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Changing dimensions of school literacies

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Changing dimensions of school literacies

Change, continuity and complementarity: Reconfiguring literacy repertoires

While many of the fundamentals of established, language-based literacy pedagogies will endure in the foreseeable future, they are by no means sufficient for the development of the kinds of literacy practices that already characterise the continuously evolving information age of the new millennium. We know that before many young children start school, they have already functionally and critically engaged with electronic and conventional format texts in ways that are not usually a part of classroom experience (Green & Bigum, 1993; Mackey, 1994; Smith, Curtin, & Newman, 1996). We also know that many children continue to be intensely involved in multimodal textual practices outside their school experience. For example, as Davidson reports, Max and James, when in fifth grade, were avid users of the animation program Microsoft 3D Movie Maker. As well as making their own thirty minute movies, they downloaded from the internet similar movies made by other children, sent both finished cartoons and ‘work in progress’ internationally, swapped ideas and communicated by email about style and effect (Davidson, 2000). Also while in fifth grade, Christian was described (Wilson, 2000) as a studious reader of his prolific collection of N64 (Nintendo 64) magazines. The computer-based literacy practices these children are engaged in represent a significant change from literacy activities most adults experienced in their childhood. But there is a complementarity between new computer-based literacies and conventional book-based literacies as evidenced in Christian's reading and collecting his N64 magazines. This complementarity is also reflected in the phenomenon of burgeoning bookstore shelves of computer magazines (often with CD ROM included), manuals, enhanced practice guides etc. and serves to remind us that the advent of the digital datasphere does not necessarily mean the extinction of page-based literacies. As well as this change and complementarity, there is continuity among some contemporary and longstanding literacy practices of school age children. For example, Christian revealed that, as well as his Nintendo magazines, he was also reading a recent novel by well-known Australian author of literature for children, Victor Kelleher. The continuing appeal of reading novels for children like Christian is more generally reflected in the phenomenal success of J. K. Rowling's ‘Harry Potter’ books (Rowling, 1997; Rowling, 1998; Rowling, 1999; Rowling, 2000) in the age of screen-based texts.

Although there is no doubt that multimedia, electronic, information sources are quickly taking up the communication of much information previously presented solely in traditional text formats, rather than being displaced by computer text, conventional literacies are maintaining a complementary role as well as being both co-opted and adapted in the evolution of our textual habitat (Goodwyn, 1998; Lankshear, Snyder, & Green, 2000; Leu & Kinzer, 2000; Rassool, 1999). In the twenty-first century the notion of literacy needs to be reconceived as a plurality of literacies and being literate must be seen as anachronistic. As emerging technologies continue to impact on the social construction of these multiple literacies, becoming literate is the more apposite description. If schools are to foster the development of these changing multiple literacies, it is first necessary to understand the bases of their diversity. These include not only the affordances of computer technology but also the increasing prominence of images in both electronic and conventional formats. In addition, the distinctive literacy demands of different school curriculum areas are now well recognized, as is the distinction between literacy practices that are reproductive of existing knowledge and prevailing social orders and values, and critically reflective literacy practices that question and challenge the status quo. The first part of this paper outlines these parameters of diversity and their interactive effects, which will be characterised as producing multi-dimensional, multiple literacies - multiliteracies.

In order to develop effective practices in emerging multiliteracies, students need to understand how the resources of language, image and digital rhetorics (e.g. hyperlinks and windows) can be deployed independently and interactively to construct different kinds of meanings. This means developing knowledge about linguistic, visual and digital meaning-making systems. This kind of knowledge requires metalanguage – language for describing language, images and meaning-making inter-modal interactions. Metalanguage, in the form of a range of different types of grammar and descriptions of text structure, is not new. Various forms of metalanguage describing technical aspects of images and their production are well known. But what is needed is a metalanguage that describes the 'grammar', or structural elements and their relationships, of images and language in terms of the functions or meaning-making roles of such elements and relationships. This means a metalanguage in which meaning-making in social contexts is fundamental to its technical description of language and image. The second part of this paper

outlines the contribution of such descriptions of visual and verbal grammar and discourse, deriving from systemic functional linguistics (SFL), as the basis of a functional and accessible metalanguage of multiliteracies (New London Group, 2000).

Multiliteracies: Multi-dimensional, multiple literacies

The relationships between visual and verbal representations – visual literacies

Written texts have always been multimodal. They are produced using a particular script or typeface, of a particular size or in varying sizes, laid out in a particular way and on certain types and quality of paper or other materials. On the whole we have been taught to overlook this kind of multimodality except in cases where students have been chided for ‘untidy’ work on ‘scrappy’ paper or rewarded for ‘excellent presentation’ of an essay (Kress, 1995b:26). But today the multimodality of print is being exploited in a wide range of texts. In her discussion of ‘visual English’ Sharon Goodman illustrates the role of typographic variation in representing multiple voices in texts and the increasing use of what she calls visual puns, which rely on the interaction of visual and verbal elements to bring their meaning to the fore (Goodman & Graddol, 1996). Computer technology facilitates not only effortless use of wide typographic variation in terms of font, colour, size etc, but also the use of dynamic text which can ‘appear’, ‘fly’ across the screen, ‘rotate’, ‘flash on and off’ etc. The verbal forms of the computer screen also have a strong intertextual function (alluding to or echoing other texts) when they appear in other contexts such as signs on shopfronts identifying businesses like ‘Newtown.freshfruit@Georges.com’. The graphology of written language needs to be read multimodally. In so doing the ways in which these multimodal features of written language make different kinds of meanings need to be understood because they are fundamental to a text’s influence on its interpretive possibilities.

Texts are also becoming increasingly multimodal in their incorporation of images with written language. This is apparent in contemporary newspapers, although there is some variation across different types of publications (Kress, 1997). Even in the case of picture story books the nature and the role of images have undergone major changes with the advent of the postmodern picture book (Hollindale, 1995; Lonsdale, 1993; Prain, 1998; Stephens & Watson, 1994; Watson, 1997). In the case of school textbooks the latter part of the twentieth century has seen a significant shift to the prominence of images (Kress, 1995a; Kress, 1997). The situation has changed from one

where language as writing was dominant as the vehicle for all of the information deemed important, to the current situation where writing is far from dominant. In contemporary texts the majority of the space is given to images and they have a significant role together with language in communicating the essential information about the topic (Kress, 2000).

Kress has argued that the contemporary integrative use of the visual and the verbal has produced a new code of writing and image, in which information is carried differently by the two modes (Kress, 1997). Information that displays what the world is like is carried by the image, consistent with the logic of the visual as arrangement and display. Written language on the other hand, tends to follow the logic of speech in being oriented to action and event, and is thus oriented to the recording/reporting of actions and events and the ordering of procedures. Lemke has also pointed out that in scientific texts, images like abstract graphs and diagrams on the one hand, and written text on the other hand, contribute differentially to the construction of meaning (Lemke, 1998). He argues that in these texts meanings are made 'by the joint co-deployment of two or more semiotic modalities' suggesting further that

It is the nature of scientific concepts that they are semiotically multimodal in this sense, and this may well be true in other systems of semiotic practices as well (Lemke, 1998:111).

As well as recognizing that all texts need to be read multimodally, we need to understand how these different modalities separately and interactively construct different dimensions of meaning. These dimensions include the 'ideational' dimension, concerning the people, animals, objects, events and circumstances involved; the 'interpersonal' dimension, concerning the issues of relative power, attitude, affect etc, defining the relations among the participants in the communication; and the textual dimension, concerning the channel of communication and the relative emphasis and information value of aspects of what is being communicated. To understand how these dimensions of meaning are constructed by the elements and structures of language and image requires knowledge of the kind of visual and verbal grammar that relates such elements and structures to meanings and ultimately to the nature of the context in which the visual and verbal texts function. Such a metalanguage of multiliteracies is addressed in the latter part of this paper.

The differentiation of subject-specific literacy demands – curriculum literacies

Multiple literacies can be differentiated not only on the basis of the channel and medium of communication (print, image, page, screen), but also according to field or subject area (history, geography, science, maths etc). Research from a variety of theoretical perspectives has shown that school subject areas have their own characteristic language forms and hence entail distinctive literate practices (Applebee, 1981; Davies & Greene, 1984; Gee, 1990; Martin, 1993; Richards, 1978; Street, 1984). A recent study of the literacy demands of the enacted curriculum in the secondary school (Wyatt-Smith & Cumming, 1999) showed that the literacy demands were dynamic, varying significantly both within lessons and across school subject areas. The researchers concluded that it is no longer appropriate to talk about ‘literacy across the curriculum’. Instead there is a need to delineate ‘curriculum literacies’, specifying the interface between a specific curriculum and its literacies rather than imagining there is a singular literacy that could be spread homogeneously across the curriculum.

Descriptions of differentiated curriculum literacies of a range of school subject areas has resulted from systemic functional linguistic research (Coffin, 1996; Coffin, 1997; Halliday & Martin, 1993; Humphrey, 1996; Martin & Veel, 1998; Rothery, 1996; Unsworth, 1999a; Veel, 1999; Veel & Coffin, 1996). This work has identified the genres (types of texts like explanations, reports, procedures, narratives etc) that are prominent in the reading materials and writing demands of different subject areas, specifying the organizational structures of such text types. For example, explanations and procedures are very frequent in science but rare in English and, while explanations also occur in history, procedures are much less frequent. The schematic structures of these genres are quite different. A report begins with a general statement that classifies the object of the report, then describes it, then details its behaviours or uses. An explanation begins with an identification of the phenomenon to be explained and then proceeds through a series of implication sequences showing how or why something is the way it is. What has also been documented is the variation in the deployment of grammatical resources in different genres and in the language of different subject areas. One example is the use of ‘nominalisation’. That is the formation of a noun from the verb form, like ‘compress’ → ‘compression’. In sequential science explanations (which show how something came to be

through a sequence of events) like the formation of coal, there is negligible use of nominalisation. On the other hand in explanations where cause is also linked to increasing levels of technicality like how sound travels, nominalisations like ‘compression’, ‘rarefaction’, ‘series’ etc are integral (Unsworth, 1997). In history nominalisations also occur but rarely to construct subject-specific technical terms like ‘rarefaction’ etc. In history nominalisations are prominent in explanatory genres, but they are usually abstract nouns that are not ‘history-specific’ like ‘widespread unemployment’ and ‘intolerance of religious dissent’ (Coffin, 1996; Martin, 1993; Veel & Coffin, 1996).

Understanding the grammatical forms of written English and how these are characteristically deployed in the genres of school subject areas is a crucial resource for enhancing students comprehension and composition of the distinctive discourse forms of different school subject areas. What is required to mobilise this resource is a metalanguage shared by students and teachers. A number of professional development programs for teachers have incorporated the explicit teaching of functional grammar and genre to provide such a metalanguage (National Professional Development Program, 1997; Polias, 1998). This kind of metalinguistic understanding positions students not only to comprehend and compose the text forms of their school subjects but also to critique the perspectives on knowledge they construct (Martin, 2000).

The affordances of computer technologies - technoliteracies

Some of the affordances of computer-based and networked technologies for information and communication are exclusive to this digital datasphere. These include hypertext and hypermedia links, windows or frames, ‘chat rooms’ of various kinds, email and certain ‘search’ capabilities. Such features have generated new kinds of literacy practices. Multimodality is not an exclusive feature of electronic texts, but the range of modalities, the extent of their use, and the nature and quality of their articulation, have significantly increased in electronic formats. The interaction of the peculiar affordances of computer-based and networked technologies and the multimodality of electronic format texts has the effect of multiplying potentially new literacy practices. Because of the digital dimension of these new practices and growing access to multimodal authoring software, individuals are now more likely to be able to be equally engaged as constructors and consumers of textual materials, closely articulating comprehending and composing behaviours.

Clearly the impact of the new technologies cannot be understood as an add-on tool for learning and teaching literacies. Rather than trying to ‘squeeze’ new technologies into familiar literacy education procedures, we need to attend to the reality of new and emerging literacies. As in the case of curriculum literacies, central to understanding the new dimensions of multiliteracies afforded by information technology is metasemiotic knowledge – understanding the systematic nature of the digital rhetorical resources that are available to make meanings and having the metalanguage to describe them. Although theoretical descriptions of digital rhetorical systems remain in their infancy, brief comment will be made about the nature and potential of hypertext links and windows and the relative significance of multimodal features of cybertexts. Then, having noted the need to attend to the reality of new and emerging literacies, it will be important to acknowledge that the conventional, hard-copy forms of ‘linear’ texts will continue to co-exist with the textual matrices of electronic hypertext for some time, and that in many electronic texts, less than optimal use is made of the potential of digital rhetorics.

The rhetorical role of the hypertextual link is routinely regarded as a kind of neutral ‘connection’, which facilitates readers being able to choose among various permutations and combinations of ‘non-linear’ pathways through one or more texts. But attention has been drawn to the need to problematize this view and develop a more sophisticated account of the meaning-making potential of links (Burbules, 1997; Foltz, 1996; Kamil & Lane, 1998). The use and placement of links is one of the vital ways in which the tacit assumptions and values of the designer/author are manifested in a hypertext – yet they are rarely considered as such (Burbules, 1997:105). Burbules proposes several categories of links based on the kinds of meanings they imply. For example, a link from a page dealing with ‘political organizations’ to one dealing with ‘Catholic Church’ could be read as a metaphor, encouraging the reader to think about politics and religion in a different way. If a page on ‘human rights violations’ is linked to pages on ‘corporal punishment in schools’, this suggests categorical inclusion.

Links make such associations, but do so in a way that is seldom made problematic; yet because such categorical links are often the gateway that controls access to information, clustering and relating them in one way rather than another is more than a matter of

convenience or heuristic – it becomes a method of determining how people think about a subject (Burbules, 1997:113).

The use of frames or windows makes it possible to have two different texts and/or images on the screen at the same time. This provides new ways for designers/authors to structure their texts and may be considered a significant advance in the potential use of the internet for educational purposes (Moore, 1999). But again the semiotic significance of the use of and placement of these frames to achieve these parallelisms goes beyond a neutral resource for juxtaposing related information. Critical reading of digital rhetorical structures necessitates a capacity to ‘make strange’ or problematize the apparent ‘naturalness’ or ‘invisibility’ of the rhetorical choices designers/authors have made, questioning why certain links and juxtapositions are included and to imagine connections of a similar kind that could have been made but weren’t. This requires meta knowledge of digital rhetorical devices – such as understanding how hyperlinks are made and multi frames included.

The more one is aware of how this is done, the more one can be aware that it was done and that it could have been done otherwise (Burbules, 1997:119).

In view of the potential for non-linear text structuring and the inclusion of multimedia ‘pages’ or screens, it is remarkable that so much electronic publishing features written text and makes strong demands on conventional reading skills (Garton, 1997). Nevertheless, the potential of electronic texts for enhanced multimodal presentation has had an obvious impact and it has been argued that visual literacies may be pre-eminent in negotiating multimedia electronic texts.

The most popular and successful websites are not necessarily elaborately linked hypertexts, but they are visually interesting. Literacy in electronic environments may have more to do with the production and consumption of images than the reading and writing of either hypertextual or linear prose (Bolter, 1998:7).

The nature, extent and rhetorical use of images in electronic publishing however, also warrants critical attention. Some literary narratives for young readers on CD ROM use multimedia and

hypertextual elements to draw the reader into the story in ways that are not available in conventional format books (James, 1999). On the other hand some such narratives are replete with gratuitous hypermedia links to images and text that are at best peripheral to the story (Miller & Olsen, 1998). In an investigation of science topics for primary school students (Unsworth, 1999b) sections in conventional trade books were compared with presentations of the same topics on the CD ROMs 'Encarta 95' (Microsoft, 1994) 'The Eyewitness Encyclopedia of Science' (Kindersley, 1994) and 'The way things work' (Macaulay, 1994). There were many more, and a greater variety of images in the trade books. In some topics on some of the CD ROMs there were no images at all. On the other hand some CD ROMs on some topics provided animations that were not possible in the books. But the significance of the type of animation also needs to be considered. For example, the Encarta 95 CD ROM provides a realistic animation of the water cycle, but there is no synoptic, schematic diagram simultaneously depicting all stages of the water cycle. Current work comparing science explanations on CD ROM and on internet websites suggests that learners attempting to work from less complex to more complex explanations need to adopt different reading strategies depending on the format of the material they are using. For example the Encarta CD ROM entry for the greenhouse effect presents the more technical version as the main text and the second version as a hyperlinked oral explanation accompanying an animation. On the other hand on the USA Today website (<http://usatoday.com.weather/tg/whrmng.htm>) the simpler explanation with animated images is presented first with a hyperlink to the more technical version and a more complex, static image.

The challenge of alternative perspectives – critical literacies

What is involved in critical literacy defies simple definition (Lankshear, 1994; Muspratt, Luke, & Freebody, 1997) but work from a variety of theoretical perspectives suggests a common recognition of critical literacy practices which can be distinguished from routine decoding of textual information and from compliantly participating in the established, institutionalised textual practices of a culture. These different aspects of literate practice will be categorized here as 'recognition literacy', 'reproduction literacy' and 'reflection literacy'. The relationship of these categories to those published elsewhere is indicated in Figure 1.

Dimensions of Literate Practice	(Green, 1988)	(Freebody & Luke, 1990)	(Hasan, 1996)	(Macken-Horarik, 1996)
Recognition	Operational	Code-breaker	Recognition	Functional
Reproduction	Cultural	Text participant Text user	Action	Reproductive
Reflection	Critical	Text analyst	Reflection	Critical

Figure 1 Distinguishing critical literacy – comparing typologies of literate practice

Recognition literacy involves learning to recognize and produce the verbal, visual and electronic codes that are used to construct and communicate meanings. It can also refer to the literacy practices are very familiar to members of a culture as they are ubiquitous and integral to common experiences of everyday life. Reproduction literacy involves understanding and producing the conventional visual and verbal text forms that construct and communicate the established systematic knowledge of cultural institutions. Reflection literacy necessitates an understanding that all social practices, and hence all literacies, are socially constructed. Because of this, literacies are selective in including certain values and understandings and excluding others. Reflection literacy means learning how to read this inclusion and exclusion. Interpreting and constructing texts entails the text analyst role, interrogating the visual and verbal codes to make explicit how the choices of language and image privilege certain viewpoints and how other choices of visual and verbal resources could construct alternative views.

This triadic categorization carries the risks of its neatness. In practice there is likely to be some degree of overlap and interweaving. Nor is the triad a simple developmental progression. Even those quite proficient in a range of literacies need to deal with code-breaking or operational mechanics in contexts of literacy practices that are novel to them. It has also been shown that quite young learners can engage productively in reflection literacies (Knobel & Healy, 1998). Nevertheless, it has been argued (Hasan, 1996; Macken-Horarik, 1996) that, regardless of the age or experience of the learner, reflection literacy presupposes reproduction literacy, which presupposes recognition literacy. These three facets of literate practice are not linked by

temporal sequence but by logical inclusion: reflection literacy includes a well-developed range of reproductive literacy practices, and these include recognition literacies, but the reverse is not the case.

What is being increasingly recognized is the importance of metalanguage in developing all three facets of literacy but particularly critical literacies (Lankshear, 1997; Luke, 2000; Rassool, 1999). In fact, although not a sufficient resource, some argue that metalanguage is a priority resource for critical literacy development.

A rudimentary working definition of critical literacy entails three aspects. First, it involves a meta-knowledge of diverse meaning systems and the socio-cultural contexts in which they are produced and embedded in everyday life. By meta-knowledge I mean having an understanding of how knowledge, ideas and information 'bits' are structured in different media and genres, and how these structures affect people's readings and uses of that information (Luke, 2000:72).

Since the 'critical dimension' of literate practice fundamentally involves awareness that all literacies are socially constructed (Lankshear, Snyder & Green, 2000), an essential feature of the metalanguage to be adopted would seem to be a clear theoretical link between the descriptions of the visual and verbal elements of texts and how they make meanings, and their relationship to the parameters of the social contexts in which they function. This is at the heart of systemic functional linguistics and the verbal semiotic analyses extrapolated from it, contributing a sound basis for a metalanguage of multiliteracies.

A metalanguage of multiliteracies

The importance of a metalanguage for developing multiliteracies is very widely acknowledged, and there seems to be growing consensus about the kind of metalanguage that is needed. A group of ten academics, identifying themselves as 'The New London Group'¹, and including members from the UK, the US and Australia addressed this issue in their proposal for a pedagogy of multiliteracies (New London Group, 1996; New London Group, 2000). They emphasised that the metalanguage needed to support a sophisticated critical analysis of language and other

semiotic systems yet not make unrealistic demands on teachers and students. But above all the metalanguage needed to derive from a theoretical account that linked the meaning making elements and structures of semiotic systems like language and image to their use in social contexts.

... the primary purpose of the metalanguage should be to identify and explain differences between texts, and relate these to the contexts of culture and situation in which they seem to work (New London Group, 2000:24).

This aligns with a fundamental premise of systemic functional linguistics (SFL) - the complete interconnectedness of the linguistic and the social (Halliday, 1973; Halliday, 1978; Halliday, 1994; Halliday, 1985; Hasan, 1995; Martin, 1991; Martin, 1992). The metalanguage included in the Queensland English syllabus for years one to ten (Queensland Department of Education, 1994) draws very extensively on SFL, and in a more modified form SFL clearly provides the source for significant aspects of the metalanguage in the New South Wales English k-6 syllabus (New South Wales Board of Studies, 1998). As already noted a number of professional development programs for teachers have incorporated the explicit teaching of functional grammar and genre to provide access to such a metalanguage (National Professional Development Program, 1997; Polias, 1998).

Extrapolating from SFL descriptions of language, researchers have developed a corresponding functional account of 'visual grammar' (Kress & van Leeuwen, 1990; Kress & van Leeuwen, 1996; Lemke, 1998; O'Toole, 1994). This work recognises that images, like language, realize not only representations of *material reality* but also the interpersonal interaction of *social reality* (such as relations between viewers and what is viewed). The work also recognises that images cohere into textual compositions in different ways and so realize *semiotic reality*. More technically, functional semiotic accounts of images adopt from systemic functional linguistics the metafunctional organization of meaning-making resources:

- *representational/ideational* structures verbally and visually construct the nature of events, the objects and participants involved, and the circumstances in which they occur.
- *interactive/interpersonal* verbal and visual resources construct the nature of relationships among speakers/listeners, writers/readers, and viewers and what is viewed.
- *Compositional/textual* meanings are concerned with the distribution of the information value or relative emphasis among elements of the text and image.

The New London Group indicated that what is needed to support a pedagogy of multiliteracies is

...an educationally accessible functional grammar; that is, a metalanguage that describes meaning in various realms. These include the textual and the visual, as well as the multimodal relations between different meaning-making processes that are now so critical in media texts and the texts of electronic multimedia (New London Group, 2000:24).

Current research is developing functionally oriented inter-modal descriptions relating visual and verbal semiotic resources (Martin, in press; O'Halloran, 1999; van Leeuwen, 2000) as well as those relating to movement (Martinec, 1999) sound and music (van Leeuwen, 1999). This work will extend and enhance the current visual and verbal bases of a metalanguage of multiliteracies as referred to here.

Conclusion

Rather than trying to 'squeeze' the textual affordances of new technologies into familiar literacy education procedures, we need to attend to the reality of new and emerging literacies. But we also need to acknowledge that conventional, hard-copy forms of 'linear' texts will continue to co-exist with electronic hypertext for some time, and that old and new literacy technologies will frequently have complementary roles in a range of contexts. Technoliteracies are distinctive because of the particular affordances of computer-based and networked technologies for information and communication. However, technoliteracies are also sites for the integrative deployment of visual, verbal and acoustic semiotic resources and, in the foreseeable future will co-exist with multiliteracies required to negotiate contemporary hard copy texts. Teachers' work will clearly involve developing students' use of multiliteracies in the composition and

comprehension of texts in computer-based and conventional formats. But it also involves developing students' meta-semiotic understanding and the associated metalanguage to facilitate critical understanding of how meaning-making systems are deployed to make different kinds of meanings in texts and how these may be oriented to naturalise the hegemony of particular interests. Although some explication of the classroom practicalities of multiliteracies development has been undertaken (Cope and Kalantzis, 2000; Unsworth, 2001), this remains an urgent agenda item for further collaboration among literacy educators and researchers.

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