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**Liu Yu and Kay O'Halloran**

**National University of Singapore**

Inter-semiotic Texture: Analyzing Cohesive Devices between Language and Images

## **1. Introduction**

The last decade has witnessed a research shift in the focus of Systemic Functional approaches to Multimodal Discourse Analysis (henceforth SF-MDA, see O'Halloran 2007). Drawing on insights of Halliday's (1978, 1985) social semiotic theory of language, SF-MDA researchers in the 1990s were mainly interested in the extension of systemic-functional grammar to non-verbal semiotic resources and media including displayed art (O'Toole 1994), visual design (Kress and van Leeuwen 1996), mathematical symbolism (O'Halloran 1996, 1999a), action (Martinec 1998) and music (van Leeuwen 1999). By contrast, from the late 1990s onwards, meaning making across different modalities in multi-semiotic texts in terms of Halliday's (1985 [2004]) ideational, interpersonal and textual meta-functions becomes the focus

of study (e.g. Baldry and Thibault, 2006; Lemke 1998; O'Halloran 2004, 2005; Royce 1998, 2007; Ventola et al. 2004).

However, as pointed out by Royce (2007: 63), there still remains a lack of research on the nature of inter-semiotic semantic relations to explain 'what features make multimodal<sup>1</sup> text visually-verbally coherent'. This paper aims to further examine image-text relations in print media and suggests Inter-semiotic Texture as an essential property of multi-semiotic texts which integrates language and images into a coherent semantic unit. A preliminary analytical framework of Inter-semiotic Cohesion which realizes Inter-semiotic Texture is presented and illustrated through the examination of multi-semiotic texts of different genres including print advertisements, news reports and instruction posters. The analysis also indicates that Inter-semiotic Cohesive Devices are significant text forming resources in multimodal discourse, which lead to interaction and negotiation between different semiotic resources.

## **2. Texture in Linguistic Text**

Previous research on image-text relations (e.g. Cheong 2004; Lim 2004) takes for granted that language and images are semantically integrated in multi-semiotic texts because all communication is understood to realize ideational, interpersonal and textual meta-functions (Kress et al. 2001, 13; O'Toole 1994, 5). Such an assumption, however, is not self-evident but deserves scrutiny. One question therefore arises: how to distinguish a coherent multimodal message from the mere co-occurrence of

language and images? Although the meta-functional organization of all forms of semiosis makes an important principle enabling their semantic integration (Baldry and Thibault 2006, 80), it is far from a sufficient condition. In fact, analytical approaches are needed to identify the defining attributes of a multi-semiotic text to avoid the risk of over-interpreting the nature of the image-text relations.

As early as three decades ago, Halliday and Hasan (1976, 1-2) pointed out that *texture*, which involves meaning relations, constitutes the essential property of a linguistic text. While attributing texture to the combination of semantic configurations of both register and cohesion, Halliday (1985, 318; Halliday & Hasan 1976, 26) regards cohesion as the crucial criterion to distinguish text from 'non-text'. The following example illustrates how texture is created through cohesion (Halliday and Hasan 1976, 2): 'Wash and core six cooking apples. Put them into a fireproof dish'. Since *them* and *six cooking apples* are identical in reference, their 'co-referentiality' (Halliday and Hasan 1976, 3) makes up a cohesive tie to interlock the above two clauses and thus provides texture.

Hasan (1985a, 1985b) further emphasizes the close relation between cohesion and texture, and narrows down the notion of texture to refer to semantic relations realized through the intra and inter-sentential text forming devices (Martin 1992, 382) in opposition to text structure derived from register variables. Hasan (1985b, 72) argues that a text may be incomplete in terms of text structure but it must possess texture.

Accordingly, Hasan's (1985b) formulation of texture is adopted in this research as the most important attribute of a text, and the text forming resources are synoptically listed in Table 1.

**Table 1** Summary of Cohesive Devices. Adapted from Martin (1992, 383)

TEXTURE
Cohesion
Theme Information Parallelism

Martin (1992, 382-384) shares Hasan's (1985b, 82) interpretation of texture, but proposes an alternative model to summarize text forming resources. Compared with Hasan's (1985b) framework, Martin (1992, 384) introduces Collocation, Sequences of Tone but excludes Parallelism. Following Martin (1992, 385), Collocation is included as a resource for texture creation in addition to Parallelism, which also constitutes an essential text forming device in multi-semiotic texts. The cohesive function of Intonation, however, is not relevant for the print media under discussion. Also worth noting is that Martin's (1992, 390) typology has the two dimensions of stratification and meta-function, both of which are productive to explore Inter-semiotic Texture in multimodal discourse.

### **3. Inter-semiotic Texture in multimodal discourse**

Despite the original application of texture in language, as van Leeuwen (2000, 179) advocates, ‘semiotics should play off different semiotic modes against each other’. On the basic assumption of language as a social semiotic device (Halliday 1978), it seems appropriate to employ Inter-semiotic Texture to identify the essential property of a multi-semiotic text. Following the definition of its linguistic counterpart (Hasan 1985b, 70-72), Inter-semiotic Texture refers to a matter of semantic relations between different modalities realized through Inter-semiotic Cohesive Devices in multimodal discourse. It is the crucial attribute of multi-semiotic texts which creates integration of words and pictures rather than a mere linkage between the two modes.

It is important to note that pioneering research has advanced towards identification of Inter-semiotic Texture. In the analysis of multi-semiotic advertisements and environmental science textbooks, Royce (1998) formulates the concept of Inter-semiotic Complementarity and establishes a system of Multimodal Sense Relations for ideational meaning making across linguistic and visual choices. The Multimodal Sense Relations system actually follows Hasan’s (1985b) Lexical Cohesion while Royce’s (1998) addition is the device of Inter-semiotic Collocation derived from Halliday and Hasan (1976).

Similarly, following Halliday and Hasan (1976) and Martin (1992), Martinec (1998)

develops the system of Componential Relations to account for different types of cohesion between language and embodied action. Also, based on Halliday's (1985) model of interdependency and logico-semantic relations, Martinec and Salway (2005) provide a grammatical description of image-text relations (see also Unsworth 2006).

Kress and van Leeuwen (2006, 177) suggest three principles of composition: Information Value, Saliency and Framing, which apply not just to single pictures, but also to multi-semiotic texts. By comparison, the principle of Information Value can be regarded as the inter-semiotic counterpart of Given-New organization (Hasan 1985b, 82) in linguistic texts while Saliency and Framing function in multi-semiotic texts similar to Theme-Rheme development in language (Hasan 1985b, 82).

O'Halloran's (2005, 2007) detailed account of intersemiosis introduces a diversity of Inter-semiotic Cohesive Devices in terms of the four meta-functions for meaning construal in mathematical discourse and presents a useful framework to analyze Inter-semiotic Texture. Significantly, O'Halloran (2005, 2007) specifies that language and pictures complement each other across the expression plane, the content plane (i.e. grammar and discourse strata) and the context plane (i.e. register and genre).

Analytical approaches to multi-semiotic text forming resources in the abovementioned research are derived from their linguistic counterparts. The present study draws on insights from both systemic-functional linguistics (henceforth SFL)

and semiotics, particularly the models of Hasan (1985b), Martin (1992), Royce (1998) and O'Halloran (2005) to further explore semantic relations between language and images.

One outstanding virtue of Hasan's (1985b) framework lies in its delicate classification of texture (Martin 1992, 382). For instance, Parallelism (Hasan 1985b, see also Table 1) is identified as a significant text forming device in language because readers always try to find parallel meanings from parallel structures (Short 1996, 67). However, its inter-semiotic counterpart has not been discussed and further research is needed to examine Inter-semiotic Parallelism. Also noteworthy is that Hasan's (1985b) approach adopts a synoptic viewpoint of texture. Texts, therefore, are viewed as finished products where cohesion is only analyzed in terms of textual meaning.

On the other hand, Martin (1992; Martin and Rose 2003) develops a dynamic account of texture by modeling discourse semantics as a meta-functionally diversified stratum. From this perspective, cohesion plays an important role in the unfolding of a text and constitutes essential meaning making resources, which are not only explored in terms of ideational, interpersonal and textual meta-functions but also at the discourse and grammar strata and the expression plane.

Both of the two models of linguistic texture have been adapted to analyze multimodal discourse. For example, Royce's (1998, 2007) system of Inter-semiotic

Complementarity is mainly a synoptic account of cohesion between language and images whereas O’Halloran’s (2005, 2007) analysis of intersemiosis in mathematical discourse is undertaken from a logo-genetic perspective (Halliday and Matthiessen 1999, 17-18) to account for the semantic expansions which take place as the text unfolds. In order to appreciate how cohesion in multimodal discourse contributes to Inter-semiotic Texture, the two models are viewed as compatible paradigms here, and Inter-semiotic Cohesion is viewed from the synoptic perspective and the perspective of logo-genesis, and a tentative framework is suggested in Table 2 to analyze cohesive relations in multi-semiotic texts.

**Table 2** Summary of Inter-semiotic Cohesive Devices in multi-semiotic texts

Stratum		Discourse
Meta-function		
Ideational	Logical	<b>Implication Sequences</b> (O’Halloran 2005)
	Experiential	<b>Correspondence</b> <sup>2</sup> (Jones 2007) <b>Antonymy</b> <b>Hyponymy</b> <b>Meronymy</b> <b>Collocation</b> (Royce 1998; see also Inter-semiotic Ideation, O’Halloran 2005)  <b>Polysemy</b>

Textual	<p><b>Reference</b> (see Inter-semiotic Identification, O'Halloran 2005)</p> <p><b>Theme-Rheme Development</b> (see Framing and Saliency, Kress and van Leeuwen 2006)</p> <p><b>Given-New Organization</b> (see Information Value, Kress and van Leeuwen 2006)</p> <p><b>Parallel Structures</b></p>
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Table 2 presents a preliminary account for the analysis of Inter-semiotic Texture in multimodal discourse. This study focuses on image-text relations in terms of experiential, logical and textual meta-functions at the discourse stratum (Martin 1992). However, it is important to note that this analytical framework does not confine intersemiosis to these three meta-functions at the discourse stratum only. On the contrary, semantic interaction between different semiotic choices is seen to take place across ranks and levels on the expression plane, the content plane (i.e. grammar and discourse strata) and the context plane (i.e. register and genre) (O'Halloran 2005, 2007). For example, multiplicative meaning can be construed across language and images on the content plane through the mechanism of Semiotic Metaphor (O'Halloran 2005, 169) while Homospaciality contributes to textual meaning on the expression plane (see Section 4.1 'Homospaciality' for a fuller discussion).

Space constraints make it impossible to fully discuss all the Inter-semiotic Cohesive Devices. In the following sections, two relatively new cohesive mechanisms, Inter-semiotic Parallelism and Inter-semiotic Polysemy, are examined with

illustrations from print media genres. Also, a discourse-based approach of Implication Sequences (O'Halloran 2005) will be elaborated to analyze logical relations across image and text to complement existing grammar-based models (e.g. Martinec and Salway 2005; Unsworth 2006).

#### **4. Inter-semiotic Parallelism**

Parallelism seems to have attracted the least attention as a cohesive device; for example, Hasan (1985b) does not fully explore its implications when analyzing linguistic texture. Perhaps the most familiar examples are phonological parallels traditionally termed as Alliteration, Assonance and Rhyme (Hasan 1985c, 5-7). Short (1996, 64) argues, however, that Parallelism is an important text forming resource because it contributes a layer of meaning which a situational explanation could not afford.

Inter-semiotic Parallelism refers to a cohesive relation which interconnects both language and images when the two semiotic components share a similar form. This type of cohesive relations can take effect as Homospatality on the expression plane (Lim 2004) or Parallel Structures at the discourse stratum. Both are important meaning making devices and contribute to semantic expansions in multi-semiotic texts.

##### **4.1 Homospatality**

Homospatality is a type of spatial parallelism between language and pictures on the expression plane. An example is found in Figure 1 where the Graphics of the smoke shares the spatial coordinates with the Typography of the word 'hot'.



**Figure 1** Example of Homospatality (Drawing of Lim 2004, 240)

Lim (2004, 240-241) argues that the mechanism of Homospatality in Figure 1 intensifies the sense of heat and smoke from the campfire. However, Martin (1992, 386) cautions that 'Parallelism is exploited rhetorically in contexts where strictly speaking it is not needed to realize the meaning at hand'. It is important to note that parallel form does not necessarily entail parallel meaning (Hasan 1985c, 3) and thus Homospatality alone is far from a sufficient condition for semantic multiplication.

Supposing in Figure 1, the Graphics of emission coincides with the Typography of the word 'strawberry', readers will be hardly convinced that the mechanism of Homospiality makes any sense, let alone gives rise to meaning expansions, for between the linguistic component 'strawberry' and the visual element 'fire' or 'smoke', it is not easy to say what kind of general meaning relation obtains. So the semantic multiplication between language and images may not solely result from Homospiality. In fact, the word 'hot' has a semantic link with the image of campfire through Inter-semiotic Collocation (Royce 1998), for 'hotness' is an inherent quality of fire and they are expected to co-occur in the same field. It therefore follows that in Figure 1, both Inter-semiotic Collocation and Homospiality help construe the intensified sense of heat from the fire.

#### **4.2 Parallel Structures**

Following Halliday (1985) and Kress and van Leeuwen (2006), language and images construe the world of experience through Transitivity structures. If the two modes share a similar Transitivity configuration, Inter-semiotic Parallel Structures will take shape in the multi-semiotic text. For example, in the news report of Figure 2, the caption *Israeli army dog attacks Palestinian woman* is classified as a Material process where *Israeli army dog* plays the role of Actor and *Palestinian woman* functions as the Goal (Halliday 1985, 102-106). On the other hand, the compositional system of Volume (O'Toole 1994) in the photo makes two visual participants salient: One is a dog and the other is a Muslim woman, judging from her clothes. The dog's mouth and

the woman's bitten left hand constitute a diagonal line, which makes up a strong vector to cause the interaction between the two participants. Moreover, the dog is posed diagonally, thereby suggesting a strong sense of dynamism (O' Toole 1994) and its role as the active participant in the episode. Following Kress and van Leeuwen (2006, 63-66), the visual Transitivity structure is an Action process, which can be trans-coded as *A dog attacks a Muslim woman*. By comparison, both the linguistic caption and the image share similar Transitivity processes where Inter-semiotic Parallel Structures take effect.



**Israeli army dog attacks Palestinian woman**

**Figure 2** Example of Inter-semiotic Parallel Structures

(Drawing of photograph from <http://www.chinadaily.com.cn/photo>, 28 March 2007)



### **Hurley has body women want**

**Figure 3** Example of Inter-semiotic Parallel Structures

(Drawing of photograph from <http://www.chinadaily.com.cn/photo>, 29 March 2007)

In contrast, Figure 3 visually represents the participants in terms of a part-whole structure. The system of Lighting (O'Toole 1994) (in the original photograph) foregrounds the woman against the dark and plain setting. Moreover, the medium shot and the frontal angle of the subject not only shorten the social distance between the represented participant and the viewers but also increase their involvement (Kress and van Leeuwen 2006). Despite the lack of eye contact with viewers, the subject is posed, thereby positioning the latter as observers to scrutinize her Possessive Attributes, which in this case appear to be her clothing and body. Following Kress and van Leeuwen (2006, 87-92), this image is represented as an Analytical process where the woman is the Carrier while her figure and clothes are the Possessive Attributes ('beautiful curves, slim waist, trendy dress'). The visual Transitivity structure thus

converges with that of the linguistic caption *Hurley has body [[women want]]*, which is a Possessive Attributive process (Halliday 1985, 122).

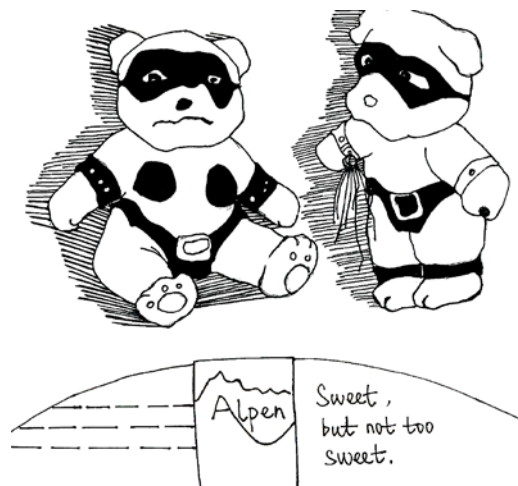
Although considered resulting in a ‘surfeit’ of cohesive harmony (Martin 1992, 386), Inter-semiotic Parallelism functions as an important text forming resource to integrate visual and verbal parts in the above examples. It makes significant contributions to establishing *co-contextualization relations* (O’Halloran 2005, 165-167) between different modes and causes textual convergence. As evidenced by Figure 1, in conjunction with other Inter-semiotic Cohesive devices, Inter-semiotic Parallelism gives rise to semantic expansions in multimodal discourse.

## **5. Inter-semiotic Polysemy**

Based on Halliday and Hasan’s (1976, 1985) Lexical Cohesive Relations, Royce’s (1998, 29) Ideational Inter-semiotic Complementarity includes various lexico-semantic relations for Inter-semiotic Texture. However, Polysemy, an important component in lexical semantics, remains unexplored.

Inter-semiotic Polysemy refers to the cohesive relation between verbal and visual components, which share multiple related meanings in multi-semiotic texts. As pointed out by Finegan (2004, 195), polysemy signals similarities rather than differences between meanings. Accordingly, Inter-semiotic Polysemy results in *co-contextualization relations* between language and images and experiential convergence in multi-semiotic texts. In the Alpen cereals advertisement from

Martinec and Salway (2005, 345) (see Figure 4), Inter-semiotic Polysemy cooperates with Inter-semiotic Parallelism, Inter-semiotic Ellipsis (O'Halloran 2005) and Inter-semiotic Correspondence (Jones 2007) to lead to semantic multiplication in the multi-semiotic text.



**Figure 4** Example of Inter-semiotic Polysemy (Drawing of Martinec and Salway2005, 345)

Cheong (2004) proposes a systemic-functional model for meaning making in print advertisements where both language and images are included as obligatory or optional elements in the Generic Structure Potential (henceforth GSP). Following Cheong's (2004) formulation, Figure 4 consists of three major GSP elements: the Lead (two teddy bears), the Display (the Alpen cereal box) and the Primary Announcement (*Sweet, but not too sweet*). In what follows, it is proposed that an appreciation of the interplay between the Inter-semiotic Cohesive Devices of Parallelism, Ellipsis and Correspondence aids our understanding of how the Alpen cereal advertisement

functions to create meaning across image and text.

Compared with the Display (the Alpen cereal box) and the Primary Announcement (*Sweet, but not too sweet*), the Lead (the teddy bears) has a larger size, and the two teddy bears are posed against a plain background, whose visual prominence Modally draws the viewers' attention (O'Toole 1994). Following Kress and van Leeuwen (2006, 87-92), the Lead is represented as an Analytical process in which the bear couple is the Carrier and the viewers are intended to observe their sado-masochistic clothes and accessories. This visual process can be trans-coded, though not equivalently in an absolute sense in language, as an Intensive Attributive process (Halliday 1985, 114-115): *The teddy bears are cute but naughty*. Likewise, the Display (the Alpen cereal box) is shown from a frontal perspective, thereby maximizing its involvement with the potential customers, who are attracted to identify the product's Possessive Attributes (Kress and van Leeuwen 2006, 145). Consequently, both the Lead and the Display share the same visual Transitivity configuration of Analytical process, which leads to Parallel Structures.

However, Parallel Structures occur not only between the Lead and the Display but also between the two visual components and the Primary Announcement. The linguistic message *Sweet, but not too sweet* is an elliptical clause, which sounds like casual spoken discourse, and thus invites the audience into a direct dialogue with the advertisement. Structurally, the Primary Announcement functions as the Attribute in

an Intensive Attributive process with the Mood element (Halliday 1985, 71-78) elided, which can be specified as *(X is) sweet, but (X is) not too sweet*. It therefore follows that both the two images and the linguistic component in this multi-semiotic advertisement share a similar Transitivity process and the cohesive relation of Inter-semiotic Parallelism is set up.

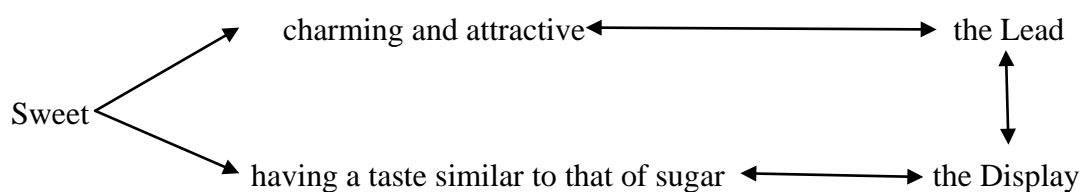
Identification of Inter-semiotic Parallelism in this advertisement is crucial, for it not only suggests *co-contextualization relations* between the visual and linguistic components of the multi-semiotic advertisement, but it also helps convey two essential messages. That is, since the Primary Announcement is structurally in parallel with the Lead and the Display, it is safe to assume that the omitted verbal parts of the Primary Announcement can be recovered from the two visual components. Namely, the linguistic Nominal and Operator Ellipses (Halliday and Hasan 1976) in *(X is) sweet, but (X is) not too sweet* can be retrieved from both the images of the teddy bears and the cereal box respectively through the cohesive device of Inter-semiotic Ellipsis (O'Halloran 2005), which helps articulate two important messages in the multi-semiotic text. Message 1 can be verbalized as *(The teddy bears are) sweet, but (The teddy bears are) not too sweet* and Message 2 as *(The Alpen Cereals are) sweet, but (The Alpen Cereals are) not too sweet*, both of which interact with the meanings made in the Lead and the Display.

Martinec and Salway (2005, 344) observe that this advertisement intends to transfer

the ‘cute but naughty’ meaning from the teddy bears onto the cereals to ‘appeal to the target audience of young, urban professionals that the product is aimed at’, but they do not explain the cohesive devices through which this crucial message is successfully conveyed in the multi-semiotic text. In fact, it is Inter-semiotic Polysemy that plays a key role in making such a subtle meaning. The lexical item ‘sweet’ in the Primary Announcement, is inter-semiotically related to both the visual attributes of the two teddy bears as ‘charming and attractive’ in the Lead and to the cereals as ‘having a taste similar to that of sugar’ in the Display respectively through Inter-semiotic Correspondence. As a result, the polysemous relation generates a semantic link between the Lead and the Display (see Table 3 for a schematic account), which finally triggers a Pictorial Simile (Forceville 1996) between the two images in parallel.

Given that the cereals rather than the teddy bears are the advertised product, the Pictorial Simile projects the Possessive Attributes ‘cute but naughty’ from the source domain (the Lead) on to the target domain (the Display) (Lakoff and Johnson 1980) and thus a new message most valued by the advertiser is successfully made: *The Alpen cereals (‘customers) are as cute and naughty as the Teddy bears.*

**Table 3** Schematic account of intersemiosis in the Alpen cereals advertisement



## **6. Logical Relations between Language and Images**

Logical cohesion is identified as an important text forming resources in language (e.g. Halliday 1985; Halliday and Hasan 1976; Hasan 1985b; Martin 1992), and thus analysis of logical meaning across verbal and visual components helps further explore the nature of Inter-semiotic Texture. Previous research has suggested two main SFL-informed models to investigate image-text relations: the grammar-based approach (e.g. Martinec and Salway 2005; Unsworth 2006) and the discourse-based framework (e.g. O'Halloran 2005).

### **6.1 The Grammar-based Approach**

Following Halliday's (1985) lexico-grammatical formulation of inter-dependency and logico-semantic relations between clauses, Martinec and Salway (2005) provide a preliminary account of the logical meaning across different semiotic resources in old and new media in which language and images are considered either equal or unequal to each other in terms of relative status while the inter-semiotic logico-semantic relations of projection or expansion apply. The grammatical approach produces valuable insights into image-text relations, but there are also some limitations which are explored below.

First of all, the relationships of inter-dependency, which exists between verbal clauses, have some drawbacks in multimodal discourse. For example, while dependent linguistic clauses fail to stand as a functional whole (Halliday 1985, 198), different

semiotic choices can function on their own right (e.g. O'Halloran 1999b; van Leeuwen 2000). Therefore in addition to inter-dependency, relations between language and images in multi-semiotic texts can also be described in terms of Meronymy. Namely, both the two modes can be considered 'parts functioning in some larger whole' (Baldry and Thibault 2006, 21).

Second, Halliday (1985, Halliday and Hasan 1976) makes a distinction between cohesion and grammar in the description of text realizing resources where the former focuses on non-structural devices with the latter on structural ones. It therefore follows that the highest level at which Halliday's (1985) grammar-based approach to logical relations functions is between clauses within a clause complex (Martin 1992, 17). But it is not always possible to reduce the inter-semiotic analytical unit to a clause complex. As Martinec and Salway (2005, 356) acknowledge, even the visual part has the potential to realize a large number of processes in addition to the accompanying text. Thus a grammar-based framework requires additional analytical units to explore image-text relations.

Furthermore, grammatical description is crucially characterized by the relation between 'items of the same kind to each other' (Eggins 2004, 126). However, in multi-semiotic texts, different kinds of grammatical items can be semantically related such as a verbal nominal group pointing to a visual process (Baldry and Thibault 2006, 138-140), which makes it difficult to fully account for the image-text relations from

the perspective of lexicogrammar.

Lastly, grammar-based models only afford a unidirectional account of the semantic relations across different semiotic choices. For instance, derived from Halliday's (1985) logico-semantic relation of extension, the image-text relations in multimodal discourse are identified either as 'text extends image' (Martinec and Salway 2005, 350) or 'image extends text' (Unsworth 2006, 62). This kind of classification, however, can be problematic. Different from a linguistic text where a linear reading is conventionalized, multimodal discourse is engaged in a scanning manner (Kress and van Leeuwen 1998, 205), thereby making it difficult in some cases to determine which mode of the message initiates and which follows.

As may be clear from the above discussion, grammar-based models, which adapt Halliday's (1985) linguistic typology, have some limitations with regards to exploring the logical relations between language and images in multi-semiotic texts, and thus an additional approach is proposed to complement existing frameworks for image-text relations.

## **6.2 The Discourse-based Approach**

Based on Martin (1992; Martin and Rose, 2003), O'Halloran (2005) proposes Implication Sequences to map out the logical relations between language, visual images and mathematical symbolism in classroom discourse. Although the system of

Implication Sequences is not specified in detail, O'Halloran's (2005) discourse-based approach to logical relations across different semiotic choices complements the grammatical approach discussed in Section 6.1.

In the first place, the discourse-based approach accounts for relations between as well as within clause complexes (Martin 1992, 19) so that analysts can be more flexible about selecting the appropriate inter-semiotic analytical unit, which need not be confined to a clause complex prescribed by the grammatical description (Halliday 1985; Martinec and Salway 2005).

Furthermore, the discourse-based system treats visual and verbal components in multimodal discourse as covariate structures, where dependent modes have the potential to be depended on (Baldry and Thibault 2006, 137-146). This leads to a bi-directional account of semantic relations between language and images.

The paucity of conjunctive expressions between linguistic and visual modes in multi-semiotic texts also poses a challenge to unravel the image-text relations from the perspective of lexicogrammar. By contrast, the logical relations between language and images can be successfully inferred from the experiential meaning of the different semiotic choices with a discourse-based approach.

Based on Martin (1992, 179; Martin and Rose 2003, 119), the current research

employs Comparison, Addition, Consequence, and Time, the four basic options for Implication Sequences, to classify the logical meaning across language and images. The logical-semantic relations of projection (Halliday 1985, 227-251) involving locutions and ideas in multi-semiotic texts are excluded from this discussion.

Also, a visual image can be related to more than one linguistic message. In a multi-semiotic news report, for instance, the picture is likely to be connected to its caption, the headline and the report proper in terms of logical meta-function. However, the present study is confined to exploring the logical relations between two contiguous visual-linguistic messages in terms of Comparison, Addition, Consequence, and Time.

### **6.2.1 Inter-semiotic Comparative Relations**

Inter-semiotic Comparative Relations are a kind of resource for organizing logical meaning with respect to similarity between language and images in multimodal discourse. When the visual and linguistic components share similar experiential meaning, the different modes are always semiotic reformulations (Martin 1992, 208-214) of each other and their logical relations will be identified as comparatives.

In the multimodal news reports of *Israeli army dog attacks Palestinian woman* (see Figure 2) and *Hurley has body women want* (see Figure 3), both the two linguistic messages reformulate their corresponding visuals but with different strategies. The

former is to shift the level of generality while the latter involves a change of abstraction. For instance, in Figure 2, one of the participants is visually represented as *a dog* (perhaps *an army dog*) but it is linguistically specified as *an Israeli army dog*. On the other hand, the Possessive Attributes in Figure 3 are visualized concretely, which can be trans-coded as *slim waist* and *beautiful curves*. Conversely, the linguistic reformulation *body [[women want]]* is more abstract.

It is important to note that the Inter-semiotic Comparative Relation is always accompanied by the use of other Inter-semiotic Cohesive Devices. For example, Figure 2 and Figure 3 both employ Inter-semiotic Correspondence and Inter-semiotic Parallelism. These cohesive resources not only lead to experiential and textual convergence between language and images respectively, but also help build the logic of Comparison across the two modes, which further results in their logical convergence and finally a high Contextualization Propensity (Cheong 2004) in the multi-semiotic texts.

### **6.2.2 Inter-semiotic Additive Relations**

In Inter-semiotic Additives, one semiotic component adds new information to the other, and hence the two messages are adjoined together. One instance of Inter-semiotic Additives is exemplified in Figure 5.



**Asia's richest woman dies at 69**

**Figure 5** Example of Inter-semiotic Additive Relations

(Drawing of photograph from <http://www.chinadaily.com.cn/bizchina>, 04 April 2007)

Following Kress and van Leeuwen (2006, 87-92), the image of Figure 5 construes an Analytical process where the woman holding a comic character is the Carrier and the viewers are orientated towards her Possessive Attributes including her hairstyle and clothes<sup>3</sup>. The visual part can be verbally described as *The woman is old but childlike*. On the other hand, there is a Material process (Halliday 1985, 102-106) in the accompanying linguistic caption *Asia's richest woman dies at 69*, which adds new information to the pictorial message about what happens to the represented visual participant.

In contrast to Inter-semiotic Comparatives where language and images are different semiotic reformulations of more or less identical experiences, the verbal and visual

parts in Inter-semiotic Additives convey related but different messages. For example, in Figure 5, both the picture and the caption represent the woman as the same participant in their Transitivity processes but construe distinctive information about her.

### **6.2.3 Inter-semiotic Consequential Relations**

Visual and linguistic components of multi-semiotic texts can be interconnected through the logic of Consequence when one semiotic message is seen as enabling or determining the other rather than simply preceding it (Martin 1992, 193). Based on the sub-classification of its linguistic counterpart, a distinction can be made between Consequence and Contingency with the Inter-semiotic Consequential Relations.

#### **6.2.3.1 Inter-semiotic Consequence**

Consequence refers to unmodalized causal relations between visual and verbal messages where the effect has been ensured. Figure 6 presents an instance of Inter-semiotic Consequence.

DIOVAN delivers the power  
of leading antihypertensives



**Figure 6** Example of Inter-semiotic Consequence

(Drawing of photograph from <http://www.apoints.com/photo>, 2 April, 2007)

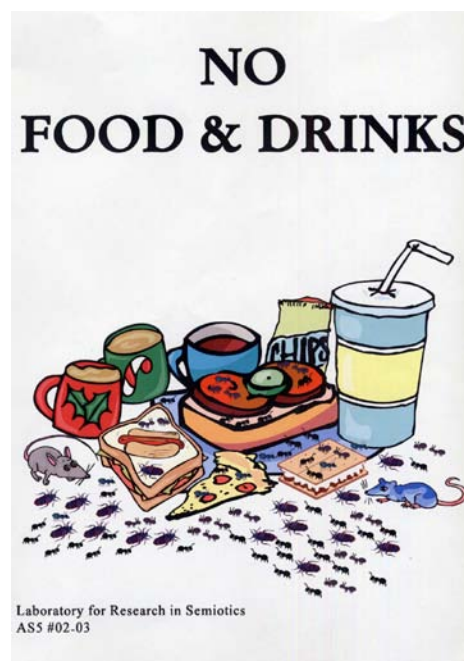
In this multi-semiotic antihypertensive advertisement, the Lead is an Analytical process (Kress and van Leeuwen 2006, 87-92) where the old couple as Carriers is seen to be happy, carefree and enjoy family harmony, as evidenced by their smiling faces and recreational activities. At the same time, the Primary Announcement (*DIOVAN delivers the power of leading antihypertensives*) suggests the reason for the visual message. The whole message conveyed by the multi-semiotic text thus might be trans-coded as *The old couple is happy, carefree and enjoying family harmony because DIOVAN delivers the power of leading antihypertensives (and cures them of hypertension).*

Cook (2001, 50-51) explains that advertising thrives on connotations created by the use of different semiotic choices. In the case of Figure 6, the advertiser does not

verbally guarantee the product's miracle efficacy against hypertension so as to diminish its liability for customers' possible accusation of deception. Instead, the ensured causality between the medicine and the carefree life is implicitly realized through the image-text relation of Consequence, which subtly exerts the persuasive force to manipulate the viewers' perception.

### 6.2.3.2 Inter-semiotic Contingency

Conversely, in multi-semiotic texts where the cause merely has the potential to determine a possibility while there is no ensured effect, the logic of Inter-semiotic Contingency is made across language and images. An example of Contingency can be found in Figure 7.



**Figure 7** Example of Inter-semiotic Contingency (Reproduced from Laboratory for

Research in Semiotics, Department of English Language and Literature, National University of Singapore)

Language and images in Figure 7 interact with each other in terms of both experiential and logical meta-functions. First of all, the represented visual participants such as cakes, biscuits, chips, tea, and coffee are semantically related to ‘food’ and ‘drinks’ in the verbal part through Inter-semiotic Hyponymy (Royce 1998). Furthermore, the ants and bugs depicted to be crawling in diagonal lines form strong vectors towards the food and drinks, thereby visually representing a Unidirectional Transactional Action process (Kress and van Leeuwen 2006, 74), which construes similar experience to the linguistic clause: *Food and drinks attract ants, bugs and mice*. Logically, the visual component functions as the purpose for its accompanying verbal text and the whole message can be trans-coded as *No food or drinks in case they attract ants, bugs and mice*.

#### **6.2.4 Inter-semiotic Temporal Relations**

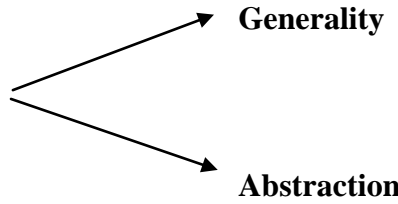
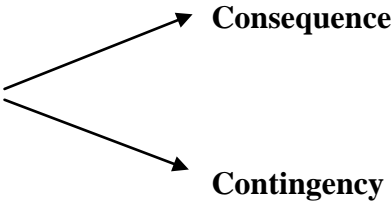
Iedema (2003) observes that the genre of procedures is no longer realized in mere language, but increasingly it is characterized by multimodality. For instance, in the 1999 version of iMac computer manuals, the operation steps are visualized prominently to guide the customer’s reading path while the verbal instructions are ‘relegated to the role of providing captions’ (Iedema 2003, 45). When different procedural steps are represented both verbally and visually, the image-text relations



message of Step 5, the image-text relation is characterized by temporary succession.

Based on the analysis of the above examples, the different kinds of logic between language and images in multimodal discourse are summarized in Table 4.

**Table 4** Inter-semiotic Logical Relations

<b>Logical Relations</b>	<b>Meaning</b>
<p><b>Comparative</b></p>  <pre> graph LR     A[Comparative] --&gt; B[Generality]     A --&gt; C[Abstraction] </pre>	<b>Similarity</b>
<b>Additive</b>	<b>Addition</b>
<p><b>Consequential</b></p>  <pre> graph LR     A[Consequential] --&gt; B[Consequence]     A --&gt; C[Contingency] </pre>	<p><b>Cause</b></p> <p><b>Purpose</b></p>
<b>Temporal</b>	<b>Successive</b>

By comparison, Halliday's (1985, 203-207) logico-semantic classification of Elaboration could be interpreted as Inter-semiotic Comparative Relations. Likewise, the logic of Comparison between language and images is also applicable in cases of Barthes' (1977, 38-41) system of Anchorage. However, contrary to Barthes' (1977) claim that images are characterized by polysemy and verbal meanings are by nature

more fixed, analysis of image-text logical relations in Figure 2 and Figure 3 indicates that both of the visual and linguistic modes can reformulate each other at different levels of abstraction and generality.

The logic of Inter-semiotic Additives is similar to Halliday's (1985, 207-210) system of Extension and Barthes' (1977, 41) classification of Relay. Also, cases of logical relations identified as Enhancement by Halliday (1985, 211-216) can be interpreted by Inter-semiotic Consequential and Temporal Relations in multimodal discourse.

However, Table 4 does not claim to include all the possible types of logical relations between different semiotic resources. This classification is only a modest step to explore the logical meaning made across language and images and further research is required. The virtue of this framework lies in its discourse-based analytical approach, which complements existing grammatical descriptions (e.g. Martinec and Salway 2005; Unsworth 2006) to account for image-text relations.

## **7. Implications of Inter-semiotic Texture**

Discussion of Inter-semiotic Texture contributes to a deeper understanding of the underlying principles for interaction and negotiation across different modes. Thibault (2000, 362) points out that the meaning of multimodal discourse is created through *contextualization relations* between different semiotic choices. Following O'Halloran (1999b), Lim (2004, 239) develops the *contextualization relations* into two different

types: 'In cases where the meaning of one modality seems to "reflect" the meaning of the other through some type of convergence', the two resources share *co-contextualization*. On the other hand, in cases where the meaning of one modality seems to be at odds with or unrelated to the other, their semantic relationship is one that diverges. Here the resources share *re-contextualization relations*.' However, further attention needs to be paid to the nature of *contextualization relations* in multimodal discourse. For example, O'Halloran (1999b, 2005, 2007) formulates the theory of *semiotic metaphors* to account for the two *contextualization relations* in which a *parallel semiotic metaphor* results in *co-contextualization* while a *divergent semiotic metaphor* gives rise to *re-contextualization*.

Complementarily, Inter-semiotic Cohesion provides plausible explanations for different types of semantic expansion between language and images. *Co-contextualization relations* may result from the use of Inter-semiotic Cohesive Devices such as Inter-semiotic Correspondence, which affords experiential convergence; Homospatiality, which leads to textual convergence; and Inter-semiotic Comparative Relations, which give rise to logical convergence. On the other hand, cohesive relations including Inter-semiotic Antonymy (Royce 1998) cause experiential divergence between different modes, thereby creating *re-contextualization relations* in multi-semiotic texts.

In the analysis of multimodal print advertisements, Cheong (2004, 176-178) suggests

that the interweaving of meaning across verbal and visual components should be measured through a scale known as Contextualization Propensity (Henceforth CP). However, Cheong's (2004) model does not specify how to measure the degree of the CP in a multi-semiotic text, which thus appears rather elusive. This problem can be solved with the introduction of Inter-semiotic Cohesion, which constitutes an analytical approach to the CP in multimodal discourse. The nature of Inter-semiotic Cohesive Devices gives rise to the CP in multi-semiotic texts.

## **8. Conclusions**

The study of Inter-semiotic Texture reveals the nature of the image-text semantic relations in multimodal discourse. As the essential property of multi-semiotic texts, Inter-semiotic Texture is realized through Inter-semiotic Cohesion, which, from a synoptic perspective, generates semantic ties between linguistic and pictorial components, and thus integrates different modalities together into a coherent product. On the other hand, from the perspective of logo-genesis, Inter-semiotic Cohesion can be regarded as the ongoing process of *contextualization*, in which meanings are made across different semiotic resources in multimodal discourse.

Admittedly, Inter-semiotic Texture in this research was developed for the interaction between only two semiotic choices, namely, language and images. But it is important to note that the analytical framework is not confined to the print media. Rather, it may be an effective research tool to explore meaning making across other semiotic

resources, for which further investigations are needed.

## Notes

1. Iedema (2003) points out that the terminology in studies of multimodality is not without controversy. O'Halloran (2005, 20-21) clarifies the distinction between 'multi-semiotic' and 'multimodal': the former term is used to describe texts which deploy over one semiotic resource whereas the latter is used for discourse which involves more than one channel of semiosis (i.e. visual, auditory and somatic). The current research only focuses on image-text relations in print texts, so the analytical data are 'multi-semiotic' rather than 'multimodal'. However, this paper uses the term 'multimodal' in a general sense as well.
2. Lemke (1998) explains that different semiotic resources do not afford the same meaning. Therefore, this paper adopts the term of Inter-semiotic Correspondence (Jones 2007) to cover the meaning of Synonymy and Repetition (Royce 1998, 2007).
3. The woman, the doll she is holding, and the comic character in the portrait share a high degree of resemblance in terms of hairstyle and clothes, which is realized through visual cohesive mechanisms similar to Synonymy or Repetition in language (Halliday and Hasan 1976) to create experiential convergence. In this way, the woman's Possessive Attribute ('childlike') is made more salient.

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