Cognitive constraints on verbal creativity: the use of figurative language in poetic discourse.

Yeshayahu Shen
Department of Poetics & Comparative Literature
The program of cognitive study of language and its uses
Tel Aviv University

INTRODUCTION: Traditional approaches to cognition and figurative language in poetic discourse

What is the role played by the human cognitive system in processes underlying the use of figurative expressions in poetic discourse?

This question has a long history in modern literary theory and in the cognitive sciences, as well as in the "interface" areas between these two, namely, the empirical study of literature (e.g., Miall and Kuiken 1990; 1994; Steen 1994); cognitive linguistics (Lakoff & Johnson 1980; Gibbs 1994); cognitive poetics (Tsur 1992); and the cognitive theory of metaphor (Freeman 1995).

Here, I would like to outline and illustrate a theory called "The Cognitive Constraints Theory" (CCT), which I have been developing over the last several years. In general, this theory attempts to account for certain regularities exhibited by figurative language in poetic discourse by suggesting that these regularities reflect a "compromise" between, on the one hand, aesthetic goals of creativity and novelty and on the other, a conformity to cognitive constraints that ensure its communicability.

I will begin by briefly pointing out three traditional views regarding the relationship between cognition and poetic structures in general. I will then outline the "CCT" (Cognitive Constraints Theory"), and will illustrate it by discussing the use of three figures of speech. Finally, I will link this theory to current views in the cognitive sciences.

One may make the following distinctions between three major approaches among the various theories addressing the issue of the role played by cognitive principles in the structure and use of poetic structures in general and figurative structures in poetry in particular:

1. ***The foregrounding approach.*** This approach, widely held by various literary critics, art psychologists, philosophers and others, maintains that stylistic properties of poetic structures (which include stylistic properties of

figurative structures) violate and deform cognitive principles in order to achieve effects unique to poetic discourse (e.g., Shklovsky, 1965; Mukarovsky, 1970). According to this view, the goal or function of poetic discourse is to create "poetic effects" in the readers and that this is achieved by deforming or violating the normal (or regular) cognitive processes and principles. Thus, according to Shklovsky, a major proponent of this view, the technique of art's goal "...is to make the object 'unfamiliar', to make forms difficult, to increase the difficulty and length of perception, because the process of perception is an aesthetic end in itself and must be prolonged" (Shklovsky, 1965:12).

Therefore, according to this approach, poetic discourse represents an 'organized violence' against cognitive processes, to paraphrase a sentence introduced by Shklovsky, a major proponent of such a view. A number of studies (e.g., Miall & Kuiken 1994; Van-Peer 1986, Steen 1994) have provided some empirical support for that view.

2. ***The poetic effect approach.***   A second approach, which can be considered a more developed version of the "foregrounding approach", maintains that poetic discourse "exploits, for aesthetic purposes, cognitive processes that were initially evolved for non-aesthetic purposes..." (Tsur 1992; 4). According to this point of view, readers of poetic discourse attempt (not necessarily consciously) to apply normal cognitive strategies to the poetic discourse they read. However, these strategies fail owing to non-conventional or irregular structures that tend to appear in those same poetic texts, resulting in the emergence of certain "poetic effects".

3. ***The conventionalist approach.***   A third approach maintains that poetic discourse requires unique cognitive processes and principles. Actually, this approach does not contradict the previous approach but rather highlights another aspect of the role played by human cognition and poetic discourse. Note that the previous approach of "violence against cognitive processes" emphasizes the very deformation, violation or interference with normal cognitive processes without necessarily committing itself to any particular position regarding the question of whether or not normal cognitive principles are replaced by other principles, let alone specifying the latter. In contrast, the "unique cognitive principles and processes" approach maintains that poetic discourse requires unique or special principles and processes. According to this approach, the reader has at his/her disposal various series of "reading strategies", each pertinent to a different type of discourse (poetic, non-poetic, informative, etc.), and once the reader of a given discourse has identified the material as a poetic or literary discourse, he or she "switches" to the pertinent mode of reading, namely, making use of those reading conventions or principles that are pertinent to that specific type of discourse (see e.g., Culler, 1976; Schmidt 1982; Steen 1994, for an elaboration of this view).

The CCT (cognitive constraints theory)

Theoretical considerations

Note that all of the aforementioned approaches assume that poetic structures do not conform to "regular" or "normal" cognitive rules, and\or that the cognitive processes involved in reading a poetic discourse differ radically from those involved in reading ordinary discourse. The combination of this characteristic of poetic structures and the way these structures are comprehended by readers of poetic discourse makes it possible for poetic discourse to attain aesthetic goals and purposes.

However, poetic discourse is not only 'poetic'. It is also a 'discourse', namely, a text to be communicated to the readers. In order to be communicated, it has to conform to certain communicative, and in particular cognitive (as well as linguistic) principles, that is, to general principles that are not unique to poetic discourse. This means that in addition to assuming that poetic discourse exhibits properties such as creativity and novelty, one may also assume that a prerequisite for achieving these poetic effects is that poetic discourse must conform to certain cognitive principles that may allow that discourse to be communicated. This could suggest an important area of research which would complement previous areas of research regarding the role played by cognitive principles in poetic discourse: **The investigation of those aspects of poetic discourse that do conform to general cognitive principles**.

Although some (perhaps all) of the previously mentioned approaches may also (usually in an implicit manner) share the assumption that aspects of poetic discourse conform to general cognitive principles, there has only been very small amount of research devoted to the examination of this issue. Perhaps the reason for this lack of research in this area is that literary critics, as well as some cognitive psychologists interested in the empirical study of poetic discourse (e.g., Shklovsky 1965; Miall & Kuiken1990), is that researchers were focusing predominantly on the creativity and novelty attributed to poetic discourse which make poetic discourse unique and different from other discourse types, rather then on the cognitive constraints on that creativity and novelty.

The major goal of the current paper is to outline the theoretical and methodological framework, the CCT, whose object it is to account for both the creativity (novelty) and the communicability of figurative expressions used in poetic discourse, notably, oxymora, similes, synaesthesia, and zeugma.

In general, this theory makes the following two complementary claims:

1. **Some types of figures of speech (e.g., oxymoron, simile, synaesthesia) used in poetic discourse exhibit general definable regularities regarding their linguistic structure across poetic contexts. More specifically, certain structural options (among a larger set of "permissible") are used more frequently in poetic discourse than others, regardless of the specific context (poem, poet, school of poets, historical period, or even language).**

2. **From a cognitive perspective, the more frequently used structural options represent more "basic" (e.g., simpler, more natural, easier to comprehend and recall) than their less frequently used counterparts.**

The first claim point out the existence of certain regularities exhibited in the use of figurative language in poetic discourse, while the second claim suggests a cognitive account for those regularities. Taken together, these two claims complement the aforementioned approaches by introducing the possibility that basic cognitive principles underlie the use of figurative language in poetic discourse.

Methodological considerations
In the next section I will illustrate the theoretical and methodological framework of the CCT by analyzing three major poetic figures, namely, the *zeugma*, the *synaesthesia* and the *oxymoron*. However, before embarking on this enterprise, let me introduce a few methodological considerations regarding the two major claims made by the CCT theory that will be applied to the analysis of each of the four figures. Recall that the first claim suggested that certain structural options drawn from the formally (linguistic) permissible class of structures for each of the figures in question, are used more frequently in poetic discourse. In order to substantiate this claim, each figure has to be analyzed to determine its level of analysis, as well as its available structural options. Such an analysis yields the formally permissible set of optional structures that can be used by each of the four figures. Subsequently, a textual analysis of a large poetic sample (in this case Hebrew and English poetry as well as additional poetic corpora written in other languages) is analyzed to ascertain whether the permissible options are more frequently used, regardless any specific context (text, poet, school or period).

Let me briefly justify the rationale behined this methodology of textual analysis, which is admittedly highly unusual in literary research. The question is: How can we generalize from tendencies of a given poetic corpus (e.g., Hebrew or English poetry) to poetry in general?
Let me point out two factors which enable us to extend the validity of the conclusions drawn to the "poetic figure" in question. Firstly, the corpus from which each figure is to be analyzed consists of examples taken from a large number of different poetic corpora for each figure, each representing a different stage in the history of Hebrew poetry (as well as additional corpora of English poetry), to be selected from poetry written by a number of prominent Hebrew poets. Any general pattern suggesting a preference for any one option over the others may then be considered as going beyond any local contextual factors, such as the particular poem from which the various figures are excerpted, the individual poet who composed them, or the particular "generation" or "school of poets" with which a given poet is affiliated, etc.

Secondly, if the sample under consideration consists of several historical periods in the evolution of a given national poetry as well as different schools of poetry included in each such period, such a sample might be taken to represent corpora which stand in direct opposition to one another, in so much as their ascribed poetic characteristics are concerned. This is the result of the well-known "struggle" between generations in poetry, which characterizes literary evolution in general. Thus, each generation of a given national poetry tends to perceive its own poetic principles as a response to, or a

reaction against those of the previous generation, and consequently, constructs an alternative poetics, as testified by the poetic manifestos, essays and articles written either by the poets themselves or by their critics. Therefore, it would be reasonable to assume that poetic tendencies allegedly prevailing in a given period are likely to be rejected by the producers during a subsequent period, and that their strategies will, in turn, be rejected by those of the next period, and so on. Consequently, if anything, one should expect writers of different periods to opt for different structural options rather than to tend to share the same pattern of preference across periods of time.

Thus, any general pattern of preference should be attributed to poetic discourse in general (and perhaps to non-poetic discourse as well), rather than to any specific contextual characteristic of a specific poem, poet, generation of poets, etc. (For similar considerations, see Ullmann's 1945 study of poetic synaesthesia, MacKay's 1986 study of poetic personification, and Shen 1987; 1995; 1997).

The second major claim made by the CCT is that the more commonly used option/s conform to some cognitive principles that determine those structural option/options as being cognitively more "basic” or "natural" in comparison with its/their counterpart. That is to say, the contention is that for each of the three figures analyzed, the option that is more frequently used in the (proposed) poetic corpora is, from a cognitive standpoint, "more basic" or "more natural" (e.g., is easier to comprehend and to recall, judged as being more sensible/likely) than the one used less frequently.
Several psychological experiments will be described in order to test this general hypothesis (see next section).

Let me emphasize the following crucial methodological point regarding the issue of the selective use of figures in poetic language. The major argument here does not pertain to the differences (or similarities) between the poetic and the non-poetic use of figures (as might be suggested by the term "poetic use of figures"). Rather, it concerns the following question which pertains directly to the characterization of the poetic use of these figures, regardless of their non-poetic counterparts: Do poetic figures exhibit any general pattern of preference (beyond that of specific contexts) for one structural option over another — equally "acceptable" — option? For example, do poetic similes favor the comparison of an abstract concept to a concrete one, or vice versa?

Taking the chance level as the standard for comparing the distribution of structures in poetry implies that one can describe the systematic distribution of such structures in poetry without any reference as to whether non-poetic language does, or does not, yield the same pattern. It might be possible, of course, at a later stage, to seek similar characterization of non-poetic language and it would be extremely interesting to ascertain whether or not the proposed constraints equally apply to non-poetic language, but this is beyond the scope of the present paper. Since the issue has to do with preferences between options that can potentially be implemented in poetic language, the relevant standard is not the distribution of these options within non-poetic language, but, rather, the chance level. That is to say, if the analysis yields a significantly higher preference for one option than for the chance level (as I will indeed demonstrate), while designating other options as significantly lower than the chance level, then this may be taken as a significant result, regardless of whether it is compared to non-poetic uses of the figures in question or not.

ILLUSTRATION OF THE CCT: An analysis of three figurative expressions

As described above, there will be three general steps in analyzing each figure.

First, an attempt will be made to isolate a certain (structural) level, where the figures in question will select one of two or more structural options.

Second, a textual analysis of a large-scale extensive poetic corpus will be conducted to determine whether these figures exhibit a selective preference for certain structural options over others, beyond a specific context (text, poet, school or period).

Third, an attempt will be made to provide a cognitive account for the above selective use. The general hypothesis will be that in each case, the preferred option will be, from a cognitive standpoint, "more basic" (i.e., is easier to comprehend and to recall, and judged to be more "sensible") than the one used less frequently. The reason that these structures are "more basic" than their counterparts is that they meet certain general cognitive constraints. A number of psychological experiments will be reported that examined this general hypothesis.

ZEUGMA

Structural options and the preference for the "literal first" structure.

A zeugma is "a figure of speech in which a word stands in the same relation to two other terms, but with a different meaning." For example: "She caught an aeroplane and a husband" (Cuddon 1977). This structure contains a certain syntactic category, typically a verb or an adjective, which governs a "catalog" of (at least) two other syntactic categories (typically nouns), one of which is literally, while the other is metaphorically, related to the predicate.

The key question to be asked in the present context with regard to the zeugma structure is: are the components of the zeugma ordered in a principled way in poetic usage? Typically, literary scholars have hardly addressed that question in a systematic manner. Basically, if poetic zeugma shows no systematic order of presentation then we may assume that the specific context (be it the specific poem, poet, period, etc.), rather than some general principle, determines their order? If, however, zeugmas are systematically ordered, they could follow one of the following two order types: either the "literal" member(s) is(are) introduced in an initial position, followed by the metaphorical member(s) (as in: "he packed his shirt and sadness"), or vice versa ("he packed his sadness and shirt"). A textual analysis of a poetic corpus will be conducted in order to find out which of these possibilities applies to the poetic zeugma.

In my previous research (see Shen 1997) a sample consisting of 350 zeugmas was excerpted from four different poetic corpora, representing different stages in the history of Hebrew poetry and one of the writings of the American poet, Alan Ginsberg. The Hebrew

sample belonged to the corpus of modern Hebrew poetry spanning the first eighty years of the twentieth century. The poets represented were prominent poets from different historical periods in the evolution of Hebrew poetry; periods which also varied substantially from one another with respect to their ascribed poetic characteristics. In line with the aforementioned methodological considerations, it would be reasonable to assume that any structural pattern found throughout the analysis could not be attributed to contextual factors, such as a particular poem, a particular poet, a particular *generation* or *school* of poets, etc. Furthermore, in order to enable generalization of our data, we extracted a large sample of zeugmas from the poetry of an American poet known for his use of zeugma, Alan Ginsberg. In studying Ginsberg, we attempted to examine whether any generalization regarding the Hebrew corpora would apply in the same way to a poet outside the boundaries of Hebrew poetry.

Note that the extent to which zeugmas were used varied significantly from poet to poet — some used them abundantly, while others did so infrequently. To avoid biasing the corpus analyzed, we collected as many zeugmas as we could find in one of the best-known collections of poems of each poet included in the five corpora comprising the Hebrew sample.

The results were straightforward. In the first corpus analyzed (the modern Hebrew poets and Ginsberg) approximately 83% of the zeugmas appeared in the "literal first" order while the opposite order contained only 17%.

In a subsequent study (Shen, in preparation) we examined whether this structural regularities can be extended to a very remote period of Hebrew poetry, namely, Hebrew Medieval poetry. By using the same methodology that was described previously, 55 zeugmas were collected from the writings of 11 major Medieval Hebrew poets. An analysis of the sample revealed that 43 out of the 55 cases (78%) consisted of the "literal first" structure, while only 11 (22%) consisted of the "non-literal first" structure.

A further analysis showed that this pattern is consistent across each and every literary corpora examined. That is, this preference was a clear-cut preference at any level of analysis, namely, for each poet, period, and language, with no exception.

In accordance with the first claim made by the CCT, then, we may conclude that different poetic corpora exhibit the selective use of one of the two structural options.

Psychological evidence for the conformity of the "literal first" structure to a cognitive constraint

The second major claim of the CCT was that the more frequently used structure (in this case the "literal first" structure) is conceived of as being cognitively more "natural" and more "basic" than it's counterpart. The cognitive principle to which this structure is assumed to conform is that the initial position in a zeugma structure should be occupied by the term with the higher accessibility (the "literal" concept), which functions as "a cognitive reference point" for the less accessible term (the metaphorical one), rather than the other way around. (See Shen 1998).

In my past research (see Shen 1998), it was found that the "literal first" structure (e.g., "he packed his shirt and sadness"), namely, the one that is more frequently used in poetic discourse, was judged by subjects to be more natural and more sensible than the inverse form (e.g., "he packed his sadness and shirt").

An even more revealing finding was found in a recall experiment (Shen 1998). Subjects in that study received a list of pairs, each consisting of a question (e.g., "What did the soldier pack?") and a related answer that represented a zeugma (e.g., "The soldier packed his shirt\sadness and sadness\shirt"). Half of the sentences were composed according to the "canonical order", namely, the literal noun first, followed by the metaphorical one (e.g., "The soldier packed his shirt and sadness"), while the other half consisted of the inverse order.

The experiment was carried out in two stages. First, the subjects were asked to read a list of the pairs described above. Then the experimenter read the questions aloud and asked the subjects to provide answers as accurately as possible, on the basis of what they remembered from the previous stage.

As hypothesized, subjects reversed (in their recall) significantly more non-canonical (non-literal first) than for canonical (literal first) structures to which they were originally exposed. (for details, see Shen 1998).

Under the present theory, the fact that people tend to invert the order of the two nouns in non-canonical sentences more than in canonical ones indicates that the latter represent a more "natural" or "basic" structure than the former.

Another argument supporting the present proposal can be found in the results of a pilot study that I conducted (Shen, in preparation). Subjects in this study were asked to judge the extent to which it would be difficult for them to interpret a given zeugma. The findings were in line with the previous conclusions, namely, the "literal first" structure was judged to be easier to assign interpretation to than the "metaphorical first" structure.

Taken together, then, these findings support the second claim made by the CCT (when applied to the case of the zeugma), namely, that the more frequently used structure in poetic discourse conforms to certain cognitive constraints, thereby making it more natural, as well as easier to understand, easier to construct a sensible context, easier to recall in it's order, etc.

SYNAESTHESIA

Synaesthesia (Greek, *syn* = together + *aesthesis* = perception) is a fascinating psychological as well as linguistic phenomenon that has long attracted scholars from various disciplines (for a review see Dann 1999). Here we will not address the psychological phenomenon that refers to the involuntary physical experience of a cross-modal association (e.g., seeing a certain color every time you hear a certain sound), and focus rather on the synaesthetic metaphors in language. These are metaphorical expressions in which we refer to a concept from one sensory domain using terms from another sensory domain. For example, in the phrase "heard melodies are sweet", Keats talks about an auditory concept — heard melodies — in terms of sweetness, which belongs to the domain of taste. Or, when we say "a cold light", we talk about light, which belongs to the visual domain, in terms of coldness, which belong to the tactile domain. In more technical terms, the synaesthesia "sweet melodies" can be described as consisting of mapping from the source domain of taste transferred onto the target domain of sound, to which we are referring. For the sake of simplifying all of the following examples, the adjective will represent the source of the mapping, while the noun will represent the target.

A crucial question with regard to the study of synaesthesia has to do with *the directionality of mapping in synaesthetic metaphors in poetic discourse*. Namely, are certain modalities more likely to get mapped onto others, or can any modality be mapped onto any other? In the first section, I will review evidence from different sources that support the claim that synaesthetic metaphors indeed exhibit a general pattern across contexts. In the second section, I will summarize some studies that provide empirical support for a cognitive account for the above pattern.

Structural options and the preference for low-to-high mapping in synaesthetic metaphors

It is commonly assumed (see e.g., Ullmann 1957, Tsur 1992, Day 1996, Cytowich 1989 *inter alia*) that modalities are organized along a scale that ranges from the 'highest' modality - SIGHT, followed (in this order) by SOUND, SMELL, TASTE, down to the 'lowest' sense, namely, TOUCH. Given this scale, or hierarchy, any given synaesthetic metaphor may exhibit a mapping extending from low-to-high modality, or vice versa. As an example, I should like to compare the following two instances of synaesthesia:
[1a] sweet melody
[1b] melodious sweetness.

[1a] represents a low-to-high mapping: the source term (i.e., the adjective *sweet*) belongs to a lower modality on the above scale than the target *melody*, namely, *TASTE* and *SOUND*, respectively. By contrast, [1b] represents the opposite directionality: from a higher to a lower modality. Given these two basic structural options, the question of directionality in poetic synaesthesia can be formulated in a more precise manner: Do synaesthetic metaphors occurring in natural discourse make use of one of these two options more frequently than the other, beyond a specific context? Or, put differently: is there a universal preference for one option over the other?

Past and present research has accumulated several pieces of evidence that suggest a clear-cut preference for the low-to-high structure (rather than its inverse structure). This represents a very robust pattern characterizing synaeshesia in poetry, cutting across different poetic corpora. Thus, in a large-scale seminal study of Europian poetry, consisting of 2000 synaesthetic metaphors, Ullmann (1957), was the first to point out the clear-cut tendency (with a relatively small number of exceptions) towards using synaesthetic metaphors conforming to the above generalization over those which violate it. (It should be noted that there is only a single exception to this generalization, that which relates to the two highest modalities (i.e., SIGHT-SOUND).

Elsewhere (see Shen 1997) a similar pattern was found in modern Hebrew poetry. Note that Hebrew poetry introduces a set of poets that belong to a totally different cultural environment and to a different period (the twentieth rather than the nineteenth century). The corpus analyzed consisted of 130 instances of poetic synaesthesia, taken from the writings of 20 modern Hebrew poets who were active during the first eighty years of this century. The poets selected represent four distinct historical periods in the evolution of Hebrew poetry, periods which, as previously mentioned, differ substantially with respect to their ascribed poetic characteristics. Each of those corpora, then, represents a unique context which is markedly different than each of the other contexts represented by the other corpora. It is thus reasonable to assume that the structural pattern emerging from this analysis could not be attributed to contextual factors such as the particular poem from which the synaesthesiae were excerpted, or to the individual poet who composed them, or to the particular 'generation' or 'school of poets' with which a given poet is affiliated, etc. The fact that the four poetic corpora (the three analyzed by Ullmann and the one reported here) cover four national literary corpora provides even stronger support for the generalization proposed.

Therefore, there is no reason to assume that any specific contextual factor (regarding the specific poems from which the synaesthesiae were taken, the specific poet, the specific poetic school, the historical stage, or even the national poetry) affects the selection pattern of the 'low-to-high' mapping shared by the Hebrew (as well as the European) sample.

A similar pattern was found in the comprehensive study conducted by Sean Day (1996) on the use of synaesthetic metaphors in prose. Day collected textual data from both English printed texts and electronic texts, the latter taken from sources that include the World Library's *Greatest Books Collection* (1991) CD-ROM, the Oxford Text Archive, and Project Gutenberg. The time-range of the data covers books from Chaucer's *Canterbury Tales* written in 1387, Shakespeare, 19th century novelists such as Melville and currently popular novels such as those by Michael Crichton.

The main finding in Day's study lends further support for the above generalization regarding the directionality in synaesthetic metaphors, namely, that in the vast majority of cases, the mapping conforms to the low-to-high direction rather than its inverse.

Further support for this tendency has been found by Yifat Manor (unpublished seminar) who analyzed the use of synaesthetic metaphors in the novelette "Etzel",

written by a well-known Hebrew novelist, Genessin.

Thus, in accordance with the first claim made by the CCT, the aforementioned evidence suggests that the low-to-high mapping in synaesthetic metaphors is a robust pattern that cuts across various specific contexts — it appears in diverse types of literary discourse (poetry as well as prose), during different periods of poetry as well as in historically unrelated languages. Such a robust pattern calls for an account that is basic and general enough to explain it.

Psychological evidence for the conformity of the low-to-high structure to a cognitive constraint

Following Shen (1997) and Shen & Cohen (1998), I would like to elaborate and develop a **cognitive** account for the robust preference for the low-to-high structure. This account suggests that the low-to-high structure is*, from a *cognitive* point of view, more *natural* than its inverse. In this respect, a synaesthesia is simply a special case of cognitive principle which applies to metaphors in general. The principle states that: ***Mapping from a more accessible concept onto a less accessible one is more natural than its inverse.*** As many studies have shown, this principle characterizes the direction of metaphorical mapping in general (see Shen 1997). For example, Lakoff and Johnson (1980) argued that the knowledge we have about concrete domains with which we have immediate contact via bodily experience, such as up-down orientation, physical objects, containers and the like, is projected onto less concrete (hence less accessible) domains, rather than vice versa. This unidirectional tendency is reflected in the verbal expressions we use in ordinary language. For example, we describe emotions by using the source domain of orientation or containers, as revealed by our use of expressions such as *I feel up/down* or *he is full of anger/fear*. This mapping is clearly unidirectional, since we do not normally conceptualize orientations or containers in terms of emotions. Therefore, there are no conventionalized expressions in language which reflect counter-directionality.

The application of this general cognitive principle to synaesthesia may suggest that the concepts belonging to the lower senses, such as touch and taste, are more accessible than those attributed to higher senses such as sound and sight (see also Shen & Cohen (1998). What makes lower concepts such as 'coldness' or 'sweetness' more accessible than higher sensory concepts such as 'light,' is that they involve a more direct, less mediated experience of perception. In other words, the lower the modality, the more direct and immediate the relation between the perceiver and the object perceived. As is the case of metaphors in general, concepts which are closely associated with immediate bodily experience are more accessible than concepts which are less so. The same logic that makes concrete concepts more accessible than abstract ones also determines the fact that lower sensory concepts are more 'concrete', that is, more accessible than higher ones. (See Shen & Cohen 1998 for an elaboration of this argument, as well as some linguistic evidence supporting it, based on the analysis of diachronic meaning extension; see also Tsur 1992 and Ulmann 1957). Therefore, I propose that the highly selective pattern of synaesthetic expression in natural discourse, across contexts, is accounted for by assuming that the use of synaesthesia in natural discourse is highly constrained by the above general cognitive principle.

So far, I have conducted a series of empirical studies that support the predictions derived from the above cognitive account. Thus, in Shen 1997 and Shen & Cohen 1998, some empirical evidence has been introduced supporting the prediction that the low-to-high structure is easier to comprehend than its inverse. A much more comprehensive study (Shen & Eisenam, in preparation) yielded a wider range of evidence supporting the above psychological account. In a recall study, subjects read a list of 20 synaesthetic metaphors, half of which conformed to the "low-to-high" structure, while the other half conformed to the inverse structure. At a later point, subjects were asked to write down, as accurately as possible, the original list of synaesthetic metaphors to which they had originally been exposed. The findings clearly showed significantly superior recall for the low-to-high structure as opposed to its inverse.

In another study, subjects were presented with 20 pairs of synaesthetic metaphors, where each pair consisted of two synaesthetic metaphors involving the same concepts, but in different directionality of mapping, such as in:

[1] A bitter warmness
[2] A warm bitterness

[1] Represented a low-to-high mapping, while [2] is represented the inverted mapping.

The subjects were instructed, regarding each pair of metaphors, to decide which expression seemed the more natural and more sensible expression, as well as to justify their decision (the justification was necessary to prevent the subjects from deciding automatically, as well as to allow us to rule out decisions made on the basis of irrelevant considerations). As predicted, the subjects significantly preferred expressions that conformed to the low-to-high structures as opposed to their inverse type.

In yet another study, subjects read 18 synaesthetic metaphors (divided equally into "standard" and "non-standard" types, and were instructed (in writing) to try to come up with a context in which a speaker could have used these expressions. They were then instructed to judge, introspectively, on a scale of 1 to 5, their difficulty in providing such a context. An analysis of the subjects' rating shows that, in accordance with our predictions, 'standard' expressions scored lower than 'non-standard' ones, namely, most subjects found it easier to come up with a context for a 'standard' synaesthesia than for a 'non-standard' one. This result was significant across subjects and across items.

In conclusion, these converging findings support the general claim made by the CCT (when applied to synaesthetic metaphors) that the more frequently used structure in poetic discourse conforms to certain cognitive constraints, thereby considering it to be more natural, as well as easier to understand, easier to construct in a sensible context, better recalled, etc.

OXYMORON

Structural options: the preference of the indirect over the direct oxymoron.

The third figure to illustrate the CCT is the oxymoron, a frequently used figure in poetic discourse. I will briefly summarize the main findings with regard to that figure. An oxymoron (Ancient Greek : *Oxus* = "sharp" *Moros* = "dull", that is: a sharp dullness) is a figure of speech which combines two seemingly contradictory elements, as in: "sweet sorrow", "serious vanity".

Following a proposal made in Shen (1987), a distinction can be drawn between two types of semantic structures which can count as types of oxymora, namely, "direct oxymoron" vs. "indirect oxymoron". The "direct oxymoron" consists of two terms which are direct antonyms, such as "silent sound". (Other examples are "a feminine man," "living death,"). The "indirect oxymoron" consists of what might be called "indirect antonyms", such as "sweet sorrow" or "cold fire". This type of oxymoron consists of terms that can only indirectly be regarded as contradictory, via their associations (for a detailed analysis of this distinction see Shen 1987).

An analysis of various samples of poetic discourse suggests a robust preference for the use of the indirect structure over of its direct counterpart. Thus, an analysis of a large sample of about 140 poetic oxymora, excerpted from (several periods of) Hebrew and English poetry, revealed a robust preference for the indirect oxymoron as opposed to its direct counterpart (see Shen 1987).

Another study (Nil, abu-Amana: unpublished seminar) analyzed a sample consisting of about 80 oxymora excerpted from modern Arabic poetry, yielding the same pattern of a clear-cut preference for the indirect oxymoron as opposed to its counterpart.

Further support for this tendency has been found by Bar-Yosef (1987), who has analyzed the use of oxymora by the Hebrew novelist Genessin. Bar-Yosef makes an argument for the predominance of the "weak" oxymoron (roughly corresponding to the phenomenon called "indirect oxymoron" in this paper) in the prose writings of Genessin.

I should like to conclude this section by noting that the very term "oxymoron" was supposedly coined to capture the nature of the phenomenon it represents (i.e., a combination of two seemingly contradictory terms). A closer analysis of this very term suggests that the term itself represents an indirect structure, since "dull" is not the direct antonym of "sharp", but, rather, an indirect one.

In summary, in complete agreement with the first claim of the CCT, poetic corpora can be seen to exhibit a selective use of the indirect oxymoron rather than the direct one, across different and unrelated poetic corpora.

Psychological studies

The reader may recall the second major claim of the CCT which is that the more frequently used structure (in this case the "indirect oxymoron) is, from a cognitive standpoint, more "natural" and more "basic" than its counterpart. At least two studies support that claim. Gibbs & Kearney (1994) found out that in addition to the "indirect oxymora" that are judged by readers as being more poetic than their counterpart, the former took readers less time to interpret them than their counterparts, suggesting that they are easier to interpret. Moreover, Gibbs & Kearney have shown that the indirect oxymoron is more productive than its counterpart in that readers tended to create more novel features from the combination of the two terms that comprise the indirect oxymoron more than they did for the direct type. This latter finding may suggest that it is easier to assign meaning to the indirect oxymoron, since a larger number of features can materialize from interpreting the combination of features than for its counterpart.

Another study (Shai Michaeli, unpublished seminar) compared interpretations generated by readers for direct and indirect oxymora. In this study, subjects were presented a list of oxymora (half of which were direct and the other half, indirect structures). They were asked to provide an interpretation for each expression and to mark those expressions for which they found it difficult to assign an interpretation. An analysis of the responses revealed that readers found direct oxymora to be more difficult to interpret than indirect ones. Furthermore, it was found that indirect oxymora generated more homogenous responses than the direct ones.

Taken together, then, these findings provide initial support for the second claim of the CCT, according to which the more frequently used structure (the "indirect oxymoron") is cognitively conceived of as being more "natural" and more "basic" than its counterpart.

Summary and conclusion

The present paper introduces the main components of the CCT which:

1.   Provide a description of the structural regularities which characterize the use of figurative language in poetic discourse, and

2.   Provide a cognitive account for these regularities.

The basic assumption underlying the CCT is that the structural regularities characterizing poetic usage of figures of speech reflects a "compromise" between aesthetic goals of creativity and novelty on the one hand (being represented by the very use of novel figurative expressions) and conformity to cognitive constraints that ensures its communicability, on the other. Thus, adhering to cognitive principles or constraints while allowing a certain amount of "freedom" for poetic language, guarantees its interpretability by blocking various options.
The CCT shares several of its basic underlying assumptions with other theories that have recently been developed. Perhaps the closest of these is the line of research called "the cognitive theory of metaphor", recently developed by Lakoff & Turner (1989), Freeman (1995), *inter alia*. According to this theory, basic conventional "root" metaphors (e.g., LOVE IS A JOURNEY, ARGUMENT IS WAR) not only constrains the way we conceptualize these source domains (love or argument) in non-poetic contexts, but in poetic discourse as well. In other words, those root metaphors are not only the metaphors upon which our ordinary conceptual repertoire is structured (Lakoff & Johnson 1980), but also figurative descriptions of these source domains in poetic discourse rely heavily on these conventional structures.

The CCT and the "cognitive theory of metaphor" share the assumption that cognitive structures constrain the poetic usage of figurative expressions. The difference between these two theories is that whereas the "cognitive theory of metaphor" refers to specific, content-loaded conceptual structures (i.e., LOVE IS A JOURNEY) and refers mainly to metaphors, the CCT relates to the structural aspect of figurative expressions and pertains to various figures of speech such as oxymoron and synaesthesia, which are not directly accounted for in the Lakoffian paradigm.

From a broader perspective, the CCT can be viewed as a theory that relates to verbal creativity, as exemplified by the poetic usage of verbal, figurative language. In that sense, it can be directly related to the accumulation of a body of research on creative thinking (e.g.,Smith, Ward, and Finke, 1995). Recent developments in the study of creativity have developed the idea of "structured imagination" (Ward, 1995). Structured imagination refers to the fact that new ideas created by human imagination are heavily structured and constrained by the properties of existing categories and concepts. For example, Ward (1995) claims that structured imagination does not refer merely to the fact that we simply make use of prior knowledge when creating novel concepts but rather, he says: "An important aspect of structured imagination, however, is that the exact features of old ideas that are retained in new ideas are readily predictable from the general principles of categorization…" (Ward, 1995, 158). This view, which related to non-verbal creativity, is fully compatible with the CCT as a theory of verbal creativity, since both share the assumption that novel structures, be

they conceptual or verbal, are constrained by basic cognitive principles and constraints that apply equally to creative and non-creative structures.

Therefore, in conclusion, the case of poetic figures of speech illustrates the two-sided nature of creative and aesthetic structures in general, namely, the struggle between novelty on the one hand, and communicability on the other. That is, figures of speech used in poetic discourse represent novel and innovative uses of language properties that are responsible for their aesthetic value (either by relating two disparate conceptual domains, as would argue many literary critics, or by creating new instantiations of underlying root metaphors, as would argue Lakoffian fans). In this respect they represent the "organized violence against cognitive processes" as the Russian formalists put it. On the other hand, this very violence against cognitive processes is itself organized and constrained by general cognitive principles. Under the present view, the case may very well be that it is this adherence to (cognitive) constraints which guarantees the interpretability and communicability of poetic language.

References

Bar-Yosef, Hamutal (1987). *Metaphors and Symbols in U.N. Genessin's Stories.* Hakibbutz Hameuchad., Publishing House.

Cytowic, R. E. (1989). *Synaesthesia: a union of the senses.* New York: Springer-Verlag.

Cuddon. J. A. (1977). *A Dictionary of Literary Terms* . ANDRE DEUTSCH.

Culler, Jonathan & Kegan, Paul 1975. Structuralist Poetics. London: Routledge .(*editor – was this correct? The previous position of & Kegan Paul was not correct*)

Dann, Kevin T. (1999). *Bright Colors Falsely Seen. Synaesthesia and the Search for Transcendental Knowledge.* Yale University Press. New Haven.

Day, S. "Synaesthesia and Synaesthetic Metaphors," *Psyche* (electronic journal) 2 (1996).
http://psyche.cs.monash.edu.au/v2/psyche-2-32-day.html

Freeman, D. (1995). "'Catch[ing] the nearest way': *Macbeth* and Cognitive Metaphor" in *Journal of Pragmatics,* Vol. 23(6). 689-708.

Gibbs, R. W. (1994)*. The Poetics of Mind: Figurative Thought, Language and Understanding*. Cambridge University Press.

Gibbs, W. R. & Kearney, Lydia R.. (1994). "When parting is such sweet sorrow: the comprehension and appreciation of oxymora". *Journal of Psychologinguistic Research*, vol, 23, No. 1.

Lakoff, G. & Johnson, M. (1980). *Metaphors We Live By*. Chicago: University of Chicago Press.

Lakoff, G. & Turner, Mark (1989). *More Than Cool Reason - A Field Guide To Poetic Metaphor*. Chicago U.P.

MacKay, D.G. (1986). "Prototypicality among metaphors: on the relative frequency of personification and spatial metaphors in literature written for children versus adults". *Metaphor and Symbolic Activity* , 1/2, 87-108. (1986).

Manor, Yifat. (unpublished manuscript). Synaesthetic metaphors in Genessin's prose. Tel Aviv University. Department of Poetics & Comparative Literature.

Miall, D.S. and Kuiken, Don (1990). What is literariness? Three components of literaryreading. *Discourse Processes,* 28 (1999), 121-138.

Miall, D. S., & Kuiken, D. (1994a). Foregrounding, defamiliarization, and affect: Response to literary stories. *Poetics*, 22, 389-407.

Miall, D.S. (1990). Readers' response to narrative: Evaluating, relating, anticipating. *Poetics*, 14(4), p. 323-339

Mukarovsky, Jan, (1970). "Standard language and poetic language". in: Freeman Donald (ed.) *Linguistics and Literary Style*. Holt, Reinhart and Winston, Inc. 1970.

Michali, Shai. Between direct and indirect oxymoron: a cognitive perspective. Unpublished manuscript (in Hebrew). Tel Aviv University. Department of Poetics & Comparative Literature. Tel Aviv, Israel.

Mukarovsky, Jan, (1970). "Standard language and poetic language". in: Freeman Donald (ed.), *Linguistics and Literary Style*. Holt, Reinhart and Winston, Inc. , p. 21-56. University of Massachusette, Massachusette.

Nil, Abu Amana. The oxymoron in Arabic modern poetry. Tel Xai College. Unpublished manuscript (in Hebrew).

Perry, Menakhem (1979). "Literary dynamics: how the order of a text creates its meanings". *Poetics Today*, 1, 1, 35-64.

Schmidt, S. J. (1982). *Foundations of the Empirical Study of Literature*. Hamburg, Buske.

Shen, Y. (1987). "The structure and processing of the poetic oxymoron". *Poetics Today* 8/1 (fall issue). pp. 105-122.

------   (1992). "Metaphors and categories". *Poetics Today*, 13:4. (1992. pp. 771 -794. (A special issue of *Poetics Today* : "Aspects of metaphor comprehension". Vol. 13:4. (1992. Quest edited by Yeshayahu Shen).

----   (1995). "Constraints on directionality in poetic vs. non-poetic metaphors". *Poetics* . 23. pp. 255-274.

---   (1997). Cognitive constraints on poetic figures. *Cognitive Linguistics*, vol. 8(1). 33-71.

---   (1997a). Metaphors and global conceptual structures. *Poetics*. 25(1). 1-17.

---   (1998). Zeugma: Prototypes, categories and metaphors. *Metaphor and Symbol*. 13(1). 31-47.

Shen, Y. (in preparation). "Why did the baby sip kisses after milk"? Zeugma and cognition. *(editor – the word 'sipped' is incorrect – it should be 'sip' – I did not change it because you may already have published it and then the title is "set in stone"!)*

Shen, Yeshayahu & Cohen, Michal. (1998). "How come silence is sweet but sweetness is not silent: a cognitive account of directionality in poetic synaesthesia". In: *Language and Literature. Vol. 7(2). 123-140.*

Shen Y. & Eisenman, Ravid (submitted). "Heard melodies are sweet, but those unheard are sweeter": Synaesthesia and cognition.

Shklovsky, Victor (1965). "Art as technique", in: L. T. Lemon and M. J. Reis (eds.) *Russian Formalist Criticism.* Lincoln: Nebraska UP. 3-24.

Smith, S.M, Ward, Thomas B., and Finke, Ronald A. (eds.), 1995. *The Creative Cognition Approach.* A Bradford Book. The MIT Press. Cambridge, Massachusetts. London, England

Steen, G. J. (1994). *Understanding Metaphor in Literature*. London: Longman.

Swayne, Mattie. (1941). "Whitman's Catalogue Rhetoric". *University of Texas Studies in English* 21 (1941): 162-78.

Sweetser, Eve. (1984). *Semantic Structure and Semantic Change: A Cognitive Linguistic Study of Modality, Perception, Speech Acts, and Logical Relations*. Ph.D Dissertation. University of California, Berkeley

Tzur, Reuven. (1992). *Toward a Theory of Cognitive Poetics* . Amsterdan, North Holland Linguistic Series. .

Ullmann, S. De,. (1945). "Romanticism and Synaesthesia", *PMLA* (Publications of the Modern Language Association of America), 60, 811-827.

Van Peer, W. (1986). *Stylistics and Psychology: Investigations of Foregrounding.* London: Croom Helm.

Ward, T. (1995). What's old about new ideas. In: Smith et al. (eds.). *The Creative Cognition Approach.* A Bradford Book. The MIT Press. Cambridge, Massachusetts. London, England (pp. 157-178).