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Visual Communication 2008 7: 443

DOI: 10.1177/1470357208096210

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Systemic functional-multimodal discourse analysis (SF-MDA): constructing ideational meaning using language and visual imagery

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ABSTRACT

The systemic functional (SF) approach to multimodal discourse analysis (MDA) is concerned with the theory and practice of analysing meaning arising from the use of multiple semiotic resources in discourses which range from written, printed and electronic texts to material lived-in reality. The SF-MDA approach developed in this article explores the meaning arising through the use of language and visual imagery in printed texts. This involves investigation of linguistic and visual forms of semiosis, and formulation of cross-functional systems such as colour. An integrative platform based on the SF metafunctional principle is proposed, and inter-semiotic mechanisms and systems (content and expression strata) are developed to capture the expansion of meaning which occurs when linguistic and visual forms combine. The SF-MDA approach is demonstrated through the analysis of ideational meaning in a print advertisement. The practical approach involves the use of digital technology in the form of image-editing software which gives rise to a more detailed semantic and ideological interpretation. The analysis reveals how metaphorical constructions of meaning (i.e. semiotic metaphors) take place across linguistic and visual elements.

KEY WORDS

content/expression stratum • cross-functional systems • digital technology
• grammatical metaphor • intersemiosis • multimodal discourse analysis
(MDA) • semiotic metaphor (SM) • social semiotics • systemic functional
linguistics (SFL) • topological/typological representation

1. INTRODUCTION

The systemic functional (SF) approach to multimodal discourse analysis (MDA) involves developing theoretical and practical approaches for analysing written, printed and electronic texts, three-dimensional sites and other realms of activity where semiotic resources (e.g. spoken and written language, visual imagery, mathematical symbolism, sculpture, architecture, gesture and other physiological modes) combine to make meaning. SF theory is well placed to provide theoretical tools for MDA because, first and foremost, it is a social semiotic theory where the meaning is seen to be context-dependent (Halliday, 1978). SF theory has to-date provided a comprehensive approach to language (e.g. Halliday, 2002, 2004; Halliday and Matthiessen, 1999; Martin, 1992; Martin and Rose, 2003). Following O'Toole's (1994) *Language of Displayed Art* and Kress and Van Leeuwen's (1996) *Reading Images: The Grammar of Visual Design*, interest in the use of SF theory for MDA has steadily increased (e.g. Baldry and Thibault, 2006a; Bateman, 2008; Iedema, 2001a, 2003; Kress and Van Leeuwen, 2001; Kress et al., 2001; Lemke 1998, 2002; Martin, 2002; Martinec, 2005; O'Halloran, 2004a, 2005; Royce, 1998; Unsworth, 2001; Van Leeuwen, 1999, 2005; Ventola et al., 2004). The basis for the ongoing development of the SF approach to MDA and the challenges which subsequently arise are explored in relation to the nature of SF theory.

The major strength of SF theory for MDA is Halliday's (1978, 2004) metafunctional principle which provides an integrating platform for theorizing how semiotic resources interact to create meaning (e.g. Baldry and Thibault, 2006a; Kress and Van Leeuwen, 2006; Van Leeuwen, 1999, 2005). The metafunctional principle is the principle that semiotic resources simultaneously provide the tools for constructing ideational meaning (i.e. experiential meaning and logical relations) and for enacting social relations (i.e. interpersonal meaning). These metafunctions are enabled through the organization of the discourse, which is the textual metafunction of semiosis. The metafunctional principle provides a basis for examining the functionalities of semiotic resources and for analysing the ways in which semiotic choices interact in multimodal discourses to fulfil particular objectives (e.g. to construct knowledge in school textbooks; to persuade a consumer to purchase a product; to stir the public to violence in the name of a religious cause).

The SF-MDA approach is concerned with the meaning potential of semiotic resources distributed across strata (i.e. context, discourse semantics, lexicogrammar and phonology, and typography/graphology) and the theory/analysis of the integrative meaning of semiotic choices in multimodal discourse. The SF-MDA approach has, for example, led to the study of the functionality of language, visual images and mathematical symbolism in mathematical discourse, and theorization of how linguistic, visual and mathematical symbolic choices combine to construct reality in ways which extend beyond what is possible using linguistic resources alone (O'Halloran, 2005, 2007a, 2007b). In addition, SF-MDA provides a transdisciplinary bridge

across traditionally distinct fields of study. For example, the SF-MDA approach to mathematical discourse involves mathematics, linguistics, semiotics, studies of visualization and mathematics education. The SF-MDA approach holds much promise for conceptualizing and analysing multimodal semiosis.

Some challenges facing SF multimodal discourse analysts include:

- (1) Modelling the functionality and grammars for semiotic resources other than language, for example, visual images (e.g. Kress and Van Leeuwen, 2006; O'Toole, 1994), mathematical symbolism (e.g. O'Halloran, 2005), music and sound (e.g. Steiner, 1988; Van Leeuwen, 1999), movement and gesture (e.g. Martinec, 2000, 2001, 2004) and architecture and space (e.g. O'Toole, 1994; Pang, 2004; Stenglin, 2004).
- (2) Mapping the metafunctional orchestration of semiotic flow within and across semiotic resources in written/printed texts (e.g. Baldry and Thibault, 2006a; Kress and Van Leeuwen, 2006; Martin, 2002; Martinec 2005; O'Halloran, 2005; Royce, 1998; Van Leeuwen, 2005; Ventola et al., 2004), electronic and film texts (e.g. Baldry and Thibault, 2006a; Djonov, 2006; Iedema, 2001b; Lemke, 2002; Van Leeuwen, 1985) and three-dimensional sites (e.g. Pang, 2004; Ravelli, 2000; Stenglin, 2004).
- (3) From (1)–(2), developing theories of *intrasemiosis* (through one semiotic resource) and *intersemiosis* (through multiple semiotic resources) (e.g. Baldry and Thibault, 2006a; Iedema, 2001a; Kress and Van Leeuwen, 2006; Martinec, 2005; O'Halloran, 2005, 2007a, 2007b; Royce, 1998; Van Leeuwen, 2005).
- (4) Developing theoretical approaches to MDA which involve perspectives from other fields, for example, architecture (Stenglin, 2004), computing (Djonov, 2006), music (Van Leeuwen, 1999), science (Lemke, 2000) and sociology, anthropology and cognitive science (Thibault, 2004a, 2004b).
- (5) Developing analytical approaches for SF-MDA through the use of information technology and software applications (e.g. Baldry, 2004, 2006; Bateman et al., 2004; O'Halloran, 2004a; O'Toole, 1999) and multimodal corpora (Baldry and Thibault, 2006b; Bateman, 2008).

The aim of this article is to explore theoretical and practical approaches to SF-MDA which contribute to the research fields (1)–(5), and the development of theoretical and practical approaches to intersemiosis ([2]–[3]) in multimodal discourse in particular. While significant advances have been made in SF-MDA, the gaps include developing a dynamic approach to theorizing and analysing intersemiotic phenomena (3) from an interdisciplinary perspective (4). An analytical approach involving the use of digital technology (5) is proposed to help achieve these objectives. The case which is explored in this article is the construction of ideational meaning through the use of language and visual imagery in printed texts.

The examination of linguistic and visual forms of semiosis and the nature of cross-semiotic mappings suggest that SF-MDA extends beyond established SF approaches which were largely developed for modelling discourse and grammatical systems in language. Existing SF approaches for modelling continuous phenomena, such as phonology¹ (Halliday, 1967, 1970, 2004; Halliday and Greaves, 2008; Matthiessen et al., 2005; Smith, 2008; Tench, 1992, 1996), speech, music and sound (Van Leeuwen, 1999) and film texts (Baldry, 2004; Baldry and Thibault, 2006a; Iedema, 2001b; Van Leeuwen, 1985) provide a springboard for developing a dynamic approach to SF-MDA using digital technology. The ultimate aim is to develop software which provides the means for continuous integrative layered analysis of multimodal discourse. While this aim is beyond the scope of this article, the potential of digital technology for SF-MDA is illustrated using image-editing and video-editing software. O'Toole's (1999) *Engaging with Art* provides the inspiration for this approach (see section 6).

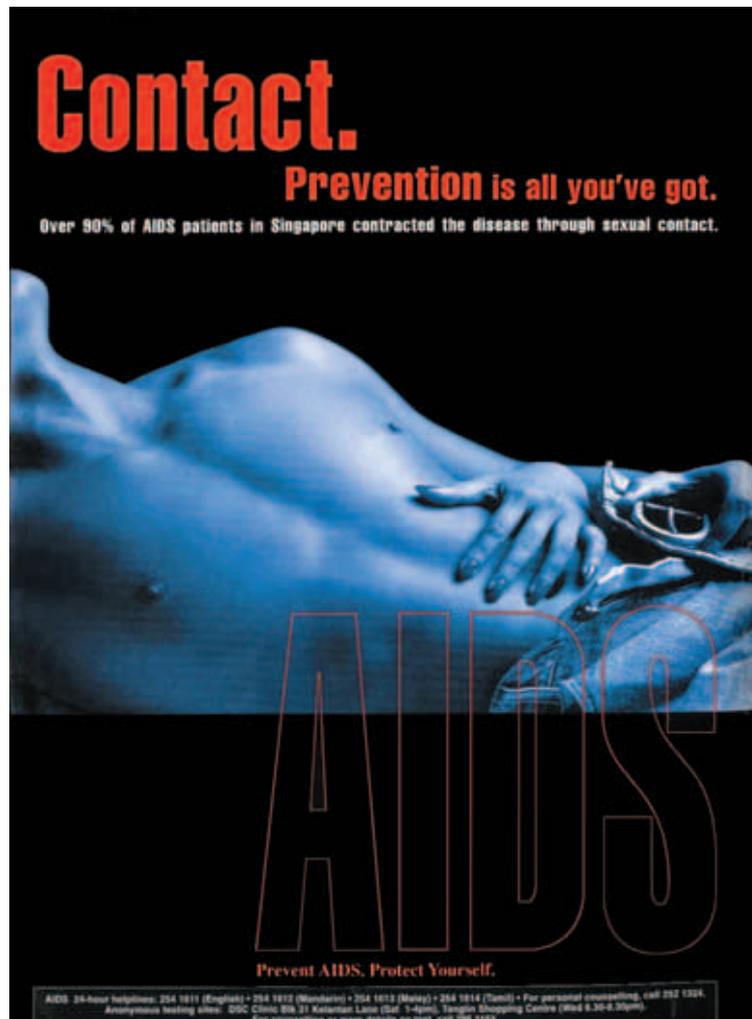


Figure 1 AIDS advertisement, *Cleo* magazine (Singapore), December 1998: 139.

This article falls into two sections: theory and text analysis, with the common aim of developing theoretical and practical approaches to SF-MDA using digital technology. In more detail, it breaks down as follows. First, visual imagery is explored from the SF perspective, including a discussion of how this form of semiosis differs from language; SF frameworks for the analysis of language and visual imagery are presented. Second, the SF-MDA approach to intersemiosis involving language and visual imagery is developed; the SF-MDA approach is supported by Lemke's (2000) formulation of mixed-mode semiosis, which is concerned with mappings across discrete and continuous forms of semiosis. Third, SF-MDA frameworks for analysing ideational meaning in printed texts are presented. Fourth, the image-editing software Adobe Photoshop is used in conjunction with the SF-MDA frameworks for the analysis of ideational meaning in Figure 1, an AIDS campaign advertisement reproduced from *Cleo* magazine, Singapore (December 1998: 139). Finally, the potential of video-editing software for SF-MDA is reviewed. At each stage, the discussion is contextualized in relation to existing research in SF-MDA.

2. SYSTEMIC FUNCTIONAL (SF) APPROACH TO LANGUAGE AND VISUAL IMAGES

Language and visual forms of semiosis differ from each other in a fundamental sense. A linguistic text typically unfolds syntagmatically as a chain which is sequentially processed, and meaning culminates progressively as the text unfolds. Systemic Functional Linguistics (SFL) is concerned with the analysis of the sequence of parts (i.e. the words, word groups, clauses, clause complexes and paragraphs), which form stages in the development of the text. The progressive structures are modelled according to metafunction, as displayed in Figure 2(a): particulate structure (orbital and serial) for experiential and logical meanings; prosodic structure for interpersonal meaning; and periodic structure for textual meaning. The texture of linguistic discourse is the mapping of the layers of the particle, wave and field type structures (see Figure 2[b]). The result is potentially a three-dimensional map for the display of significant instances and/or sequences with respect to the unfolding metafunctional orchestration of meaning.

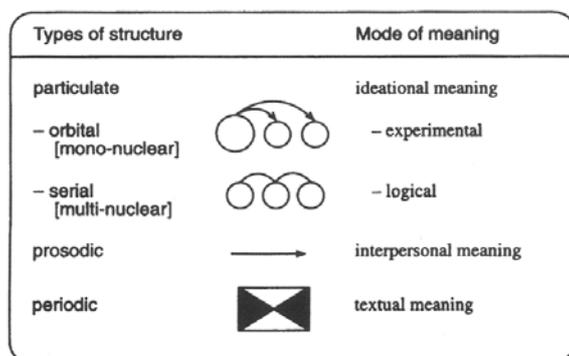


Figure 2(a) Types of structure in relation to modes of meaning (Martin, 1997: 17). Reprinted with the permission of the publisher, The Continuum International Publishing Group.

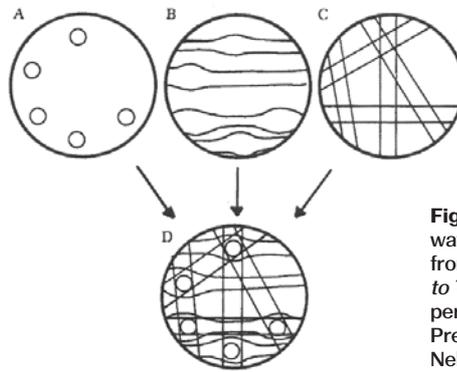


Figure 2(b) Linguistic texture: particle, wave and field (Pike, 1982: 12). Reprinted from *Linguistic Concepts: An Introduction to Tagmemics* by Kenneth L. Pike by permission of the University of Nebraska Press. Copyright 1982 by the University of Nebraska Press.

On the other hand, studies of visual processing (e.g. Ivry and Robertson, 1998) reveal that perception of the whole visual image takes precedence over perception of the parts, which may consist of a series of happenings within the overall work. There are factors, such as the size of the image and the ratio and density of the whole to the parts which need to be taken into consideration, but generally the whole is perceived before the parts in visual imagery. For example, the man in Figure 1 is perceived before the body parts. The Gestalt school of psychology (e.g. Wertheimer, 1938) emphasizes that perception of the whole is predicated on the basis of *the relationship* between the parts, rather than the individual identities of each component. The visual image is thus processed through visual scanning of the parts that bear a relationship to each other within the context of the whole work.

The basic opposition is the part/whole sequential relations of progressive dependencies of language, which form global patterns of particulate (ideational), prosodic (interpersonal) and wave-like (textual) structures versus the immediate whole/part relationships of the visual image. It appears that somewhat different SF models and approaches for language and visual imagery are required, and a meta-approach for conceptualizing the meaning arising from the integrated use of the two semiotic resources is needed. The transdisciplinary dialogue across linguistics and visualization studies afforded by SF-MDA promises to be productive with regards to developing our understanding of the two semiotic resources and the ways in which they interact to create meaning. SF approaches to language and visual imagery are discussed in sections 2(a) and 2(b).

2(a) SF model for language

The SF framework for language (Halliday, 2004; Martin, 1992; Martin and Rose, 2003) is shown in Table 1. The language plane contains the content stratum which consists of discourse semantics (paragraph and text) and the lexicogrammar (word group, clause, clause and clause complex), and the expression stratum (phonology and typography/graphology for spoken and written language). SFL is concerned with the description and use of

Table 1 Systemic functional (SF) framework for language (Halliday, 2004; Martin, 1992)

LANGUAGE	
CONTENT	Discourse Semantics
Stratum	Discourse Relations (paragraph and text)
	Lexicogrammar
	Clause complex
	Clause
	Word Group
	Word
	(Metafunctionally Based Systems)
EXPRESSION	Typography/Graphology and Phonology
Stratum	(Cross-Functional Systems)

metafunctionally based systems (i.e. experiential, logical, interpersonal and textual) for linguistic analysis. A clear and accessible description of SFL is found in Eggins (2004).

The nature of the SFL systems which operate on the content stratum and the expression stratum for language, however, appear to be different. It has been possible to formulate discourse and lexicogrammatical systems² which have distinct metafunctional orientations (e.g. THEME for textual meaning, MOOD for interpersonal meaning, TRANSITIVITY and ERGATIVITY for experiential meaning and LOGICO-SEMANTIC RELATIONS for logical meaning). However, the systems which function on the expression stratum do not appear to adhere to such strict metafunctional classification. That is, phonological and typographical/graphological systems for the expression of spoken and written language (which function to create meaning alongside grammatical and discourse selections) defy the neat metafunctional classification of the SFL systems formulated for the content stratum. The *system fidelity* (Lim, 2004) is variable, resulting in what has been termed *cross-functional systems* in Table 1. The ambiguous situation of the expression stratum is depicted on the most recent cover of Halliday's (2004) *Introduction to Functional Grammar* (IFG), where the metafunctional divide is not clearly marked. The nature of phonological and typographical/graphological systems in SFL warrant further exploration.

The units for intonation in the SFL approach to phonology form the tone system which consists of contrasting pitch movements (e.g. Halliday, 1967, 1970, 2004; Halliday and Greaves, 2008; Matthiessen et al., 2005; Tench, 1992, 1996). However, the tone system realizes textual meaning (e.g. the rhythmic organization of units of information, including the prominence of parts through tonicity), interpersonal meaning (e.g. falling/rising intonation patterns for questions, statements, commands and so forth) and logical relations (e.g. tone sequences and tone concord). In essence, the tone system

is multifunctional, unlike the SFL systems proposed for the content stratum (i.e. grammar and discourse), which have distinct metafunctional orientations (see section 5[a] for discussion of SFL systems for ideational meaning).

The SFL approach to the expression stratum for written language has largely been neglected (see 'Special Issue: The New Typography', *Visual Communication* 4(2), June 2005). However, it appears that typographical systems such as font, colour and style are multifunctional. For example, the red font colour in 'Contact. Prevention is all you've got' and 'AIDS' in the original colour version of Figure 1 realizes textual meaning (e.g. red for coherence), interpersonal meaning (e.g. red to attract attention) and experiential meaning (e.g. red for danger). In a similar manner, the large and outline Font Style of 'AIDS' in Figure 1 realizes interpersonal meaning (e.g. to attract attention) and experiential meaning (e.g. to appear illusive). The analysis of Figure 1 in section 7 contains a detailed discussion of the significance of the typographical selections in the AIDS advertisement.

It appears that phonological and typographical/graphological systems on the expression stratum for language function differently from discourse and grammatical systems on the content stratum. The expression stratum systems may require new forms of description compared to the metafunctionally based systems for the content stratum, which generally take the form of system networks in SFL. This is the position adopted in this article. Furthermore, consideration of the SFL approach to intonation is instructive for SF-MDA, largely because it entails a dynamic approach.

Halliday (1994) explains that 'a much more dynamic model of grammar in which progressive interdependencies . . . are seen as typical rather than exceptional' (p. xxv) is required for spoken discourse. It is no accident that SFL phonological analysis is undertaken using software (e.g. Praat) which creates soundfiles for each tone group from larger soundfiles (Halliday and Greaves, 2008; Matthiessen et al., 2005; Smith, 2008). The use of technology for phonological analysis paves the way for the SF-MDA approach developed in this article. The aim is to develop a SF-MDA approach to dynamically model and analyse multimodal discourse through the use of digital technology. The reason for the proposed SF-MDA approach developed in sections 6 and 7 is straightforward. Multimodal semiosis is a dynamic phenomenon which requires the dynamic dimension afforded by digital technology.

2(b) SF model for visual imagery

The SF model for visual images based on O'Toole (1994) is displayed in Table 2. Two strata are theorized for visual imagery; the content stratum (i.e. visual discourse/grammatical systems for the whole image and its component parts) and the expression stratum (i.e. systems for the material realization of the image). The stratification of the visual plane into content and expression strata represents an extension of O'Toole's (1994) model. The aim of this extension is to include the systems through which the visual image

Table 2 Systemic functional (SF) framework for visual images (based on O’Toole, 1994)

VISUAL IMAGES	
CONTENT	Discourse Semantics
Stratum	Intervisual Relations Work
	Grammar
	Scene Episode Figure Part
	(Metafunctionally Based Systems)
EXPRESSION	Graphics
Stratum	(Cross-Functional Systems)

materializes in the SF-MDA approach. The expression stratum for visual imagery is designed to parallel the expression stratum for language.

The discourse and grammar systems for visual imagery realize the four metafunctions (O’Toole, 1994; Kress and Van Leeuwen, 1996). However, the systems for visual imagery are not the same as the language systems, which is an obvious point given the differences between the two semiotic resources. The discourse and grammatical systems for visual imagery require descriptive categories and analytical approaches which do not necessarily involve SFL categorical-type system networks (see O’Toole, 1994: 24). For example, the descriptive categories for analysing the experiential meaning of the whole image and relations between the component parts are Scene, Sub-Scenes and Components (see Table 4[b]). These systems are discussed in section 5(b).

Significantly, the systems on the expression stratum for visual imagery (e.g. Colour,³ Framing and Perspective) have the same metafunctional diversity found on the expression stratum for language. For example, the use of blue Colour lighting in the Scene in the original version of Figure 1 realizes interpersonal meaning (e.g. to focus attention on the male body) and experiential meaning (e.g. to create a surreal context). Similarly, the Framing of the male body against a black background in Figure 1 realizes textual meaning (e.g. to make the visual image a single component) and interpersonal meaning (e.g. to make the decontextualized visual image salient, see section 7). The cross-functionality of systems on the expression plane for language and visual imagery suggests that alternative approaches to modelling and analysing system selections are required. The SF-MDA approach developed in sections 6 and 7 involves the use of digital technology.

An SF-MDA approach to intersemiosis across language and visual imagery is the focus of section 3. As Lemke (1998) explains, the result of multimodal semiosis is multiplicative. The questions which subsequently arise are: (a) how does this semantic expansion of meaning take place; and (b) how can we theorize and map the intersemiotic interactions which account for the multiplicative effect?

3. INTERSEMIOSIS ACROSS LANGUAGE AND VISUAL IMAGERY

Theorization of intersemiosis is central for the investigation of the processes which results in a convergence of meaning (co-contextualizing relations of parallelism) and/or divergence of meaning (re-contextualizing relations of dissonance) in multimodal texts (O'Halloran, 1999, 2007b; Royce, 1998, 2002; Thibault, 2000). Attempts at theorizing intersemiosis are reviewed before discussing Lemke's (2000) theory of mixed-mode semiosis which provides the theoretical basis for the SF-MDA analytical approach developed in this article.

The modelling of intersemiosis has taken various forms. For example, Cheong (2004) conceptualizes the semantic expansions of ideational meaning in print advertisements in terms of the *Bi-Directional Investment of Meaning* across visual and linguistic components. The resulting *Contextualization Propensity* (CP) of the linguistic and visual selections opens up an *Interpretative Space* (IS) in which the *Semantic Effervescence* (SE) can be assessed. Cheong's (2004) approach foregrounds the importance of the contextualizing relations which open up a space of interpretation. The question is how do these contextualizing relations take place?

Royce (1998) formulates the *Intersemiotic Complementarity* of language and visual images, where 'visual and verbal modes semantically complement each other to produce a single textual phenomenon' (Royce, 1998: 26). Royce (1998) identifies a number of metafunctionally based strategies through which image and language function intersemiotically. Royce (1998) adopts Halliday (2004) and Halliday and Hasan's (1976, 1985) categories of lexical cohesion to account for ideational meaning. These categories include intersemiotic repetition, synonymy, antonymy, hyponymy, meronymy and collocation across visual and verbal choices. Royce (1998) is concerned with the interpersonal relations established between the reader/viewer and the text through MOOD and MODALITY which function to reinforce address and attitudinal congruence or dissonance. The layout and composition through information value, salience, framing, intervisual similarity and reading paths are considered for textual meaning.

Royce's (1998) framework provides the basis for the formulation of *intersemiotic mechanisms*, where semantic expansions of co-contextualizing and re-contextualizing relations take place across linguistic, symbolic and visual elements in mathematical discourse (O'Halloran, 2005, 2007b). These mechanisms are summarized later and illustrated with examples from

Figure 1 and mathematical discourse (O'Halloran, 2007b). Special significance is attached to semiotic metaphor (SM) (point 6) in the analysis of Figure 1 in section 7.

1. *Semiotic Cohesion*: System choices function to make the text cohesive (e.g. 'sexual contact' in Figure 1 coheres with the photograph of the semi-naked man).
2. *Semiotic Adoption*: System choices from one semiotic resource are incorporated as system choices within other semiotic systems (e.g. x appears in linguistic, symbolic and visual images in mathematics discourse, O'Halloran, 2007b).
3. *Semiotic Mixing*: Items consist of system choices from different semiotic resources (e.g. 'For personal counselling, call 252 1324' in Figure 1 consists of linguistic and mathematical symbolic selections).
4. *Juxtaposition and Spatiality*: The multimodal text is compositionally arranged to facilitate intersemiosis (e.g. the super-sized AIDS with outline font in Figure 1 is superimposed across the photograph).
5. *Semiotic Transition*: System choices result in intersemiotic discourse moves called macro- and micro-transitions (e.g. 'Use your graph . . .' in a mathematics question shifts the discourse from the linguistic/symbolic description of the problem to the visual image of the graph (O'Halloran, 2007b)).
6. *Semiotic Metaphor (SM)*: Metaphorical shifts occur where the functional status of elements is not preserved and new elements are introduced (e.g. the photograph in Figure 1 depicts a complex scene which becomes the metaphorical entity 'sexual contact' (see section 7)).

O'Halloran (2005, 2007b) proposes metafunctionally based systems for intersemiosis (i.e. experiential, logical, interpersonal and textual) for the analysis of mathematical discourse. While these systems are not presented here due to space constraints, a tentative framework for intersemiotic systems for ideational meaning between language and visual imagery is presented in section 5(c). The SF-MDA of Figure 1 in section 7 demonstrates how choices from these intersemiotic systems result in a multiplicative expansion of meaning in the AIDS advertisement. Further research is necessary, however, to investigate the systems through which intersemiotic co-contextualizing and re-contextualizing relations take place. Martinec (2005), for example, formulates systems for logico-semantic relations and status for text-image relations. Such research is fundamental for developing SF-MDA aimed at theorizing and analysing multimodal texts.

Lemke (2000) provides a meta-theory to explain why semantic expansions of meaning take place intersemiotically. Lemke (2000) proposes that language and visual images have different semantic orientations.

Language is seen to create a typographical view of reality, a symbolic order of reality according to difference in kind or category. The propensity of language for categorical distinctions is evident from the system of *transitivity* where process types, participants and circumstance are modelled as particulate structures consisting of discrete categories (Martin, 1992, 1997) (see section 5[a]). Visual perception is considered to be topological in nature, where the formulation of difference takes place in terms of degree. For example, the visual image in Figure 1 constructs degrees of difference with regards to the spatial position and the relative size of the body parts.

Lemke (2000) adapts a model borrowed from biology to theorize multimodal semiosis as a hierarchically organized dynamical system. Lemke (2000) conjectures that semantic expansions take place through mixed-mode semiosis because mappings across typographical and topological forms result in new levels of organization in the system, giving rise to a new space of interpretance. Lemke (2000) suggests that simple parallel mapping (i.e. continuous variation to continuous variation and discrete variants to discrete variants) does not result in such qualitatively new phenomena:

And if it had, what would its functional advantages be? In a mapping of continuous variation onto continuous variation, there is very little room for novelty or innovation; there is only re-description. (p. 107)

Lemke suggests that mixed-mode semiosis, where discrete variations are mapped to continuous variation and vice versa results in the semantic expansions which are found in multimodal discourse.

Lemke's assumption that language realizes categorical-type distinctions needs to be modified in light of the continuum-based clining resources of SFL systems such as graduation in Appraisal Theory (Martin and Rose, 2003) and intonation in spoken discourse. Similarly, the assumption that visual imagery realizes topological-type meanings requires modification in light of research in neurological cognition where it is suggested that visual sensory information is organized into two types: categorical and coordinate representations (e.g. Kosslyn, 1987). Ivry and Robertson (1998: 226) explain that categorical representations are important for object recognition, while coordinate representations are important for locating objects in space and for calculating distances between objects. The topological/typological distinction between language and visual imagery may therefore entail some oversimplification.

Despite these reservations, Lemke's (2000) theorizations provide a useful way for framing the semantic expansions taking place in multimodal discourse. Mathematics and science, for example, produce a new space of interpretance through mixed-mode semiosis; i.e. the use of language, visual imagery and mathematical symbolism to create a new world view which extends beyond that possible using language. It is suggested here that SFMDA can follow the same path of mixed-mode semiosis through the use of

digital technology. That is, digitally enhanced visual imagery provides a new space of interpretance for SF-MDA through topological mappings of typographical and typological choices in multimodal texts to accompany the linguistic descriptions. The potential of digital technology to produce new systems of interpretance are discussed in section 6, and the use of image-editing and video-editing software for the SF-MDA is demonstrated in section 7. The theoretical underpinnings of the SF-MDA approach for the analysis of ideational meaning, however, are first developed in sections 4 and 5.

4. SF-MDA APPROACH TO PRINTED TEXTS

Printed texts such as Figure 1 are conceptualized as *Mini-Genres* (Baldry and Thibault, 2006a) which differ in terms of *Registerial Mix* (i.e. field, tenor and mode selections) arising from ideational, experiential and textual meanings, respectively. Mini-Genres consist of *Items* (Kok, 2004) which consist of smaller multimodal *Components*. Figure 1, for example, is an advertising Mini-Genre consisting of Items which include the Lead, Announcement, Enhancers, Emblem, Tag and Call-and-Visit Information (Cheong, 2004). Detailed description and analysis of the Items in Figure 1 are found in section 7.

The SF-MDA approach to multimodal texts involves the formulation of hierarchies such as Items and Components (Baldry and Thibault, 2006a; O'Halloran, 2007b; Van Leeuwen, 1999) where 'larger-scalar units provide integrating contexts for smaller-scale ones' (Baldry and Thibault, 2006a: 144). The basis for the interaction is the *meaning compression principle* which is

a principle of economy whereby patterned multimodal combinations of visual and verbal resources on the small, highly compressed scale . . . provide semiotic models of the larger, more complex realities that individuals have to engage with. (Baldry and Thibault, 2006a: 19)

Lower scale elements are contextualized at higher levels in much the same way that local parts of the visual image are processed in relation to the whole. This means that complex multimodal texts may be scanned quickly to assimilate the required information because lower level elements are contextualized in relation to higher levels. The operation of the meaning compression principle is evident in mathematical discourse (O'Halloran, 2007b). The SF-MDA analysis of Figure 1 in section 7 reveals how the photograph is contextualized in relation to the linguistic text. In this case, the meaning compression principle results in Semiotic Metaphor (SM).

The SF-MDA framework in Table 3 provides the basis for investigating intersemiosis in printed multimodal texts that involve linguistic and visual forms of semiosis. Intersemiosis takes place within and across Mini-Genres, Items and Components and on the expression stratum with regards to the materialization of the text. The SF-MDA framework is used for the

Table 3 SF-MDA framework for printed texts: language and visual imagery

IDEOLOGY			
GENERIC MIX			
REGISTERIAL MIX			
CONTENT Stratum	← INTERSEMIOSIS → Mini-Genres, Items and Components (Linguistic, Visual and/or Other)		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; text-align: center;">LANGUAGE</td> <td style="width: 50%; text-align: center;">VISUAL IMAGES</td> </tr> </table>	LANGUAGE	VISUAL IMAGES
	LANGUAGE	VISUAL IMAGES	
	← INTERSEMIOSIS → Discourse Semantics		
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Discourse</td> <td style="width: 50%;">Intervisual Relations Work</td> </tr> </table>	Discourse	Intervisual Relations Work
	Discourse	Intervisual Relations Work	
← INTERSEMIOSIS → Grammar			
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;"> Clause complex Clause Word Group/Phrase Word </td> <td style="width: 50%;"> Scene Episode Figure Part </td> </tr> </table>	Clause complex Clause Word Group/Phrase Word	Scene Episode Figure Part	
Clause complex Clause Word Group/Phrase Word	Scene Episode Figure Part		
DISPLAY Stratum	← INTERSEMIOSIS → Materiality		
	Typography/Graphology and Graphics		

analysis of Figure 1 in section 7. The framework in Table 3 may be extended to include semiotic resources – for example, mathematical symbolism (see O’Halloran, 2005, 2007b).

5. LANGUAGE AND VISUAL IMAGES: IDEATIONAL MEANING

The functionality and systems for ideational meaning in language and visual imagery are discussed in sections 5(a) and (b) before intersemiotic construction of ideational meaning is explored in section 5(c). The SF systems for experiential and logical meaning in language (Halliday, 2004; Martin, 1992; Martin and Rose, 2003) and visual images (based on O’Toole, 1994) are displayed in Tables 4(a) and (b).

5(a) Linguistic construction of ideational meaning

The construction of experience in SFL is conceptualized through the system of TRANSIVITY (Halliday, 2004; Halliday and Matthiessen, 1999) where participants are configured with a process and forms of circumstance. The ERGATIVE interpretation involves the Medium (the central participant) and the Agent (the participant acting on the Medium). The unfolding of larger

Table 4 Systemic functional (SF) model for ideational meaning: (a) language, and (b) visual images

LANGUAGE		VISUAL IMAGES
Experiential Meaning	Logical Meaning	Representational Meaning
DISCOURSE		VISUAL DISCOURSE/GRAMMAR
IDEATION (Activity Sequences)	CONJUNCTION & CONTINUITY (Logical Relations)	SCENE Movement-Action-Event-Being Sequence (Figures, Objects, Setting) Narrative/Descriptive/Explanative Relations Interplay of Episodes Spatial/Temporal/Causal
GRAMMAR		SUB-SCENES (Episodes) Movement-Action-Event-Being (Figures, Objects, Setting) Narrative/Descriptive/Explanative Relations Spatial/Temporal/Causal Relations
TRANSITIVITY (Processes, participants and circumstance)	LOGICO-SEMANTIC RELATIONS & INTERDEPENDENCY	COMPONENTS Figures, Objects, Setting
ERGATIVITY (Agency)		EXPRESSION (Cross-Functional Systems) According to Medium and Materiality of Visual Image (e.g. print, drawing, painting, electronic) e.g. Colour (Shading, Brightness, Hue) Perspective, Framing and so forth
EXPRESSION (Cross-Functional Systems) According to Medium Materiality (e.g. print, drawing, painted, electronic) e.g. Font (Type, Format, Case, Typeface, Size and Colour) Layout (Spacing, Justification, Visual Effects and so forth)		

activity sequences of processes, participants and circumstance are described through the discourse system of IDEATION (Martin, 1992; Martin and Rose, 2003). The linguistic construction of logical relations is conceptualized through logical sequences between clauses which are described in terms of LOGICO-SEMANTIC RELATIONS and INTERDEPENDENCY. The unfolding of global logical relations in the text is described through the discourse system of CONJUNCTION and CONTINUITY (Martin, 1992; Martin and Rose, 2003).

An important feature of the linguistic construction of ideational meaning, which has significant implications for SF-MDA is grammatical metaphor (GM). GM is concerned with semantic shifts of meaning which take place at three levels of complexity (Halliday and Matthiessen, 1999; Martin and Rose, 2003; Martin and Veel, 1998; Simon-Vandenberg et al., 2003). The first type of semantic shift involves changes in the functional status of elements: for example, a process becomes an entity (e.g. the process 'move' becomes 'movement'). The second type involves repackaging configurations

of elements: that is, the clause becomes a word group/phrase (e.g. 'X moves Y' becomes 'the movement of X to Y'). The third type is the repackaging of sequences of configurations: that is, the clause complex becomes a clause (e.g. 'X moves Y, so Z occurs' becomes 'the movement of X to Y results in Z'). The three types of GM are significant because they have implications for understanding intersemiotic metaphor in multimodal discourse.

GM provides a basis for conceptualizing the metaphorical shifts in meaning which occur in the intersemiotic construction of meaning. These shifts of meaning called semiotic metaphors (SM) are illustrated in the analysis of ideational meaning for Figure 1 in section 7. Furthermore, it is proposed that GM developed in language in response to the functions fulfilled by the semiotic resources of mathematical symbolism and visual imagery in scientific discourse (O'Halloran, 2003, 2005). If this is indeed the case, then GM itself is a direct product of multimodal semiosis. This conjecture points to the need to consider semiotic resources as part of a *larger integrated phenomenon*, rather than individual systems of meaning. The study of intersemiosis in multimodal discourse becomes imperative with such a view of social semiosis.

5(b) Visual construction of ideational meaning

Genres of visual images function to realize Narrative, Descriptive and Explanative relations (see Table 4[b]). The ensuing discussion is largely concerned with Narrative relations in photographs, drawings and paintings where representational meaning is theorized in the form of a Scene consisting of Movement-Action-Event-Being Sequences of Figures and Objects in a Setting. There may be Interplay of Sub-Scenes or Episodes within the Scene, each with their own Movement-Action-Event-Being Sequence. For example, the Scene of the man reclining in Figure 1 consists of two Sub-Scenes; the woman's hand on the man's body and the man undoing his belt buckle.

Logical relations take the form of Spatial, Temporal or Causal Relations which unfold within the Scene and/or Sub-Scenes. Logical relations are typically made explicit in scientific genres (Guo, 2004; O'Halloran, 2005). However, the capturing of an instant in Narrative Relations means that the logical relations may remain open to interpretation. For example, the blue lighting and the suspension of activity in Figure 1 create a sense of unreality with respect to the Scene which is unfolding. The exact nature of the Narrative Relations is not made explicit.

The potential ambiguity of logical relations in visual imagery opens a semantic space of interpretance within which language can operate. It appears that language functions to order our experiential view of the world through specific configurations of processes, participants and circumstance, and further to that, imposes explicit logical relations on those constructions.⁴ At the same time, visual imagery is capable of representing scenes where component parts are related in the context of the whole image. In many

cases, visual imagery reproduces our perceptual awareness of the world or, alternatively, subverts that view in profound ways. The specific functionalities of language and visual imagery require further exploration which is beyond the scope of this article.

5(c) Intersemiotic construction of ideational meaning

O'Halloran, (2005, 2007b) extends Royce's (1998) approach to propose metafunctionally based systems for intersemiosis for the analysis of mathematics discourse. The SF-MDA systems that have been adapted for ideational meaning in linguistic and visual texts are displayed in Table 5. The SF-MDA discourse systems are based on Martin's (Martin, 1992; Martin and Rose, 2003) discourse systems of IDEATION and CONJUNCTION & CONTINUITY and the grammatical systems are based on Halliday's (2004) system of TRANSITIVITY and LOGICO-SEMANTIC RELATIONS and INTERDEPENDENCY. SF-MDA systems on the expression stratum are

Table 5 SF-MDA systems: the ideational metafunction

INTERSEMIOSIS ACROSS LANGUAGE AND VISUAL DISPLAY			
Metafunction	Discourse	Grammar	Expression
Experiential	INTERSEMIOTIC IDEATION Activity sequences and relations which span visual and linguistic elements	TRANSITIVITY RELATIONS Relational processes to set up identifying relations	JUXTAPOSITION Use of space and position to create lexical and visual relations
		LEXICALIZATION & VISUALIZATION Functional elements are re-represented using an alternative semiotic resource	FONT Use of font style, size and colour for experiential meaning COLOUR Use of colour for experiential meaning
Logical	INTERSEMIOTIC IMPLICATION SEQUENCE Cohesive and structural devices	INTERSEMIOTIC LOGICO-SEMANTIC RELATIONS & INTERDEPENDENCY Cohesive and conjunctive devices	SPATIAL POSITION Alignment of items in the text
		INTERPLAY OF SPATIALITY & TEMPORALITY Visual transformation of linguistic elements and vice versa	COLOUR Use of colour to direct the sequence for the construction of logical relations

included in Table 5. The SF-MDA framework is used for the analysis of Figure 1 in section 7. However, it should be noted that the SF-MDA systems for ideational meaning in Table 5 are illustrative only. Further analysis of multimodal corpora (Baldry, 2006; Baldry and Thibault, 2006b; Bateman, 2008) is necessary to provide a detailed description of intersemiotic systems.

The SF-MDA discourse system for experiential meaning in Table 5 is Intersemiotic Ideation. The Activity Sequence in Figure 1, for example, stretches across the photograph and the linguistic text. The Transitivity Relations involve intersemiotic relations of processes, participants and circumstance which, in the case of Figure 1, involve the Scene of the man and the choices of participants, processes and circumstance in the linguistic text. Transitivity Relations may involve Lexicalization and/or Visualization of functional elements. For example, the visual Scene becomes 'contact' and 'sexual contact' in the linguistic text (see section 7). Juxtaposition and the use of space create intersemiotic relations. For example, the AIDS in outline font in Figure 1 is superimposed over the visual image. Font style and Colour are systems which aid the intersemiotic expansion of meaning (see section 7).

The SF-MDA discourse system for logical meaning is the Intersemiotic Implication Sequence, which in the case of Figure 1, is implicitly realized (see section 7). Intersemiotic Logico-Semantic Relations & Interdependency and the Interplay of Spatiality & Temporality function at the rank of grammar to realize logical meaning. For example, the logical reasoning behind the suspension of the Activity Sequence in the photograph and the linguistic text is the product of intersemiosis. Spatial Position and Colour aid the sequence of logical reasoning which is implicitly realized in Figure 1. The semantic dimensions of the logical reasoning in Figure 1 are not immediately apparent, however. The SF-MDA of Figure 1 in section 7 demonstrates the need for close multimodal textual analysis in order to understand the semantics of the text.

6. SF-MDA AND DIGITAL TECHNOLOGY

Technology impacts on semiosis (e.g. the printing press led to the development of modern mathematical symbolism) and simultaneously provides a platform for developing disciplinary knowledge and practices. Digital technology opens up the path to explore semiosis in new ways because static and dynamic visual images can be easily manipulated. O'Toole (1999) uses this facility to introduce a *visual* means for exploring system selections in paintings through displaying the choices for Light, Framing and Gaze in hypertext format. The result is stunningly effective in terms of highlighting metafunctionally based choices in electronic versions of the paintings. The SF-MDA approach in section 7 follows O'Toole's (1999) example with regards to the use of digital technology for the analysis of Figure 1. The potential of digital technology for SF-MDA is explored in more detail later.

Typological and topological analyses of images and film texts are possible using digital technology. Visual editing systems in software

application such as Adobe Photoshop and Adobe Premiere contain degrees of difference in the menu choices which take the form of a continuum (e.g. colour, brightness, saturation and hue). In addition, image-editing techniques can realize categorical distinctions with respect to object definition. Shapes and outlines can be traced, cut and manipulated in other ways. For example, the 'magic wand' in Adobe Photoshop creates an outline of shapes based on colour matching. Shapes and objects can be captured and traced using digital technology. Digital technology offers means for capturing, changing and ultimately analysing colour, spatial position, shape and lighting in images and film texts.

Our sensory systems process information in ways that integrate our perception of the world into a complex dynamic whole, and this is perhaps the approach to MDA we should be seeking, replicated through digital technology. It is apparent that linguistic descriptions are both indispensable and limiting with respect to the analysis of multimodal discourse. The meanings arising from choices from the systems of Gaze, Colour, Shape, Movement, Framing, Layout, Lighting and so forth cannot be adequately described using language. As mathematics, the sciences and other disciplines such as medicine, architecture and design increasingly embrace the mixed-mode semiosis afforded through digital technology, the potential of semioticizing SF-MDA using similar strategies should be explored. The promise of digital technology is fundamentally the development of a new research paradigm. The potential of the approach is demonstrated in the analysis of ideational meaning of Figure 1 in section 7.

7. SF-MDA OF THE AIDS ADVERTISEMENT USING DIGITAL TECHNOLOGY

Singapore is a small modern city-state which is governed by the People's Action Party (PAP) since becoming a republic in 1965. It is characterized by strong governance and strict social, political and economic control of its multicultural population, which is predominantly Chinese. The first publicized case of AIDS in Singapore took place in 1998, and this was followed by various advertisements and campaigns aimed at controlling the spread of the disease. The AIDS advertisement in Figure 1 is one effort in this campaign. In addition, the PAP government introduced various strategies, including mandatory medical screening for sections of Singaporean society. The social, cultural and political history of Singapore and the construction of the AIDS crisis are worthy of further study. The purpose of this article, however, is to illustrate how particular realms of meaning are created intrasemiotically and intersemiotically through visual imagery and the linguistic text in the AIDS advertisement, and how these choices relate to issues of gender, sexuality, identity and ethnicity.

The AIDS campaign advertisement reproduced in Figure 1 appeared in the December issue (1998: 139) of *Cleo* magazine. The SF-MDA analysis explores the realm of ideational meaning in Figure 1. The analysis is

Table 6 Generic structure (Cheong, 2004: Figure 1). Reprinted with the permission of the publisher, The Continuum International Publishing Group

Visual Components 	Lead Locus of Attention (LoA)	Scene: Figure of the Man
	Display Explicit/Implicit Congruent/Incongruent (metaphorical)	Implicit Congruent
Linguistic Components 	Announcement Primary Secondary 1 Secondary 2	Contact. Prevention is all you've got. Over 90% of AIDS patients in Singapore contracted the disease through sexual contact.
	Enhancer Primary Secondary	AIDS Prevent AIDS. Protect Yourself.
	Call-and-Visit Information	AIDS 24-hour helplines: 254 1611 (English) • 254 1612 (Mandarin) • 254 1613 (Malay) • 254 1614 (Tamil) • For personal counselling, call 252 1324. Anonymous testing sites: DSC Clinic Blk 31 Kelantan Lane (Sat 1–4pm), Tanglin Shopping Centre (Wed 6.30–8.30pm). For counselling or more details on test, call 295 1153.

undertaken using the SF frameworks developed in sections 2 to 5 and the image-editing software Adobe Photoshop. References to O'Toole's (1994) systems for compositional and interpersonal meaning are included. The original version of Figure 1 appears in colour, a factor which is taken into account in the ensuing analysis.

The generic structure of Figure 1 is displayed in Figure 6 according to Cheong's (2004) framework for print advertisements. Cheong's (2004) Locus of Attention (LoA) initially functions to attract the viewer. The LoA may be congruent or metaphorical, depending upon whether the product and/or services are explicitly or implicitly displayed. Linguistic components of print advertisements include the Primary and Secondary Announcements, and the Enhancer and Tag which provide further information.

The Generic Structure of Figure 1 is visually displayed in Figures 3(a) and (b) through Framing (O'Toole, 1994). The strong horizontal and vertical nature of the Framing devices in Figure 1 contribute to a sense of stability. This stability is highlighted in Figure 3(b) using a black/white digitized version of Figure 1. The AIDS campaign advertisement invokes a sense of

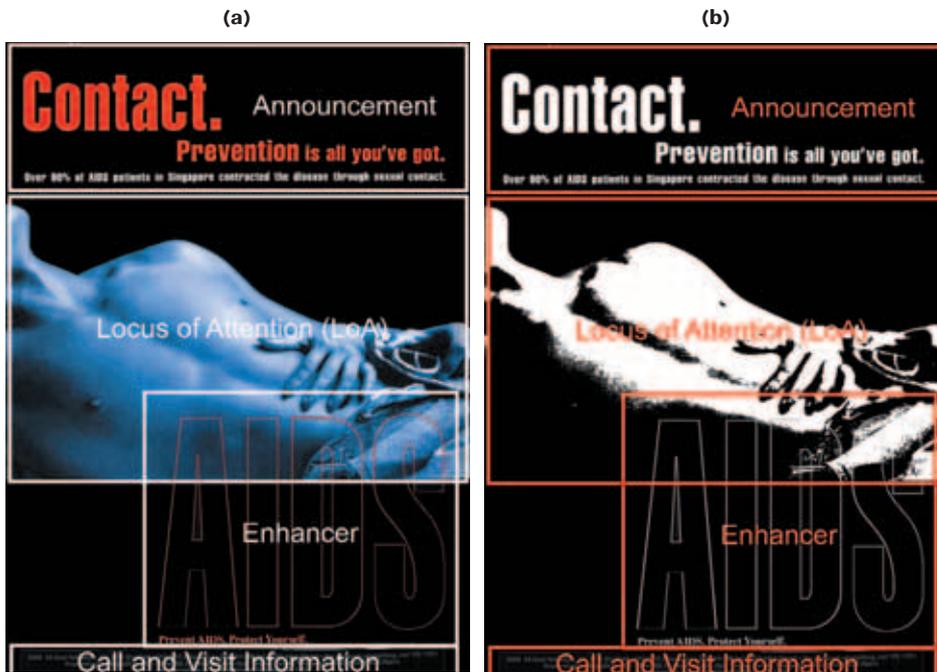


Figure 3 (a) Generic elements, (b) Framing to create stability

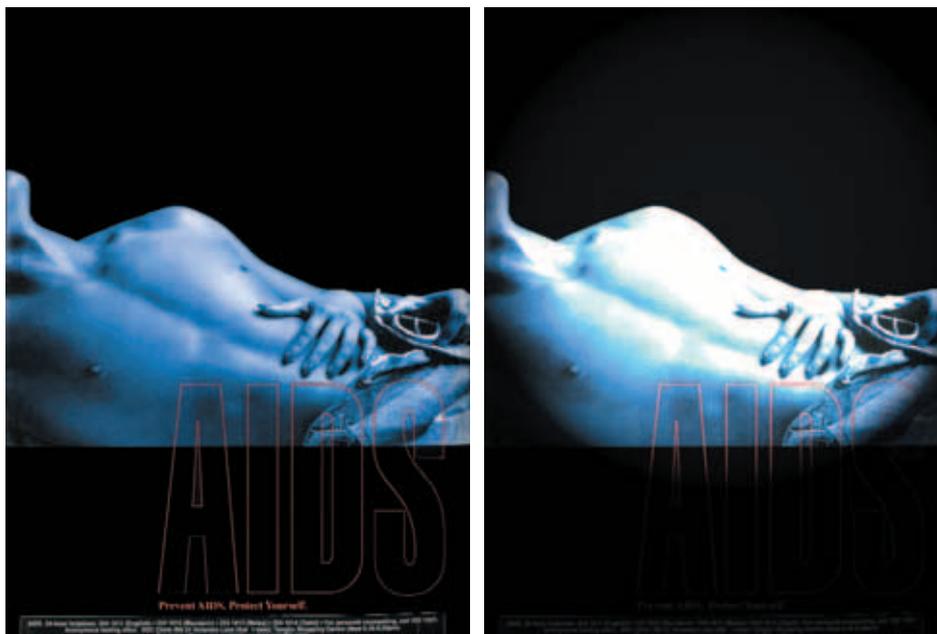


Figure 4 (a) Locus of Attention (LoA), (b) Use of light

permanence which is not easily dismissed. The dynamic aspect is primarily confined to the curvature of the man's body, which functions alongside other system choices to attract the viewer's attention.

The Locus of Attention (LoA) is the Scene consisting of the Figure of a young male model pictured from the chin to the groin, which is displayed in Figure 4(a). The interpersonal choices which function to make the Figure salient are Size, Centrality and the Play of Light on the body (O’Toole, 1994) against a decontextualized black background. The direction of the Light source in the Scene, which is highlighted in Figure 4(b), indicates the careful arrangement and staging of the Scene. The cropping of the photographic image is such that the identity of the model is not disclosed. The body posture and nakedness invoke a sense of sensuality and, at the same time, vulnerability through the unprotected exposure of the man’s neck and body.

The semiotics of the lived-in sensual body experience in the fragmented realm of the photographic instance can be redefined using digital enhancement. The Lighting Colour in the original version of the AIDS advertisement is unmistakably a strong blue, creating an underworld-type Scene in Figure 1. The significance of the blue Lighting Colour may be underscored through a Colour Change, for example, to bright pink and green iridescent Hues, which function to re-contextualize the Scene. Such an editing effect is shown in Figure 5 (the exact colours are not displayed). In addition, the blue Lighting Colour functions to make the finely toned texture of the man’s body textually, interpersonally and experientially salient. The smooth skin and lack of body hair indicates that the Figure is a young Asian male, most likely Chinese, given the Singaporean context of the campaign advertisement.

Figure 5
Changing the
colour scheme

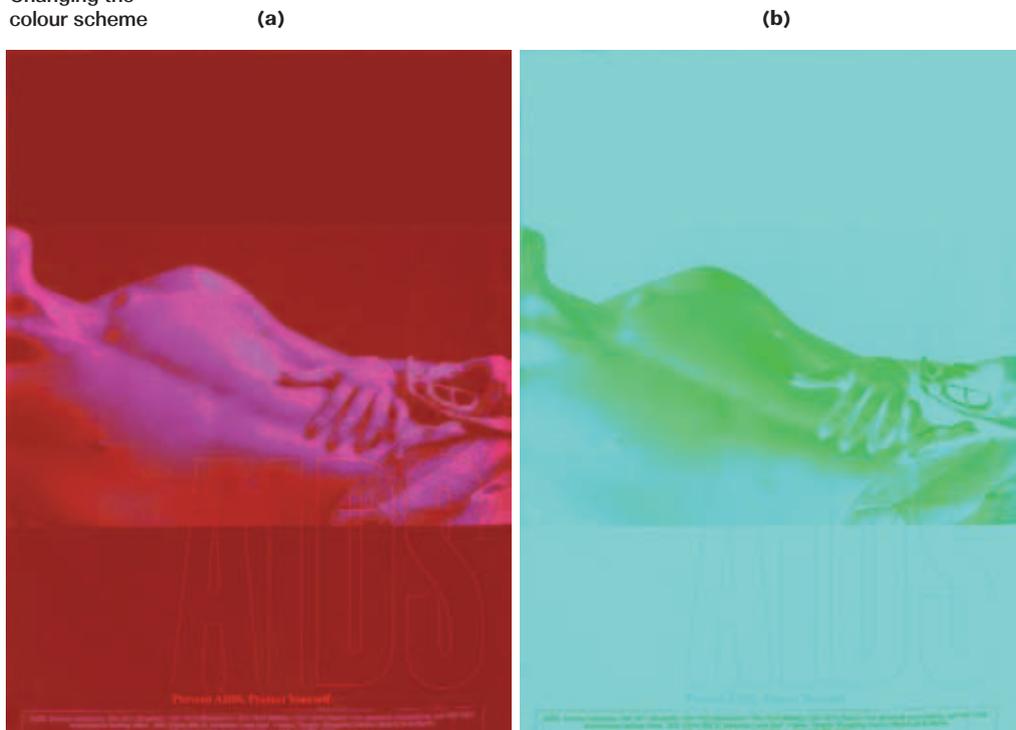




Figure 6 Action in the Sub-Scenes

The Movement-Action Sequence in the Scene involves two Sub-Scenes. The first Sub-Scene is a hand resting on the man's body, and the second Sub-Scene is the man's hand seemingly suspended in the process of undoing his belt buckle, as displayed in Figure 6. 'The hand', pictured rather spider-like with long painted fingernails (which appear red under the blue light), provides the only clue as to the identity of the second Figure. Although somewhat ambiguous, the shape and size of 'the hand' suggest that it is a woman's hand. Subsequent discussions with the producers confirm that the second model is a woman. It appears, therefore, that the photograph depicts heterosexual relations, with perhaps a suggestion of homosexuality through the vulnerability of the feminized image of the male Figure.

The Narrative Relations of the Scene unfold through the Sub-Scenes where the male Figure is seduced by an anonymous Figure, presumably a woman who is reduced to 'the hand'. The woman could be a prostitute, given the underworld context suggested in Figure 1. The Interplay of Episodes in the Sub-Scenes suggests that the decision regarding the outcome of the sexual encounter appears to lie with the man who holds his belt buckle. Patriarchal and ethnic dominance are reinforced in the Scene. The exposed neck and naked body makes the man appear vulnerable, however, to the advances of the spider-like hand. Classificatory systems for men and women are suggested, and women are portrayed as potential predators in Figure 1. The identities of the Figures are not revealed, and the anonymity of the Scene and the absence of Gaze of the Figures position the viewer as an observer with the power to pass judgement without direct participation.

The Primary Announcement takes the form of the linguistic message 'Contact.' through choices from the systems of Position (top left corner), Font Size (large) and Font Colour (which is a bright saturated red). The viewer simply cannot miss the Primary Announcement. 'Contact.', however,

Contact.

TH1	
M1	
T1	
E1	

Prevention is all [[you've got]].

TH1	Topic Theme	Rheme			
M1	Subj Mood	Fin Mood	Comp Residue		
T1	Token	Proc ReIn Iden Int	Value		
E1	Medm	Proc	Range		

Over 90% of AIDS patients in Singapore contracted the disease through sexual contact.

TH1	Topic Theme					Rheme				
M1	Subj					Fin Pred	Comp		Circ-Adj	
	Mood					Mood-Residue	Residue		Residue	
T1	Actor					Proc Mat	Range		Mann Means	
E1	Medm					Proc	Range		Circ	

Figure 7 Primary and Secondary Announcements

does not realize a command to contact someone or to contact the AIDS agency. On the contrary, 'Contact.' appears to realize an entity. This interpretation is supported by the Secondary Announcements 1 and 2; 'Prevention is all [[you've got]]' and 'Over 90% of Over 90% of AIDS patients in Singapore contracted the disease through sexual contact.' 'Contact' and 'sexual contact' are grammatical metaphors (GM), derived from the process 'to contact'. The linguistic analysis for the Primary and Secondary Announcements are displayed in Figure 7.

The LoA, the photographic Scene, is intersemiotically re-contextualized in relation to the Primary Announcement 'Contact.', and vice versa. There is a Bi-Directional Investment of Meaning as Intersemiotic Ideation takes place between the visual and linguistic elements in Figure 1. Significantly, the Contextualization Propensity (CP) of the Primary Announcement means that the single instance from the complex Scene of the young man and 'the hand' is collectively subsumed under the linguistic entity 'Contact'. In other words, the complexity of human sexual relations, captured in a photographic instant, is reconfigured as the entity 'Contact.'. The depersonalized nature of the Scene is intensified as the visual suspension of sexual activity is further reduced to an entity. The Interpretative Space (IS) of the Primary Announcement 'Contact.' and the photographic Scene limit the Semantic Effervescence (SE) of Figure 1, a phenomenon which bears upon the logical relations which are established.

A semantic shift occurs in Figure 1 when the visual Scene is reduced to the entity 'contact'. This is a case of semiotic metaphor (SM), where a complex Scene and embedded Sub-Scenes are intersemiotically reconfigured

as an entity through the process of Lexicalization. The Primary Announcement relocates and negatively classifies what appears to be unsanctioned sexual activity, which becomes 'sexual contact'. The entity 'sexual contact' is ideologically grounded as intrinsically bad and potentially dangerous, in this case, for the male Figure. The full stop in the Primary Announcement 'Contact.' functions intersemiotically with the photographic Scene to reinforce the message for the male Figure to 'stop'. The female Figure, represented as 'the hand', is constructed as responsible for posing the danger.

'Contact.' is followed by the Secondary Announcement, 'Prevention is all [[you've got]]', which coheres to the Primary Announcement through choices for Font Style and Font Colour, Alignment and Position. The relational statement, which takes the form of a warning, has the Token 'Prevention' and the Value 'all [[you've got]]'. The topical Theme 'Prevention' has larger Font Size which makes the Token prominent. 'Prevention' is a grammatical metaphor (GM) where the Actor and the Range are removed from the congruent construction 'X prevents Y'. However, the down-ranked 'you' in 'all [[you've got]]' functions intersemiotically to refer to the male Figure making the decision regarding the outcome of the sexual encounter. The only means for surviving AIDS is prevention, and the one who is targeted to survive through preventive measures in this case is the man. The message of prevention is reinforced through the Secondary Announcement 2, 'Over 90% of AIDS patients in Singapore contracted the disease through sexual contact'.

The logical meaning implicitly established in Figure 1 is that AIDS may be contracted through unsanctioned sexual behaviour which takes the form of an entity with negative connotations. Figure 1 functions to normalize heterosexual relations, and the warning about the threat of AIDS appears to be directed towards the interests of men. The possibility of contracting AIDS through other means (e.g. drug injections, medical

AIDS

TH1	
M1	
T1	
E1	

Prevent AIDS.		Protect Yourself.			
TH1	Topic Theme	Rheme	TH1	Topic Theme	Rheme
M1	Pred Residue	Comp Residue	M1	Pred Residue	Comp Residue
T1	Proc Mat	Range	T1	Proc Mat	Goal
E1	Proc	Range	E1	Proc	Medm

Figure 8 The Enhancers

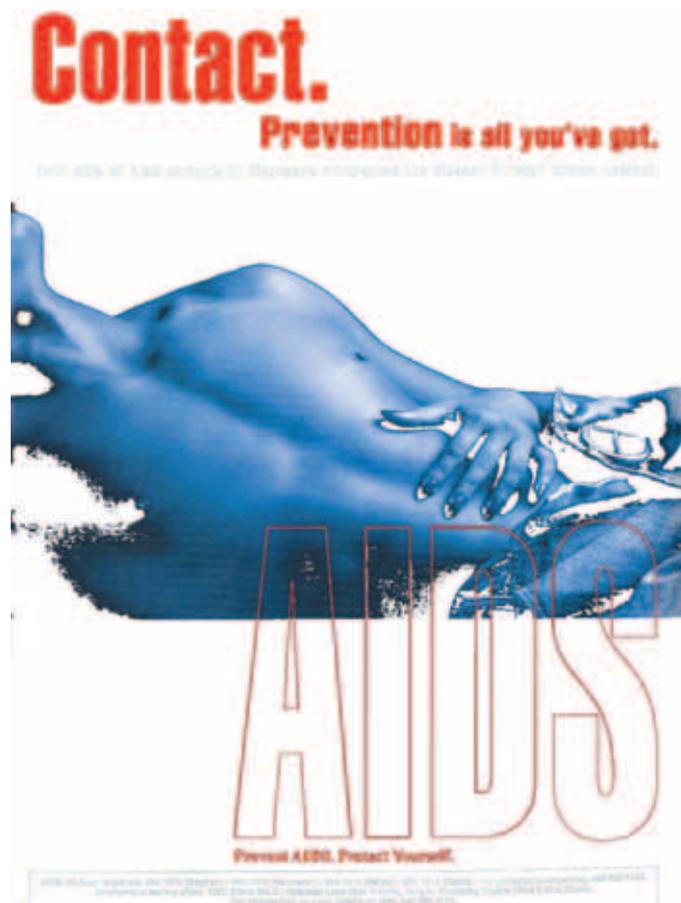


Figure 9
Font Typeface,
Size and Style

transfusions and pregnancy) is not mentioned. The implicit nature of the Intersemiotic Implication Sequence means that a detailed semantic interpretation of Figure 1 is required.

The typography of the Primary Enhancer 'AIDS' is a marked choice in terms of Font Size and Font Style. The AIDS advertisement is digitally enhanced against a white background in Figure 9 to provide a clearer rendition of this typographical choice. The outline Style of 'AIDS' in large Font adds to the underworld tone of Figure 1 and creates a context where AIDS cannot be seen or firmly grasped. AIDS becomes an entity which lurks half hidden from sight, ghostlike and lethal. The AIDS entity is Juxtaposed across the photograph of the Scene, which has been intersemiotically reduced to sexual contact. The Secondary Enhancers take the form of two commands, 'Prevent AIDS. Protect Yourself' where the Actor 'you' (Medium/Agent) for the Processes 'Prevent' (AIDS) and 'Protect' (Yourself) is the young male Figure. Women are portrayed as a threat to the dominant order of heterosexual Asian/Chinese men.

Figure 1 has implications for the construction of identity, ethnicity, gender and social status in connection with sexual behaviour and the spread

of AIDS. The identity and gender politics are significant because the advertisement appeared in the popular magazine *Cleo*, which primarily targets female readers. The construction and positive/negative evaluation of women is reinforced, with female readers clearly *not* wanting to identify with 'the hand' in Figure 1. Furthermore, the danger of AIDS for women takes the indirect form of other women who lie in wait for partners and husbands. Different normative codes of sexual behaviour and identity are reinforced, and women take on the added role of surveillance for their partners, as well as for themselves.

These codes of behaviour are reinforced in a second advertisement in the AIDS campaign series in Singapore. The advertisement appeared in December 1998 in the magazine *FHM* which is a magazine primarily aimed at a male audience. The Locus of Attention (LoA) in the *FHM* advertisement is the open palm of a hand which is gesturing 'stop'. There is a brightly coloured condom on each finger of the hand, which is salient against a white background. The Primary Announcement 'Just put it on.' (i.e. Nike's slogan 'just do it') intersemiotically realizes the command to use a condom. The intensity of the command is tempered through the modal Adjunct 'just'. The Secondary Announcement 1, 'French Cap. Bush Hat. Love Handle. Condom.', intersemiotically reinforces the playful construction of sexuality visualized by the coloured condoms. The Secondary Announcement 2 is 'Over 90% of AIDS patients in Singapore contract AIDS through unprotected casual sex' and 'Prevent AIDS. Protect yourself'. These Announcements function intertextually with the AIDS advertisement from *Cleo*, the difference being that sexual contact in Figure 1 targeting a female audience becomes casual sex for the male reader.

The analysis of Figure 1 using image-editing software demonstrates how semiotic choices may be visually marked in a way which gives rise to detailed semantic and ideological interpretations of the text. The usefulness of digital technology for SF-MDA has also been demonstrated for the analysis of a film segment from *Chinatown* (Towne, 1974), using video-editing software Adobe Premiere (O'Halloran, 2004b). A screen capture of the SF-MDA analysis is displayed in Figure 10. The approach involves using overlays to visually annotate choices in the film text. The overlays are layers (recorded as Videos 2 to 6) which are added to the original movie track (Video 1). The movie is rendered to flatten the layers into a single film where semiotic choices are dynamically mapped through using vectors, choices of lighting and colour and other forms of visibility. The SF-MDA analysis takes the form of a film text.

The monitor window in Figure 10 shows a still shot from the film (see the top right-hand corner) where the interpersonal systems of Gaze (marked by vectors), Light (using a flaring lens) and Colour Contrast (using colour matching) are marked using the special effects found in Adobe Premiere. The analysis reveals the semiotic means for intensifying the interpersonal relations between Jack Nicholson and Faye Dunaway in a street scene. In a subsequent

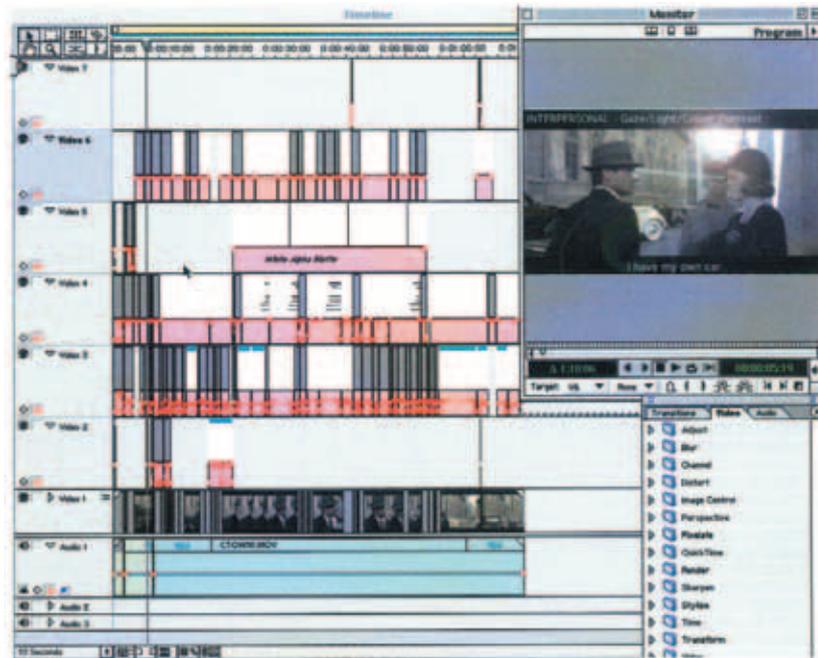


Figure 10 Adobe Premiere: video-editing software for film analysis

shot, the interpersonal relations between the two actors become more marked with a change in the Camera Distance and Proxemics (displayed using line segments) and a change in the direction of Gaze (displayed using vectors). The complexity of SF-MDA becomes evident with video-editing techniques which attempt to capture the dynamic aspect of film texts (O'Halloran, 2004b).

The task of capturing and analysing complex multimodal constructions of reality becomes imperative as the realm of the visual and the multimodal increasingly move alongside the linguistic through the advance of technology. The major challenges facing multimodal discourse analysts include developing theoretical and practical approaches using digital technology and incorporating transdisciplinary perspectives in the process.

8. CONCLUSION

The preceding discussion is an attempt to highlight: (i) the different functionalities of semiotic resources: in this case, language and visual imagery, and the need to develop theoretical frameworks accordingly; (ii) the significance of the cross-functional systems on the expression stratum which are concerned with the material basis of semiosis; (iii) the centrality of intersemiosis for understanding the nature of semantic expansions and metaphorical shifts of meaning; and (iv) the potential for developing new theoretical and practical approaches to SF-MDA through the use of digital technology. Furthermore, insights from disciplines that embrace technology should accelerate our conceptualization and understanding of multimodal semiosis.

ACKNOWLEDGEMENTS

My thanks to the anonymous reviewers for their constructive comments which led to the current version of this article.

NOTES

1. My sincere thanks to Brad Smith and Chris Cleirigh for sharing their knowledge of the systemic functional approach to phonology.
2. Linguistic systems have been capitalized following SFL conventions.
3. Colour has been theorized in different ways (see Kress and Van Leeuwen, 2006, 2002; O'Halloran, 2005; O'Toole, 1994). Colour is theorized as a cross-functional system on the expression stratum for language and visual imagery in this article.
4. Mathematics and science developed as discourses which foreground ideational meaning against a backdrop of consistent patterns of textual and interpersonal meaning.

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