

Metaphorical Transfer or not ? :

Re-examination on Synaesthetic Expressions*

Miyagi Sadamitsu

Contents

1. Introduction
2. Observations
3. Previous Studies Based on “Transfer”
4. Discussion : Metaphorical Transfer or not ?
 - 4.1. Schematization of Meaning
 - 4.2. Co-occurrence of Sensations
 - 4.3. Gestalt Cognition
5. Conclusion

1. Introduction

Synaesthesia is generally defined as “the perception, or description of the perception, of one sense modality in terms of another” (Preminger 1974 : 839).¹ It is considered that, for instance, in (1a, b) tactile impressions are metaphorically “transferred” onto the visual field to describe the experiences of color, and in (2a, b), on the other, gustatory concepts are utilized to express the sound sensation.

- (1) a. warm/cold colors
b. atatakai/samui iro (‘warm/cold colors’ in Japanese)
- (2) a. a sweet voice
b. amai koe (‘sweet voice’ in Japanese)

This paper will point out that the traditional analysis based on the metaphorical transfer is still

八戸大学ビジネス学部

* The present paper is a revised version of Sadamitsu (2002) in *Machikaneyama Ronso* 36, 31-49. I would like to thank Seisaku Kawakami and Yukio Oba for their instructions and encouragements. My gratitude goes to Yuki-Shige Tamura, who is always giving me helpful suggestions and comments. I am also indebted to Michael T. Wescoat, who kindly acted as an informant. The responsibility of any remaining deficiencies, of course, rests entirely upon the author.

¹ In this article, “synaesthesia” solely refers to a linguistic phenomenon as a branch of figurative expressions although it means such neuropsychological experiences as colored hearing and colored vowels (see Harrison and Baron-Cohen (1997) or Marks and Bornstein (1987), inter alia). And also we do not treat polysemous semantic extensions of perception verbs, analyzed by Viberg (1984) or Sweetser (1990), inter alia.

disputable, although it has been believed without any doubt so far, viewing from a cognitive linguistic standpoint, in which language is deeply related with our cognitive system.

We will overview the observations on this linguistic phenomenon in section 2 first, and review previous analyses arguing for the directionality in section 3. In section 4 we will discuss our main issue: Are the synaesthetic expressions actually a metaphorical transfer or not? The main discussing points are schematization of the meaning, co-occurrence of the sensations and Gestalt cognition in this figurative language. Section 5 is allocated for concluding remarks.

2. Observations

To begin with, we should overview how the linguistic phenomena has been observed and analyzed. It is reported that there is a directional tendency in the metaphorical “transfer” concerning the selection of the synaesthetic sensory domain and the target one. Take a look at the following examples. Metaphorical “transfers” are not allowed from visual domain to tactile one as in (3a, b), nor from visual one to gustatory one as in (4a, b) both in English and Japanese.²

- (3) a. *a lighted coldness
 b. *akarui hada-zawari (‘bright touch’ in Japanese)
- (4) a. *an yellow taste
 b. *kandakai amasa (‘shrill sweetness’ in Japanese)

This directional tendency is observed both from diachronic and synchronic perspective. (See Ullmann 1951; Williams 1976; Yamanashi 1982, 1988; inter alia).

First, Ullmann (1951) observed synaesthetic expressions in poetries and pointed out that there is a hierarchical distribution among the sensory domains in the directional tendency.³ The hierarchical distribution means that the lower sensory modalities are likely to be transferred to the higher ones. In other words, it is likely from the less differentiated ones to the more differentiated ones. According to Ullmann, the order of the differentiatedness is assumed as follows: Touch < Heat < Taste < Scent < Sound < Sight. And also he observed that the most productive synaesthetic source is tactile domain, and on the other the most productive sensory target of the metaphor is sound one, followed by sight one. (See Ullmann 1951: 280-283.)

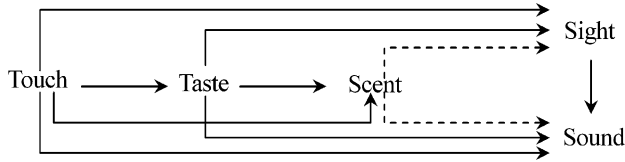
Williams (1979) examined the phenomenon in *OED* and *MED* to observed the historical meaning changes, and showed that there is also a directional tendency on the metaphorical transfers between the following six sensory modalities: Touch, Taste, Scent, Dimension, Color,

² Recently some researchers disagree with the directional tendency showing the following examples:
 (i) a. akarui kaori (‘bright fragrance’ in Japanese)
 b. hakkirisita kaori (‘clear fragrance’ in Japanese) (Seto 2003: 72)

³ He observed the figurative expression in poetries of England, France, and Hungary in 19th century: Byron, Keats, William Morris, Wilde, Dowson, Phillips, Lord Alfred Douglas, Arthur Symons, Longfellow, Leconte de Lisle, Theophile Gautier.

and Sound. (See Williams 1976 : 463 for details.)⁴

Examining Japanese prose such as present-day novels and newspapers, Yamanashi (1988) observed the directionality of the synchronic transfers based on the five basic sensations, i.e. Touch, Taste, Scent, Sight, and Sound, and gives the results in the following figure:⁵



(Yamanashi 1988:60)

Figure

He reports that the directionality above basically holds true in the transfers between the five sensory modalities in English examples.

3. Previous Studies Based on “Transfer”

In order to give an explanation to the directional tendency of synaesthetic expressions as overviewed above, previous studies have been conducted treating the figurative language as a metaphorical transfer. They can be grouped mainly into three : (i) Sense Modality Hierarchy Hypothesis, (ii) Development/Evolution Process Hypothesis, and (iii) Accessibility Hypothesis.

First, Sense Modality Hierarchy Hypothesis is based on the differentiatedness hierarchy proposed by Ullmann (1951). According to the theory, the metaphorical transfers are tend to be created by mappings from the lower, i.e. the less differentiated, sensory modalities such as Touch, Taste, and Scent to the higher, i.e. the more differentiated, ones such as Sight and Sound. It is supported by Ikegami (1978), Yasui (1978), Kunihiro (1989), and other linguists. Yasui (1978 : 130-136) explains that when we have only a few specific words to express our sensations, we borrow words for the lower sensory domains in terms of metaphorical transfers.

Let us move on to another model for synaesthetic expressions labeled as Development/Evolution Process Hypothesis. The directionality of synaesthetic transfers is claimed to be motivated by the developmental/evolutionary order of the human senses. This idea is originated from Williams (1976). He assumes that “the physical evolution of the sensory modalities appears to follow the order of transfers : tactile, gustatory, olfactory, acoustic/visual or visual/acoustic” (Williams 1976 : 472), and he further suggests that “paralleling this phylogenetic

⁴ He also reports that this directionality of diachronic transfers in synaesthetic metaphors is to a considerable extent true for other Indo-European languages (Greek, Italian, Latin, and Middle High German) and for Japanese as well.

⁵ The broken lines in the figure mean that the tendency of the transfer is relatively weaker than other.

sequence is the ontogenetic history of the human neonate’s sensory maturation.” (Williams 1976 : 473)⁶ Yamanashi (1988) and Yu (2003) agree with this theory.

The last theory we review here is Accessibility Hypothesis. This theory is based on the General Cognitive Constraint proposed by Shen (1997) as in (5) below.

(5) General Cognitive Constraint (hereafter GCC) :⁷

A mapping from more accessible or basic concepts onto less accessible or less basic ones seems more natural, and is preferred over the opposite mapping.

(Shen 1997 : 54)

The notion of accessibility used in this constraint is underpinned by the two cognitive factors described in (6).

- (6) a. The directness of the contact between the sense which perceives and the perceived entity
- b. The existence, or lack thereof, of a special organ in the human body by means of which the entity is perceived

(Shen 1997 : 54)

Sadamitsu (1999, 2004, 2005) have pointed out the shortcomings of this theory and modified it by adding a third cognitive factor, identifiability of the stimulus source. And he has provided an alternative Accessibility Hierarchy : Touch>Taste>Sight>Scent/Sound, and has demonstrated by the frequency analysis on Japanese data how properly the theory explains the metaphorical tendency.

As Ullmann (1951) pointed out, the linguistic data shows that the phenomenon can be explained not by a clear-cut rule but by a tendency.⁸ We can find some examples which are against the directional tendency explained above as in (7). They are perfectly acceptable although they are analyzed as metaphorical “transfers” from Sound domain to Taste one, which is a mapping from a less accessible modality to a more accessible one.

- (7) a. a quiet taste
- b. shizukana amasa (‘quiet sweetness’ in Japanese)

In addition, we can find another problem. In a single “transfer” between the same sensory domains, some are well-formed and others are not. Example (8a, b) are acceptable but (8c, d) are not, while visual concepts are utilized to describe acoustic sensations in all expressions.

- (8) a. a transparent sound
- b. tomeina oto (‘transparent sound’ in Japanese)

⁶ We cannot provide any evidence either for or against this theory, and we cannot say for certain that there is a parallelism between the two processes : sensory development and sensory evolution. The reason why there seems to be a similarity between synchronic and diachronic tendency in synaesthetic transfers is a question that we should reserve for other papers.

⁷ Shen (1997) also argues that GCC is applicable to other figurative languages such as simile and zeugma as well.

⁸ Ullmann (1951 : 280) himself says that “transfers *tend to* mount from the lower to the higher reaches of the sensorium, from the less differentiated sensations to the more differentiated ones, and not vice versa” (Ullmann 1951 : 280, italics mine) and shows that 1665 “upward” transfers in his hierarchy were found while 344 “downward” ones (Ullmann 1951 : 282).

- c. *a blue sound
- d. *aoi oto ('blue sound' in Japanese)

What is going on here? We will discuss this issue in the next section considering whether synaesthetic expressions are actually metaphorical “transfers” or not.

4. Discussion : Metaphorical Transfer or not ?

In order to discuss the issue we raised in the previous section, we will consider three facets of this phenomenon: schematization of meaning, co-occurrence of sensations, and Gestalt cognition. Going through the mechanism of synaesthetic expressions from a cognitive linguistic view point, we will point out that it is quite doubtful to regard all the phenomena as a metaphorical transfer from one sensory domain to another in a single uniform way.

4.1. Schematization of Meaning

As we have seen in the previous section, we can easily find examples against the directional tendency, no matter how we set the conditions for the sensory modality hierarchy. Take a look at the following examples :

- (9) a. a sweet sound
- b. amai oto ('sweet sound' in Japanese)
- c. *a salty sound
- d. *shoppai oto ('salty sound' in Japanese)

As in (8), the direction of the metaphorical “transfer” is the same in all examples in (9) : from Taste to Sound, but some are acceptable and others are not. We will consider this from semantic breaching at first.

Taking semantic categorization into consideration, it is quite natural that not all of the word members belong to one sensory modality are homogenous. It is not because of the difference of the meaning, but because of the difference in schematicity degree of the meaning. Let us consider the examples in (9) again. What is different between (9a, b) and (9c, d) is not the meaning content itself, but the degree how the meaning of the word has been breached. In the former examples, the meaning of the adjective *sweet* has been highly schematized in that case, while in the latter examples that of *salty* has not enough to be utilized for another sensation. Putting it further, once a sensory word has acquired a schematized meaning, it can be utilized to describe a lot of sensations in other sensory fields, even in the ones far different from sensory modalities. Look at the examples in (10) for English and in (11) for Japanese.

- (10) a. a sweet breeze
- b. a sweet taste
- c. a sweet sight/color
- d. a sweet smell/flavor
- e. a sweet music/song/sound/voice
- f. a sweet boy/woman
- g. a sweet dream/sleep

- h. a sweet kiss
- i. a sweet victory
- (11) a. ?amai hadazawari ('sweet touch')
- b. amai aji ('sweet taste')
- c. amai iro/gara ('sweet color/texture')
- d. amai nioi/kaori ('sweet smell/flower')
- e. amai ongaku/uta/oto/koe ('sweet music/song/sound/voice')
- f. amai kao ('sweet face')
- g. amai yume ('sweet dream')
- h. amai kuchizuke ('sweet kiss')
- i. amai kangae ('sweet thinking')

In these cases, some do not have the original meaning for the Taste sensation, and only have schematic meanings such as 'pleasing, satisfying, charming, lovable, etc. in general.'

The following examples from English (12) and from Japanese (13) show a gradience of meaning breaching and their acceptability as synaesthetic expressions.

- (12) a. a loud sound
- b. ?a loud color
- c. ?a loud smell
- d. ??a loud taste
- e. ??a loud touch
- (13) a. urusai oto ('loud sound')
- b. ??urusai iro ('loud color')⁹
- c. *urusai nioi ('loud smell')
- d. ??urusai aji ('loud taste')
- e. *urusai hadazawari ('loud touch')

In (12) the English word *loud* has lost its specific meaning for the Sound modality to mean 'offensive and obtrusive' in (12b, c) and 'strong or powerful' (12d, e). On the other hand, the Japanese word *urusai* has not been schematized enough to be used in other semantic fields as shown in (13b-e).

These heterogenic characteristics in a single sensory modality category trigger the difference in acceptability between the expressions even though they are analyzed to belong to the same semantic category. Concerning to this point, Tsur (1992: 249) correctly explains citing an example **lily-voiced cicadas* that it is unacceptable "because 'lily' is too concrete an object for intersense transfer, and its definite shape is not very likely to dissolve into a gestalt-free quality." That's why *a transparent sound* is perfectly acceptable while **a blue sound* is not. It is because the adjective *transparent* has a breached meaning enough to be utilized to depict a sound sensation in the former example, while in the latter the visual word *blue* is too concrete to describe a acoustic concept.

⁹ *Urusai gara* ('loud pattern' in Japanese) is a well-formed expression.

Therefore, in some synaesthetic expressions, it does not seem so reasonable to regard all the phenomena as metaphorical “transfers” from one sensory concept to another in a uniform way.

4.2. Co-occurrence of Sensations

The next facet that we will consider concerning to synaesthetic expressions is co-occurrence of sensations in a single sensory event. Focusing on the acceptability of the figurative expressions, there are some examples which will become more acceptable when we can easily imagine or recall that two or more sensations in question are involved in a single cognitive event. Let us examine the examples below:

- (14) a. [a] hard sound (Komori 1992: 62)
b. [a] salty smell¹⁰
- (15) a. kobashii oto (‘savory sound’) (Oorui 1997: 18)
b. karai iro (‘hot color’)

At first glance, these synaesthetic examples seem to be not perfectly acceptable. Once we put a context for each expression as in (16) and (17), respectively, however, they will sound absolutely acceptable.

- (16) a. a sound when you hit a hard thing like a pan
b. a smell when you are exposed to the sea breeze
- (17) a. a sound when corns are being burnt
b. a color of kimchi, Korean pickle

These linguistic data show that co-occurrence of the sensations in question is strongly related with the production and understanding of the synaesthetic expressions. When we can perceive, or usually be expected, two or more sensations at a time in recognizing one thing in a single sensory event, we will regard these sensory concepts as highly related so that we can create and understand a synaesthetic expression.

Given the significant roll of co-occurrence of sensations, we can provide a natural and convincing explanation to the strong relationships both between tactile and gustatory modality and between gustatory and olfactory one.

- (18) a. a harsh wine
b. namerakana aji (‘smooth taste’ in Japanese)
- (19) a. a sour smell
b. amai kaori (‘sweet flavor’ in Japanese)

These examples can often be found in eating and tasting events. Example (18) are based on tactile concepts to depict gustatory sensations, and (19) are on concepts of taste for olfactory sensations. Taste concepts have a tight connection with touch and scent one in light of co-occurrence of sensations. The sensation of taste cannot always be clearly separated from

¹⁰ The full sentence is as follows: “Visitors to this charming, historic city are always captivated by the authenticity of the experience, the friendliness of the people and the invigorating *salty smell* of the sea.” (“Visitor Info,” *Skate Canada*, January 15-21, 2007, italics mine. http://www.skatecanada.ca/en/events_results/events/cdns07/visitors/index.html)

those of touch in the mouth and scent of the food, since “tasting is a complex process” and “the mouth contains nerve endings sensitive to taste and feel and the olfactory sense interacts with these” (Lehrer 1978 : 98). Then, we have many natural transfers in synaesthetic metaphors as shown above.

Taking the co-occurrence of sensations into consideration, we can also explain properly why ambiguous expressions are produced concerning to the taste concepts as in the examples below :

- (20) a. a hot dish
b. a savory dish

Does (20a) describe either a sensation of a high temperature of the food or that of a pungent spicy taste of it? How about (20b)? Is it about taste or smell? Since these sensations occur simultaneously in every tasting event, it is safely say that these sensory concepts are stored in our mind as a set.

Accordingly, it is quite insufficient to regard the synaesthetic phenomena solely as one of metaphor. Although some linguists such as Taylor (1989) disagree with the analysis in terms of metonymic recognition for this figuration,¹¹ the examples in (14), (15), (18), and (19) at least are positively based on the metonymic process as we have seen above. In other words, when we describe a thing in a cognitive event, we can utilize the attributions of the stimulus source in addition to the stimulus itself. In the case of (14a), the hardness is not a sensation of the stimulus source, the sound, but an attribution of the stimulus source, the pan. Nevertheless, it is utilized to depict the acoustic sensation in the form of synaesthetic expression since the attribution of the stimulus source, the pan, is one of the most characteristic features concerning to the cognitive event.

This conclusion appears to be quite opposite that of meaning schematization discussed in the previous section in that synaesthetic expressions are likely to be produced and accepted when two or more sensory concepts are strongly and simultaneously invoked in a single cognitive event. Then again, in such synaesthetic expressions as shown above, it does not seem so reasonable to regard the linguistic phenomena solely as metaphorical “transfers” from one sensory domain to another.

4.3. Gestalt Cognition

The last evidence is Gestalt cognition for the discussion here against the previous analyses which treat synaesthetic expressions exclusively as metaphorical “transfers” from one sensory modality to another.

Let us consider a bigger question than the modifying relations between sensory modalities. That is, “Why does the synaesthetic figuration occur in the first place?” It must be because our sensory equipments are highly specialized for each sensation and also strongly integrated to recognize things in the world (See Nakamura 1979). The most characteristic feature of

¹¹ “Synaesthesia involves the mapping one sensory domain on to another It is doubtful whether attributes of these different domains get associated through metonymy.” (Taylor 1989 : 139)

our cognitive system is that we are always using all sensory organs, not just the single one specialized for the stimulus in question, when we recognize a thing in a cognitive event. Consciously or unconsciously, we are always getting vast amounts of information from each and every equipment. Based on the co-occurring sensory information from all over our body, we recognize the target thing as a Gestalt. On this regard, Merleau-Ponty (1945) truly points out that “man *is a sensorium commune*” (Cited from the translation, Smith 1962 : 238).¹² To put it another way, one single individual is a big sensor as a whole. Based on this Gestalt cognition of a target thing in the world, the synaesthetic experiences motivate us to project them into synaesthetic language, when we strongly recognize to be aware of the co-occurrence of multiple sensations from our sensory organs. We put them straightforwardly into language that way. Considering this point, it is not strictly true to regard this figurative phenomenon as a metaphorical “transfer” from one sensory modality to another.

In synaesthetic expressions, metaphorical mappings can occur not between the sensory modalities but between the Gestalt patterns all the sensations will make when we perceive things. With the vast amount of sensory information from all over our body, we form a Gestalt pattern to recognize a thing. For another thing, we set another pattern. If we find any similarity between the patterns, then we will express it using the mechanism of metaphor from one Gestalt pattern to another.

Let us quote Amagasaki (1990) to discuss the nature of our Gestalt cognition system.

(21) Common sense is not a sense that commonly occurs through stimuli from different physical parts. It is a sense that we form according to a posture against different experiences in different fields. Our basic five senses, such as taste and touch, and our somatic sense which tells us information on our physical balance, are all partial senses themselves. Common sense, on the other, is an integrated sense of our physical situation which is invoked by the partial senses all over our body.

(Amagasaki 1990 : 139, translation mine)

According to his analysis, when we express *sweet* to put a pleasure feeling of a music tune into words, we may be feeling the same sensory pattern as the one when we are tasting some sweets, say, in the flaccidity of the muscles or in the one neural excitation, even though it may occur in a lower intensity level.

This insightful analysis has directly to do with the meaning schematization discussed above. Let us consider example (1) *warm colors* once again. What can bring this synaesthetic expression into existence is the similarity between the Gestalt sensational pattern perceived from the color and the pattern from the warm thing, in which the most characteristic one

¹² Merleau-Ponty (1945) also analyzes that “Synaesthetic perception is the rule, and we are unaware of it only because scientific knowledge shifts the centre of gravity of experience, Sight, it is said, can bring us only colours or lights, and with them forms which are the outlines of colours, and movements which are the patches of colour changing position. But how shall we place transparency or ‘muddy’ colours in the scale? . . . The senses intercommunicate by opening on to the structure of the thing. One sees the hardness and brittleness of glass, and when, with a tinkling sound, it breaks, this sound is conveyed by the visible glass.” (Cited from the translation, Smith 1962 : 229)

must be the heat sensation.¹³ Therefore, we can conclude that all synaesthetic expressions are not exactly metaphorical “transfers” from one sensory modality to another. We can safely use the term metaphorical transfer for this figurative language not between the sensory domains but between the Gestalt patterns of sensations in question, which is based on the topological similarity in perceiving things.

In this way, close looking at the cognitive motivation of synaesthetic figuration, we see that meaning schematization and co-occurrence of sensations discussed above are organically linked each other.

5. Conclusion

This paper has shown that, viewing from a cognitive linguistic perspective, the traditional analysis on synaesthetic expressions is not exactly correct in that it is solely based on the metaphorical transfer between sensory modalities. In order to clarify this point, we have mainly discussed the following three issues: meaning schematization, co-occurrence of sensations, and Gestalt cognition.

First, as Sadamitsu (1999) points out, synaesthetic expressions will become natural and acceptable when the original meaning of the adjective has been schematized enough. And this factor can give a room to produce the “transfers” opposite the directional tendency mentioned above and also allow some sensory adjectives to be used to describe things in the other semantic fields.

Second, following Komori (1993, 2000) and Sadamitsu (1999, 2004, 2005), we have discussed that synaesthetic figurations are not based exclusively on metaphorical recognition, but in some cases they are based on metonymic recognition. When two or more sensations occur at a time strongly enough to invoke the concepts and images, they are easily and naturally expressed in the form of synaesthetic languages.

And lastly, we have shown that both cognitive mechanisms of meaning schematization and co-occurrence of sensations are organically linked each other, in terms of a cognitive motivation of synaesthetic figuration, that is, Gestalt cognition. Our cognitive system is both highly specialized and strongly integrated. It is necessary that all of the sensory information co-occur to form Gestalt patterns or schemas for each perceived entity. Then, when we come across a topologically similar pattern in perceiving another entity, we can put it into a form of synaesthetic expression, directly projecting our recognition onto the language.

To sum up, the traditional analysis is not correct in that synaesthetic expression solely involves a metaphorical transfer from one sensory modality to another. Taking the cognitive motivation into consideration, we can conclude that it involves a metaphorical mechanism from

¹³ Not only the metaphorical recognition between the Gestalt patterns but also a metonymic one can be involved in this kind of examples. We can often experience warm or hot things which are red or yellow. The most convincing example is the sun. Through these experiences, we can produce these synaesthetic expressions based on the metonymic recognition system.

one Gestalt pattern to another based on the topological similarity.

As we have pointed out in the present paper, synaesthetic expressions are not homogenous. It is another defect of the traditional analysis to have only explored the metaphorical directionality without paying any attention to the important fact. Then, they have been afflicted with rivers of counter examples. Another new issue we have to work with is how can we explain the directional tendency admitting the heterogeneous nature of synaesthetic expressions. And we need to clarify more fundamentally how such cognitive mechanisms as metaphor, metonymy, and Gestalt cognition affect the figuration. This task, however, will be beyond the range of this paper and we have to await further research.

References

- Amagasaki, Akira (1990) *Kotoba-to Shintai*, Keisou-Shobou, Tokyo.
- Cytowic, Richard E. (1993) *The Man Tasted Shapes*, A Jeremy P. Tarcher/Putnam Book, New York. Rep. by MIT Press, Cambridge, Massachusetts, 1998.
- Evans, Nicholas and David Wilkins (2000) "In the Mind's Ear: The Semantic Extensions of Perception Verbs in Australian Languages," *Language* 76, 546-592.
- Gibbs, Raymond W., Jr. (1994) *The Poetics of Mind : Figurative Thought : Language, and Understanding*, Cambridge University Press, Cambridge.
- Harrison, John E. and Simon Baron-Cohen (1997) "Synaesthesia: a Review of Psychological Theories," in Simon Baron-Cohen and John E. Harrison eds., *Synaesthesia : Classic and Contemporary Readings*, 109-122, Blackwell, Oxford.
- Ikegami, Yoshihiko (1978) *Imi-no Sekai : Gendai Gengogaku-kara Miru*, NHK Books, Tokyo.
- Ibarretxe-Antuña, Iraide (1999) "Metaphorical Mappings in the Sense of Smell," in Raymond W. Gibbs, Jr. and Gerard J. Steen eds., *Metaphor in Cognitive Linguistics*, John Benjamins, Amsterdam/Philadelphia.
- Komori, Michiko (1993) "Kyoukankaku Hyougen no Naka no Kan'yusei (Metonymy in Synaesthetic Metaphors)," *Osaka Syouin Joshi Daigaku Eibei-Bungaku-Kaishi* 29 : 49-65.
- Komori, Michiko (2000) "Kyoukankaku Hyougen ni Mirareru Metonymy Kiban ni tuite (Metonymic Foundation in Synaesthetic Metaphors)," *Eigo Goho Bunpo Kenkyu (Research on English Grammar and Usage)*, 7, 123-134.
- Kunihiro, Tetsuya (1989) "Gokan-wo Arawasu Goi : Kyoukankaku-Hiyu Hyougen," *Gengo* 18, 11 : 28-31.
- Lakoff, George (1990) "The Invariance Hypotheses: Is Abstract Reason Based on Image-Schemas?" *Cognitive Linguistics* 1, 39-74.
- Lakoff, George and Mark Johnson (1980) *Metaphors We Live By*, the University of Chicago Press, Chicago and London.
- Langacker, Ronald W. (1987) *Foundations of Cognitive Grammar Vol. I : Theoretical Prerequisites*, Stanford University Press, Stanford, California.
- Lehrer, Adrienne (1975) "Talking about Wine," *Language* 51, 901-23.
- Lehrer, Adrienne (1978) "Structure of the Lexicon and Transfer of Meaning," *Lingua* 45, 95-123.
- Marks, Lawrence E. and Marc H. Bornstein (1987) "Sensory Similarities : Classes, Characteristics, and Cognitive Consequences," in Robert E. Haskell ed. (1987) *Cognition and Symbolic Struc-*

- tures : The Psychology of Metaphoric Transformation*, Ablex, New Jersey.
- Merleau-Ponty, Maurice (1945) *La Phenomenologie de la Perception*, Editions Gallimard, Paris. [*Phenomenology of Perception*, trans. by Colin Smith (1962), Routledge and Kegan Paul, London.]
- Muto, Ayaka (2000) “‘Kankaku-kan no Imi-ten’yo’ wo Sasaeru ‘Metafa’ to ‘Metonimi’: ‘Kyoukankaku-teki Hiyu’ towa Nanika (‘Metaphor’ and ‘Metonymy’ Supporting the Meaning Transfers between Senses: What is the ‘Synaesthetic Metaphor’?),” *Kotoba no Kagaku (Studia Linguistica)* 13, 97-116.
- Nakamura, Yujiro (1979) *Kyoutsuu-Kankaku-Ron (Theory of Common Sences)*, Iwanami-Shoten, Tokyo.
- Oorui, Natsuko (1997) “A Study of Metonymy in Sound-Oriented Synaesthetic Expressions,” unpublished B. A. thesis presented to Osaka University.
- Preminger, Alex ed. (1974) *Princeton Encyclopedia of Poetry and Poetics*, Princeton University Press, Princeton, N.J.
- Sadamitsu, Miyagi (1999) “Synaesthesia: A Study from a Cognitive Viewpoint,” *Conference Book* 17, 121-124, English Linguistic Society of Japan.
- Sadamitsu, Miyagi (2004) “Synaesthesia Re-examined: An Alternative Treatment of Smell Related Concepts,” *Osaka University Paper of English Linguistics* 8, 109-125.
- Sadamitsu, Miyagi (2005) “Kyokankaku Hyogen no Ten’yo: Kyukaku ni tsuite (Transfers of Synaesthetic Expressions: Concerning to the Sense of Smell),” the presentation handout at the 13th conference of Fukuoka Cognitive Linguistics Society, at Seinan Gakuin University, March 26th, 2005.
- Seto, Ken-ichi (2003) “Gokan de Ajiwau (Taste Using Five Senses),” in Ken-ichi, Seto ed. (2003) *Kotoba wa Aji wo Koeru (Words Go beyond Taste)*, 62-76, Kaimei, Tokyo.
- Shen, Yeshayahu (1997) “Cognitive Constraints on Poetic Figures,” *Cognitive Linguistics* 8, 33-71.
- Sweetser, Eve (1990) *From Etymology to Pragmatics: Metaphorical and Cultural Aspects of Semantic Structure*, Cambridge University Press, Cambridge.
- Taylor, John R. (1989) *Linguistic Categorization: Prototypes in Linguistic Theory*, Clarendon Press, Oxford.
- Tsur, Reuven (1992) *Toward a Theory of Cognitive Poetics*, North-Holland, Amsterdam.
- Ullmann, Stephen (1951) *The Principles of Semantics*, Basil Blackwell, Oxford.
- Viberg, Åke (1984) “The Verbs of Perception: A Typological Study,” in Brian Butterworth, Bernard Comrie, and Östen Dahl eds., *Explanations for Language Universals*, 123-162, Mouton de Gruyter, Berlin.
- Williams, Joseph M. (1976) “Synaesthetic Adjectives: A Possible Law of Semantic Change,” *Language* 52, 461-78.
- Yamanashi, Masa-aki (1988) *Hiyu to Rikai (Metaphor and Understanding)*, Tokyo University Press, Tokyo.
- Yamanashi, Masa-aki (2000) *Ninchi-Gengogaku-Genri (Principles of Cognitive Linguistics)*, Kurosio, Tokyo.
- Yasui, Minoru (1978) *Gengai-no Imi (Implicit Meaning)*, Kenkyusya, Tokyo.
- Yu, Ning (2003) “Synesthetic Metaphor: A Cognitive Perspective,” *Journal of Literary Semantics*, 32, 19-34.