

# Sweet Fragrances from Indonesia: A Universal Principle Governing Directionality in Synaesthetic Metaphors

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## 1. INTRODUCTION



Figure 1: The Sweet Fragrance supermarket in Indonesia

In Indonesia, on the island of Borneo, in the town of Pontianak, there is a supermarket called *Harum Manis* (shown in Figure 1 above). *Harum* means 'fragrant' or 'fragrance', while *Manis* means 'sweet' or 'sweetness'. The name of the shop may thus be translated into English as 'Sweet Fragrance'.

Is it a mere accident that the store was called *Harum Manis* and not *Manis Harum*, or 'Fragrant Sweetness'? After all, the two words have similar meanings, denoting pleasant sensations, and also similar grammatical behaviour, presumably belonging to the same part of speech. This suggests that either order should have been equally appropriate. However, this is not the case; in actual fact, there are good reasons why *Harum Manis* was chosen and *Manis Harum* rejected. These reasons are what this paper is all about.

## 2. METAPHORS AND SYNAESTHESIA

*Harum manis*, and its English counterpart, *sweet fragrance*, are examples of metaphors based on a relationship of synaesthesia, or *synaesthetic metaphors*.

A *metaphor* is a structure that involves a mapping between two distinct domains, referred to as *target* and *source* (or, alternatively, *tenor* and *vehicle*), such as the following English examples:

- (1) (a) smooth character
- (b) green idea

In the above examples, the nouns, *character* and *idea*, represent the target domains, while the adjectives, *smooth* and *green*, represent the corresponding source domains. Typically, as in the above examples, the target domain involves an abstract concept, while the source domain has to do with a concept that is more concrete.

*Synaesthesia* is a systematic relationship between elements from two distinct sensory modalities. For example, hearing a particular note on the piano, such as C#, might cause a person to see a certain colour, such as an orangey brown; such a person would be undergoing a synaesthetic experience based on a relationship between the sensory modalities of sound and sight.

A synaesthetic metaphor is a metaphor in which target and source domains are associated with different sensory modalities. In our Indonesian supermarket example above, the target domain, *harum* 'fragrant', belongs to the sensory modality of smell, while the source domain, *manis* 'sweet', belongs to the sensory modality of taste. Two other examples of synaesthetic metaphors in English are the following:

- (2) (a) soft light
- (b) sweet melodies

In (2a), *light*, the target domain, is associated with the sense of sight, while *soft*, the source domain, is associated with the sense of touch. And in (2b), *melodies*, the target domain, is associated with the sense of sound, whereas *sweet*, the source domain, is associated with the sense of taste.

## 3. THE DIRECTIONALITY PRINCIPLE

Synaesthetic metaphors pose a variety of challenging research questions that have attracted the interest of scholars: What is the basis for the identification of similarities between concepts associated with different sensory modalities? Are there differences between poetic and non-poetic usages of synaesthetic metaphors? How and when does the ability to use synaesthetic metaphors develop? To what extent are synaesthetic metaphors universal?

The question addressed in this paper is the following one: Are there constraints on the directionality of synaesthetic metaphors? Or in other words: Are concepts from certain sensory domains more likely to function as target domains while concepts from other sensory domains are more commonly found in the role of source domains, or is it the case that concepts from any sensory modality can be mapped onto concepts from any other sensory modality with equal likelihood?

For metaphors in general, that is to say, not necessarily synaesthetic ones, the directionality question has been investigated by Ortony, Vondruska, Foss and Jones (1985), Shen (1997), and many others. For specifically synaesthetic metaphors, the directionality question has been studied by Ullman (1957), Tsur (1992), Shen (1997), Shen and Cohen (1998), Yu (2003), Shen and Eisenman (to appear), and others.

The first study of the directionality of synaesthetic metaphors is Ullman's (1957) pioneering research of poetic synaesthesia. Ullman's point of departure is that the various sensory modalities form a hierarchy with respect to their degree of differentiation:

(3) *Hierarchy of Sensory Modalities*

sight > sound > smell > taste > touch

In accordance with the above hierarchy, sight is the highest, or most differentiated sense, followed, in that order, by sound, smell and taste, with touch as the lowest, or least differentiated sense.

One may wonder what the motivation may be for the above hierarchy, and, indeed, a number of scholars have offered various explanations for it; see, for example Ullman (1957), Tsur (1992), Shen (1997), Shen and Cohen (1998) and Popova (2005). One possible explanation is discussed briefly in the next section of this paper. However, for the purposes of this paper, we accept the hierarchy as a given fact; our main focus is on using it as an analytical tool facilitating an insightful description of the patterns of usage displayed by synaesthetic metaphors.

Given the Hierarchy of Sensory Modalities, synaesthetic metaphors are presented with two structural possibilities, which can be exemplified with reference to our Indonesian supermarket:

- (4) (a) sweet fragrance  
(b) fragrant sweetness

In (4a), *fragrance*, the target domain, is associated with the sense of smell, while *sweet*, the source domain, is associated with the sense of taste; accordingly, the mapping is upwards on the hierarchy, from a lower sensory domain to a higher one. Conversely, in (4b), *sweetness*, the target domain, is associated with the sense of taste, while *fragrant*, the source domain, is associated with the sense of smell; accordingly, the mapping is downwards on the hierarchy, from a higher sensory domain to a lower one.

Ullman (1957) looks at over 2000 synaesthetic metaphors from 8 poets representing 19th century poetry in three languages, English, French and Hungarian. His main finding can be summarized as follows:

(5) *Directionality Principle*

With greater than chance frequency, synaesthetic metaphors involve mappings upwards on the Hierarchy of Sensory Modalities (with the exception of sight and sound, which behave in similar fashion)

In other words, in synaesthetic metaphors, the target domain tends to be associated with a sensory modality lower down on the hierarchy, and the source domain with a sensory modality higher up on the hierarchy.

For example, in (2), both metaphors conform to the Directionality Principle in (5): in (2a) *soft light*, the mapping is from touch to sight, while in (2b) *sweet melodies*, the mapping is from taste to sound. But what about the two examples in (4)? In (4a) *sweet fragrance*, the structure, once again, is in conformity with the Directionality Principle, with the mapping from taste to smell. However, in (4b) *fragrant sweetness*, the mapping violates the Directionality Principle, since in this case it is downwards, from smell to taste. Thus, the Directionality Principle accounts for the structure of the Indonesian supermarket name, and the choice of *Harum Manis* 'Sweet Fragrance' over the alternative *Manis Harum* 'Fragrant Sweetness'. But does the Directionality Principle really apply also to names for supermarkets in distant Indonesia, or is *Harum Manis* just a fortuitous coincidence?

#### 4. UNIVERSALITY AND COGNITIVE SIMPLICITY

More generally, Ullman's study raises the question to what extent the Directionality Principle is universal, that is to say, to what extent it applies to synaesthetic metaphors in other languages and in other genres.

A variety of further investigations suggest that indeed, the Directionality Principle is applicable well beyond the specific languages and genres examined in Ullman's original study: among such studies are Dombi (1974) for Hungarian poetry, Williams (1976) for Japanese prose, Day (1996) for German and American English prose, Manor (1996) for Hebrew prose, Shen and Cohen (1998) for Modern Hebrew poetry, Yu (2003) for Chinese literary and non-literary prose, Arsenic (2005) for Serbo-Croatian poetry, and Shen and Gadir (forthcoming) for Biblical Hebrew. The above studies span a variety of languages, periods and genres. Linguistically, they are representative of Europe, the Middle-East and also East Asia. Historically, although focusing on the 20th century, they examine also works from the 19th century (as did Ullman's original study), and go back to antiquity with Biblical Hebrew. In terms of genres, they include both poetry and prose, the latter of both literary and non-literary varieties. In particular, some of the studies, such as those by Shen and Gadir and by Shen and Cohen, span several decades, and thus include different sub-periods of modern poetry, as defined by conventional literary studies. It is a generally accepted view in literary studies that consecutive literary generations rebel against their predecessors with respect to conventions of linguistic usage as well as various other aspects of poetic texts; see Shen (1977) for details. Accordingly, the fact that the Directionality Principle for synaesthetic metaphors remains valid across successive literary generations suggests that this principle reflects basic and invariant properties of human cognition.

Further evidence for the Directionality Principle derives from examination of the ways in which words change their meanings over time. One very common pattern of meaning change involves a metaphorical expression which in the distant past might have been used in a novel and creative fashion, but which over the course of many years becomes conventionalized, and is used with greater and greater frequency, so much so that the metaphorical nature of the expression becomes weakened and ultimately lost: the result is an expansion of the literal meaning of the source expression to include also its erstwhile metaphorical function. For example, in Indonesian, the original meaning of the word *keras* was 'hard', and this remains its basic meaning today. However, at some point in the past, the word *keras* was applied to expressions denoting sounds, resulting in

synaesthetic metaphors in which *keras* was understood to mean 'loud'. In such metaphors, *keras*, the source domain, is associated with the sense of touch, while the various target domains are associated with the sense of sound; thus, these metaphors are in accordance with the Directionality Principle. Over the course of time, these metaphors became conventionalized and increasingly common, to the extent that contemporary dictionaries of Indonesian now list 'loud' as a secondary meaning of *keras*. While it is probably still the case that speakers of Indonesian consider the basic meaning of *keras* to be 'hard', usages of *keras* to mean 'loud' are well on the way to losing their metaphorical nature, at which time the meaning change will have reached completion. In the case of *keras*, the meaning change is thus from the sensory modality of touch to that of sound, which is upwards on the Hierarchy of Sensory Modalities. In general, the Directionality Principle predicts that when words denoting sensory perceptions change their meanings to ones associated with different sensory modalities as result of the conventionalization of a synaesthetic metaphor, then the direction of the change will be upwards on the Hierarchy of Sensory Modalities. And indeed, a variety of studies of diachronic meaning change in different languages have shown that it proceeds in accordance with the Directionality Principle; see, for example, Williams (1976) for English and Japanese, Yu (1992) for Chinese, and Shen and Gadir (forthcoming) for Hebrew.

Thus, there is already considerable evidence suggesting that the Directionality Principle may be universal. But why should this be the case? In general, universals of language may be due to any or all of the following factors: chance, language contact and subsequent borrowing, inheritance from a hypothetical common proto-language, and universal properties of human cognition. In the case at hand, the widespread distribution of synaesthetic metaphors patterning in accordance with the Directionality Principle clearly rules out chance, and also renders a borrowing explanation extremely unlikely. Moreover, the patterns of diachronic meaning change discussed above suggest that the Directionality Principle is not just an accidental property inherited from some proto-language but rather an active force governing the formation of metaphors in contemporary languages. Thus, we are led towards an explanation for the Directionality Principle couched in terms of universal properties of human cognition.

One possible explanation for the Directionality Principle stems from the observation that, in the Hierarchy of Sensory Modalities, lower sensory modalities are more concrete or "accessible" than higher sensory modalities. To the extent that this is the case, the Directionality Principle for synaesthetic metaphors can be viewed as a particular instantiation of the more general directionality principle mentioned in Section 2 above, to the effect that source domains tend to be more concrete, target domains more abstract. This explanation is developed in Shen and Cohen (1998), Shen and Eisenman (to appear), and Shen and Gadir (to appear).

If in fact the Directionality Principle is part of human cognition, then this ought to be observable experimentally. In particular, if synaesthetic metaphors conforming to the Directionality Principle are cognitively simpler or more basic, then we would expect subjects to judge such metaphors as more natural, to assign them interpretations with greater ease, and to be able to recall them more successfully. In a series of experiments conducted on speakers of Hebrew, Shen and Cohen (1998) and Shen and Eisenman (to appear) show that these predictions are borne out. Thus, the experimental evidence suggests that metaphors conforming to the Directionality Principle are indeed cognitively

simpler. However, to the best of our knowledge, no similar experiments have so far been conducted on speakers of any languages other than Hebrew. Once again, the question arises whether similar facts obtain in other languages, that is to say, whether synaesthetic metaphors conforming to the Directionality Principle are cognitively simpler across the languages of the world.

## 5. SYNAESTHETIC METAPHORS IN INDONESIAN

In this paper, we present some preliminary studies of synaesthetic metaphors in Indonesian. Indonesian is chosen as a language that is far removed from Hebrew and other European languages in terms of geographical space, genealogical affiliation, grammatical structure, and cultural influences. If Indonesian turns out to be similar to Hebrew and other European languages then the case for universality is substantially boosted. The studies presented herein are part of a large-scale ongoing investigation of metaphors and related tropes in Indonesian and other languages of Indonesia, seeking out patterns of universality and diversity in the realm of figurative language.

Indonesian is the national language of Indonesia, spoken by around two hundred million people, albeit not all natively. As is generally the case for large languages, there is a great amount of variation along several independent dimensions. *Standard Indonesian* is the formal variety of the language, and that most commonly described in the linguistic literature. However, nobody speaks Standard Indonesian as their first native language; children acquiring Indonesian start out with one or more varieties of colloquial Indonesian, and only later acquire the standard language. Colloquial Indonesian exhibits a substantial amount of regional variation, with varying degrees of mutual intelligibility between dialects; in addition, colloquial Indonesian varieties are all very different from the standard language. Since the present studies were carried out in the capital city, Jakarta, the variety of colloquial Indonesian that we shall be concerned with here is that generally referred to as *Jakarta Indonesian*. (Somewhat confusingly, Jakarta Indonesian is occasionally referred to simply as "Colloquial Indonesian"; however, this usage fails to take into account the existence of other regional varieties of colloquial Indonesian.) Some grammatical studies of Jakarta Indonesian can be found in Wouk (1989, 1999), Cole, Gil, Hermon and Tadmor (2001), Tjung (2006), Sneddon (2006) and Gil (2006, to appear). Jakarta Indonesian and Standard Indonesian are not autonomous entities; rather, they represent the two idealized endpoints on a continuum of language varieties, or lects; see Sneddon (2003). In reality, speakers are constantly moving up and down the lectal cline, from basilect to acrolect and back again. What this means is that any given naturalistic text may combine features of Jakarta and Standard Indonesian. Moreover, when subjects are presented with experimental tasks, it is not always possible to tell whether they are performing them in Jakarta or Standard Indonesian (even when the experiments involve linguistic stimuli that are unambivalently in one or another variety). Accordingly, in this paper, we shall use the term "Indonesian" to refer to the entire range from Jakarta to Standard Indonesian.

What we are interested in is whether synaesthetic metaphors in Indonesian behave the same way as in other languages. Already we have encountered examples suggesting that this might be the case: the supermarket called *Harum Manis* 'Sweet Fragrance', and the meaning change of *keras* from 'hard' to 'loud'—both conforming to the Directionality Principle. But one swallow does not make a spring. In what follows, we shall present

results from two studies of synaesthetic metaphors, one corpus-based, the other experimental, showing that the Directionality Principle does indeed govern the structure of synaesthetic metaphors in Indonesian.

### 5.1. THE CORPUS STUDY

As noted above, corpus studies demonstrating the validity of the Directionality Principle have been conducted for several European languages, ancient and modern Hebrew, and also two East Asian languages, Chinese and Japanese. Still, in many respects, the Eurasian landmass constitutes a single linguistic area with many shared features setting it apart from other geographical regions; see, for example, many of the chapters of the *World Atlas of Language Structures* (Haspelmath, Dryer, Gil and Comrie eds. 2005). Therefore, it is of interest to conduct similar studies on languages from other parts of the world, such as, for example, Indonesian, spoken in insular Southeast Asia.

The present study is based on a corpus of written Indonesian, culled, for the most part, from the internet; the corpus consists of texts of a variety of genres, including poetry, short stories, and journalistic articles. The corpus is coded for various sorts of figurative language, including metaphors of various kinds, among which are the synaesthetic metaphors of concern in the present paper. The compilation and coding of the corpus is an ongoing project; accordingly, the results presented in this paper are of an interim nature.

So far, the corpus has yielded a total of 125 synaesthetic metaphors. Of these, 121 are in accordance with the Directionality Principle, while just 4 are in violation of it. Thus, the Indonesian corpus study joins forces with the previous studies mentioned above, providing strong additional support for the universality of the Directionality Principle.

A few examples of Indonesian synaesthetic metaphors from the corpus are given in (6) - (10) below. In each example, the sensory modalities of the target and source domains are indicated, followed by the text itself, with the synaesthetic metaphor in boldface. (In (8) and (10) there are two different synaesthetic metaphors within each example.)<sup>1</sup>

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<sup>1</sup> Each example is presented in three lines: text, interlinear gloss, and free translation into English. In examples (6) and (8), some of the surrounding text is shown in square brackets, in free translation into English, in order to provide further information concerning the context in which the synaesthetic metaphor occurs. The interlinear glosses make use of the following abbreviations: ABSTR abstract; AG agent-oriented voice; ASSOC associative; AUG augmentive; DEAG deagentive; DEM demonstrative; DEPAT depatientive; DIST distal; DISTR distributive; EP end-point-oriented voice; NEG negative; PFCT perfect; REL relative; SG singular; VOC vocative; 1 first person.

(6) *sight > touch*

[‘The newest colours in the Chic Colour series from the Majirel Spring Summer Colour Collection consist of three captivating colours that can be suited to skin colour, namely Agua Chic with choice of aquatic colour with hints of green and blue,’]

Pure Chic untuk **warna** yang lebih **lembut** dan feminin  
Pure Chic for **colour** REL more **soft** and feminine  
‘Pure Chic for a **softer** and more feminine **colour**’

[‘and salmon pink and Exo Chic in exotic mahogany purple suitable for chocolate coloured skin.’]

(7) *sound > taste*

Kedai kopi itu sekarang melantunkan **lagu-lagu enak**  
shop coffee DEM-DEM:DIST now AG-reflect-EP **DISTR-song delicious**  
kesukaan Yoshio  
ABSTR-like-ABSTR Yoshio  
‘The coffee shop now plays lots of **delicious songs** that are Yoshio’s favourites’

(8) *sound > touch / sound > touch*

**Suaranya lembut** mengalun “Paaaak Bagyo”  
**voice-ASSOC soft** AG-swell VOC-father Bagyo  
‘Her soft voice swelled “Mister Bagyo”’

[‘The first two “aa” low, the last two “aa” heightening.’]

**Bunyi “k” tidak tajam** melainkan tersentak medok  
**sound k** NEG **sharp** AG-other-EP DEAG-pull heavy.accent  
‘The sound “k” not sharp, but startling with its heavy accent’

[‘The sound “Baa” heightening, the sound “gyo” lowering and long.’]

(9) *smell > taste*

Setelah tiga bulan berada dalam tanah  
one-PFCT three month DEPAT-exist inside earth  
aku menggali kembali kotoran yang telah **berbau asam** itu  
1SG AG-dig return dirty-AUG REL PFCT **DEPAT-smell sour** DEM-DEM:DIST  
‘After it was in the earth for three months, I dug up the muck that was already **smelling sour**’

(10) *smell > touch / smell > taste*

Udara balai desa lama-lama jadi **tajam** oleh **aroma** keringat.  
air public.building village DISTR-old become **sharp** by **odour** sweat  
**Asam, asin, asem.**

**sour salty sour**  
‘The air in the old village halls became **sharp** with the odour of **sweat**. **Sour, salty, sour.**’



In (6), *warna*, the target domain, is associated with the sense of sight, while *lembut*, the source domain, is associated with the sense of touch. In (7), *lagu-lagu*, the target domain, is associated with sound, whereas *enak*, the source domain, is associated with taste. In (8), in the first case, *suaranya*, the target domain, is associated with sound, while *lembut*, the source domain, is associated with touch; similarly, in the second case, *bunyi "k"*, the target domain, is associated with sound, whereas *tidak tajam*, the source domain, is associated with touch. In (9), *berbau*, the target domain, is associated with smell, while *asam*, the source domain, is associated with taste; this metaphor accordingly exhibits the same pattern of sensory modalities as the *Harum Manis* "Sweet Fragrance" supermarket name. Finally, in (10), in the first case, *aroma*, the target domain, is associated with smell, while *tajam*, the source domain, is associated with touch; the same *aroma* also functions as the target domain of a second metaphor, in which *asam*, *asin*, *asem*, the source domain, is associated with taste. These examples, and many others like them in the corpus, show that synaesthetic metaphors in Indonesian texts typically involve mappings upwards on the Hierarchy of Sensory Modalities, in accordance with the Directionality Principle.

## 5.2. THE EXPERIMENTAL STUDY

The Indonesian corpus study suggests that for Indonesian speakers, too, synaesthetic metaphors conforming to the Directionality Principle may be cognitively simpler than others violating it. But is this really the case? As noted above, the cognitive reality of the Directionality Principle has previously been tested only for Hebrew. Our plan is to replicate all the Hebrew experiments on Indonesian; however, so far, we have had occasion to conduct just a single experiment, testing subjects' naturalness judgments of synaesthetic metaphors in conformity with and in violation of the Directionality Principle.

The structure of the experiment and its results are presented in Table 1 below:

| no | sense<br>1 | sense<br>2 | item<br>1 | item<br>2 | gloss<br>1  | gloss<br>2   | var 1<br>(%) | var 2<br>(%) |
|----|------------|------------|-----------|-----------|-------------|--------------|--------------|--------------|
| 1  | sight      | sound      | merah     | nyaring   | red         | high-pitched | 82           | 80           |
| 2  | sight      | sound      | cerah     | dengung   | bright      | buzzing      | 25           | 27           |
| 3  | sight      | smell      | kuning    | anyir     | yellow      | rancid       | 77           | 82           |
| 4  | sight      | smell      | putih     | sengat    | white       | putrid       | 40           | 32           |
| 5  | sight      | taste      | hijau     | rasa      | green       | taste        | 27           | 27           |
| 6  | sight      | taste      | gelap     | pahit     | dark        | bitter       | 45           | 32           |
| 7  | sight      | touch      | kilat     | tajam     | shiny       | sharp        | 85           | 75           |
| 8  | sight      | touch      | hitam     | dingin    | black       | cold         | 72           | 57           |
| 9  | sound      | smell      | denyut    | pesing    | throbbing   | urine-smell  | 85           | 77           |
| 10 | sound      | smell      | desah     | wangi     | wheezing    | fragrant     | 72           | 67           |
| 11 | sound      | taste      | gedebuk   | tawar     | thudding    | bland        | 52           | 67           |
| 12 | sound      | taste      | dengkur   | asam      | grunting    | sour         | 57           | 82           |
| 13 | sound      | touch      | bunyi     | keras     | sound       | hard         | 90           | 97           |
| 14 | sound      | touch      | debar     | lembek    | throbbing   | soft         | 65           | 92           |
| 15 | smell      | taste      | harum     | manis     | fragrant    | sweet        | 97           | 75           |
| 16 | smell      | taste      | gosong    | pedas     | burnt-smell | peppery      | 52           | 52           |
| 17 | smell      | touch      | amis      | licin     | fish-smell  | smooth       | 65           | 57           |
| 18 | smell      | touch      | apek      | panas     | musty       | hot          | 20           | 15           |
| 19 | taste      | touch      | gurih     | kasar     | savoury     | rough        | 70           | 77           |
| 20 | taste      | touch      | asin      | lembut    | salty       | soft         | 62           | 80           |

Table 1: The Naturalness Judgment Experiment for Synaesthetic Metaphors in Indonesian

The experiment was presented to subjects in the form of a sheet of paper containing 20 stimuli. Each stimulus consists of a synaesthetic metaphor in two forms: one conforming to the Directionality Principle, the other violating it. Subjects were asked to circle the form that they judged to be the more natural of the two. The 20 stimuli test all 10 possible combinations of the 5 sensory modalities, with 2 stimuli per combination. In Table 1, the first two columns present the sensory domains, the next two columns the Indonesian words chosen, and the two columns after that their English glosses. Note that one of the 20 combinations, number 15, happens to involve the words forming the name of the Indonesian supermarket.

The experiment is constructed in two alternative variants which differ with respect to the grammatical construction of the synaesthetic metaphor. These two alternative variants may be exemplified with reference to stimulus 15:

- (11) Variant A:        harum manis                manis harum  
          Variant B:        harumnya manis            manisnya harum

Variant A of the experiment involves the *bare juxtaposition* construction, in which the two words occur alongside each other without any additional grammatical marking. Variant B of the experiment involves the *-nya* construction, in which the first word is marked with the associative enclitic *-nya*, whose meaning ranges between that of a definite article such as 'the' and that of a possessive pronoun such as 'its'. Thus, subjects given Variant A of the experiment had to choose between forms such as *harum manis* and *manis harum*, while subjects given Variant B had to choose between forms such as *harumnya manis* and *manisnya harum*.

The motivation for testing two different constructions is to make sure that we know which of the two words in each expression is the target domain and which the source domain. Indonesian, especially in its colloquial varieties, allows for a much greater degree of grammatical flexibility than most familiar European languages; see Gil (2005a,b) for the Riau dialect of Indonesian, similar facts obtain also for Jakarta Indonesian. For example, a bare juxtaposition construction such as *harum manis* allows for at least the following two potential interpretations: (a) an *attributive* interpretation, in which the second word modifies the first, 'sweet fragrance', and (b) a *conjunctive* interpretation, in which both words are equally ranked, 'fragrant and sweet'. Whereas the attributive interpretation gives rise to a metaphor in which the first element, the head of the expression, is the target domain, and the second element, the attribute, is the source domain, the conjunctive interpretation does not result in a metaphorical expression—its interpretation is more closely akin to that of a zeugma. In order to ensure that subjects obtain a metaphorical reading, the *-nya* construction is introduced, as its effect is to narrow down the range of possible interpretations. Thus, in a construction such as *harumnya manis*, the most readily available interpretation is a predicative one, in which the first word is understood as the subject, and the second word as its predicate, 'the/its fragrance is sweet'. This interpretation is clearly metaphorical, with the first element as target domain and the second element as source domain.

Each variant of the experiment has two different versions in which the stimuli are randomized in different orders, and the relative order of the two forms within each stimulus is also different. In each version, there are some stimuli in which the form

conforming to the Directionality Principle occurs on the left (as in (11) above) and others in which it occurs on the right.

A total of 80 subjects, native speakers of Indonesian resident in Jakarta, were tested: 40 for each variant, 20 for each version within each variant. The results of the experiment are given in the last two columns of Table 1, for variants 1 and 2 respectively. The figures show the percentage of subjects that chose the form of the synaesthetic metaphor conforming to the Directionality Principle.

The results of the experiment show that subjects tended to prefer synaesthetic metaphors conforming to the Directionality Principle over their alternatives that violate it. Of the 20 stimuli, 15 scored over 50% for both variants, while just 5 scored under 50% for both variants. (The latter group are shaded grey.) In general, the results of the bare juxtaposition and *-nya* variants are quite similar, suggesting that subjects interpreted both variants in accordance with the same principles. A chi-squared test shows that the overall preference for synaesthetic metaphors conforming to the Directionality Principle is significant at  $p < 0.01$ .

Nevertheless, the results of the experiment show considerable variation from one stimulus to another, for which we do not expect to be able to come up with a single unified explanation. Each word and each pair of words has its own story, its own idiosyncratic features, which affect the way in which it is judged by the experimental subjects. All we can do is to speculate briefly on a few of the other factors that may underlie some of the observed variation.

To begin with, it may be noted that of the 5 stimuli that scored under 50%, one, namely stimulus 2, involves the two highest sensory domains, sight and sound. As noted in the formulation of the Directionality Principle in (5) above, sight and sound constitute an exception to the generalization concerning directionality; hence stimulus 2 need not be considered as a counterexample to the Directionality Principle.

Like other figures of speech, synaesthetic metaphors may be ranked on a scale ranging from highly innovative and hence extremely rare to highly conventionalized and accordingly very common. With respect to the experimental task, one might expect subjects to be more consistent in their judgments of metaphors that are more highly conventionalized and to which they have already presumably been exposed. Thus, if the experiment had been targeted specifically at conventionalized metaphors, the results would have been "better", that is to say, conforming more closely to the Directionality Principle. However, such results would have been little more than a recapitulation of the findings from the first, corpus study, telling us what we already know. Instead, an attempt was made to test synaesthetic metaphors of a more innovative nature, in the hope that subjects faced with such stimuli would be forced to exercise their relevant cognitive faculties creatively and in real time, rather than simply calling upon a memorized list of familiar conventionalized collocations. However, in actual fact, it proved to be very difficult to come up with 20 different stimuli satisfying the experimental design and also exhibiting an equal degree of innovativeness.

In an attempt to evaluate the degree of innovativeness of the experimental stimuli, a post hoc analysis was conducted making use of the MPI Jakarta Child Language Corpus. The MPI Jakarta Child Language Corpus consists of over 2,300,000 words of naturalistic conversation in Jakarta Indonesian, of which roughly half is spoken by young children, and the remaining half by adults, largely, though not entirely, directed towards children.

Although the MPI Jakarta Child Language Corpus may appear, on the face of it, to provide a less than optimal hunting ground for synaesthetic metaphorical expressions, arguably such a corpus of naturalistic speech actually provides a more faithful reflection of the range of linguistic phenomena to which ordinary speakers of Indonesian are exposed in the course of their everyday lives, and which might, accordingly, impinge on their performance as experimental subjects.

Table 2 below presents the frequency of occurrence in the MPI Jakarta Child Language Corpus of the 40 individual words in the experimental stimuli, arranged according to the five sensory modalities. The frequencies are defined in terms of number *n* of tokens per million words, on a roughly logarithmic scale, as follows: very high ( $1000 < n$ ), high ( $100 < n \leq 1000$ ), mid ( $10 < n \leq 100$ ), low ( $0 < n \leq 10$ ), very low ( $n = 0$ ). For each word, the frequency measure takes into account occurrences of the word both in bare form and with additional prefixes and/or suffixes.

|           | sight                                | sound                            | smell                       | taste                    | touch                       |
|-----------|--------------------------------------|----------------------------------|-----------------------------|--------------------------|-----------------------------|
| very high | merah                                |                                  |                             |                          |                             |
| high      | gelap hijau<br>hitam kuning<br>putih | bunyi                            | wangi                       | manis pedas<br>rasa      | dingin keras<br>panas tajam |
| mid       |                                      |                                  | amis gosong                 | asam asin<br>pahit tawar | kasar lembek<br>licin       |
| low       | cerah kilat                          | dengkur<br>denyut<br>nyaring     | apek harum<br>pesing sengat | gurih                    | lembut                      |
| very low  |                                      | debar degung<br>desah<br>gedebuk | anyir                       |                          |                             |

Table 2: Frequency of Words in the MPI Jakarta Child Language Corpus

As evident from Table 2, the distribution of word frequencies varies across the different sensory modalities. Sight has the most frequent words, due largely to the common use of colour terms. In contrast, sound has the least frequent words, so much so that when constructing the experiment, we had to go a dictionary to find appropriate words. The remaining three sensory modalities fall in-between sight and sound. What Table 2 shows, then, is that in constructing the experimental stimuli, there was simply no practical way to ensure that all of the words chosen would be of comparable frequency.

Of course, what has a potential effect on subjects' judgments is not the frequencies of individual words but rather the frequencies of their collocations as synaesthetic metaphors. Accordingly, the MPI Jakarta Child Language Corpus was searched for

synaesthetic metaphors corresponding to each of the 20 experimental stimuli. The search included expressions instantiating any grammatical construction, bare juxtaposition, *-nya*, or other, provided the two words are present and constitute a synaesthetic metaphor. For 18 out of the 20 stimuli, no such combinations were found in the corpus. What this suggests, then, is that by and large, the experiment achieved its goal of testing subjects' creative, real-time cognitive abilities: when choosing one order over another, they were doing so primarily because it sounded better on the fly, not because they remembered having heard a similar collocation in the past. Thus, to the extent that subjects' judgments were consistent with the Directionality Principle, this suggests that synaesthetic metaphors conforming to the Directionality Principle are not just more frequent in texts, but also cognitively simpler or more basic.

But what of the remaining two stimuli, those that did show up as synaesthetic metaphors in the corpus? One of them, stimulus 13, involves the conventionalized meaning extension of *keras* 'hard' to mean 'loud' as discussed in Section 4 above; the combination of *keras* with *bunyi* 'sound', as in stimulus 13, occurs exactly once in the corpus:

(12) *sound > touch*

**Keras** nggak, **bunyinya?**  
**hard** NEG **sound-ASSOC**  
 'Is the **sound loud**?'

In the above example, *bunyinya*, the target domain, is associated with sound, while *keras*, the source domain, is associated with touch. Example (12) thus corresponds to Variant B of stimulus 13, albeit with an inverted word order. The high frequency of this particular metaphor, as reflected by its presence in the corpus, is undoubtedly the reason why, of all the 20 stimuli, stimulus 13 is the one in which subjects most consistently chose the order conforming to the Directionality Principle, at 90% and 97% respectively for the two variants.

However, the second stimulus occurring in the corpus, stimulus 5, is more problematic. In the corpus there are four instances of synaesthetic metaphors combining *hijau* 'green' and *rasa* 'taste', and all four violate the Directionality Principle. These four tokens occur in a single stretch of discourse, involving a young boy aged 3 years and 3 months, playing with a collection of coloured blocks which he picks up, one after another, pretends to eat, and then comments on their taste by means of a sequence of synaesthetic metaphors involving the word *rasa* 'taste' in construction with the appropriate colour terms, including, as per stimulus 5, the word *hijau* 'green'. Following is one example of the child's speech, instantiating the combination in stimulus 5 plus a similar one involving the colour blue:<sup>2</sup>

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<sup>2</sup> In example (13), *hijau* 'green' is spelled *ijo*, as is customary in colloquial Jakarta Indonesian. The form *nyam* is an onomatopoeic word representing the sound of eating.

(13) *taste > sight / taste > sight*

Itu                      bukan **rasa** **ijo**,    **r(asa)...** **ra(sa)...** **biru**,  
 DEM-DEM:DIST NEG    **taste** **green** **taste**    **taste**    **blue**  
                               nyam nyam nyam nyam nyam  
                               nyam nyam nyam nyam nyam

'That doesn't taste green, that tastes blue, *nyam nyam nyam nyam nyam*'

In (13), *rasa*, the target domain, is associated with taste, while *ijo* and *biru*, the source domains, are associated with sight. Thus, the synaesthetic metaphors in (13) and other similar examples in the same discourse involve mappings downwards on the Hierarchy of Sensory Modalities, in violation of the Directionality Principle. As was the case for example (12), the occurrence of the synaesthetic metaphor in the corpus is consonant with the judgments offered by the experimental subjects, though, in the present case, in mirror-image form. Thus, for stimulus 5, only 27% of subjects chose the predicted form; the remaining 73% preferred the form exemplified in example (13), in violation of the Directionality Principle.

As suggested by both of the above examples, frequency in naturalistic speech may be an additional factor governing subjects' judgments of naturalness in the experimental task. However, this leaves unanswered the question of why, in both the MPI Jakarta Child Language Corpus and the experimental study, combinations of *rasa* and a colour term, as in stimulus 5, form synaesthetic metaphors in violation of the Directionality Principle. A possible answer to this question is provided by Viberg (1984), who shows that the principles governing synaesthetic metaphors are different for verbs than they are for other parts of speech. Although parts-of-speech distinctions are difficult to draw in Indonesian, the word *rasa* does stand out in relationship to the other words in the experiment drawn from the modality of taste. Whereas the other words refer primarily to specific taste qualities, such as 'sour', 'bitter' and so forth, *rasa* refers to the abstract notion of taste or to the activity of tasting, in which latter case it has the semantic attributes characteristic in most languages of verbs. Thus, the different behaviour of synaesthetic metaphors involving the word *rasa* may be part and parcel of a more general tendency involving verbs or verb-like words, as proposed by Viberg.

Having come this far, we may now return to our supermarket name *Harum Manis* 'Sweet Fragrance'. In the experiment, for stimulus 15, subjects exhibited a very strong preference for *harum manis*, 97%, over its alternative form, *manis harum*, just 3%. Although this particular synaesthetic metaphor did not occur in the MPI Jakarta Child Language Corpus, its observed usage as a supermarket name, albeit in a far-away city on another island, makes it plausible to assume that subjects had encountered it sometime somewhere in the past, which might account, in part, for their overwhelming preference for the attested form *harum manis*. To answer the question posed at the beginning of this paper: the choice of the supermarket name was no fortuitous coincidence—cognitively simpler synaesthetic metaphors make for better commercial brand names.

## 6. CONCLUSION

In this paper we presented a preliminary exploration of synaesthetic metaphors in Indonesian. While the corpus study shows that Indonesian synaesthetic metaphors look very much like those previously described in other languages, the experimental study—

the first to be done outside of Hebrew—suggests that the structure of synaesthetic metaphors observed in texts reflects underlying principles of cognitive simplicity, as encapsulated in the Directionality Principle. Both studies suggest that the principles governing the structure of synaesthetic metaphors proposed on the basis of Hebrew and other Eurasian languages may indeed be universal. The work reported on herein is part of a wider, ongoing study of metaphors and other tropes in Indonesian, which we hope will contribute towards a better understanding of what is universal in the realm of figurative language and what is specific to particular languages and cultures.

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