes strongly manifest upon encounter of the 'target assumption' (involving the 'remain alive/'survive' meaning of *left).* The incongruity between the two assumptions triggers this shift from weak to strong manifestation and makes the joke work. Such a view thus assumes that the initial interpretation of the ambiguity involved is retained for contrastive purposes.

De Palma and Weiner (1992), Giora (1991), and Weiner (1996) posit that the structure of jokes is categorial (à la Rosch, 1973), starting with the most prototypical (salient) member of the set (of things that war determines such as who wins - the right or the wrong) and ending with a marginal (less salient) member (who remains alive). Such a view suggests that a humorous 'surprise' does not rely on a stark difference between two interpretations. Rather, it depends on the likelihood of the less accessible/less-salient interpretation to be relevant to and included within the category proposed initially. A humorous surprise, then, does not constitute an entirely unthinkable option (Giora, 1991), but only a less salient one–one that should not but which nevertheless has escaped our attention because of our salience prone mind.

Giora (1991, 1995, in press, Chapter 6), however, further proposed that joke comprehension involves attenuation of the salient, but contextually incompatible meaning (the 'political orientation' interpretation of *right & left*) following the disjunctor point. For the joke to get through, the (salient) meaning activated initially should be suppressed, at least momentarily, and replaced by the (less salient) appropriate sense (The suppression hypothesis; see Gernsbacher & Robertson, 1995 for a similar view, and see Colston, Giora & Katz, 2000, and Vaid, Hull, Gerkens, Heredia, & Martinez, 2000 for supportive results discussed in Appendix 5).

3.2 The Role of Salience and Context in Joke Comprehension

Most jokes make up a discourse that best exposes our tendency to opt for the salient, most probable concept first. Note how we are caught entirely off guard when we realize that a person who has a *drinking problem* is, in fact, one who spills liquid all over himself while drinking (*Flying High* by Abrahams, Zucker & Zucker, 1980). Jokes' pleasurability, then, hinges on discovering the

[2]The jokes dealt with here either include polysemous or ambiguous interpretations. Polysemies involve related meanings; ambiguities involve unrelated meanings. According to Attardo et al. (1994), such jokes are the most common ones and highly typical among verbal jokes (as opposed to referential jokes, the most common type of joke).

novel in the familiar. The stimulus invites the comprehender to process a more salient, familiar meaning first ('drinking alcohol excessively') only to make her discover that a less salient, seemingly unthinkable meaning makes more sense.

To let our salience-prone mind go astray, the initial context of a joke is usually unambiguous, compatible with the salient meaning, so that this interpretation is retained exclusively up until the punchline, at which point a sudden incongruity forces a reinterpretation. The following joke (taken from Coulson & Kutas, 1998b) may serve to illustrate the collaboration between salience and context:

(14) By the time Mary had had her fourteenth child,
she'd finally run out of names to call
her husband.

The salient meaning of *names* is associated with 'proper names'. In addition, the most plausible interpretation of *name calling* in the context of childbirth is also associated with 'proper names'. Furthermore, the most plausible interpretation of 'running out of *names'* in the context of the birth of a fourteenth child is further supportive of the 'proper names' interpretation. Salience and contextual information harmonize here: contextual information is highly supportive and predictive of the salient meaning of the polysemous word. The punchline, therefore, comes as a 'total' surprise.

Revisitation of salient meanings–discovering novelty in the familiar (7a-b)–rather than mere surprise ending (7a) may indeed be a major factor in accounting for the largely acknowledged difficulty and pleasurability of joke interpretation. Indeed, as shown by Coulson and Kutas (1998b), other forms of discourse involving less salient, unexpected items, which do not require reinterpretation of salient meanings, have been found to be less demanding and less funny. For instance, in their study, nonjoke texts (15a), having an equally unpredictable (low cloze probability) ending as jokes (15b), diverging from jokes in that they do not involve reinterpretation (of salient concepts), were faster to read than jokes (15b) and judged as less pleasurable:

(15) By the time Mary had had her fourteenth child, she´d finally run out of names to call her
(a) Nonjoke ending: offspring
(b) Joke ending: husband

Crucially, then, for a joke to be enjoyed (understood as a joke), it should involve recognizing novelty in salient concepts[3].

In sum, most semantic jokes make up an optimal innovation. They involve recognizing the novel in the familiar. The assumption that in addition, they further involve suppressing the familiar should wait further research (see Appendix 5).

4 On Recognizing the Novel in the Salient: The case of Nonconventional Irony

Given the optimal innovation hypothesis (6), only novel or less-familiar ironies will be discussed here, since only they meet the requirements for optimal innovativeness (7a-b). By contrast, conventional ironies such as *wise guy,* or *tell me about it*, embedded in irony-inviting contexts, would not affect humor or pleasure, because they do not meet the requirement in (7a): no novelty is involved in their decoding. Indeed, with the exception of Giora (in press) and Giora & Fein (1999b), most of the literature on humor dealt with less familiar irony only.

Unlike jokes, irony relies entirely on context for its optimal innovativeness. The various theories on irony would, therefore, diverge with regard to the role context plays in irony comprehension.

[3]Not all jokes conform to the salient-less salient course of interpretation. When they don't, the contextually appropriate meaning derived initially needs to be revisited at the punchline position. It is hypothesized, however, that such reinterpretation will be less surprising as a result.

4.1 Theories of Irony Comprehension

The field of irony research has received an immense boost in the last decade. For an extensive review of the field (which is beyond the scope of this chapter) see Attardo (2000) and Giora (1998, 2001, in press). Here I briefly sketch contemporary views of how we understand irony vis à vis the context in which it is embedded. Three major approaches dominate the field: (i) 'the direct access view', which counters (ii) 'the traditional, standard pragmatic model', and (iii) 'the graded salience hypothesis' that counters both. It is only according to the graded salience hypothesis and standard pragmatic model, however, that irony is optimally innovative and hence pleasing. According to the direct access view, however, irony should be treated as pure innovation whose decoding is entirely context dependent and involves only its innovative sense, and hence less pleasing.

4.1.1 The Interaction-based, Direct Access Views

The interactionist, direct access view assumes that a constraining context affects comprehension primarily: a strong context governs processing significantly, affecting linguistic processes very early on. Consequently, in a rich and supportive context, irony comprehension need not involve a contextually incompatible (e.g., literal) stage at all. Rather, context should activate the contextually appropriate (ironic) interpretation exclusively so that only that meaning becomes available for further processes. In a strong context, then, irony comprehension should proceed seamlessly, and should not differ from processing equivalent literal language (see 'the relevance-theoretic account' and 'the allusional pretense view'). Equal reading times of items embedded in literally and ironically biasing contexts support this view (see Gibbs, 1986, but see Giora, 1995 for a critique; Giora, Fein & Schwartz, 1998; Schwoebel, Dews, Winner and Srinivas, 2000 for different findings). According to the direct access view, then, the sarcastic target in (16) should not be more pleasurable than the nonsarcastic target in (17):

(16) Billy and Joe were long-time pals. But one time when Billy was away on a business trip, Joe slept with Billy's wife, Lynn. When Billy found out about it afterwards, he was upset. He confronted Joe and said to him:
[Sarcastic target] "You are a fine friend."

(17) Billy and Joe were long-time pals. One time Billy was in desperate need of money. His car had broken down and he needed $300 to fix it. So, he asked Joe for a loan. Joe said he could lend Billy the money. This made Billy happy and he said to Joe,
[Nonsarcastic target] "You are a fine friend."

4.1.1.1 The relevance theoretic account

The relevance theoretic account of irony (Gibbs, 1986; Jorgensen, Miller & Sperber 1984; Sperber & Wilson 1981, 1986/95; Sperber 1984; Wilson & Sperber 1992) is consistent with some aspects of the direct access hypothesis. Basically, it assumes that utterance interpretation relies on context for its decoding. According to Sperber and Wilson, context is generally not given in advance, but is searched for as part of the interpretation process. As a result, processing irony (19) need not differ from processing a nonironic utterance (18). Specifically, irony is an "echoic interpretive use in which the communicator dissociates herself from the opinion echoed with accompanying ridicule or scorn" (Wilson & Sperber 1992: 75). While its processing involves disengaging from an echoed opinion, or from what it assumes (Curcó, 2000), processing an equivalent nonironic utterance involves endorsing an echoed opinion. In both, then, there is an echoic allusion to be picked up which is invited by context (Sperber & Wilson 1986/95: 239):

(18) a. He: It's a lovely day for a picnic.
[They go for a picnic and the sun shines.]
b. She: (happily): It's a lovely day for a picnic, indeed.

(19) a. He: It's a lovely day for a picnic.
[They go for a picnic and it rains.]
b. She: (sarcastically): It's a lovely day for a picnic, indeed.

4.1.1.2 The allusional pretense view

Kumon-Nakamura, Glucksberg and Brown (1995) proposed a more general theory of discourse irony. According to the allusional pretense view, irony alludes to or reminds the addressee of what should have been–of an expectation or a norm that went wrong (see also Kreuz & Glucksberg, 1989). To enable the addressee to appreciate the allusion, irony involves pragmatic insincerity, thus allowing various speech-acts to be ironic. For example, when a car driver says *I just love people who signal when turning* when the car ahead of her makes a turn without signaling, the speaker alludes to a social norm or expectation to signal upon turning, while simultaneously pretending to compliment the errant driver. Such view of irony assumes that irony comprehension involves activating the linguistic meaning of what is said in order to assess its sincerity and derive the ironic or nonironic interpretation, depending on the context. Thus, in any given situation, there is a decision to be made whether what is said is intended sincerely (i.e., literally) or insincerely (i.e., ironically). In this way, ironic and literal interpretations are equally affected by contextual information (Glucksberg, 1995).

The assumption that context plays a primary role in comprehension so that processing does not involve an incompatible phase views irony as pure innovation which does not expect to induce affect.

4.1.2 The standard pragmatic models

According to the various versions of the standard pragmatic model, processing involves an initial literal stage which, at times, will have to be revisited by late context effects (as in the case of irony). Such an approach might be more consistent with the optimal innovation hypothesis, provided the literal response to be revised is a familiar response.

4.1.2.1 The traditional view

The traditional view, notably, Grice (1975) and Searle (1979), assumes restricted contextual effects. According to this view, context affects comprehension at a late stage, only following linguistic processes, and only if these processes do not result in context fit. Thus, if I say *What a lovely day for a picnic* on a stormy day, my addressee would first compute the literal meaning of the statement, then reject it as the intended meaning and replace it with an alternative, contextually appropriate meaning. According to the traditional view, then, understanding nonliteral language involves a sequential process. The first stage is literal and obligatory, and the second stage is nonliteral and optional, induced by contextual information. In Gricean (1975, pp. 46ff) terms, the initial process involves a breach of a norm (primarily the Quality maxim). According to Attardo (2000), the violation should be minimally disruptive, though perceivable as disturbing contextual appropriateness. The overt, least disruptive violation is a signal for the addressee to reject the literal meaning as the intended meaning and derive the speaker's intention (dubbed 'particularized conversational implicature') which should replace the inappropriate interpretation. In contrast, literal language involves initially just one process. Therefore, understanding literal and nonliteral language should differ, with nonliteral language requiring a double take. Longer reading times found for utterances embedded in ironically vs. literally biasing contexts support the standard pragmatic model (Giora et al., 1998; Schwoebel, Dews, Winner & Srinivas, 2000).

Consistent with the modular view (Fodor, 1983), which proposes that the contextually inappropriate meanings activated during the first initial access phase should be suppressed only subsequently, the standard pragmatic model assumes that the contextually incompatible literal meaning of irony should be suppressed and replaced by a contextually compatible ironic meaning. Thus, *What a lovely day for a picnic* said on a stormy day is rejected as contextually incompatible and replaced by its approximate opposite–*What a lousy day for a picnic.* In this view, then, irony comprehension involves a suppression process at the second integration phase. It therefore differs from processing its equivalent literal interpretation. This suppression assumption, however, has not gained empirical support (see Giora, in press; Giora & Fein, 1999b; Giora et al., 1998).

4.1.2.2 The relevant inappropriateness assumption

Attardo (2000) provides a more general account of irony than the traditional view by going beyond the maxim violation condition posited by Grice (1975). According to Attardo, irony need not violate any maxim. Rather, while assuming the Relevance maxim (for the second, integration phase), it should breach contextual appropriateness ostensibly at the initial phase, so that the comprehender may detect the intended violation and derive the ironic interpretation. For example, when, in a drought-stricken area, one farmer says to another *Don't you just love a nice spring rain?* the utterance may be true, yet inappropriate, given the situation of utterance (it is not raining). According to Attardo, violation of contextual appropriateness includes violation of both sincerity and cultural norms or expectations (assumed necessary for irony interpretation by the allusional pretense, see above) and more (e.g., deictic inappropriateness). Indeed, optimal innovations involve a minimal disruption or change–one that does not obscure the familiar response while inviting a novel response.

4.1.2.3 The joint pretense view

The joint pretense view (Clark & Carlson, 1982; Clark & Gerrig, 1984; Clark, 1996) is also inspired by the Gricean view (Grice, 1978). It assumes a speaker who pretends "to be an injudicious person speaking to an uninitiated audience; the speaker intends the addressee of the irony to discover the pretense and thereby see his or her attitude toward the speaker, the audience, and the utterance" (Clark & Gerrig, 1984: 12; for a similar view see Boulton as quoted in Booth, 1974: 105). By saying *What a lovely day for a picnic* on a stormy day, the ironist assumes the identity of another speaker addressing a gullible audience. The present addressee, however, is supposed to take delight in recognizing both the pretense and the intended attitude of ridicule toward the pretending speaker, the audience, and the utterance. According to Clark (1996: 368), joint pretense is conceived of as a staged communicative act (see also Haiman, 1998; Kotthoff, 1998) where the actual speaker is also an implied speaker performing a sincere communicative act toward an implied addressee who is also the actual addressee. Both actual participants are intended to "mutually appreciate the salient contrasts between the demonstrated and actual situations", so that if asked, the actual speaker would deny meaning for the actual addressee what the implied speaker means for the implied addressee.

According to this view, irony is a two-layered act of communication in which the literal (which is in most cases the salient) meaning is activated and retained by both the speaker and the addressee, who reject it as the intended meaning though they pretend otherwise.

4.1.2.4 The tinge hypothesis

The tinge hypothesis (Dews, Kaplan & Winner, 1995; Dews & Winner, 1995, 1997a, 1999) assumes that irony is used to mute the intended negative criticism. The positive literal meaning of irony (*That was really funny* said on a mean joke) tinges the addressee's perception of the intended meaning. Similarly, the negative literal meaning of ironic compliments (*It's a tough life* said to someone on vacation) mitigates the positively intended meaning. Dews and Winner and their colleagues assume that the contextually incompatible, literal meaning of ironic remarks is processed at some level and interferes with the intended meaning. Following Long and Graesser (1988), they propose a dual-process model "in which comprehension may occur after the recognition of an incongruity or simultaneously" (Dews & Winner, 1997: 405). According to the tinge hypothesis, then, the literal meaning of irony is activated initially, either before or alongside the ironic meaning, and is retained in order to dilute the implicit criticism or compliment. Using a Stroop like interference paradigm, Dews and Winner tested this hypothesis. They asked subjects to judge the intended (rather than the literal) meaning of ironic utterances and recorded their responses. If utterances are shown to take longer to be judged as positive or negative relative to their literal interpretations, this suggests that the contextually incompatible, literal meaning is accessed automatically, interferes with the process, and slows it down. Consistent with the tinge hypothesis, ironies such as *What a lovely day for a picnic* were judged as less aggressive than their literal counterpart *What a lousy day for a picnic* and took longer to be judged as positive or negative relative to their literal interpretations. Dews and Winner concluded that, unlike literal language, irony comprehension involves an obligatory, contextually incompatible, literal phase

(Dews et al., 1995; Dews & Winner, 1997; Winner, 1988)[4].

4.1.3 The graded salience hypothesis

Contra the interactionist view, and partly following Fodor's (1983) modular assumptions, the graded salience hypothesis assumes distinct mechanisms, linguistic and contextual, that run in parallel without interacting initially (Giora, 1997, 1999, in press; Giora & Fein, 1999b; Giora, Fein & Schwartz, 1998; Giora, Peleg, & Fein, 2001; Peleg, Giora & Fein, 2001, in press). The linguistic (lexical) mechanism is a bottom-up, encapsulated machinery that is sensitive only to linguistic information. In contrast, the contextual mechanism involves top-down processes that are sensitive to both linguistic and extra-linguistic knowledge. Unlike the traditional modular assumption (Fodor, 1983), however, the graded salience hypothesis assumes that the encapsulated, lexical access mechanism is ordered: more salient meanings–coded meanings foremost on our mind due to conventionality, frequency, familiarity, or prototypicality–are accessed faster than and reach sufficient levels of activation before less salient ones. According to the graded salience hypothesis, then, coded meanings would be accessed upon encounter, regardless of contextual information or authorial intent. Coded meanings of low salience, however, may not reach sufficient levels of activation to be visible in a context biased toward the more salient meaning of the word (but see Hillert & Swinney, 2001 for a different view).

Contextual, top-down processes may also affect comprehension immediately. A constraining and highly predictive context may avail meanings on its own accord very early on. Nevertheless, it would not penetrate lexical access. Though it has a predictive role that may speed up derivation of the appropriate meaning, it would not obstruct inappropriate, coded meanings upon encounter of the lexical stimulus. Indeed, contextual information may be strong and even faster than lexical processes, so much so that it may avail meanings even before the relevant stimulus is encountered, fostering an impression of direct access. This may be particularly true when the stimulus is placed at the end of a strong sentential context, after most information has been accumulated and integrated, allowing effective guessing and inferential processes. However, these inferential processes do not interact with lexical processes but run in parallel (Giora et al., 2001; Peleg et al., 2001, in press). As shown in Giora et al. and Peleg et al., assuming a simultaneous operation of the encapsulated, linguistic mechanism and the integrative, central system mechanism allows the graded salience hypothesis to predict when contextual information may be faster than, coincidental with, or slower than linguistic processes. Unlike the traditional views, then, the graded salience hypothesis does not always predict slower contextual effects that result in sequential processes. Neither does it assume (as Grice, 1975 does) that activation of a whole linguistic unit should be accomplished before contextual information comes into play. Rather, across the communication path, context and linguistic effects run in parallel, with contextual information availing meanings on its own accord, affecting only the end product of the linguistic process.

As illustration, consider the processes involved initially in trying to make sense of *What a lovely day for a picnic* said on a stormy day. According to this view, upon encounter, the processor would automatically retrieve the salient (literal) meaning of *lovely* ('nice') from the mental lexicon. However, given simultaneous top-down processes, this process will not result in contextual fit. This accidental mismatch between lexical (salient) and contextual (novel) meanings will result in an optimally innovative ironic interpretation. If said on a sunny day, however, the automatically retrieved, lexical meaning will achieve contextual fit, with no novelty involved. The graded salience hypothesis, then, would predict longer reading times for an utterance embedded in an ironically than in a literally biasing context. Note, however, that irony need not build on a salient literal meaning. Its salient meaning can also be figurative as when the conventional metaphor *Children are precious gems* can be used ironically, or when a conventional irony is used innovatively (*Read my lipstick*). In such cases, it is also some nonliteral meaning that should be processed initially

[4]However, though over-polite requests that were perceived as ironic were rated less rude than their (nonironic) under-polite counterparts, they were not rated as less insulting (Kumon-Nakamura, Glucksberg & Brown, 1995). According to some accounts, irony may be a politeness strategy without muting the criticism. In fact Colston (1997) and Toplak & Katz (2000) argue that irony is used to enhance rather than dilute condemnation.

on account of its salience (cf. Pexman et al., 2000). Thus, if ironies and literals differ processing-wise, it is not the literal-nonliteral dichotomy that accounts for their difference, but the salience-nonsalience continuum.

The indirect negation view of irony (Giora, 1995) supplements that graded salience hypothesis with regard to integration processes. According to this view, irony is a form of negation that does not make use of an explicit negation marker. Often, an affirmative (*What a **lovely** day for a picnic* said on a stormy day) rather than a negative (*What a **lousy** day for a picnic* said on a sunny day) expression is used to implicate that a specific state of affairs is different or far from the taken for granted, expected (or more desirable) state of affairs made explicit by the expression. Such a view assumes that irony comprehension involves activating the salient, often literal meaning initially. However, it does not assume that the indirectly negated meaning is suppressed and replaced by its opposite, as suggested by the traditional account. Rather, irony entertains both the explicit and derived messages, so that the dissimilarity between them may be computed. By saying *What a lovely day for a picnic* on a stormy day, the ironist points out the extent to which the criticized object (weather) has fallen short of expectations, and is far from being 'lovely'. The indirect negation view thus predicts that the explicit (often) literal meaning of irony activated initially would be retained for purposes of irony interpretation.

As in the case of the standard pragmatic view, longer reading times of nonsalient (ironic) versus more salient (literal or nonliteral) items and longer response times to nonsalient (ironically) related than to salient (literally or nonliterally) related probes support the graded salience hypothesis (Giora, Fein & Schwartz, 1998; Giora & Fein, 1999a; Pexman et al., 2000; Schwoebel et al., 2000). In addition, demonstrated retention rather than suppression of the salient (often) literal meaning of irony supports the direct negation view (see findings in Giora, Fein & Schwartz, 1998; Giora & Fein, 1999b). Empirical evidence, then, supports the graded salience hypothesis and the indirect negation view, and questions the direct access and standard pragmatic models. It shows that, contra the direct access view, salient meanings get activated regardless of context. It further shows that, contra the standard pragmatic model, salient meanings get activated regardless of literality. Diverging from the traditional pragmatic model, it also shows that salient but inappropriate meanings are not suppressed as irrelevant but retained for further processes.

The graded salience hypothesis and indirect negation view and the various versions of the standard pragmatic model, which assume that irony involves processing (aspects of) its literal interpretation, predict that unfamiliar irony will be more pleasurable than its more familiar literal interpretation. Given the optimal innovation hypothesis (7), the graded salience hypothesis further predicts that unfamiliar irony will be more pleasurable than familiar irony (*Read my lips* vs. *Read my lipstick*) and that familiar metaphor (*Children are precious gems*) will be less pleasurable than its nonsalient ironic interpretation (invited by an irony inducing context). These predictions remain to be validated.

5 Conclusions

What stimuli would incur liking or pleasure? Is it the familiar that is most likable? Is it total novelty that is most pleasing? Is it the figurative that is most enjoyable? The optimal innovation hypothesis predicts that optimal innovation–novel stimuli allowing an insight into the familiar–will be appreciated as most pleasurable, regardless of figurativity.

Findings indeed show that it is optimal innovation that is judged as most pleasing (Giora, in press, Giora, Kronrod et al., 2001; Giora et al., in prep; Kronrod et al., 2000). And though it is costly, because it involves entertaining multiple interpretations simultaneously, optimal innovation is rewarding. On some accounts, its reward is even long-lasting (see Berg & Lippman, 2001; Derks, Gardner, & Agarwal, 1998; Gardner, J. B., & Agarwal Gibbs, 1986; Kreuz, Long & Church, 1991; Lippman & Dunn, 2000; Mcaninch, Austin, & Derks, 1993; Schmidt, 1994; Schmidt & Williams, 2001; Unger, 1996; Vangiffen, & Maher, 1995 on humor and its effect on memory and see also Darling & Civikly, 1987; Kaplan & Pascoe, 1977; McMorris, Urbach, & Connor, 1985; Powell & Andresen, 1985; Ziv, Gorenstein, & Moris, 1986 on the effects of humor on retention of materials).

Appendix A

The theory of joke comprehension proposed here and elsewhere (Giora, 1991) assumes that understanding an optimally innovative discourse such as jokes involves a reinterpretation process in which a salient response to a key word or expression is accessed initially and retained until the disjunctor position. Following this position, it is suppressed to allow for a less salient (but globally compatible) response to emerge. At this point, the initial response has no role in constructing the intended response. Rather, it may stand in the way and interfere with comprehension. According to the retention/suppression hypothesis (Giora, in press), meanings are retained as long as they are conducive to the interpretation process but discarded if they interfere with comprehension (cf. Gernsbacher, 1990). Indeed, comprehenders who are less able at suppressing salient but incompatible meanings have been shown to be poor comprehenders (Gernsbacher, 1990, 1994).

Colston, Giora & Katz (2000) tested the suppression hypothesis, aiming to show that the meaning activated initially is suppressed later on, at offset of the punchline sentence. Results indeed demonstrate that the meaning of the key word, assumed to be salient, was available immediately after offset of the key word (at the end of the first line, see [a] below). Similarly, after offset of the second segment (b), its levels of activation were still marginally significant. However, at the final punchline position (c), the initially activated meaning was no longer available: It was no more activated than the unrelated probe, suggesting that, at this point, it underwent suppression.

(a) My friend asked me to look at his ear*
(b) but it was covered with butter*
(c) and salt.*
.....
probes (displayed at *)

Vaid et al. (2000) report similar results. They tested one-liner jokes (*I still miss my ex but my aim is getting better*) which were displayed for 4500 ms. They showed that 150 ms after offset of the joke, only the probe related to the contextually appropriate meaning was primed ('hate'), whereas the salient meaning ('love') related to the ambiguous word (*miss*) was not. These results are consistent with the suppression hypothesis, suggesting that after a sufficiently long delay allowing for joke processing to be complete, the salient but contextually inappropriate meaning of the ambiguous word was deactivated.

The suppression hypothesis may indeed account for other findings regarding joke comprehension. Given that suppression comes with a cost (Gernsbacher, 1990), the suppression hypothesis predicts that an interpretation process that does not require suppression would be less costly than one that requires such a process. This prediction is consistent with the findings in Coulson and Kutas (1998b) discussed earlier. Consider, again, example (15) above. While both *husband* and *offspring* were shown to be similarly unpredictable or probable given the preceding context (having cloze probability of 4% and 2% respectively), only *husband* would trigger suppression of the salient meaning of ('proper') *name* so that a less salient concept ('epithets associated with insult') be activated. In contrast, though *offspring* is a low probability ending, suppressing the originally highly salient meaning of *name* is not required. On the contrary, like the probable ending 'child', *offspring* involves retaining the notion of 'proper name' with which it is consistent, since, like 'child', it represents the same salient concept, only by means of an unexpected word. No wonder it took less time to process than *husband*. True, cloze probability is tailored to detect context predictive effects. However, in the specific studies discussed, it also indexes salience (see Giora, in press, Chapter 6 for a full discussion).

Or, consider another example (taken from Coulson & Kutas, 1998b):

(d) He is so modest he pulls down the shade to change his
Joke ending: mind
Nonjoke ending: jacket
Conventional ending: clothes

According to the suppression hypothesis, for the joke to get through, the salient meaning of *change* ('replace a material object ', 'take off cloths'), which is also the one invited by the context (having a cloze probability of 42%), has to be suppressed so that the more novel, less salient meaning of *change* ('change of an immaterial object'), having a cloze probability of 6%), be evoked. Though *changing a jacket* is a less salient, less frequent expression compared to *'changing clothes'* (having a cloze probability of 3%), it need not involve suppressing the salient ('physical replacement') meaning of *change*, because it is an extension of that self-same meaning. The nonjoke ending, then, is not an optimal innovation: no novel sense or concept was involved here. Indeed, subjects took less time to read the nonjoke (*jacket*) than joke (*mind*) ending.

Findings from event-related brain potentials lend further support to the hypothesis that joke comprehension involves suppression. In another study, Coulson and Kutas (1998a and see also Coulson, 2001) compared event-related brain potentials recorded from the scalp as participants read joke and nonjoke sentences. The difficulty of integrating a given word into an established context is correlated with N400 amplitude. N400 amplitude is largest for items with low cloze probability such as semantic anomalies, and smallest for easily integrated items with high cloze probability such as best completions. Accordingly, the suppression hypothesis predicts that joke comprehension would involve N400 amplitude to a greater extent than nonjokes. It also predicts that the effect would be greatest for jokes involving highly salient meanings compared to those involving less salient meanings, since salient meanings are harder to suppress (Giora, in press). Moreover, it predicts that this effect would be more pronounced among good than among poor comprehenders who are deficient at suppression (cf. Gernsbacher & Robertson, 1995).

Findings in Coulson and Kutas (1998a) indeed serve to support the suppression hypothesis. They show that jokes elicited larger N400 components than nonjokes (ending with similarly cloze probability items), and that this effect was greatest where highly salient meanings were involved. Furthermore, they showed that this pattern was most pronounced among participants whose performance on the comprehension questions suggested they understood most of the jokes, suggesting that they suppressed the incompatible, though salient meaning (for a detailed discussion see Giora, in press, Chapter 6).

For Coulson and Kutas (Coulson, 2001; Coulson & Kutas, 1998a,b), however, these findings support the hypothesis that joke comprehension involves a 'frame-shift'. Frame shifting occurs when elements of a given message-level representation are mapped onto a new frame. Jokes, they contend, are deliberately constructed to suggest one frame while evoking elements also consistent with another. The notion of frame shifting is not inconsistent with the assumption of the graded salience hypothesis concerning joke comprehension. It is plausible to assume that a word meaning involves activating its unmarked contextual information or frame. Moreover, jokes do not always hinge on explicit word meanings but rather on frame anticipation. Though the following joke requires the accessing of a less salient reading of *something* as referring to humans, contextual information derived from the 'frame' plays a crucial role in its initial interpretation (as 'a drink'):

(e) When I asked the bartender for something cold and full of rum, she recommended her husband.

Recall however that optimal innovations require an extra processing effort compared to familiar responses, because they involve processing the salient and more. Findings in Coulson and Kutas, therefore, may not speak to the issue of suppression and may only demonstrate that jokes are optimal innovations. Even the finding that good comprehenders invest more effort than poor comprehenders in processing jokes might be only indicative of poor comprehenders' limited ability to entertain multiple messages on account of limited mental resources (see Miyake, Just & Carpenter, 1994).

References

Attardo, S. (1994). *Linguistic theories of humor.* Berlin: Mouton de Gruyter.

Attardo, S. (1996a). Humor. In J. Verschueren, J-O Östman, J. Blommaert, & C. Bulcaen (Eds.), *Handbook of Pragmatics* (pp. 1-18). Amsterdam/Philadelphia: John Benjamins.

Attardo, S. (1996b). Humor theory beyond jokes: The treatment of humorous texts at large. In J. Hulstijn and A. Nijholt (Eds.), *Automatic Interpretation and Generation of Verbal Humor.* IWCH '96. Twente Workshop on Language and Technology 12 (pp. 87-101). Enschede: University of Twente.

Attardo, S. (2000). Irony as relevant inappropriateness. *Journal of Pragmatics, 32,* 793-826.

Attardo, S. (2001). *Humorous texts: A semantics and pragmatics analysis.* Berlin: Mouton De Gruyter.

Attardo, S., Attardo, D. H., Baltes, P., & Petray, M. J. (1994). The linear organization of jokes: analysis of two thousand texts. *Humor, 7,* 27-54.

Berg, E. M. & Lippman, L. G. (2001). Does humor in radio advertising affect recognition of novel product brand names? *Journal of General Psychology, 128,* 194-202.

Bornstein, R. F., & D'Agostino, P. R. (1992). Stimulus recognition and the mere exposure effect. *Journal of Personality and Social Psychology, 63,* 545-552.

Brinker, M. (1988). *Aesthetics as the theory of criticism.* Tel Aviv: Broadcast university/The Ministry of Defense, Israel.

Brisard, F., Frisson, S., & Sandra, D. (2001). Processing unfamiliar metaphors in a self-paced reading task. *Metaphor and Symbol, 16,* 87-108.

Colston, H. L. (1997). Salting a wound or sugaring a pill: The pragmatic functions of ironic criticism. *Discourse Processes, 23,* 25-45.

Colston, H. L., Giora, R., & Katz, A. (2000, July). Joke comprehension: Salience and context effects. Paper presented at The 7th International Pragmatics Conference, Budapest.

Coulson, S. (2001). *Semantic leaps.* Cambridge and New York: Cambridge University Press.

Coulson, S., & Kutas, M. (1998a). Frame-shifting: Event-related brain response to jokes. Paper submitted for publication.

Coulson, S., & Kutas, M. (1998b). Frame-shifting and sentential integration. Paper submitted for publication.

Curcó, C. (1995). Some observations on the pragmatics of humorous interpretations: a relevance theoretic approach. *UCL Working papers in Linguistics, 7,* 27-47.

Curcó, C. (1996a). The implicit expression of attitudes, mutual manifestness, and verbal humor. *UCL Working Papers in Linguistics, 8,* 89-99.

Curcó, C. (1996b). Relevance theory and humorous interpretations. In N. Hulstijn, & A. Nijholt (Eds.), *Automatic interpretation and generation of verbal humor* (pp. 53-68). Twente: University of Twente.

Curcó, C. (1998). Indirect echoes and verbal humor. In V. Rouchota, & A. H. Jucker (Eds.), *Current issues in relevance theory* (pp. 305-325). Amsterdam and Philadelphia: John Benjamins.

Curcó, C. (2000). Irony: negation, echo and metarepresentation. *Lingua, 110,* 257-280.

Darling, A. L., & Civikly, J. M. (1987). The effect of teacher humor on student perceptions of classroom communicative climate. *Journal of Classroom Interaction, 22,* 24-30.

De Palma, P., & Weiner, J. E. (1992). Accessibility and knowledge representation. *Proceedings of COLING '92,* 1121-1125.

Derks, P., Gardner, J. B., & Agarwal, R. (1998). Recall of innocent and tendentious humorous material. *Humor-International Journal of Humor Research, 11,* 5-19.

Dews, S., & Winner, E. (1997). Attributing meaning to deliberately false utterances: The case of irony. In Ch. Mandell, & A. McCabe (Eds.), *The problem of meaning: Behavioral and cognitive perspectives* (pp. 377-414). Amsterdam: Elsevier.

Dews, S., & Winner, E. (1999). Obligatory processing of the literal and nonliteral meanings of ironic utterances. *Journal of Pragmatics, 31,* 1579-1599.

Elnatan, I. (2000). Enticement: Aesthetic effects of conventional versus innovative uses of language. Unpublished paper, Tel Aviv University (in Hebrew).

Elnatan, I. (2002). Degree of innovation and pleasure rating. Unpublished MA thesis, Tel Aviv University (in Hebrew).

Freud, S. (1905/1960). *Jokes and their relation to the unconscious.* New York: Norton.

Gibbs, R. W. Jr. (1986). On the psycholinguistics of sarcasm. *Journal of Experimental Psychology: General, 115,* 3-15.

Gibbs, R. W. Jr. (in press). A new look at literal meaning in understanding what is said and implicated. *Journal of Pragmatics.*

Giora, R. (1991). On the cognitive aspects of the joke. *Journal of Pragmatics 16,* 465-486.

Giora, R. (1995). On irony and negation. *Discourse Processes, 19,* 239-264.

Giora, R. (1997). Understanding figurative and literal language: The graded salience hypothesis. *Cognitive Linguistics, 7,* 183-206.

Giora, R. (1998a). Irony. In: J. Verschueren, J-O Östman, J. Blommaert, & C. Bulcaen (Eds.), *Handbook of pragmatics* (pp. 1-21). Amsterdam: Benjamins.

Giora, R. (1998b). When is Relevance? On the role of salience in utterance interpretation. *Revista Alicantina de Estudios Ingleses, 11,* 85-94.

Giora, R. (1999). On the priority of salient meanings: Studies of literal and figurative language. *Journal of Pragmatics, 31,* 919-929.

Giora, R. (2001). Irony and its discontent. In G. Steen, & D. Schram (Eds.), *Psychology of language: In honour of Elrud Ibsch* (pp. 163-182). Amsterdam: John Benjamins.

Giora, R. (in press). *On our mind: Salience, context and figurative language. New York: Oxford University Press.*

Giora, R., & Fein, O. (1999a). On understanding familiar and less-familiar figurative language. *Journal of Pragmatics, 31,* 1601-1618. (Special issue on 'Figurative and literal language', ed. by R. Giora).

Giora, R., & Fein, O. (1999b). Irony: Context and salience. *Metaphor and Symbol, 14,* 241-257.

Giora, R., & Fein, O. (1999c). Irony comprehension: The graded salience hypothesis. *Humor, 12,* 425-436.

Giora, R., Fein O., & Schwartz, T. (1998). Irony: Graded salience and indirect negation. *Metaphor and Symbol, 13*, 83-101.

Giora, R., Kronrod, A., Elnatan, I., & Fein, O. (2001, July). The role of salience in aesthetic creativity. Paper presented at the Eleventh Annual Meeting of The Society for Text and Discourse. The University of California, Santa Barbara.

Giora, R., Peleg, O., & Fein, O. (2001, May). Resisting contextual information: You can't put a salient meaning down. Paper presented at the international workshop Towards an Experimental Pragmatics. The University of Lyon.

Giora, R., Zur, A., & Fein, O. (in prep). Degree of innovation and pleasure rating of visual stimuli. Tel Aviv University.

Haiman, J. (1998). *Talk is cheap: Sarcasm, alienation, and the evolution of language.* Oxford: Oxford University Press.

Harrison, A. A. (1977). Mere exposure. In L. Berkowitz (Ed.), *Advances in experimental social psychology* (Vol. 10, pp. 610-646). New York: Academic Press.

Kaplan, R., & Pascoe, G. C. (1977). Humorous lectures and humorous examples: some effects upon comprehension and retention. *Journal of Educational Psychology, 69,* 61-65.

Keysar, B., Shen, Y., Glucksberg, S., & Horton, S. W. (2000). Conventional language: How metaphorical is it? *Journal of Memory and Language, 43,* 576-593.

Kreuz, J. R., Long L. D. & Church B. M. (1991). On being ironic: Pragmatic and mnemonic implications. *Metaphor and Symbolic Activity, 3(6)*, 149-162.

Kronrod, A. (2001). On the role of salience in optimal innovation: Aesthetics as a function of the old/new ratio. Unpublished MA thesis. Tel Aviv University.

Kronrod, A., Giora, R., & Fein, O. (2000, September). Creative writing: The optimal creative innovation in fixed expressions. The EARLI special interest group writing conference 2000. University degli Studi di Verona.

Kumon-Nakamura, s. Glucksberg, S., & Brown, M. (1995). How about another piece of the pie: The allusional pretense theory of discourse irony. *Journal of Experimental psychology: General, 124*, 3-21.

Kunst-Wilson, W. R. & Zajonc, R. B. (1980). Affective discrimination of stimuli that cannot be recognized. *Science, 207,* 1019-1024.

Lippman, L. G. & Dunn, M. L. (2000). Contextual connections within puns: Effects on perceived humor and memory. *Journal of General Psychology, 127,* 185-197.

Miyake, A., Just, M. A., & Carpenter, A. P. (1994). Working memory constraints on the resolution of lexical ambiguity: Maintaining multiple interpretations in neutral contexts. *Journal of Memory and Language, 33*, 175-202.

Mcaninch, C. B., Austin, J. L., & Derks, P. L. (1993). Effect of caption meaning on memory for nonsense figures. *Current Psychology-Research & Reviews, 11,* 315-323.

McMorris, R. F., Urbach, S. L., & Connor, M. C. (1985). Effects of incorporating humor in test items. *Journal of Educational Measurement, 22*, 147-155.

Mukarovský, J. (1932/1964). Standard language and poetic language. In P. L. Garvin (Ed.), *A Prague School reader on esthetics, literary structure, and style* (pp. 17-30). Washington, DC: Georgetown University Press.

Mukarovský, J. (1978). *Structure, sign and function.* Yale University Press.

Peleg, O., Giora, R., & Fein, O. (2001). Salience and context effects: Two are better than one. *Metaphor and Symbol, 16,* 173-192.

Peleg, O., Giora, R., & Fein, O. (In press). Contextual strength: The whens and hows of context effects. In I. Noveck & D. Sperber (Eds). *Experimental Pragmatics.* Palgrave.

Pexman P., Ferretti, T., & Katz, A. (2000). Discourse factors that influence irony detection during on-line reading. *Discourse Processes, 29,* 201-222.

Piven, H. (1999). Piven, *Avodot* 1990-1999 (Piven, Works 1990-1999). Tel Aviv: Am Oved.

Pexman P., Ferretti, T., & Katz, A. (2000). Discourse factors that influence irony detection during on-line reading. *Discourse Processes, 29,* 201-222.

Powell, J. P., & Andresen L.W. (1985). Humour and teaching in higher education. *Studies in Higher Education, 10,* 79-90.

Raskin, V. (1985). *Semantic mechanisms of humor.* Dordrecht: Reidel.

Rosch, E. H. (1973). On the internal structure of perceptual and semantic categories. In T. E. Moore (Ed.), *Cognitive development and the acquisition of language* (pp. 111-144). New York: Academic Press.

Shklovsky, V. (1917/1965). Art as technique. In L. T. Lemon & M. J. Reis (Eds. and Trans.), *Russian formalist criticism: Four essays,* 3-57. Lincoln, NE: University of Nebraska Press.

Schmidt, S. R. (1994). Effects of humor on sentence memory. *Journal of Experimental Psychology: Learning Memory and Cognition, 20, 953-967.*

Schmidt, S. R. & Williams, A. R. (2001). Memory for humorous cartoons. *Memory & Cognition, 29,* 305-311.

Steinhart, E. & Kittay, E. F. (1998). Metaphor. In J. L. Mey (Ed). *Concise encyclopedia of pragmatics* (pp. 576-581). Amsterdam: Elsevier.

Toplak, M., & Katz, A. N. (2000). On the uses of sarcastic irony. *Journal of Pragmatics, 32,* 1467-1488.

Unger, L. S. (1996). The potential for using humor in global advertising. *Humor-International Journal of Humor Research,* 9, 143-168.

Utsumi, A. (2000). Verbal irony as implicit display of ironic environment: Distinguishing ironic utterances from nonirony. *Journal of Pragmatics, 32,* 1777-1807.

Vaid, J., Hull, R., Gerkens, D., Heredia, & R., Martinez, F. (Novermber, 2000). The time course of script activation in verbal humor processing: Preliminary evidence. Poster presented at the 41^{st} annual meeting of the Psychonomic Society, New Orleans.

Vangiffen, K., & Maher, K. M. (1995). Memorable humorous incidents: gender, themes and setting effects. *Humor-International Journal of Humor Research, 8,* 39-50.

Weiner, J. E. (1996). Why is a riddle not like a metaphor? In J. Hulstijn and A. Nijholt (Eds.), *Automatic interpretation and generation of verbal humor* (pp. 111-119). IWCH '96. Twente Workshop on Language and Technology 12. Enschede: University of Twente.

Yus, F. (1998). A decade of relevance theory. *Journal of Pragmatics, 30,* 305- 345.Zajonc, R. B. (1968). Attitudinal effects of mere exposure. *Journal of Personality and Social Psychology, 9,* 1-27.

Zajonc, R. B. (1980). Feeling and thinking: Preference need no inferences. *American Psychologist, 35,* 151-175.

Zajonc, R. B. (2000). Closing the debate over the independence of affect. In J. P. Forgas (Ed.), *Feeling and thinking: The role of affect in social cognition* (pp. 31-58). Cambridge, United Kingdom: Cambridge University Press.

Ziv, A., Gorenstein, E. & Moris, A. (1986). Adolescents' evaluation of teachers using disparaging humour. *Educational Psychology, 6,* 37-44.