

A COGNITIVE APPROACH TO POETIC EFFECTS OF RHETORICAL FIGURES: TOWARD A UNIFIED THEORY OF COGNITIVE RHETORIC

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Cognitive Rhetoric Project: Aim and Scope

This paper presents our research project of cognitive rhetoric that aims at empirically exploring a cognitive mechanism underlying the relationship between styles, meanings and effects, especially focusing on rhetorical figures such as metaphor, simile and metonymy. The cognitive rhetoric project differs from the traditional study of rhetoric in that the analysis of rhetorical effects is systematically based on the cognitive theory of how rhetorical figures evoke poetic effects. Cognitive linguistic research on literature, especially a series of Turner's work (e.g., Lakoff and Turner 1989; Turner 1996), is closely related to our project, and his work is sometimes called cognitive rhetoric (Hamilton and Schneider 2002). However, these studies only illustrate that the embodied mechanism of cognition such as conceptual metaphors and conceptual blending explains descriptively literary work and its interpretation, or that such embodied basis is fundamentally poetic in nature; they do not explain how literariness or poeticality is appreciated and what cognitive mechanisms are involved in the appreciation. Rather, our use of the term "cognitive rhetoric" is most similar to Sperber's (1975) "rhétorique cognitive".

Our cognitive rhetoric project takes a top-down approach that examines to what degree a general mechanism of poetic appreciation can explain the effects of each rhetorical figure, and also a bottom-up approach that begins by finding out properties affecting the effects of each rhetorical figure and then examines empirically how poetic appreciation is affected by these properties.

Incongruity Resolution as A General Mechanism of Cognitive Rhetoric

Our cognitive rhetoric project argues that *an incongruity resolution model* is seen as a general mechanism of appreciating or evoking poetic effects. The key notion of the model is *reinterpretable incongruity*. Poetic effects are appreciated when an incongruity is perceived in a figurative expression at the early stage of language comprehension and after that it is compensated by a rich interpretation. The underlying cognitive mechanism is that the perceived incongruity causes great processing effort, and the reinterpretation process justifies such expended effort by yielding a rich interpretation consisting of diffuse meanings (Utsumi 2002, 2005).

For example, consider the following metaphor, famous words in Shakespeare's play "Romeo and Juliet".

But, soft! What light through yonder window breaks?
It is the east, and Juliet is the sun!

The first line is read literally. But when the sentence "Juliet is the sun" is encountered in the next line, its semantic deviation of the literal meaning being activated causes an incongruity. Therefore, the reader has to search for another interpretation to resolve the incongruity, which causes great processing effort. With the contextual information (e.g., the word 'light' used metaphorically in the first line contributes to a metaphorical reinterpretation) and her/his private background knowledge, the reader arrives at a rich interpretation of the metaphor.

The incongruity resolution model, although originally proposed as a mechanism of humor appreciation, has much to do with a number of notions in literary studies. For example, *defamiliarization* and *foregrounding* can be seen as a kind of stylistic incongruity. Miall and Kuiken's (1999) empirical finding on literariness that "literariness is constituted when stylistic or narrative variations defamiliarize conventionally understood referents and prompt reinterpretive transformations of a conventional feeling or concept" is also compatible with the notion of incongruity resolution. Furthermore, the incongruity resolution model is most similar to Sperber and Wilson's (1995) relevance-theoretic view of poetic effect as the effect of an utterance which achieves its relevance through a wide array of weak implicatures enough to offset the processing effort.

Giora's (2003) optimal innovation hypothesis is also closely related to the incongruity resolution model, but it predicts the pleasurability of an utterance. According to her hypothesis, the optimally innovative stimulus, a stimulus which induces not only a novel response but also a salience response, would be rated as more pleasurable than either a familiar stimulus or a purely innovative stimulus which does not allow for a recovery of a salience response.

Empirical Test of Cognitive Rhetoric: A Case of Metaphor Appreciation

According to the incongruity resolution model, poetic effects of a metaphor would be appreciated when an yielded interpretation of the metaphor is rich, or interpretively diverse in Utsumi's (2005) term, enough to compensate the incongruity caused by semantic dissimilarity between the topic and the vehicle. On the other hand, it may follow from the optimal innovation hypothesis that the most pleasing metaphors are those that are novel because of their low topic-vehicle similarity, but that are still comprehensible. Hence, the incongruity resolution model and the optimal innovation hypothesis make the following predictions on metaphor appreciation.

1. For comprehensible metaphors, interpretively diverse metaphors are more poetic and pleasing than less diverse metaphors because the interpretive diversity of comprehensible metaphors is correlated positively with their topic-vehicle dissimilarity.

2. Poeticity and pleasurability of less comprehensible metaphors do not depend on their dissimilarity and interpretive diversity.

3. Comprehensible metaphors are more poetic and pleasing than less comprehensible ones.

In order to test these predictions, I conducted experiments on metaphor comprehension and appreciation, a part of which was reported in (Utsumi 2005). Forty Japanese metaphors of the type "X is Y" (e.g., "*Sleep is the sea*" and "*Love is a game*") were used for the experiments. In the experiment for metaphor comprehension, 80 Japanese undergraduate students were asked to list three or more features (words or phrases) representing the meaning of each metaphor, to describe their own interpretation of the metaphor freely by sentences and to rate comprehensibility of the metaphor on a 7-point scale ranging from 1 (*not at all comprehensible*) to 7 (*comprehensible*). In the experiment for metaphor appreciation, 42 Japanese undergraduate students were asked to rate metaphors with respect to poeticity on a 7-point scale ranging from 1 (*nonpoetic*) to 7 (*poetic*), as well as on six 7-point scales of appropriateness, beauty, formality, political, tastefulness and preciseness. Moreover, other 42 Japanese undergraduate students rated the metaphors with respect to pleasurability (or the degree of interest) on a 7-point scale ranging from 1 (*not at all pleasing*) to 7 (*pleasing*). These rating scores for each metaphor were then averaged across participants. Interpretive diversity was calculated as the entropy $H(M)$ of the metaphorical meaning of a metaphor M , which was defined by $H(M) = -\sum_{x \in M} p(x) \log_2 p(x)$ where $p(x)$ was a relative salience of a feature x in the list of words or phrases generated in the experiment.

For poeticity rating and pleasurability rating, an analysis of variance (ANOVA) was conducted with comprehensibility (comprehensible, less comprehensible) and diversity (high, low) as the between-item and within-participant factors. Comprehensible metaphors are those whose comprehensibility was the average 4.30 or higher, and high-diversity metaphors are those whose interpretive diversity was the average 3.01 or higher. Figure 1 shows mean poeticity ratings

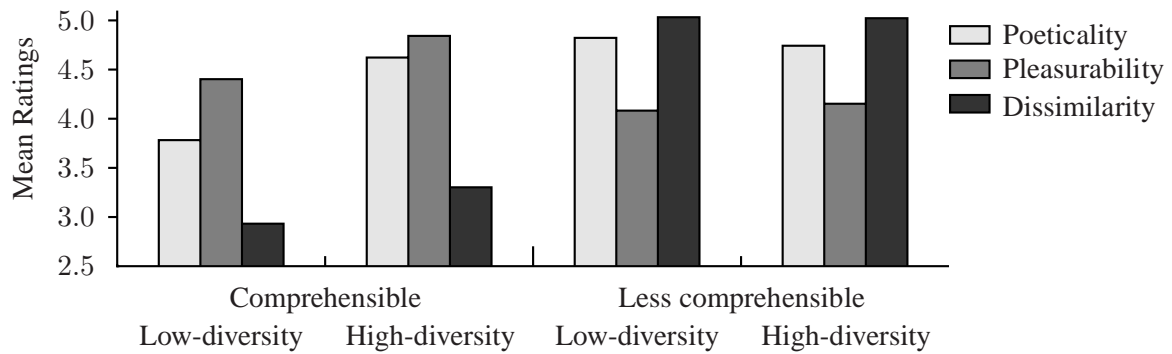


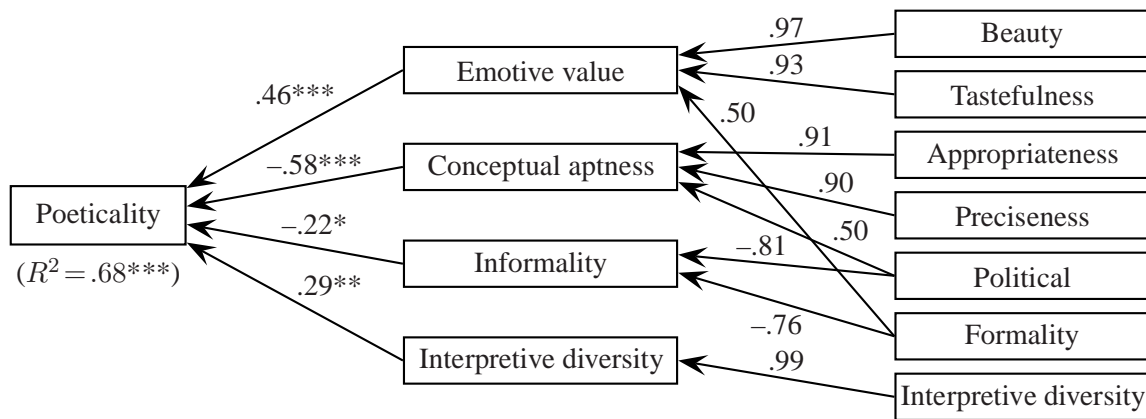
Figure 1: Mean poeticity and pleasurability by comprehensibility and interpretive diversity

and mean pleasurability ratings of all the conditions. First, there was a significant interaction of comprehensibility and diversity for poeticity, $F_i(1, 36) = 6.46, p < .05$ and $F_p(1, 41) = 39.17, p < .001$, and for pleasurability, $F_p(1, 41) = 4.90, p < .05$ but $F_i(1, 36) = 1.24, p = .27$. The nature of the interaction was that, when metaphors were comprehensible, high-diversity metaphors were rated as more poetic and pleasing than low-diversity metaphors, $F_i(1, 36) = 9.91, p < .01$ and $F_p(1, 82) = 56.07, p < .001$ for poeticity; $F_p(1, 82) = 10.77, p < .01$ but $F_i(1, 36) = 3.01, p = .09$ for pleasurability, but such difference was not observed for less comprehensible metaphors. Furthermore, interpretive diversity of comprehensible metaphors was correlated with their topic-vehicle dissimilarity, $r = .57, p = .01$, but less comprehensible metaphors yielded no significant correlation between them, $r = .15$. All these results were fully consistent with Predictions 1 and 2.

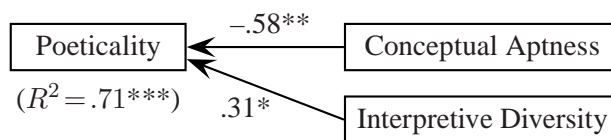
However, one finding inconsistent with the predictions was obtained for poeticity. The main effect of comprehensibility was significant for poeticity, $F_i(1, 36) = 9.27, p < .01$ and $F_p(1, 41) = 20.64, p < .001$, but less comprehensible metaphors were rated as more, rather than less, poetic than comprehensible metaphors. This finding contradicts Prediction 3, suggesting that poetic appreciation of metaphors, especially of less comprehensible metaphors, may be governed by other cognitive processes than incongruity resolution. More generally speaking, these findings suggest that other properties of rhetorical figures should be taken into account toward a full-fledged theory of cognitive rhetoric. Note that the main effect of comprehensibility was also significant for pleasurability, $F_i(1, 36) = 8.84, p < .01$ and $F_p(1, 41) = 16.42, p < .001$, and as predicted, comprehensible metaphors were more pleasing than less comprehensible metaphors.

To examine how comprehensible and less comprehensible metaphors differ in poetic appreciation, I conducted a regression analysis with poeticity rating as the dependent variable (Utsumi 2005). Independent variables were four factors in Figure 2(a) derived from a principal component analysis conducted on the ratings of six metaphor properties and interpretive diversity. The regressions were calculated not only for all metaphors but also for comprehensible and less comprehensible metaphors. Figure 2 shows the results of the regression analysis. All the four factors were related to metaphor poeticity, but emotive value and conceptual aptness accounted for more of the variance in poeticity than interpretive diversity; emotively more positive (i.e., more beautiful and tasteful) and less apt (i.e., less precise and appropriate) metaphors were rated as more poetic. This result provides empirical evidence for the argument that poetic appreciation of metaphor cannot be explained only by incongruity resolution.

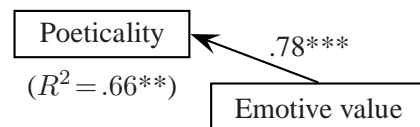
Furthermore, the regression analysis for comprehensible metaphors and less comprehensible metaphors (Figures 2b and 2c) suggests that the appreciation process differs between comprehensible and less comprehensible metaphors. Poeticity of comprehensible metaphors was affected by conceptual aptness and interpretive diversity, thus suggesting that the incongruity resolution model holds true of comprehensible metaphors and that poetic appreciation may be governed primarily by semantic processing. On the other hand, poeticity of less comprehensible metaphors was associated with only emotive value, which suggests that poetic appreciation of less comprehensible



(a) All metaphors (summary of principal component analysis and regression analysis)



(b) Comprehensible metaphors



(c) Less comprehensible metaphors

Figure 2: Summary of principal component analysis of seven metaphor properties and summary of regression analysis predicting metaphor poeticity (* $p < .05$. ** $p < .01$. *** $p < .001$.)

metaphors depends crucially on aesthetic processing. Given these findings, it might be assumed that metaphor appreciation starts with both semantic processing and aesthetic processing initially, and aesthetic processing is suppressed later when semantic processing works properly, although this assumption is speculative and must await further empirical research. It must be noted that the regression analysis with metaphor pleurability as the dependent variable showed that, regardless of their comprehensibility, pleurability of metaphors was related to both conceptual aptness and emotive value. (When all metaphors were analyzed, $\beta = .46$ for conceptual aptness and $\beta = .73$ for emotive value, $R^2 = .77$, $p < .001$.) This finding suggests that the process of appreciating metaphor pleurability may not differ between comprehensible and less comprehensible metaphors.

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