

Literacy Theories for the Digital Age



NEW PERSPECTIVES ON LANGUAGE AND EDUCATION

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NEW PERSPECTIVES ON LANGUAGE AND EDUCATION: 45

Literacy Theories for the Digital Age

Social, Critical, Multimodal, Spatial,
Material and Sensory Lenses

Kathy A. Mills

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*This book is dedicated to Ryan,
Lachlan, Juliette, Marie and Henry*

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Have you ever wondered about a book that you wanted to read, but it wasn't written yet? This is the book I wrote because I wanted to read it. It is my hope that others, including established and recent scholars and educators from a range of disciplines, will find value and renewed inspiration in the theories and conceptualisation of this work for their own research and practice. To the growing number of graduate students in education around the world, I trust you will find this volume a vital introduction to some of the key theories that are shaping the challenging and ever-relevant field of literacy education in the digital turn.

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Foreword

The Sensory Turn in Literacy Theory and Practice

This book charts a range of established and emergent paradigms for literacy research. Classic paradigms include socio-cultural literacies, multimodal literacies and critical approaches to literacy. More recent paradigms include socio-spatial literacies, socio-material literacies, and presented for the first time here, sensory literacies. Kathy Mills lays out the key concepts of each of these approaches, notes their internal tensions, surveys recent developments, and draws out implications for the classroom. In the process, the old definition of literacy as essentially alphabetical is exploded, and replaced by the notion of ‘multiliteracies’, derived from the work of the New London Group (2000). There is also a strong focus on the extracognitive and extralinguistic dimensions of literacy. This will not sit well with many educational psychologists, who have a vested interest in the restricted definition of literacy. But it will appeal, and appeal strongly, to those who recognise, like Mills, that the digital revolution has put an end to literacy, as we knew it.

Texts are no longer static the way they were in the print era – they are interactive. And why shouldn’t a student be allowed to submit a home video alongside or even in place of an essay in English class? In the age of YouTube, it is visual literacy skills that students are most in need of – skills to produce videos themselves, and skills to analyse videos critically. Thus, whereas an earlier generation of educators stirred up lots of anxiety about our ‘amusing ourselves to death’ and ‘the closing of the American mind’ (i.e. ignoring the canon), or allowing ‘edutainment’ to take the place of education proper, Mills’ main message in this book is to get over it and get on with the show.

In one research project Mills and her colleagues conducted, upper primary school students were provided with camcorders and invited to make videos of their schoolyard activities. One video included clips of going down

a slide – from the perspective of the slider. Carsten Höller would approve. He is the German artist best known for installing a series of gigantic, glass-encased slides in the Tate Modern Turbine Hall gallery. Like many contemporary artists (Jones, 2006), Höller is bent on exploding the conventional understanding of aesthetic experience as one of ‘disinterested contemplation’. Art should be sensational, should be thrilling, and it is if you hurtle down one of his slides. In offering museum-goers this opportunity, Höller is also recovering and restoring the original meaning of the term aesthetic, which comes from the Greek *aisthēsis*, which translates as ‘perception from the senses’ without specification as to modality or limitation to ‘the beautiful’.

Mills explodes our understanding of literacy in the same way Höller explodes our conventional understanding of art. She does so through introducing her own theory of ‘sensory literacies’, which can be broken down into the visual, audio, gestural, tactile, spatial, olfactory, gustatory and various assemblages (e.g. audio-visual), all of which exceed, but also complement, the textual. This move is inspired in part by Mills’ reading of recent research in neuroscience and in the anthropology and history of the senses. Briefly, while we live in a society in which much of our knowledge comes to us through our eyes (e.g. the printed text, the computer screen), we now know that the senses work together to promote learning. As Rosalind Charlesworth, a professor of child development puts it: ‘We learn best through multisensory experiences’ (Charlesworth, 2014: 51). This is confirmed by neuroscientists, such as Jeanette Norden, who states, ‘The brain loves diversity’ (quoted in Henshaw, 2012: 249). Indigenous societies have long been aware of the importance of integrating the senses in learning experiences. In her article, *Other Ways to Wisdom: Learning through the Senses Across Cultures*, Constance Classen describes how for Indigenous cultures, ‘...each of the senses has a vital role to play in the acquisition of knowledge about the world’ (Classen, 1999: 269; see further Howes, 2014b). Engaging multiple senses makes events and objects more interesting and memorable in which-ever culture one lives.

I had the pleasure of reading Mills’ book in manuscript form while on the plane to Toledo to attend the 47th annual meeting of the International Visual Literacy Association (IVLA), which was held at the Toledo Museum of Art (TMA). It enabled me to better comprehend the ground-breaking nature of that conference and its venue. In the words of John Debes (1969: 27), one of the founders of the IVLA, writing in 1969, ‘Visual literacy refers to a group of vision competencies a human being can develop by seeing and at the same time having and integrating other sensory experiences’. This definition, with its stress on multisensoriality, resonates with a point made by Brian Kennedy, the visionary Director of the TMA, in a TEDx Dartmouth

talk called ‘Visual literacy: Why we need it.’ In his talk, Kennedy expressed the view that ‘visual literacy is the key to sensory literacy’, and that creating conditions for sensory literacy should be the goal of the contemporary museum. The TMA accordingly staged a special exhibition entitled *InSight: Contemporary Sensory Works*, curated by Adam Levine, timed to coincide with the IVLA conference. The exhibition brochure states provocatively:

Is art meant only for the eyes? The three artists featured in this exhibition don’t think so. They [i.e. Pinaree Sanpitak, Aminah Robinson, and Magdalene Odundo] all create works that explicitly or implicitly evoke a multisensory experience. Although each artist’s work is highly visual, the art on display in *InSight: Contemporary Sensory Works* also plays with notions of tactility and sound.

The conference itself was entitled *The Art of Seeing: From the Ordinary to the Extraordinary*. This idea of seeing as an art, as a competency not a given, is a tremendously powerful one. Knowing how to see a painting is seen as equivalent to knowing how to read a book, and therefore, as a skill which requires training. The TMA has taken the promotion of visual literacy to extraordinary lengths, beginning with baby tours, and continuing with the publication of an alphabet book called *The Art of Seeing Art: A, B & See* under the direction of Director of Education, Kathy Dank-McGhee.

Reading and looking at this alphabet book of works from the Toledo Museum of Art will help children develop important looking skills that contribute to visual literacy. Being literate in the visual arts could give young children an advantage in learning to read and write. (Toledo Museum of Art, 2013: 3)

The extraordinarily rich body of research on the complementarity of visual and alphabetic literacy, and how skill at one not only could, but does, enhance performance in the other (see Dank-McGhee & Slutsky, 2007), as well as the notion of multiliteracies promoted throughout this book by Kathy Mills, gives the lie to phenomenological anthropologist Tim Ingold’s suggestion, in his critique of the anthropology of the senses, that ‘the eyes and ears should not be understood as separate keyboards for the registration of sensation, but as organs of the body as a whole’ (Ingold quoted in Mills, this volume). In his statement, Ingold belittles the differences between seeing and hearing (and completely ignores tasting, smelling and the rest). He is oblivious to the notion of multiple intelligences because of his diminished understanding of the multisensoriality of human experience, and his

dismissal of the growing body of research in the history and anthropology of the senses that points to the differential elaboration of the senses in different cultures and historical periods (see Howes & Classen, 2014). Ingold dismisses this vast corpus of work because it fails to cohere with what the philosopher Merleau-Ponty would lead us to expect. But Ingold's work is really just a testimony to the poverty of phenomenology and, in our estimation, only serves to underscore the need to take a sociologically savvy, cross-culturally aware approach to the study of the multimodality of human learning and experience (see Howes & Classen, 2014; Ingold & Howes, 2011). As Classen observes, when we examine the meanings vested in different modalities and sensations across cultures:

We find a cornucopia of potent sensory symbolism. Sight may be linked to reason or to witchcraft, taste may be used as a metaphor for aesthetic discrimination or for sexual experience, an odour may signify sanctity or sin, political power or social exclusion. Together, these sensory meanings and values form the *sensory model* espoused by a society, according to which the members of that society 'make sense' of the world, or translate sensory perceptions and concepts into a particular 'worldview.' There will likely be challenges to this model from within the society – persons and groups who differ on certain sensory values – yet this model will provide the basic perceptual paradigm to be followed or resisted. (Classen, 1997: 402)

In keeping with the spirit of exploding literacies that animates this book, I would like by way of closing, to address one last example of a kind of literacy practice that actually takes us beyond the pale of literacy and enucleates writing from an alphabetical perspective. It comes from the last chapter of *Worlds of Sense* (Classen, 1993b). It is a study of literacy as anti-culture, which has to do with the Andean experience of the written word.

Andean society was traditionally, and remains, a profoundly oral society. For example, according to Andean cosmogony, the world and its peoples were called into being by the creator, Viracocha, and his voice made the corn grow. While most of the empires of the world have depended on some form of writing, the Inca Empire was unique in that it depended on the quipu, described below.

Throughout the Andes today, there is an annual tradition of holding Conquest Plays. Unlike the Conquest Plays of Mexico, which celebrate the coming of the Spanish and the civilising influence of Christianity, these dramas commemorate the destruction of the Inca Empire. A common theme is the disjunction between orality and literacy, sound and silence. In one



version, the Spanish move their lips when they speak, but make no sound. The Inca Emperor Atahualpa is handed a written letter. He raises it to his ear in an attempt to listen to its contents, but to no avail. He passes it around among his followers, but the scratches on the paper equally mystify them:

Seen from this side, it is like a swarm of ants . . . Looking at it again, I see stags, upside down and their feet in the air. Who on earth could understand that?

The process is repeated with a Bible, which is handed to the Emperor by a Spanish priest. After examining it, Atahualpa drops it. This is the excuse the Spanish needed. Pizarro's soldiers rush in and seize the Inca for refusing to receive (and submit to) the Word. He will later be beheaded. In another version, the priest sets about beating the Indians with the Bible after Atahualpa drops it. These plays offer 'a graphic portrayal of the Andean experience of [the onslaught of] writing and Christianity as a brutal imposition' (Classen, 1993a: 117).

The beheading of Atahualpa plunged the Andean world into silence. Bereft of the Inca's commanding voice, the empire crumbled. The Inca's voice had used to be relayed by the quipu-makers to the far corners of the empire, just as information, typically used for accounting purposes, flowed back to the capital Cuzco via the same medium.

The quipu is a fascinating technology of communication. It consists of a set of knotted cords of different colours hung on a string. The information is encoded in the differences of colour and the position and size of the knots. The quipu is, then, 'a recording in three dimensions with colour' (Ascher & Ascher, 1981: 62). But unlike writing or photography, or any of the other recording and communications media with which we modern Westerners are familiar, the quipu does not store information independently of the mind or body of the recorder. It is a mnemonic device, nothing more, and each quipu maker had a personal style, a kind of shorthand, as it were. This is why several hundred extant quipu can only bear mute testimony to a vanished civilisation. Every attempt by scholars to decode them has failed.

Can quipu making and telling be considered a form of literacy? On the basis of Kathy Mills' definition, it could be so. It is actually a very sensual medium of communication, engaging touch and rhythm in the tying of the knots, and involving a wide range of colours and patterns (Classen, 1999: 125). Furthermore, the quipu is not flat and linear, as is writing; it is multi-dimensional – which makes it unlike a two-dimensional computer screen as well. Functioning on several sensory levels and in more than two-dimensions, the quipu is a highly sophisticated form of sensory literacy. As for cracking



the code, the quipu scholar Robert Ascher suggests that the problem lies with Western academics being too visualist in their approach. If we could but curb our visuality a little:

We might understand [quipu] writing as simultaneously tactile and visual, and probably more. Being that we are who we are, it is difficult to internalise this notion so that it becomes a part of us, but I think that it is the next step that must be taken in the study of Inka writing. (Ascher, 2002: 113)

The multisensoriality of the quipu rivals that of any digital device. There is a very real problem with truancy in the Andes. For example, Classen recounts a delightful myth that explains why children keep running away from school. This is not surprising, given the association of the kind of learning that goes on in school (i.e. learning to read and write) with anti-culture. What sort of policy would be needed to attract the children back? Certainly, it would not be a policy based on one copybook per child, however colourful, or even one laptop per child, but perhaps one quipu per child.

Hopefully, these ruminations have revealed something of how stimulating Kathy Mills' theory of sensory literacies can be. It is the same with each of the approaches to literacy she treats: the socio-cultural, the critical, the multi-modal, the socio-spatial and the socio-material approaches to literacy. This slim volume is a remarkable compendium, a brilliant work of synthesis – and the book to end all books.

David Howes
Sensory Anthropologist

1 Globalisation, Mobile Lives and Schooling in the Digital Turn

In an age of the 'global home,' literacy practices of the past are reduced in their power to determine the practices of the future.
(Mills)

Ways of thinking about literacy research arise in particular historical moments, and in relation to the social, economic, political and technological factors that set the stage and call for different ways of doing and theorising literacy. This book is an attempt to acknowledge the multiple and coexisting paradigms that are making a significant difference to the way we understand literacy in what I have called the 'digital turn' – the rapid digitalisation of literacy practices generated by human action, across a growing number of spheres of practice in the 21st century (Mills, 2010b: 246).

Globalisation

Children and youth today are growing up in a very different world than generations past: they can potentially use digital toys, tablets and mobile devices anywhere and anytime from much younger ages and earlier stages of language development than ever before. With the rise of the global home, a pun on McLuhan and Powers' (1989) book entitled *The Global Village*, the way young children are socialised in literacy practices is radically altered when compared with previous generations. For example, with the advent of touch-screen technologies, such as the iPad, babies and toddlers in many households can interact with an array of educational apps before they are able to correctly hold a pencil. At the same time, they are often surrounded

2 Literacy Theories for the Digital Age

at home and early childhood settings by an array of non-digital literacy materials, such as books, crayons, paper, craft, puzzles and alphabet blocks: the children switch between these and digital literacy practices with ease.

The elementary school age child can potentially interact with a broadened selection of screen-based entertainment, from handheld to full sized video game consoles, tablets, personal computers and laptops for multiplayer online games. They can view user-generated content from peers on YouTube about the latest crazes, from tutorials about loom bands to Minecraft parodies. Teenagers and adolescents use the internet for both social and non-social purposes, including support of their offline friendships with peers (Gross, 2004). In the context of continuing urbanisation and more blatant commercialisation through globalised media, children and youth are often surrounded by digital displays from small to large, from the handheld devices in the home to the electronic billboards on buildings, buses and almost any commercial object that has a vertical surface.

A walk through Times Square in New York provides an extreme example of the pervasiveness of the digital image by global corporations and economies. The large-scale distribution of mass media and popular culture that saturates urban life through globalisation and technological progress brings with it both new opportunities and new risks (Jones Diaz *et al.*, 2007). Beck (1992: 22) foresees that, 'Along with the growing capacity of technical options grows the incalculability of their consequences'. These social and technological changes bring new security concerns for end-users, such as cyber bullying, identity theft, social engineering, piracy, malware and phishing, while events such as the 11 September attacks demonstrate the presence of an instant global audience for the transnational organisation of terrorist acts on a global scale (Giddens, 2002).

Literacy has become a process of commodification in which literate learning is entangled with commodities. It is similarly implicated by what Kinder (1991: 3) terms a 'transmedia intertextuality' – a conglomeration of interconnected texts across modes and media. In the context of capitalist accumulation, literacy learning throughout the life course involves interaction with multiple objects, video games, websites, toys, movies, books, figurines and licensed merchandise, as literacy is made and remade in networks of practice, and as material texts circulate and are adapted into diverse commodified forms. Within these discursive repertoires, which are often tied to global commercial corporations, children actively construct and reconstruct their sense of self and identity (Hughes & Macnaughton, 2001). This calls for a problematising of the ideological effects of the hybridised textual environment, and nuanced accounts of everyday and school-based literacy practices within the social conditions of globalisation (Makin & Whiteman, 2007).



2 Socio-cultural Literacies

The view that literacy as a set of cognitive skills is an ideology that ignores racial, cultural, and other forms of social difference.
(Mills)

This chapter provides insights into recent changes within the socio-cultural paradigm of literacy research, which became known as the New Literacy Studies (Gee, 1999; Street, 1997b). Drawing on my review published in the *Review of Educational Research*, and extending it to recent developments, I define the socio-cultural literacy theory and interrogate its key themes (Mills, 2010b). I address some of the tensions in socio-cultural approaches, such as the boundaries or limits of literacy – a criticism that has also been raised in relation to multiliteracies approaches (see Cameron, 2000; Prain, 1997). I also consider the confines of regarding literacies as local practices, against the emerging features of digital practices more globally. I evaluate the extent to which critical approaches and other paradigms have shaped and continue to influence the New Literacy Studies. I trace some of the shared characteristics of literacy practices that have emerged in digital situations of use, and provide a vision of the future for teachers to integrate digital literacy practices into school curricula.

Key Concepts of Socio-cultural Literacies

Defined concisely by Street (2003: 79), literacy practices are ‘... particular ways of thinking about and doing reading and writing in cultural contexts’. Varieties of literacy practice are always constructed out of specific social conditions, including political and economic structures (Cook-Gumperz, 2006; Luke, 1994). What was unique and distinguished this view from the prevailing psychometric or autonomous paradigm is that knowledge and literacy practices were reconceived as constructions of particular social groups, rather than attributed to cognition alone (Street, 1984). This view



opposed theorists such as Hildyard and Olsen (1978), who appealed to the scientific, intrinsic and seemingly culturally and racially benign nature of literacy as a purely individual cognitive skill.

A key difficulty with interpreting literacy practices within any community is the problem of limiting what constitutes a literacy practice, an issue that has been raised elsewhere (see Barton *et al.*, 2000; Mills, 2010b). Gee (2012) provides an interesting answer to this question, using the term Discourses (with a capital D) rather than literacy. He defines Discourses as socially recognised ways of using words or other semiotic codes (e.g. images, sounds) and ‘... ways of behaving, interacting, valuing, thinking, believing and speaking ... and often reading and writing ...’ (Gee, 2012: 3). These are used to identify members of a socially meaningful group. To put it another way, Discourses are instantiations of identity.

As Gee (2005) explains, a major function of language is to act out different kinds of people for different sorts of roles and occasions. For example, in a job interview, one can attend not only to supplying the ‘correct’ verbal answers to questions, but to projecting a certain kind of ideal persona for the role. This includes how one enters and exits the room, where one sits, how one sits and even the direction one’s foot is pointed. Discourses include facial expression, eye contact, gesticulations, length of responses, volume, pacing, tone and expression of voice, grammatical choices, hairstyle, clothing, footwear and so on.

There are traces here of Goffman’s (1959: 136) well-cited theory outlined in his book, *The Presentation of Self in Everyday Life*. Goffman theorised that language is more than what is communicated through words or verbal symbols that have attached meanings familiar to those in the interaction. It is more than the expression that one ‘gives’. Rather, language is as much about the message that one ‘gives off’ – the wide range of action that is symptomatic of one’s identity, as one participates in social life.

A critical point is that groups often have different home and community-based Discourses that have differing degrees of alignment with the required language and Discourses in schools and institutions. This contributes a great deal to appreciating why groups in society have differing degrees of literacy ‘achievement’, as defined by schooling systems. While Gee acknowledges that there are also cognitive features of literacy learning, this is not his emphasis, given that the prevailing view of literacy, particularly in educational achievement psychometrics, reading research and school accountability discourses, has often been a cognitive one (Gee, 2012).

Explicitly drawing on Gee’s definition of Discourses, Lankshear and Knobel (2008: 255) similarly define literacies as ‘socially recognised’ ways of communicating ‘... through the medium of encoded texts ... as members of

3 Critical Literacies

We find contemporary society and culture wanting in many ways and believe that research should support efforts for change.

(Carspecken, 1996: 6–7)

Key Concepts of Critical Literacies

A critical orientation to literacy studies begins with a concern about social inequalities, social structures, power and human agency. Power relations mediate all thought and language, so that all language, textual practices and linguistic conventions are the product of relations of power and struggles for power. Poet and social activist Adrienne Rich once wrote:

My daily life as a teacher confronts me with young men and women who had language and literature used against them, to keep them in their place, to mystify, to bully, to make them feel powerless. (Rich, 1979: 61)

Critical orientations to literacy, whether in relation to new media or old, derive from varied schools of thought, from the Frankfurt School Institute of Social Research to Paulo Freire's ideals. However, centrally, critical approaches to literacy aim to disrupt hegemonic discourses about what counts as literacy and for whom. Such approaches consider the power of discourses in terms of who has access to literacies and literacy practices, and how the inequitable distribution of literacy can be changed. As Dewey perceived:

When language is used simply for the repetition of lessons, it is not surprising that one of the chief difficulties of schoolwork has come to be instruction in the mother tongue. Since the language taught is unnatural, not growing out of the real desire to communicate vital impressions and convictions, the freedom of children in its use gradually disappears. (Dewey, 1971: 55–56)

Critical approaches consider both power in languages and discourse, as well as the power behind language and discourses – the social structures and power relations that give rise to, maintain and reproduce language, and limit access to formal discourses for certain groups (Fairclough, 1989). Students need to be taught flexible and wide-ranging social competencies for educational, occupational and other social purposes, coupled with the ability to challenge ideologies of texts, textual practices and one's own place at any given point in time within the social structure (Luke, 1994). And regardless of what grammatical forms, bilingual approaches, modes or technologies are taught within the literacy curriculum, literacy pedagogy isn't inherently democratic or critical in nature. Critical approaches to literacy directly address the ideologies in books and media, and work towards the development of a critical consciousness (Shor, 1999).

Literacy events in schools are rule-governed social contexts that have embedded values, identities and symbols of the social world. The social roles and images circulated in school texts are not natural or inevitable, but can be interrogated. Critical approaches reposition teachers and students to deconstruct dominant selective traditions in schools and society, particularly in the complex textual and multimedia environments of navigating and remixing digitally mediated texts.

Domination and privilege

From a critical orientation, any serious analysis of literacy studies requires an attendant understanding of the way in which literacy pedagogies function in the process of social struggle, whether tied to race, class, gender, belief or other identities, and how literacy pedagogies may also legitimate or alternatively critically challenge the continued privileging of dominant groups (Apple, 1982). Literacy practices in schools need to be reinterpreted and repositioned with an attendant awareness of the changing demands of the historical, cultural and political context in which they are used (Luke & Freebody, 1997). As Luke (1997: 2) concluded, 'There is compelling historical and contemporary evidence that, the best intents and efforts of teachers notwithstanding, many school systems are not providing equitable access to powerful literacies'.

Providing new evidence for these patterns of literacy marginalisation in Australia, ethnographic data from students' home and school lives demonstrates that students' ability to take hold of multimodal design in the classroom is partially bounded by the consequences of social action more widely distributed (see Mills, 2011c). For example, in an Australian classroom, multilingual and Indigenous students who were not of the dominant, white

4 Multimodal Literacies

A multimodal approach to technology-mediated learning offers a way of thinking about the relationship between semiotic resources and people's meaning making
(Jewitt, 2006: 16)

Key Concepts of Multimodal Literacies

Multimodal approaches to literacy are currently prolific in educational research, indicated by the steady increase in the number of research studies of digitally mediated literacy practices (Mills, 2009). The popular terms 'multimodal' and 'literacy' now appear together in over 30,000 scholarly texts accessible to Google Scholar, though definitions of multimodality are not always alike. The dominant theory of multimodality addressed in this chapter is positioned within the theoretical framework of social semiotics (Kress & van Leeuwen, 2006). Social semiotics explicitly attends to meaning-making of diverse kinds, whether of words, actions, images, somatic meanings or other modes (Thibault, 1993). Therefore, by definition, social semiotics acknowledges the role of non-linguistic modes in human social meaning.

Multimodality is defined as '... the use of several semiotic modes in the design of a semiotic product or event' (Kress *et al.*, 2001: 20). Reading and writing have always been multimodal, since these literate practices involve the decoding and encoding of words, while similarly attending to spatial layout of the text, images and other modes of representation (e.g. gestural meanings of represented characters, material features of the book). Yet undeniably, people-driven technological developments of communication have given rise to a much more diverse range of texts and textual practices. There is more rapid dissemination of a greater number of multimodal texts than ever before, and more prolific flows of textual practices across cultures, sub-cultures and national borders via the internet (New London Group, 2000),

particularly given the ease of uploading user-generated content using Web 2.0 technologies (Mills & Chandra, 2011).

Humans have always learned to communicate through multiple sign-systems or modes, each of which offers a distinctive way of making meaning (Kress & Bezemer, 2008). However, many theorists see that there is cause for heightened interest given the affordances of digital technologies to capture, create, modify, combine and disseminate images on a much broader scale than in the past. The multimodal ways in which we remember our lived experiences, and preserve our heritages through the visual, are similarly more fluid and configured differently, coupled by greater immediacy and increased portability to share these representations (Giaccardi, 2012).

There are changing social roles and identities associated with multimodal assemblages of audio, visual, gestural, spatial, tactile and other modes that are combined and disseminated with greater ease by everyday users via mobile devices, and disseminated via social media sites, such as Twitter and Facebook (Mills, 2009) and image or video sharing sites (e.g. YouTube, Instagram, Pinterest, SoundCloud). While theorists see that conventional offline literacy practices and new online communication practices are epistemologically different (Knobel & Lankshear, 2007), culturally more participatory (Jenkins *et al.*, 2009) and defined by new online social orders (Snyder, 2001), it is fundamentally the transformation of modes to which multimodal approaches attend.

Modes as sign-systems

Definitions of the multiple resources that humans use to communicate have been multiple and varied, including definitions of 'modes'. For example, the New London Group (2000) uses the term 'modes' in conjunction with 'design'. They identify six major areas or modes of meaning: linguistic, visual, audio, gestural, spatial and multimodal. Multimodal design is considered the most significant, since it concerns the interrelationship of different modes of meaning and the patterns of interconnection among modes.

While Kress (2000b) has several chapters located within Cope and Kalantzis' volume by the New London Group, his interpretation of modes in his sole authored chapters differs slightly to the New London Group. For example, Kress includes music as an example of a mode, as opposed to the broader classification used by the New London Group – audio design. In the New London Group's account, music is listed as a sub-category of audio design, which can be grouped with other examples of audio, such as sound effects, recorded speech and silence (New London Group, 2000). Kress' usage of the term 'modes' is similar to Suhor's (1984) use of the term 'sign-systems',



5 Socio-spatial Literacies

*...[S]paces ... are socially constructed... This recognition alone opens up
new ways of looking at literacy and learning.*
(Soja, 2004: x)

Socio-spatial literacy research is transforming the way we think about the social and geographical distribution of literacy practices across regions. It has enriched our thinking most fundamentally about how literacy spaces are socially produced, and about how the social spaces of literacy are influenced by power (Mills & Comber, 2013). Literacy research is a field in which we have, for some time, acknowledged the interactions between globalisation and the circulation of literacy practices across transnational borders (New London Group, 1996).

There is a growing recognition that the spatial dimension of literacy, including the flows, networks and connections between literacy practices that circulate in society, are worthy of more serious attention in literacy research, including at the local level. For example, recent literacy studies have examined the connections between literacy practices in, within, and across specific social spaces of school and home (Bulfin & North, 2007; Nespor, 1997, 2008; Pahl, 2001), and within public spaces such as libraries (Nixon, 2003) and the mall (Moja, 2004). Others have examined literacies within institutional sites, such as prisons (Wilson, 2004), and in virtual environments (Valk, 2008). Fenwick and colleagues (2011: 130), who trace the spatial in educational research rather than literacy studies per se quip: 'Space is too important to be left to social geographers'.

These approaches that give priority to spatial themes in social and cultural geography have led to new theorisations of space as it pertains to literacy studies. For example, literacy theorists have borrowed Soja's term Thirdspace to take on a new meaning for literacy studies (Gutierrez, 2008; Lynch, 2008; Moje *et al.*, 2004). New phrases to encapsulate this strand of literacy research include spatial theories (Gulson & Symes, 2007), spatialised literacy (Leander & Sheehy, 2004) and geosemiotic approaches to language



and discourse that ‘... study the social meaning of the material placement of signs... discourses and... actions in the material world’ (Scollon & Scollon, 2003: 2). These spatial theories are sometimes coupled with the view that systems of signs are always located in the material or spatial world – as a necessary condition of their existence – and that literacy is more than a mental construct, detached from the space-time dimensions in which it is practiced.

The recognition of space in literacy studies can be called the spatial turn (Mills & Comber, 2013), which has concord with other literacy research paradigms, from a critical turn (e.g. Comber & Simpson, 2001; Luke, 1998), to the social turn (e.g. Gee, 1992; Street, 1995) and within what I have called the broader ‘digital turn’ (Mills, 2010b: 246). The spatial turn in literacy studies is not unique to our work, but has occurred throughout the past decade, with edited works, such as Leander and Sheehy’s (2004) book, *Spatializing Literacy Research*, which brings researchers together to reconceptualise literacy in ways that address spatial aspects of literacy practices. There is also an increasing number of literacy studies that demonstrate the significance of space in literacy practices, whether within single social sites or across social sites, at a micro-level (e.g. classroom interactions) or macro-level (e.g. globalisation) of social analysis (see Mills & Comber, 2013).

This chapter moves beyond general notions of space or à la mode spatial metaphors, to conceptualise a principled theory of spatial literacy. Soja perceives that spatial theory is sometimes at risk of becoming a ‘... now-fashionable attachment... to geographical facts and spatial metaphors’ (Soja, 2004: ix). To avoid the conflation of spatial metaphors with a systematic theory of space and literacy, it is important to begin by articulating the central principles of social-spatial literacy research, which we have outlined elsewhere (Mills & Comber, 2015).

Key Concepts of Socio-spatial Literacies

In socio-spatial literacy studies, there is first the recognition that language practices are distributed socio-geographically in patterned ways, appearing in distinct forms in certain social sites, while having similarities to literacy practices in other social spaces (Mills & Comber, 2015). Spatiality in literacy studies includes the socio-material relations of space-time that are central to literacy practices, conceiving of spaces as more than storehouses of social action. The spatiality of communication includes the temporal dimension of flows and connections between literacy practices across social sites and geographies, and the spatial dimensions of texts themselves

6 Socio-material Literacies

*Information only becomes knowledge when it is grounded quite concretely
in the social, material world.*

(Scollon & Scollon, 2003: 11)

There has been a recent upsurge of interest in the material dimensions of education, with the term ‘material’ referring to anything that possesses mass or matter, and which uses physical space (Haas, 1996). This includes the literacy practices and artefacts that cross between homes and communities. This interest stems from fields such as material culture studies and visual studies, and is associated with ethnographic and phenomenological approaches to inquiry. Within visual culture studies, there is an awareness that ethnographers need to attend not only to the visual content of local cultures, but also to their materiality (Pink, 2009). Social environments, classrooms, shopping malls, libraries, homes and workplaces, are inextricably tied to material culture. They are not culturally benign objects, but are ‘...active mechanisms for socialisation and enculturation’ (Johnson, 1980: 174).

The material elements of classrooms, the books, pencils, desks, chairs, tablets, visual displays and other learning materials, often function as heuristics for learning, and the connections between materials, actors and knowledge in the classroom can be mapped and problematised in relation to their connections to the wider society (Bloome, 2012). Literacy, as socially and materially situated practice, involves tools for encoding and decoding, and is materialised in different ways using the resources at hand by cultural groups in specific social and historical contexts (Pahl & Burnett, 2013).

Theories of learning have long attended to tool use as central to social cognition, following Dewey, Vygotsky and Piaget. For example, applying Vygotskian principles of tool use, we have conducted research into students’ use of Lego robots and programming software, which we regard as cultural tools (Mills *et al.*, 2013). A tool serves ‘as the conductor of human influence’ on goal-centred activity (Vygotsky, 1978: 55). We demonstrated that when children are confronted with new and challenging problems, they exhibit a

range of responses to attain the goal, drawing on sophisticated technology tools and speech directed toward other persons to mediate their practical activity. Problem-solving activity involved mediating interactions with Lego robots, computer screens and actors, and those materials were inextricably connected to students' problem-solving (Mills *et al.*, 2013).

The mediating power of tools is tied to the accumulation of knowledge of prior generations that are embedded in the design of the artefact (Cole & Engeström, 1993). Examples of tool use in Vygotskian problem-solving experiments include everyday objects, such as string or sticks to extend a child's reach for a candy (Vygotsky, 1978). A learning material can be as simple as a stick or a piece of chalk, or as complex as a robot. From the design of school furniture, to the structure of the built environment, materials, including tools, have always played a vital part in the structuring of learning (Lawn & Grosvenor, 2005).

Materiality is vital to literacy learning. Socio-material approaches to literacy emphasise the active and dynamic role of the tangible materials, whether of pencils or policies, of paper or iPods, and their interplay with human elements in literacy learning. It is presented here as a way of researching social action, such as in the context of education or literacy practices, rather than a grand meta-narrative of society. At the outset, it is acknowledged that socio-material literacy research can be used not only to represent or understand literacy practice, but also to intercept or change the shape of socio-material relations that are observed. This concept of the agency of materials is consistent with certain socio-material approaches in education more broadly (Fenwick & Edwards, 2010).

Key Concepts of Socio-material Literacies

Within literacy studies, there are some early examples of research that attend to socio-material principles, such as object ethnography, which uses objects as the starting point for ethnographic inquiry (Carrington & Dowdall, 2013). Other approaches that prioritise materials in literacy practices are artifactual literacy (Pahl & Rowsell, 2010), and critical artifactual literacy (Pahl & Rowsell, 2011), which both regard artefacts and objects as life presences that actively reflect identities (Rowsell, 2011; Turkle, 2007). These theories are not explicitly named as socio-material approaches, but demonstrate the shift toward examining the role and meaning of materials in literacy events.

There are several defining principles of socio-material approaches in literacy research. The first is that socio-materiality does not privilege human

7 Sensory Literacies

Without our bodies – our sensing abilities – we do not have a world...
(Arola & Wysocki, 2012: 3)

Key Concepts of Sensory Literacies

In this chapter I propose a new approach which I have coined ‘sensory literacies’. I also highlight areas of intersection with other established approaches to literacy practice. The sensory literacies approach is a revitalised way of thinking about the multisensoriality of literacy and communication practices, including their technologies of mediation and production. Such a view is grounded in an established research tradition in the social sciences that has foregrounded the sensorial nature of human experience, perception, knowing and practising, and which draws from anthropology, sociology and philosophy of the senses (Pink, 2009). While there has been a recognised sensorial direction in the anthropology of the senses (Howes, 2003), I see the potential of theorising the sensoriality of literacy practice, that is, deriving from or relating to the senses, across a diversity of cultures (see Mills *et al.*, 2013; Ranker & Mills, 2014).

Theorists, such as Abram (1997) in his highly cited work, *The Spell of the Sensuous*, have awakened a paradigm shift that emphasises the body and its connections to the natural world in language, without renouncing rationality. There are now recognised versions of sensory scholarship, (Stoller, 1997), sensuous ethnography (Stoller, 2004), sensual methodology (Warren, 2008), and sensuous geographies of the body and place (Rodaway, 1994). The social sciences have given attention to the sensoriality of culture (Howes, 2005), the sensoriality of film (MacDougall, 2005), the sensoriality of architecture (Pallasmaa, 2005), the sociology of the senses (Simmel, 1997 [1907]), the sensoriality of teamwork in medical procedures (Hindmarsh & Pilnick, 2007), the sensoriality of laundering (Pink, 2005), the sensoriality of

gardening (Tilley, 2006), the sensoriality of cooking and the sensoriality of memory (Sutton, 2006).

It is important to acknowledge at the outset that the corporeal acknowledgment of the bodily dimension of literacy practice does not conflict with established principles of socio-cultural literacy studies, outlined in Chapter 2 of this volume. Rather, by acknowledging different communities of practice and their diverse bodily ways of making meaning, socio-cultural views of literacy can support sensory approaches by illuminating cultural frames of reference for somatic literacy practices across culture, sub-cultures and social sites.

Senses and literacy practices

The sensoriality of literacy includes the aesthetic enjoyment of a film, curling up with a book on the sofa, and the entanglement of the body and senses in sensory walks with a camera (see Pink, 2009). In the context of a widened array of hybrid digital technologies affording heightened interactivity, increased mobility and convergence with multiple platforms, the sensoriality of literacy practices is constantly shifting. For example, the sensation of human movement and gestures is now fundamental to game playing with motion-sensing technologies. Full-body, three-dimensional, motion-capture technologies offer different sensory affordances in game consoles, such as Xbox Kinect. Without touching the screen, players use gross motor skills, such as dancing, bending, jumping, kicking, turning, swaying, locomotion and motioning with the arms to compete in game play. Nintendo DS games held in the palm of the hand are frequently responsive to the players' verbal instructions and deliberate blowing of breath into the device, in addition to the continual movement of the stylus controlled by the user on the screen.

Haptics – pertaining to touch – is also central to the touch screen controls of iPad games, e-books and smartphone applications, and software platforms for drawing and writing are frequently responsive to a tilt or shake of the mobile device. Many game technologies are also visually responsive, with features of eye tracking or pinpointing the user's eye-movements to alleviate the need for haptic controls, such as mouse, touch screen or track pad. Users positioned correctly in front of the computer or device can simply gaze at screen commands to select program options. The recent changes to the purview of interactive technologies for responding to human movement, touch, breath, gaze and other sensory forms calls for new approaches to literacy research that go beyond disembodied views of texts and textual practices to foreground the body and the senses.

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