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Zeugma: Prototypes, Categories, and Metaphors

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Literal sentences use preferred word orders, in which prototypical members of taxonomic categories (e.g., *an orange*) precede nonprototypical ones (e.g., *a lemon*), rather than vice versa (as in *The man bought an orange and a lemon in the grocery store*; Kelly, Bock, & Keil, 1986). Similar word orders are also preferred in metaphorical expressions (e.g., *milk precedes kisses* in *"The boy swallowed milk and kisses in his warm bed"*). Sentences that violate this tendency are more frequently inverted in recall than those that do not. This word order is used more frequently in poetry.

Metaphors have some of the properties of literal statements that are concerned with classification (Glucksberg & Keysar, 1990; Honeck, Kibler, & Firment, 1987; Shen, 1992, 1997b). *"My job is a jail"* uses *jail* as a prototypical example of an unpleasant, confining situation, which is an ad hoc category (Barsalou, 1983). Hence, some of the principles at work here should be the major principles underlying natural common categorization (as proposed in Shen, 1997b). This article focuses on a different aspect of categorization that has only been partially examined (Shen, 1992, 1997b), namely, prototypicality structure.

Expressions using several examples of a category have a standard word order in many cases (e.g., *oranges and lemons*). Although *lemons and oranges* makes sense, the reverse order is preferred. These preferred orders may be as pertinent to tropes as they are to literal language. If so, they may be reflected in several aspects of figurative language, because figurative language often calls on specific orders of words. Zeugma, notably, generally uses at least two nouns following a verb and a preposition (e.g., *"She went down the road in a flood of tears and a taxi"*). In this

instance, the reverse order still makes sense: *"She went down the road in a taxi and a flood of tears."* However, there may still be a preference for one order over another—the first order seems more amusing, pithy, and elegant. One can be transported by a flood or a taxi, although one carries us away in an unintended fashion. At times, one of the two nouns may be a standard or prototypical example of a category and so, besides matters of style and pithiness, there may be principles of categorization at work here. In short, the word order in zeugma may often have a preference, despite the fact that comprehension could often rest on either order.

Kelly, Bock, and Keil (1986) examined the relations between prototypicality and sentence structure in recall and preference ratings, using sentences such as *"The man bought an orange (lemon) and a lemon (orange) in the grocery store."* They discovered that sentences in which the prototypical member preceded the less prototypical one were judged as more natural than their inverse. Moreover, Kelly et al. pointed out that the latter were systematically changed in recall with prototypical instances of categories placed before nonprototypical instances. This study, then, suggests the following precedence of prototypical member principle: Prototypical members of a taxonomic category represented by the sentence predicate tend to precede nonprototypical members.

My goal here is to examine whether this principle can be extended to the structure of zeugma, which is a special case of metaphorical categorization (see Shen, 1997b).

PROTOTYPICALITY AND ZEUGMA STRUCTURE IN RECALL

A zeugma (e.g., *"She caught an airplane and a husband"*) constitutes a type of metaphorical category (see Shen, 1997b) in which the predicate represents the category label and its arguments represent the members or instances of that category. Consider the example *"The boy swallowed milk (kisses) and kisses (milk) in his warm bed."* Here, the predicate represents a category (things one swallows), whose members are *milk* and *kisses*. The question of interest now becomes whether the precedence of prototypical member principle may be extended to cases of zeugmatic structure as well. In other words, assuming that *milk* is more prototypical than *kisses*, would *milk and kisses* represent a more basic or natural order than *kisses and milk?*

This is the main question addressed in this article. I examine this question from two different but complementary perspectives. I report a recall experiment in which the recall of standard versus nonstandard structures was measured. In addition, I report on a large-scale analysis of the distribution of standard versus nonstandard sentences in natural poetic discourse (which involves the production of these structures).

To answer this question, I conducted a recall experiment that replicates Kelly et al.'s (1986) recall experiment design, this time using metaphorically related concepts. The main hypothesis was that the precedence of prototypical member principle may be extended to metaphorically related concepts as well, and that an identical pattern to that obtained in Kelly et al.'s experiment would be found. More specifically, my prediction was that the sentences would be systematically changed in recall, with prototypical instances of categories being mentioned before nonprototypical instances.

EXPERIMENT 1

Method

Participants. Forty-six undergraduates from Tel-Aviv University with a mean age of 28 years participated in the experiment. All participants were native Hebrew speakers who volunteered to complete the questionnaire during a class.

Materials. The stimulus set consisted of 14 question–answer pairs. (A sample of the pairs used in the experiment is presented in Table 1.) Consider, for example, the following pair:

Question: *What did the boy do in his warm bed?*
Answer: *"In his warm bed the boy swallowed milk (or kisses) and kisses (or milk)."*

TABLE 1
Sample of Pairs Used in Experiment 1 (Translated From Hebrew)

1. What did the soldier do on his way to war?
   On his way to war, the soldier packed his sadness (shirt) and his shirt (sadness).
2. How did Ronit arrive?
   Ronit arrived at the party with a friend (a smile) and a smile (a friend).
3. What did the baby do?
   The baby swallowed milk (kisses) and kisses (milk).
4. What did the man dream?
   The man dreamed that he crossed his love (road) and his road (love).
5. What happened in the opening scene of the movie?
   In the opening scene the hero smelled a flower (light) and a light (flower).
6. What did the farmers do?
   The farmers sowed seeds (hopes) and hopes (seeds).

Here, the predicate *swallowed* (in the answer) establishes the category of *things to be swallowed* (literally or metaphorically), of which *milk* and *kisses* are members. Of these, *milk* (typically the literal noun with respect to the predicate) represents a prototypical member of this (ad hoc) category, whereas *kisses* (typically the metaphorical noun) represents a (relatively) nonprototypical member. The prototypicality of each noun relative to its corresponding predicate was determined by three independent judges (undergraduate students in the department of Poetics & Comparative Literature at Tel Aviv University) who reached an agreement of 90% (with most disagreements resolved through discussion among the judges).

Using these 14 pairs, two booklets were composed, each containing 14 sentences from the 14 item pairs. In Booklet 1 half the sentences displayed the *canonical order* (i.e., the highly prototypical noun was placed first, followed by the low-prototypical noun). The other half of the sentences in Booklet 1 consisted of the inverse order. The 14 sentences in Booklet 2 were the counterparts of those in Booklet 1; each sentence in Booklet 1 had its counterpart (same item, opposite order) in Booklet 2. The order of the sentences in each booklet was randomized. In addition, two additional booklets, 3 and 4, were created, similar to 1 and 2 with the sentences in different orders. This counterbalancing of the items in each booklet is a major improvement of experimental design compared with a related experiment I reported elsewhere (see Shen, 1997b). In the previous experiment the items were not fully counterbalanced; that is, there was only one booklet that contained 14 sentences, half of which displayed the canonical order and the other half the inverse. Thus, in the previous experiment, each participant read either the canonical order or of each pair or its inverse. In contrast, the items in this experiment were fully counterbalanced; that is, each of the 14 sentences in Booklet 1 had its counterpart (same item, opposite order) in Booklet 2. In addition, in the current experiment I created two additional booklets (3 and 4), similar to the first two except that the sentences in each were presented in a different randomized order. These additional booklets were not included in the previous experiment.

Each booklet opened with the following instructions: "You will receive a list of questions and answers. Read them carefully. Try to remember the answers correctly since you will be later asked to recall them as accurately as you can." Following the instructions, the 14 pairs of questions and answers appeared. The questions in the pairs consisted of the "framing" part of each sentence. For example, the question for the previous example (*"In his warm bed the boy swallowed milk/kisses and kisses/milk"*) was *What did the boy do in his warm bed?* These questions were constructed to serve as cues for recall, without any mention of either the category names or the nouns. The final part of the booklet instructed the participant to remember the booklet number (1, 2, 3, or 4), and to write it down on the sheet of paper he or she was about to receive for the recall task.

Procedure. Participants were tested in two groups of 24 and 22 participants. The procedure included exposure and recall stages. During exposure, each participant was given one of the four booklets and asked to read it without time limitation. After finishing reading, the participants were asked to return the sheets of paper containing the question-answer pairs and were reminded that they would be given a series of questions regarding the sentences they had read. They were then asked to answer the questions as accurately as they could on the basis of what they remembered from the previous stage.

Results

Each participant received four scores based on his or her recall answers:

1. Recall measure for canonical sentences; that is, the number of nouns the participant recalled of the total number of sentences presented in canonical order at the exposure stage (regardless of order of presentation at the recall stage).

2. Recall measure for noncanonical sentences; that is, the number of nouns the participant recalled of the total number presented in noncanonical order at the exposure stage (regardless of order of presentation at the recall stage).

For both recall measures, only those sentences in which the two nouns were accurately recalled were scored. Sentences that were partially recalled (i.e., those in which none or only one of the nouns was given) were not counted.

3. Inversion measure for canonical order; that is, the number of cases in which the participant inverted the order of nouns presented at the exposure stage in a canonical order (prototype first).

4. Inversion measure for noncanonical order; that is, the number of cases in which the participant inverted the order of nouns presented at the exposure stage in a noncanonical order (prototype second).

The possible range for each type of inversion score was from 0 to 7, as each participant was exposed to 7 canonical and 7 noncanonical sentences.

A repeated measures analysis of variance was performed. As can be seen in Table 2, the number of cases in which participants inverted the original order of the nouns they had read for sentences with noncanonical order (nonprototype first) was significantly higher than for those with canonical order, $F(1, 45) = 24.80, p < .0001$.

To rule out the possibility of difference between the two booklets, we performed the same analysis separately for each booklet; the same results were obtained (see Table 3).

As is evident from Table 4, no difference was found between the number of items recalled, depending on the linear position of the prototype, in the exposure

TABLE 2
Numbers of Pairs Reversed

Sentence Type	M	SD
Prototype first	0.478	0.809
Nonprototype first	1.760	1.537

Note. N = 46.

TABLE 3
Analysis Performed Separately for Each Booklet

Booklet No.	Sentence Type	Recall		Inverse	
		M	SD	M	SD
Booklet 1	Prototype first	3.782	2.087	0.478	0.845
	Nonprototype first	4.434	1.646	1.565	1.199
Booklet 2	Prototype first	4.347	2.207	0.478	0.790
	Nonprototype first	4.173	1.613	1.956	1.821

Note. N = 46.

TABLE 4
Numbers of Pairs Recalled

Sentence Type	M	SD
Prototype first	4.065	2.143
Nonprototype first	4.304	1.617

Note. N = 46.

TABLE 5
Analysis of Items

Sentence Type	Recall		Inverse	
	M	SD	M	SD
Prototype first	0.606	0.159	0.077	0.042
Nonprototype first	0.645	0.177	0.264	0.143

Note. N = 46.

phase, $F(1, 45) = 0.71$, $p > .403$. Similar results were obtained using the same analysis separately for each booklet (see Table 3).

Analysis of Booklet 1 ($n = 23$ participants) for the recall measure yielded the same results, $F(1, 22) = 2.53$, $p < .126$, and for the inverse measure, $F(1, 22) = 13.64$, $p < .0013$. For Booklet 2 ($n = 23$), for the recall measure, $F(1, 22) = 0.21$, $p < .65$, and for the inverse measure, $F(1, 22) = 9.99999$, $p < .001$.

To rule out the possibility that specific items (and not a general phenomenon) were responsible for the results, another analysis was performed in which the specific items were used as a repeated variable, thus held constant. The dependent variable was the percentage of participants who recalled each item, depending on the order of its presentation (whether the prototype appeared in an initial or noninitial position), and similarly, the percentage of participants who reversed each item, regardless of order of presentation. This analysis yielded the same pattern: No difference was found in the recall measure between recall of the two orders, $F(1,13) = 1.28$, $p < .278$ (see Table 5 for means and standard deviations). In contrast, the inverse measure yielded a significant difference: Participants tended to invert more items from the noncanonical order than from the canonical, $F(1, 13) = 19.66$, $p < .0007$.

Discussion

The participants reversed the order of the two nouns in each sentence when these initially deviated from the canonical order. The results thus provide support for the claim that the principle concerning the initial position of prototypical members can be extended to the zeugma structure.

Interestingly, recall was not significantly improved as a function of noun presentation order. Note, however, that in the Kelly et al. (1986) study, the recall measure did not yield an unequivocal result, with only one type of sentence examined (phrasal conjunct) revealing a significant difference in recall, and with no such difference found for declarative sentences. A possible explanation for this result is that two conflicting factors influenced recall; on the one hand, the naturalness of the canonical order enhanced recall, yet on the other hand, the less natural order may have caused participants to spend more cognitive effort to comprehend the noncanonical sentences, enhancing recall as well. These conflicting factors may have resulted in the nonsignificant difference in recall of the two sentence types.

The fact that people tend to invert the order of the two nouns in noncanonical sentences more than in canonical ones may indicate that the latter represent a more natural or basic structure than the former. If this is indeed the case, one would expect

such structures to be used more frequently than their inverse in natural discourse. To test this general hypothesis, a large-scale analysis of natural discourse was conducted.

PROTOTYPICALITY, ZEUGMA, AND NATURAL DISCOURSE

In what follows, I summarize the main findings of a textual analysis of a sample of poetic zeugmas conducted in a previous study (Shen, 1997a). It should be emphasized that the theoretical goals and conceptual framework of the previous analysis differ from those of this one. The corpus of natural discourse selected was poetic discourse. This particular type of discourse is worthy of examination mainly because it constitutes a natural type of discourse. Although poetic discourse is planned discourse, it nevertheless constitutes a natural discourse, as opposed to the artificially constructed pieces of discourse commonly used by cognitive psychologists. For instance, Graesser, Gernsbacher, and Goldman (1997) stated: "An adequate model of discourse comprehension would generalize to naturalistic texts rather than being restricted to experimenter-generated 'textoids'. One of the current trends is to explore the process of comprehending actual literary texts" (p. 316).

Furthermore, many literary scholars maintain that poetry makes creative, novel use of language; if anything, one would expect poetic language to employ more frequently the less natural structure. If, in fact, we discover the language employed in poetry conforms to the stated cognitive principle, this may provide even stronger evidence for our hypothesis than would the same finding in any other natural discourse.

The question we would thus like to examine is, do standard zeugmas appear in poetic discourse more frequently than their counterpart, beyond specific context?

EXPERIMENT 2

Description of the Corpus Analyzed

A sample consisting of 350 zeugmas was selected from (a) five different poetic corpora representing different stages in the history of Hebrew poetry and (b) the writings of the American poet Allen Ginsberg. The Hebrew sample belonged to the corpus of modern Hebrew poetry spanning the first 80 years of the 20th century. The poets represented were prominent poets from different historical periods in the evolution of Hebrew poetry. These periods also vary substantially from one another

with respect to their ascribed poetic characteristics. Thus, it is fair to assume that any structural pattern found throughout the analysis cannot be attributed to contextual factors such as a particular poem, a particular poet, a particular generation or school of poets, and so on. For similar considerations, see Ultman's (1957) study of the poetic synaesthesia and Shen's (1987) study of the poetic oxymoron.

Furthermore, in order to enable generalization of these data, a large sample of zeugmas was extracted from the poetry of an American poet known for his use of the zeugma, Allen Ginsberg. Ginsberg was studied in an attempt to examine whether any generalization regarding the Hebrew corpora would equally apply to a poet outside the boundaries of Hebrew poetry.

The extent to which zeugmas were used varied significantly from poet to poet: Some used them abundantly, whereas others did so infrequently. To avoid biasing the corpus analyzed, researchers collected as many zeugmas as they could find in one of the most known collections of poems of each poet included in the five corpora comprising the Hebrew sample. Three of the corpora were poems of representative poets of three major periods in modern Hebrew poetry who used a relatively large number of zeugmas: Alterman, from the Modernist period; Amichai, from the State-Era period; and Viseltir and Volach, from the Era of the Eighties. In addition, zeugmas that appeared in the poetry of seven other major poets belonging to various periods of Hebrew poetry were collected, with a range of two to nine zeugmas collected for each poet.

All 350 zeugmas were analyzed as follows. First, the term *zeugma* was explained and demonstrated to two independent judges (undergraduate students in the humanities at Tel Aviv University), as was the concept of the *ad hoc category* represented by the zeugma's predicate. The judges were then given all the zeugmas and instructed as follows: "Mark all zeugmas whose members differ regarding prototypicality, within the ad hoc category represented by the predicate of the zeugma." As an example, they were given the zeugma *"I packed my shirt and sadness."* "I retained only those cases in which the judges agreed that the arguments contained in the zeugmas differed with respect to their prototypicality. This left us with 240 zeugmas, divided as follows: Alterman, 19 zeugmas; Amichai, 51; Viseltir, 50; the seven other Israeli poets, 37; and Ginsberg, 83.

These 240 zeugmas were submitted to two other independent judges (again, undergraduate students in the humanities at Tel Aviv University). They were asked to sort these zeugmas into two groups: those that consist of prototype first, nonprototype second order (the standard order) and those that consist of nonprototype first, prototype second order (the inverse order). They were given examples for each of these types. Their judgments were compared and showed a high rate of matching (approximately 90%). Most differences were resolved following discussion among the judges, and agreement was reached in approximately 95% of the cases. The few cases for which no agreement was reached were discarded.

TABLE 6
Overall Summary of the Prototype First Versus Nonprototype First Zeugmas in the Six Poetic Corpora

Zeugma Type	Alterman %	Amichai %	Viseltir %	Volach %	7 Poets %	Ginsberg %	M %
Prototype first	79	84	84	79	78	78	81
Nonprototype first	21	16	16	21	22	22	19

Results and Discussion

The results are shown in Table 6. Approximately 83% of the zeugmas conformed to the standard, prototype-first order, whereas only 17% consisted of the opposite order. As shown, this pattern is consistent across the six literary corpora examined. In particular, it should be emphasized that the variability among corpora was relatively low, ranging between 78% and 84% for the standard order, versus 16% to 22% for the inverse order.

For each corpus, the hypothesis that the distribution of the zeugmas is random was tested using the binomial distribution. For all six corpora (five major poets and the group of seven poets) the results were significant. Thus, the zeugmas do have a directionality as hypothesized: Natural discourse makes far greater use of standard zeugmas than of nonstandard ones. The results were as follows: Alterman, $p < .02$; Viseltir, $p < .001$; Amichai, $p < .001$; Ginsberg, $p < .001$; and seven poets, $p < .002$.

A chi-square analysis of the frequencies of the standard versus nonstandard zeugmas for each of the six corpora (Table 6) revealed that these two variables (noun order and poetic corpus) were independent of each other, $\chi^2 (4, N = 350) = 1.8, ns.$

PROTOTYPICALITY AND SIMILES

Comparisons of several examples of a category have been previously shown to be directional—for example "Poland is like Russia" (see, e.g., Tversky, 1977). Although "Russia is like Poland" makes sense, Tversky and Gati (1978) argued, based on a series of well-known studies of similarity judgments, that the order of the first comparison ("Poland is like Russia") is preferred (as making more sense, showing higher similarity between the two terms, etc.) to its inverse ("Russia is like Poland"). Note that Russia is a more prototypical member of the category communist countries than is Poland, and this difference in prototypicality is responsible for the asymmetry. Such a structure better conforms to one of the

communicative functions of comparisons (see, e.g., Ortony, 1979), namely, to extend the addressee's knowledge about a lesser known or less salient concept by comparing it to a known, salient concept. The preference principle underlying this directionality is the *directionality principle*, which states that prototypical members of a taxonomic category tend to occupy the topic position, rather than vice versa.

Turning to metaphorical categorization, a corresponding asymmetry is found when metaphorically related concepts are introduced in a comparison structure such as a simile, namely, a comparison between concepts belonging to different taxonomic categories as in "Rage is like a volcano." Under this analysis, the comparison's ground (e.g., *erupting unexpectedly and violently*) fills a similar function to that of the zeugma's predicate, namely, representing a category of which the concepts comprising the comparison can be viewed as members. Thus, *erupting unexpectedly and violently*, presumably the ground of the previous example, can be viewed as representing the ad hoc category of *things that erupt violently and unexpectedly*, and the comparison's two terms (*rage and a volcano*) as members of that category (see Glucksberg & Keysar, 1990; Shen, 1997b).

Ortony, Vondruska, Foss, and Jones (1985), in discussing the structure of similes, pointed out that similes exhibit a high degree of asymmetry; when reversed, metaphorical comparisons yield either an anomalous reading or an entirely different interpretation (see Glucksberg & Manfredi, 1995). In short, it has been shown that the same categorization phenomenon regarding the relations between prototypicality and asymmetry applies equally to metaphorically and taxonomically related concepts (see Shen, 1992, 1997b).

PROTOTYPICALITY AND SIMILES IN NATURAL DISCOURSE

What we have seen so far is that the structure of metaphorical comparisons, like that of their literal counterparts, is constrained by the prototypicality structure of the concepts compared. Thus, the structure in which the *B* term is more natural or basic than the *A* term, with respect to their shared category, is more natural or basic from a cognitive perspective than its inverse. Let us label these the *standard* and *reversed* structures, respectively.

If standard similes are preferred over nonstandard ones as representing a more natural or basic order than their inverse, one would expect the former to be used in natural discourse more frequently than its reversed counterpart. To test this general hypothesis, I conducted a large-scale analysis of poetic discourse; the same considerations that led me to examine this particular type of discourse in the case of zeugma apply to this analysis as well.

EXPERIMENT 3

The analysis was conducted on a selection of 201 similes from four corpora of Hebrew poetry. This represents a segment of a larger analysis conducted for different purposes and fully reported elsewhere (see Shen, 1995). The similes were all *closed* similes; that is, similes in which the ground was explicitly stated (as in *"The fog scratching its back like a cat"*). This was done to allow for the judgment of the prototypicality of the simile's topic and vehicle to make use of the ground as the category label relative to which prototypicality was determined.

The four poetic corpora were as follows. The first group (72 similes) was selected from a corpus consisting of poems published during the period known as the Revival of Hebrew poetry by the following major poets: Chaim Nakhman Bialik, Ya'akov Steinberg, Saul Tschernikhovsky, and Zalman Shneor. The second group (36 similes) represents the Modernist generation of Hebrew poets and includes poetry by Avraham Shlonsky, Nathan Alterman, Leah Goldberg, and Alexander Penn. The next group (36 similes) was drawn from poetry written in the 1960s by those known as the State-Era poets: Nathan Zach, Yehuda Amichai, David Avidan, and Uri Bernstein. The last group (57 similes) was selected from Hebrew poetry published during the 1980s by the following poets: Yonah Volach, Dalia Rabikowitz, Yehuda Amichai, and Yair Horowitz.

The 201 similes were selected by simply extracting the first closed similes found in one of the most known collections of each poet.

Procedure

The 201 similes were analyzed on the prototypicality scale. We compared the number of instances in which the mapping is from a more prototypical to less prototypical component, as in *"A flock of birds leaves a trail like a jet plane"*—with the number of mappings from the less to the more prototypical term as in *"The fire is hot like a cloud."*

Scoring. In order to measure the distribution of the standard versus reversed structures, the following scoring method was used. Four independent judges (undergraduate students from Tel Aviv University) were given a 4-point scale of prototypicality ranging from 1 (the lowest score) to 4 (the highest prototypicality), and they were asked to score the concepts comprising the 201 similes for prototypicality. Two judges scored the similes from the first two corpora, whereas the other two scored the remaining two corpora.

The criterion given to the judges for determining the prototypicality of a given concept (relative to its category, represented by the simile's ground) was the extent

to which the concept in question could be regarded as a prominent (prototypical) member of the category represented by the simile's ground. For example, in the simile *"The fog scratching its back like a cat,"* the ground *scratching its back* constitutes an ad hoc category (i.e., *things that scratch their backs*) of which *cat* is a more prototypical member than *fog*. In contrast, in the simile *"Evening skies stooped like the blowing of a trumpet,"* the category constructed is *things that stoop;* in such a category neither *evening skies* nor *the blowing of a trumpet* are viewed as prototypical members.

Those concepts that scored lower (1 or 2) were classified as nonprototypical, whereas those identified as belonging to the higher levels (3 or 4) were classified as prototypical.

Prior to the analysis, all four judges were asked to provide their judgments with respect to 60 randomly chosen samples to establish their reliability. Their judgments were compared and showed a relatively high rate of matching (75%). Most differences were resolved following discussion, and agreement was reached in 90% of the cases. (In almost all the remaining cases, the difference between judgments was not higher than 1 point on the 4-point scale.) The judges were asked to provide their assessments. The agreement within each pair of judges reached 85%, with disagreements usually resolved through discussion. In the small number of cases in which no agreement was reached, the similes were replaced by new ones.

Results and Discussion

The metaphorical comparisons selected from the corpus were divided into standard structure, in which a prototypical concept is mapped onto a nonprototypical one, and reversed structure, in which a nonprototypical concept is mapped onto a prototypical one.

To summarize the results presented in Table 7, of the 201 similes, 106 showed varying levels of prototypicality in the following distribution: 77 (73%) displayed a nonprototypical–prototypical structure, whereas 29 (27%) displayed the prototypical–nonprototypical structure. The remaining 95 similes included 79 (83%)

TABLE 7
Overall Summary of Types of Structures According to Generations of Poets

Comparison Type	Revival		Modernist		1960s		1980s		Sum (M)	
	n	%	n	%	n	%	n	%	n	%
Standard	19	66	15	85	19	79	24	69	77	73
Reversed	10	34	3	15	5	21	11	31	29	27

nonprototypical–nonprototypical similes and 16 (17%) prototypical–prototypical; these are not presented in Table 7.

Recall that the hypothesis tested here is that the distinction of simile structure deviates from chance distribution across all four corpora. The hypothesis was confirmed for the four corpora considered together ($p < .001$). A chi-square analysis of the frequencies of the standard versus nonstandard orders in the four eras revealed that the two variables, order and era, were independent of each other, χ^2 (3, $N = 201$) = 2.55, ns.

The hypothesis was also tested in each corpus in itself using the binomial test. For three of the four corpora, the results were significant, consistent with the hypothesis stated earlier: The standard similes (nonprototypical–prototypical) outnumbered by far the nonstandard, inverse structure (Modernism: $p < .01$; 1960s: $p < .01$; 1980s: $p < .05$). The results of the test for the Revival corpus were not statistically significant, but observation of the data reveals a clear tendency to prefer the standard similes here as well: 19 of the cases consisted of the standard structure, whereas only 10 consisted of the nonstandard type.

The main findings of this analysis indicate that the poetic simile is highly constrained with respect to the distribution of various possible structures, with the frequency of use of standard structures significantly outranking the use of the reversed type.

A closer look at the four periods analyzed (see Table 7) provides even further support for this conclusion. This pattern was consistent across the four literary corpora examined. In particular, it should be emphasized that the variability among corpora was relatively low, with the prototypicality scale between periods ranging from 66% to 85% for the standard nonprototype–prototype structure and from 15% to 34% for the reversed structure.

These results suggest that literary figures are not solely governed by contextual constraints. Such a view seems to predict that different literary schools, represented here by the four poetic corpora, differ significantly in their use of literary figures. If the contextual-constraint theory was correct, the specific use of similes by the different schools would have been different. However, the differences among the four schools are far from statistically significant. We may therefore conclude that there are certain important aspects of similes that are not contextually governed.

GENERAL DISCUSSION

The prototype structure of categorization constrains certain aspects of the use of the two types of metaphoric and literal expressions analyzed in this article, zeugma and simile. It was observed that in zeugmas, prototypical concepts of a common

taxonomic category represented by the sentence predicate tend to precede nonprototypical concepts, and that in similes less prototypical and more prototypical members of a given category tend to be inserted into the topic and vehicle, respectively. It was suggested that the principles underlying these preferences are shared by both common and metaphoric categorization (Shen, 1995, 1997b). Empirical evidence regarding aspects of metaphor comprehension (e.g., based on recall experiments) was introduced to provide some support for this argument.

The use of a standard, well-known item to describe a lesser known item is a common phenomenon in various contexts of communication and learning (see, e.g., Lakoff, 1987; Rosch, 1975). That is, communication is generally designed to inform the addressee about that which he or she is less familiar with, by means of what he or she does know. For example, assuming my addressee knows little of my grandfather, I would use a phrase like *"My grandfather is a bit of a Napoleon"* to extend the listener's knowledge about the topic or to highlight specific aspects of it. Hence, when receiving communication about something new or something that is highlighted, people will usually recall the word order by putting the prototype first. The natural tendency is therefore to look at the vehicle word in the pair and to ask of what category is this a standard example.

Arguably, it is not the vehicle word itself that makes it a standard example for a category, as its place in the vehicle's position. For example, in *oranges and lemons*, the word *lemons* is presumably a standard example for a category that *oranges* is not. Thus, it would be reasonable to start the pair with *oranges* only when we want someone to think of the category for which *oranges* is the standard example. In a context in which *lemons* represent the standard of a category, it would be more appropriate to start the pair with *lemons* than with *oranges*. These possibilities were not examined in this study, which focused instead on expressions in which the predicate (e.g., *packed*), specifying the category in question (*things one packs*), was explicitly stated in regards to both items in the pair (e.g., *shirts and sorrow*). It is indeed possible that for yet other potential predicates the word order of the pair may have been reversed.

Note, too, that accounting for metaphorical expressions in terms of categorization is restricted to certain aspects of categorization but not to others. For example, we do not expect all the implications of a category to follow when we use metaphoric categorization: "*Surgeons are butchers*" does not imply that surgeons are shopkeepers, even though butchers are shopkeepers (see Kennedy, 1993, pp. 19, 221–222).

This may explain why even young children, when presented with a comparison between infection and war, tend to reject the inference that white blood cells wear uniforms (as do soldiers), although, amusingly enough, they do infer from that analogy that white blood cells can die from an infection, that the cells feel sorry when they hurt germs, that the cells think germs are bad, and so on (Vosniadou &

Ortony, 1986). What I have shown is that some matters related to categorization do have implications we expect to follow in the trope. Specifically, prototype affects word order in zeugma. Furthermore, this order may often be affected by the specific purpose of the text as well and not just by the familiar word order.

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