

APPLYING DIALOGIC THEORY TO ILLUMINATE THE
RELATIONSHIP BETWEEN LITERACY EDUCATION AND
TEACHING THINKING IN THE CONTEXT OF THE INTERNET
AGE

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Abstract

In this theory paper I argue for a convergence between the idea of teaching thinking and the idea of teaching for literacy in the context of the Internet Age. I begin with the claim that literacy practices taught in school are not external to thinking but that they shape both how we think and how we value thinking. This is supported by some recent evidence from neuroscience and a discussion of the Flynn effect which suggests that thinking changes in history partly as a result of literacy education. This leads me to the claim that the advent of the Internet restores some of the intellectual affordances of oracy but in a new hybrid form. I examine some of the new literacy practices that are emerging on the Internet and argue that they are new forms of dialogue. This supports the proposition that teaching for thinking and literacy education in the Internet Age needs to be understood within a larger context, the context of teaching for dialogue. Understanding literacy for the Internet Age as dialogic literacy has implications for policy and practice.

Keywords: dialogic, Internet, new media literacy, teaching thinking, theory of education

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1. INTRODUCTION

The advent of the Internet Age changes literacy and how we think about literacy. The Internet is clearly not the opposite of traditional literacy, it continues many of the features of print-based literacy for example, but it also has other affordances that can support aspects of ways of thinking found in oral societies. Two-way participation in written dialogues that construct knowledge is an example of an affordance of the Internet that is already shaping education. The context of communication via the Internet has led to the articulation of new forms of literacy and new forms of literacy education (Knobel and Lankshear, 2007). Beyond this proliferation of descriptions of 'new literacies' the challenge of the Internet Age prompts us to think again about how we understand literacy. In this paper I propose a concept of dialogic literacy that is not a 'new literacy' but a new way of thinking about literacy.

I begin with a review of some of the evidence that literacy shapes brains and ways of thinking and unpack some of the implications of this for how we understand education. After looking briefly at what neuro-science has to say about this I turn back to Socrates in order to restore awareness of the difference between meaning inside of dialogues and meaning considered as if outside of any dialogue. This distinction made by Socrates is, I claim, the essential dialogic distinction picked up much later by Buber (1958) and Bakhtin (1984) and now influencing educational theory. I present the example of the Flynn effect, the finding that the way in which we think as measured by IQ tests, has been changing in the last century, as evidence that literacy educational practices impact on ways of thinking. I argue that the Internet changes literacy practices and that this is likely to have a similar impact on ways of thinking to that of print literacy before it. In particular the Internet has some of the affordances of oral dialogic thinking through its support for participatory knowledge construction. I elaborate on the theoretical significance of this for understanding knowledge and education in the context of relationship with others and with otherness. This focus on relationship is contrasted to the more widespread modernist tendency, related to an affordance of print literacy, which has been to privilege an understanding of knowledge, thinking and education in terms of the representation of others and of otherness. A specific form of dialogic literacy education, literacy education for relationship and engagement, is put forward as the kind of literacy education that corresponds to the demands of the Internet Age.

In keeping with the dialogic style of thinking which I outline later in this paper, I do not try to make my argument entirely through rigorous entailment but rather through the cumulative implications or 'resonances' of a series of illustrations. The idea is that, in addition to the linear links that I do try to make leading towards my conclusion, each illustration also serves as a separate voice in an ongoing dialogue. The intention is not to constrain you, the reader, to agree to my claims through the overwhelming force of my argument, but rather to open a creative space of new

possibilities through juxtaposing different perspectives such that new insights might emerge. Although I hope that these new insights will connect with those that I have had myself, dialogic theory suggests that they will also be unique for each context of reading and so may well go beyond my own insights in interesting new directions. I am not sure if this modest experiment adapting the normal genre conventions of research articles in a more dialogic direction will succeed or not. Only you, dear reader, can decide. Do please let me know.

The argument of this paper hinges on the meaning of a number of key terms, including 'literacy', 'dialogue', 'dialogic' and 'thinking' which, by convention, ought to be defined in an introduction. I am initially using these terms in ways which either reflect established usage or build from relevant literature. I take literacy to refer both to the context of reading and writing texts (alphabétisation in French and alfabetización in Spanish) and also to the more general underlying process of reading meaning and expressing meaning which is implicit in alphabetization and can be generalized out to other contexts for example the use of new media (UNESCO, 2007, 147). Although these two uses of literacy are often contrasted they seem to me to be compatible on a continuum from a specific practice to a more abstract and generalized application of key features of that practice. The same continuum can be found in the use of dialogue and dialogic where 'dialogic' abstracts and generalizes key features of empirical dialogues (Linell, 2009, 5-6). Dialogue was defined by Bakhtin when he wrote: 'if an answer does not give rise to a new question from itself, it falls out of the dialogue' (Bakhtin, 1986, 168). Dialogue implies a certain 'openness to the other' such that creative learning is possible (Wegerif, 2013, 31). 'Dialogic' combines the resonant Greek word 'logos' (variously translated as 'reason', 'discourse', 'word') with the root 'dia' meaning 'across or through' and refers to the generic process of making meaning across a gap of difference. Whereas monologic refers to that reasoning which works by reducing apparent difference to one correct representation using determinate methods, dialogic refers to creative reasoning in which there are always multiple perspectives in play. My understanding of 'oral dialogic thinking' builds on Ong's account of oral thinking as bound up with relationships in situations (Ong, 1982) and is outlined in more depth in section 2 below where I unpack the significance of Socrates' account of dialogic thinking. With the term 'thinking' I am not referring to the whole area of cognition as defined by psychology but the more limited area referred to by Resnick as 'higher order thinking' which is distinctively human and can be characterized by creativity and complexity (Resnick, 1987). I concur with those who argue that thinking, understood in this way, and dialogue are both aspects of the same dialogic process, the term 'dialogue' often referring to 'public' visible or audible thinking whereas the term thinking more often refers to 'private' and invisible dialogues or dialogic mental processes (Ferryhough, 2009). Thinking has traditionally been understood in mechanical and monologic ways, so one aim of this paper is to show how these more traditional 'monologic' uses of the term thinking can be challenged and de-

veloped just as more monologic understandings of literacy can be challenged and developed.

2. LITERACY EDUCATION CHANGES BRAINS

Stanislaus Dehaene conducted ground-breaking research comparing literates, illiterates and ex-illiterates on various tasks using fMRI (Functional Magnetic Resonance Imaging) brain scans. While scanning brains, as a method of research, is quite limited in what it can tell us about meaning and any scans always require careful interpretation, nonetheless they can provide insights into larger level ways in which brain activity is organized. In this case Dehaene's results provided clear evidence that there are differences in the structure of activity in the brains of the literates and illiterates that he studied. Whereas literacy is commonly referred to only in positive terms, Dehaene points out that there are cognitive losses as well as cognitive gains associated with becoming literate. Some of these occur because word recognition colonizes areas of the visual cortex. Dehaene found reduced ability to recognise faces amongst literates, for example, and that literates also lost some of their capacity for holistic perception while gaining a greater capacity for analytic perception. This effect was most marked in those taught literacy from their infancy as opposed to those who become literate later in life (Dehaene, 2009).

Perhaps the most significant change that comes with literacy is that literates have the option of seeing words as they hear them. As literates we are all able to see words and we can also convert audible words into visual representations of words. fMRI brain scans confirm this common experience. When literates listen to spoken words, electro-magnetic activity is not just found in the auditory cortex, as one would expect, but is frequently also found in the visual cortex or that part of the brain dedicated to the processing of visual experience (Dehaene 2009; Dehaene et al., 2015). Non-literates, on the other hand, only hear words and do not see them because they do not have a visual form for words. In fact it is problematic to suggest that they hear 'words' as opposed to speech since they often cannot separate individual words out from the continuous flow of what is heard. The phenomenologist, Merleau-Ponty, makes the point that what is usually directly experienced in listening to talk is a flow of meaning rather than a sequence of sounds requiring interpretation (Merleau-Ponty, 1968, 169).

Walter Ong argued that the impact of literacy education in enabling us to see words is significant for the way in which we think and also for the way in which we think about thinking (Ong, 1982). The ability to see words that is afforded to us through literacy enables us to separate words out from the flow of meaning in order to reflect on them and analyse them. The ability granted by literacy to analyse meaning in abstraction from context has proved useful. It is essential to science and has been used to characterize the modern western mind (Goody, 1977). However, like many gifts, this ability brings with it a potential danger. By writing words down, even if only in our imagination, or 'mind's eye', we can form the misleading

impression that we are analyzing not just words but also the ‘meanings’ that seem to be associated with the words. The ability literacy gives us to associate meaning with words and then treat words as if they were defined limited objects in front of our gaze can lead to a certain type of illusion or misunderstanding: the illusion that we can treat meanings as if they were things rather than aspects of relationships. This is an argument first put forward by Socrates as reported by Plato in the Phaedrus.

3. SOCRATES AND THE ESSENTIAL DIALOGIC DISTINCTION

Like us Socrates lived and taught at a time of revolutionary change in communications technologies. In his lifetime the use of the new technology of alphabetic writing was spreading throughout Greece. This new technology was changing the nature of education in a way that troubled Socrates. Perhaps ironically we only know this because his student, Plato, wrote down Socrates’ reflections on writing in his account of a dialogue between Socrates and Phaedrus (Plato, 360 BCE/2006). Socrates is concerned that writing down words threatens a loss of meaning. He uses a range of metaphors to make this point, referring to written words as being like bastard children, like orphans, like ghosts and finally as like seeds planted on flagstones in the sun. His main point, repeated many times, is that while written words may appear to have meaning this is a superficial illusion because there is no intelligence behind the words to back them up:

You would imagine that they had intelligence, but if you want to know anything and put a question to one of them, the speaker always gives one unvarying answer. And when they have been once written down they are tumbled about anywhere among those who may or may not understand them, and know not to whom they should reply, to whom not: and, if they are maltreated or abused, they have no parent to protect them; and they cannot protect or defend themselves. (ibid.)

After some discussion on these lines Socrates and Phaedrus agree about the superiority of words spoken in dialogue over words written down:

Socrates: I mean an intelligent word graven in the soul of the learner, which can defend itself, and knows when to speak and when to be silent.

Phaedrus: You mean the living word of knowledge which has a soul, and of which the written word is properly no more than an image?

The neuroscience research on the difference between the literate and the non-literate brain which I referred to above perhaps gives us a helpful insight into the strong contrast that Socrates makes here between words as living meanings (when spoken) and words as things (when written down). It is often taken for granted by literates that words can be separated from the contexts in which they are spoken and yet still mean something. It is possible that non-literates like Socrates tend to experience the meanings of words differently, not as things that can be moved around but as part of a living relationship with others and with otherness. For ex-

ample, the term 'philosophy' applied to Socrates' work was not merely an abstract concept word for Socrates but probably indicated his close relationship ('philos' is often translated as 'love') with the goddess Sophia. As literates we inevitably think of the goddess Sophia as a personification of the concept of wisdom. From a more fully oral point of view it might be more appropriate to think of our abstract concept of wisdom as a de-personalisation of the living presence of the goddess Sophia.

Writing did not, of course, replace oracy in ancient Greece, it simply augmented oracy to a modest extent. Oral dialogues remained the main medium of education in Plato's academy. Oral reasoning was taught in medieval universities. In the sixteenth century Montaigne, in his essay 'On Education', quotes many classical sources in support of his case for the importance of learning through dialogue, and not only dialogue with tutors but also with as many different people as possible so as to learn how to think for oneself (Montaigne, 1595/2011). In fact the large majority of people remained illiterate everywhere until the advent of mass education systems which began in some countries in the nineteenth century and continue to spread outwards. In elite universities such as Oxford and Cambridge in the United Kingdom the tutorial system preserves the importance of oral dialogue between professors and students, although this is always oral dialogue in the context of written texts. It would be foolish to oppose literacy to oracy, since literacy is almost always combined with oracy. Nonetheless Socrates is making an important point about the potential of literacy to impact not only on how we think but also on how we think about thinking.

In a fascinating study of the shift from the holistic and multi-voiced thinking of Montaigne and other humanists to some of the more narrowly focused and abstract thinking that shaped the image of reason in the modern age, Toulmin argues that Socrates' fear that writing had the potential to depersonalize meaning proved prophetic (Toulmin, 1990). Toulmin wrote not about the impact of literacy as such but, more particularly, 'print-literacy' which, in combination with education, led to the ideological dominance of ways of thinking that were only possible through implicit reference to representations on paper. He writes eloquently of the negative impact of switching from an understanding of the unit of reason as 'an utterance in a dialogue' to the key unit of reason becoming 'a proposition in a proof'. The first humanist way of understanding reason implies inquiry, uncertainty and multiplicity of perspectives whereas the more modernist mode of thinking brought in by enlightenment writers like Descartes, Newton and Leibniz implies that all difference can be reduced to one true representation. This account of reason as the reduction of difference to sameness or equality is made explicit by Leibniz in founding what became called classical logic (Leibniz, 1973, 185).

Socrates' claim that writing could never carry real dialogic intelligence has proved to be an exaggeration. Bakhtin's dialogism is based on an analysis of the way in which texts, particularly the written characters in Dostoevsky's novels, enter into dialogic relations which illuminate what he refers to as 'infinite' spaces of 'con-

textual meaning' (Bakhtin, 1984; 1986). Socrates was, nonetheless, profoundly right when he pointed to the difference between a living meaning within a dialogue and the dead mere form of meaning when words are treated as meanings-in-themselves outside of any dialogue. It is this crucial, but still largely overlooked, distinction between what could be called 'the inside of dialogues' and 'the outside of dialogues' that is the basis for the contemporary dialogic critique of much educational practice. This is not really about whether a word is written down or spoken or transliterated to some other medium, it is about our relationship with the word. The distinction that Socrates is making between the letter that kills and the spirit that brings life was not only picked up by St Paul in the New Testament (2 Corinthians 3:6) but also by Martin Buber in his contrast between the 'I/it' attitude that objectifies and freezes the other to the 'I/thou' attitude that engages openly with the other and allows the other to breathe (Buber, 1958). Words, written or spoken, do not mean on their own but only have meaning in the context of a relationship and the nature of that meaning depends upon the quality of that relationship. The written words that Socrates claimed were 'motherless orphans', were more the beginnings of a new kind of community that is not face-to-face but mediated by writing. As Benedict Anderson points out, the reading of written words establishes new communities of those who share a common language and feel a sense of insider identity derived only from reading texts (Anderson, 1991).

Another possible way to express this key distinction and to bring out its significance is through making a contrast between the transmission model of communication and the concept of 'dialogue'. It is common to describe communication in terms of the encoding and decoding of meanings as if meanings are things that can be divorced from speakers, listeners and the relationship between them (Cornelius, 2002). This implicit conduit model seems to lie behind the many approaches to literacy education that focus on coding and decoding of letters as a separate set of tangible skills independent of context (UNESCO, 2007). Dialogue, on the other hand, implies internality, the internality of a relationship. It is only within the relationship that the signs have meaning and the meaning that they have depends upon the quality of the relationship. The dialogic understanding of literacy education articulated first by Freire understands that literacy education is not culturally or politically neutral but is all about relationships and inevitably participates in the building of different kinds of community (Freire, 1972).

4. THE 'THINKING' PART OF 'TEACHING THINKING' CHANGES OVER TIME

So far I have argued that becoming literate, in the alphabetization sense, has an impact on how people think through making words visible and more available for analysis and I have related this to Socrates' challenge to the kind of abstract decontextualized thinking that depends upon writing. I have also related this aspect of literacy education to a historical shift in how we think about thinking, from thinking about thinking as a form of dialogue to thinking about thinking as a kind of au-

tomatable mechanical process or algorithm. Now I would like to argue, from the evidence referred to as ‘the Flynn effect’, that literacy education has not only changed the way in which we think about thinking but has also changed the way in which we think in a measurable way. One implication of this is that, if the print-based literacy associated with mass education has had an impact on how we think in the past then new forms of literacy associated with the Internet might have a similar in scale, but different in content, impact on how we think in the future.

It should not be surprising to learn that technology change impacts upon the kind of thinking that we value. As technology takes over once prized aspects of cognition such as memory and formal logic, other aspects, such as social sensitivity and creativity, inevitably move forward in our estimation. But what is perhaps more surprising is that there is also evidence that changing technology use impacts on how we actually think. ‘The Flynn effect’ is the label given to empirical evidence from IQ tests that how most people in developed countries think has changed significantly over the last hundred years. There is good reason to think that this change in thinking has been brought about by changing technology in the form of education and literacy practices.

James Flynn looked back at records of raw scores of IQ tests before they were standardized. This data shows, for example, that, in just 30 years between 1952 and 1982, the average IQ of 18 year olds in the Netherlands went up by over 20 points (Flynn, 2009). The highest gains in the Flynn effect are found in the test of which words are similar or different and in non-verbal reasoning using Raven’s progressive matrices (puzzles requiring visual-spatial thinking). Similar rises in IQ have been found throughout the world since the beginning of the use of such tests about one hundred years ago but now the rise seem to be tailing off in developed countries whilst it continues in developing countries (Teasdale and Owen, 2008).

So what caused this rapid rise in scores on some reasoning tests? Many competing explanations have been put forward but most commentators give a prominent role to increased formal schooling (Neisser, 1998; Ceci, 1991). While expanding education remains the likely explanation Greenfield also relates specific changes in visual reasoning to the spread of TV and, more recently, video games (Greenfield, 2009).

In his book ‘What is Intelligence?’ Flynn looks for an explanation in the data gathered by Luria and Vygotsky in Uzbekistan reflecting the differences between the thinking of schooled literate people and non-schooled ‘non-literate’ people. He quotes this example of an interview with someone defined in the study as a ‘non-literate’ (Flynn 2009, 27):

White bears and Novaya Zemlya (Luria, 1976, 108-109)

Q: All bears are white where there is always snow; in Zovaya Zemlya there is always snow; what color are the bears there?

A: I have seen only black bears and I do not talk of what I have not seen.

Q: What do my words imply?

A: If a person has not been there he cannot say anything on the basis of words. If a man was 60 or 80 and had seen a white bear there and told me about it, he could be believed.

Flynn writes in commentary on this and other extracts from Luria that: "If the everyday world is your cognitive home, it is not natural to detach abstractions and logic and the hypothetical from their concrete referents" (Flynn, 2009, 24). His point is that the unschooled thinking is not worse than schooled thinking, it is a product of a different intellectual orientation corresponding to a different life-world. Non-literate thinking is based on experience and is probably more useful in the non-literate life-world than thinking mediated by abstract concepts. However, in the modern world much experience is already mediated by symbolic abstractions. Where the Uzbek peasants interviewed by Luria lived by planting, digging, herding and hunting, many modern people have to earn their living by manipulating symbols on pages and on computer screens.

5. COMMUNICATION TECHNOLOGY ON THE INSIDE OF THINKING

When Walter Ong read the Luria data he interpreted it in terms of a contrast between oral ways of thinking and literate ways of thinking (Ong, 1982, 50; Liberman, 2008). In oral cultures, he claimed, thinking is situated in contexts and in relationships. The meanings of words cannot be removed from those situations and considered in abstraction. As was noted above, these claims are supported to some extent by recent neuro-physiological work (Dehaene, 2009). Ong's claims also fit well with Socrates' claims in the *Phaedrus* (as reported by Plato) that *logos* (reason) is never abstract but is always reasoning in the context of relationships. Inspired by Socrates, Bakhtin coined the term 'dialogic' as a contrast to more formal abstract logics. These formal abstract logics and models of reason of every kind are only possible because of literacy in the form of alphabetization. Plato's famous invention of 'dialectic' for example, is a product of writing down dialogues after the event and focusing only on one successful strand of reasoning to the exclusion of all the contingent pathways and uncertainty of a living dialogue (Nikulin, 2010). Dialogic is different from written down argument because it always implies the creative co-presence of multiple voices. Bakhtin expands on Socrates' initial argument:

The idea begins to live, that is, to take shape, to develop, to find and renew its verbal expression, to give birth to new ideas, only when it enters into genuine dialogic relationships with other ideas, with the ideas of *others*. Human thought becomes genuine thought, that is, an idea, only under conditions of living contact with another and alien thought, a thought embodied in someone else's voice, that is, in someone else's consciousness expressed in discourse. At that point of contact between voices-consciousnesses the idea is born and lives. (Bakhtin, 1984, 88)

Socrates' critique of the danger of monologism that is inherent in writing appears especially relevant to us now because of the new kind of writing-thinking that is

afforded by the Internet and associated communications technologies. Oracy supports a dialogic view of thinking as situated in contexts where language is used within relationships. This is different from the kind of unsituated abstract logical kind of thinking that has become privileged by the combination of print literacy with modern schooling and that is embodied in the similarities and difference component of a standard IQ test.

6. THE CHALLENGE OF THE INTERNET AGE

Print can be used in many ways, of course, but the formal schooling system has been built around its affordance for monologic. Monologic, as the etymology of 'single-voiced' suggests, implies that there is only one correct version of reality and one correct method of thinking. In traditional schooling the correct version of reality is represented in the books that are selected as the core curriculum and schools transmit these representations into the minds of students, testing them to make sure that they reproduce the correct representation accurately. It is this kind of education that has presumably led to the increased scores on the 'differences and similarities' part of the IQ test where decontextualized 'logical' (monological) thinking is tested. Despite some variations and experiments, on the whole this print-based model of schooling is remarkably similar all around the world (Collins and Halverston, 2009). But will this print-literacy based model of education with its print-literacy concomitant style of thinking change now that we have entered the still unfolding Internet Age?

The Internet, which is rapidly replacing print as what could reasonably be called 'the dominant medium of communication' (Poster, 1995), offers a return to some of the dialogic affordances of oracy. (I am using the term 'Internet' here as a shorthand for new electronic communications technology including mobile phones, multi-media communications, apps for texting and emailing, blogging and micro-blogging). With the Internet there is always also the potential of a living relationships with multiple voices and there is no way of stepping outside of this dialogue into a position of single-voiced certainty. That is why Wikipedia is more changeable and uncertain than traditional print encyclopedias whilst also being, according to research studies, both more accurate and more up-to-date (Giles, 2005). Anyone using Wikipedia needs to learn how to check sources and therefore how to participate, if only in a modest way, in producing knowledge for themselves as well as passively consuming the knowledge that has already been produced and written down by others.

In the world of business, a disruptive technology is described as one that improves a service in a way that is unexpected and so goes on to create its own new way of doing things and its own different 'value system' eventually displacing an existing technology. An example of such disruption is the way in which peer-to-peer music file-sharing software running via the Internet has already undermined the market in physical CDs and led to the closure of high-street chains of shops

specializing in selling music in CD form. Nobody expected this use of the Internet and the big business interests did not want it but it turned out to provide users with music in a way that many preferred to the existing technology of CDs.

Is the Internet likely to have a similar disruptive impact in education to that it has already had in the music industry? It appears to support a new form of dialogue that has educational potential. I will start with a simple example from my experience that is probably familiar to many readers. When I used to struggle to learn new software in order to create educational multimedia, I learnt that attending training courses was not nearly as effective as contingently searching out solutions to problems as they arose using the Internet. Searching for the obscure error codes I was receiving invariably led me to forums in which similar problems had already been raised and other participants on the site had offered solutions. This experience is paradigmatic of the main affordance that the Internet has for a new kind of education. Following the music industry transformation one could call this peer-to-peer education. When we look at concrete examples of this new kind of education we find that it is a new type of dialogue and also a new type of literacy practice. This new dialogic Internet literacy combines a focus of interest – lets us call this ‘the question’ – with resources generated by others that can help answer that question. There is a kind of dialogue going on in such online ‘communities’ but it is not face-to-face dialogue, nor is it normally dialogue with the ancestors or personifications of cultural energies of the kind we find in all fully oral societies. It depends upon print-literacy but goes beyond this. It could be called dialogue with a community within which one is a participant. But what we mean by the term community here is different from an external physically constituted community. There is seldom any clear boundary around an Internet community. For this reason Gee has challenged the use of the term community and suggested ‘affinity spaces’ as an alternative (Gee, 2005). An affinity space is a space for dialogue where participants are focused on a shared topic more than they are on each other. For the participant asking the question in an affinity space, the community is not bounded, nor does it need a personification, it is an absent horizon to which one speaks. When the horizon speaks back it does so in the form of another individual sharing the affinity space and yet that individual also stands in for the ‘community’ that has been formed around identification with a common interest.

7. THE CHIASMIC FORM OF NEW INTERNET LEARNING DIALOGUES

Bakhtin writes of dialogues that every answer gives rise to new questions (Bakhtin, 1986). Dialogue often breaks out in Internet mediated communities or affinity spaces but when it does it is not simply dialogue between individual voices but it takes the form described by Merleau-Ponty as a ‘chiasm’, this is the reversal and intertwining of an inside and an outside (Merleau-Ponty, 1964; 1968). In rhetoric the term chiasm refers to the reversal of subject and object in a sentence. Reversing the sentence ‘I see the world’ into the sentence ‘The world sees me’ leads to an

example of a chiasm: 'I see the world, the world sees me'. When I ask a question on an Internet site the community is outside of me, out there all around me in a kind of invisible cloud, but when the response comes back then that cloud coalesces into a foreground message that in turn raises questions and becomes the focus for further interactions in which the outside community becomes inside 'me' and then returns outside again.

The programming language and learning environment called 'Scratch' provides an example of how this simple 'question within a dialogue' chiasm structure can lead on to kinds of education that rival the education provided by schools. This account of a new form of education is also an account of a concrete 'new media literacy' combining aspects of print-literacy with aspects of oracy in a way that is distinct from both. Scratch is a simple programming language that is supported by a community of users. Anyone can join. There are currently over one million registered members of the Scratch online programming community and 306,000 project creators.

Thomas and Seely Brown illustrate the new kind of educational experience made possible by the Internet through the example of Sam, aged 9, who became engaged in making simple games using Scratch (Thomas & Brown, 2011). When Sam uploads the simple games that he makes using Scratch software others can comment and borrow bits of his code in order to remix it but with a tag that shows that their new version was based on Sam's original. When Sam likes programs that he finds then he also downloads the code and gets into conversations with the maker about remixing it. This approach offers an engaging way to learn programming but more than that Sam has learnt from this engagement how to learn from others. Thomas and Seely Brown report that Sam told them that the single most important thing he learnt was 'not to be mean' and also to make sure that you commented on something good when you came across it. What he looked for in a program was 'something really cool you could never know yourself'.

Sam did take some classes to help him improve his programming and Scratch is used within many schools. Despite this there is a clear difference in the approaches to education represented by the ideal type of print-based schooling on the one hand and this example of Internet mediated informal education on the other. Sam started with participation and then contingently learnt the skills and knowledge that he needed to improve his participation. The print-based literacy curriculum tends to go the other way, starting with a list of skills and knowledge that it is assumed that children will need in order to be able to participate later on.

8. OUTSIDE VOICES AND THE INFINITE OTHER

Virtual or absent other voices are important in educational dialogues, just as important or perhaps, even more important, as the voices incarnated in physically present peers and physically present teachers. Sam, described learning programming using Scratch above, had an audience for his constructions and he was moti-

vated by thinking about the response of that audience. In literacy classrooms the sense of an audience for words is often lacking but this ability to take the point of view of the potential audience could be said to be crucial for any effort at constructing meaning. The importance of the relationship with the interlocutor follows from taking a dialogic approach. This is also true when the interlocutor is an invisible horizon of otherness. It is easy enough for most children to construct an argument when responding face to face to an interlocutor but often much harder when the same children are asked to write an argumentative essay and faced only by a blank page (Bereiter & Scardamalia, 1982). It is at this point that we need to learn how to invoke virtual generalized others and engage in dialogue with them.

The crucial role that the absent addressee can play in precipitating a shift in understanding can be seen clearly in some data I analyzed from an American upper primary classroom (full details in Wegerif, 2011). In the data a group of four children, including Angelina, Will and Julia, had been told to make a graph but had not been told how to make it. They had been growing plants as a class and had measured each plant's height each day. One of the children, Angelina (all names have been changed), wanted to write down the observation data in cells linked to each plant name. She had not really understood how a graph can help display information. Julia and Tom argued with her that they should map the height of the plants on one axis against the days on the other axis. They argued for a long time even turning the graph paper around so that they could literally see it from each other's point of view. At one point in the video it is possible to see that Angelina changes her mind in quite a dramatic way. She precedes her change of mind by listening intently to Julia, then turning her head away from Julia a little, as if for a moment of private thought, then she lifts her head slowly with a long drawn out 'Ohhh!', her eyes widen as her mouth opens into the 'O' shape which is at the same time a kind of smile. 'I see it now' she says. What leads to this dramatic switch around in perspective? Before Angelina's conversion, Will had just said: 'That's what you're telling them with the graph—that's why we're making the graph!' And then Julia had added: 'We're saying: "It's day nineteen – how is it going?"' As she said this she turned a little to the side and made an exaggerated welcoming gesture with her hand drawing in an imaginary viewer from outside to look at the graph.

There was something at stake for Angelina in not changing her mind as she had invested time in her arguments and she wanted to be right, yet she found herself led, almost despite herself, to agree with Julia. Angelina's change of mind here did not stem from any abstract logic expressed verbally so much as from a shift in perspective to see the graph from an outside point of view – the point of view of the future viewer of the graph referred to and brought into the discussion by Julia with her welcoming gesture. This perspective is, at one and the same time, both the idea of a concrete other person who might show up and an absent nebulous cloud of possible otherness.

The absent addressee or future audience invoked by the children in this episode is, perhaps, an example of a phenomenon that Bakhtin was referring to with his

concept of the superaddressee. Every dialogue generates, he claimed, a third voice or a 'witness' position that he called the superaddressee. Although not a physically embodied perspective, this third voice serves as an influential voice or perspective in all dialogues. Bakhtin, writes of the superaddressee:

The aforementioned third party is not any mystical or metaphysical being (although, given a certain understanding of the world, he can be expressed as such) – he [sic] is a constitutive aspect of the whole utterance, who, under deeper analysis, can be revealed in it. This follows from the nature of the word, which always wants to be heard, always seeks responsive understanding, and does not stop at immediate understanding but presses further and further (indefinitely). (Bakhtin, 1986, 126–127)

It follows from Bakhtin's account of the superaddressee that if you try to pin down this third position in order to dialogue with it you will find that another superaddressee position is automatically generated. Bakhtin did not bring this out but with the benefit of reading Bakhtin after reading Levinas we can see that the infinite regress implied by the idea of the superaddressee means that it leads to a more cognitive version of a transcendental kind of voice that Levinas refers to as 'the Infinite Other' (Levinas, 1961; Hand, 1989). In a way the absent audience that needs to be invoked for effective education into literacy is also a version of George Herbert Mead's notion of the Generalised Other (Mead, 1934). The Generalised Other represents the voice of the community, what every reasonable member of this community would think. Levinas's idea of the Infinite Other, by contrast, is that aspect of each and every real other that transcends our understanding. When we represent the other we think that we contain them but when we relate openly to the other we recognize that they transcend us because we are located within their gaze. This means that there is always an excess, something that is beyond our grasp. For Levinas this is the source of an ethical demand that we respond to the other with respect.

Bakhtin's notion of the 'witness' position or 'superaddressee' in every dialogue is relevant for re-constructing the new kind of dialogic relationship that is found in online interaction. The notion of being in dialogue with absent voices and concepts such as the Infinite Other can seem very abstract but are given a concrete reality in interaction on the Internet. After all, when you write a forum post or a blog post or post a picture or a video who is it that you are engaging with? You might claim that you can define the other as you know the community and you know the kind of responses that they will have. This is a Generalised Other version of the superaddressee as a personification of the community. This kind of other is often invoked in phrases like 'what everybody thinks' or 'what everybody does'. But on the Internet few communities are closed off and in reality you do not know who will read your post and how they will respond. This leads us to an instantiated experience of dialogue with the Infinite Other. A simple corollary of the unbounded nature of the Internet is that there will be people reading your blog who do not think 'what everybody thinks' and who respond in quite unexpected and unanticipated ways. Of course, in a sense, dialogue with the Infinite Other is an impossible expe-

rience because we cannot pin down the Infinite Other and say how she, he or it 'is'. Nonetheless, in another sense, we all engage in this kind of dialogue whenever we write on the Internet. The Internet literacy related idea of the Infinite Other as the interlocutor is not intended to refer to any kind of defined and limited 'object' or 'subject' but it is intended as a useful idea for understanding that thinking is never final because every attempt at settlement can be undermined by a new perspective from beyond the imagined community. The idea of a dialogic relation with the Infinite Other is another way of referring to the infinite openness at the heart of dialogue, an openness that needs to be embraced if we wish to think and write creatively.

Assessment can be motivating and formative. When teachers assess work they do so, whether they realize this or not, as temporary stand-ins for their communities. The assessment of work that will always count for the most in the end is the judgment of the relevant community. But the Internet is open in a way that makes it hard to draw a boundary delimiting a specific community of readers and responders. This means that when creative works are put out for review on the Internet, the ultimate addressee of that work is not just someone in particular, nor is it really everyone in general, but rather it is everyone in particular. In other words the Internet gives a certain kind of concrete embodiment to the otherwise abstract seeming idea of the Infinite Other.

9. THE NEW DIALOGIC

Both Bakhtin and Levinas follow Socrates in contrasting living words with dead words, where living words are 'internal' to a dialogic relation and carry infinite potential for making new meaning whilst dead words are external to the dialogue and have become sedimented into things with fixed meaning. However, whereas Socrates, an oral thinker, appears to identify these living words with the warm breath of face-to-face speech (breath is a translation of the Greek word *pneuma* which can also be translated as 'spirit') both Bakhtin and Levinas locate the source of meaning not in the words themselves so much as in the particular kind of difference that characterizes dialogic relations. The point they are making is that meaning requires not, as Socrates assumed, the warm breath that unites self and other but a gap of difference between self and other. This point is encapsulated in a claim from Volosinov, a close collaborator of Bakhtin in the 1920s, that: 'meaning is like an electric spark that occurs only when two different terminals are hooked together' (Volosinov, 1986). It is this focus on the dialogic relation as a kind of difference rather than a kind of identity that most clearly distinguishes the metaphor of thinking as 'dialogue across difference' from Socrates' original version of thinking as face-to-face dialogue.

Understanding dialogic meaning as more like a spark across difference than like a tool in a social context makes it possible to understand the positive role of technology in educational dialogues. Bakhtin, for example, went beyond face-to-face

dialogue to explore dialogue between texts arguing that it is the difference between texts which opens up 'bottomless' depths of 'contextual meaning' and leads to sparks of 'inter-illumination'. He gives the example of how, for him, reading the texts of ancient Greece, gave him an extra perspective from which to see his situation in twentieth-century Russia in a way that opened up the possibilities of thought in general (Bakhtin, 1986, 11).

Levinas directly relates his valuing of difference to valuing the communicative affordances of new technology. He takes on Heidegger's criticism of modern technology as enframing our thoughts and alienating us from 'being', claiming, by contrast, that Heidegger's mystical association of being with place leads directly to the horrors of Nazism (Heidegger's association of spirit with Germany, the German language and the German people) and claims that it is the role of technology to liberate us from the 'perpetual warfare' implied by such place-based identity by taking us out of our home space and bringing us into relationship with others. He writes, in an article in praise of the achievement of Gagarin, that:

Technology wrenches us out of the Heideggerian world and the superstitions regarding place. From this point on, an opportunity appears to us: to perceive men [sic] outside the situation in which they are placed, and let the human face shine in all its nudity. Socrates prefers the town in which one meets people to the countryside and the trees (Levinas, 1990).

Bakhtin, from within a very different tradition of thought, appears to articulate a point of view with some similarities. He points out that 'in order to understand, it is immensely important for the person who understands to be located outside the object of his or her creative understanding – in time, in space, in culture' (Bakhtin, 1986, 7). He was dismayed by the narrow frame of reference within which most people operate and writes that we need to think always in the 'great time' that unites all cultures. He echoes the infinity that Levinas refers to when he claims that the meaning of any utterance is found in the whole dialogue but that this whole dialogue has no end. His notion of 'great time' was of the place of meeting between all voices from every time and place. Education on the dialogic model stimulated by Bakhtin is about drawing students from narrow concerns to the more universal thinking of 'great time'.

10. NEW LITERACIES, TRANSLITERACY AND 'DIALOGIC LITERACY'?

Various attempts have been made to articulate the new kinds of literacy that are required in the Internet Age. Jenkins, for example, argues that we should be teaching new media skills such as 'Performance: The ability to adopt alternative identities for the purpose of improvisation and discovery', and 'Appropriation: The ability to meaningfully sample and remix media content'; as well as 'Transmedia navigation: The ability to follow the flow of stories and information across multiple modalities' (Jenkins, 2006). Donald Leu and his team argue that specific new literacy practices are changing so fast that, to characterize New Literacy (with capitals), we

need to go beyond all the proliferation of specific 'new literacies' (no capitals) and draw out the more general principles that are common to many of them. One of these New Literacy principles is, for example, that 'New Literacies are multiple, multimodal, and multifaceted, and, as a result, our understanding of them benefits from multiple points of view', another is that critical literacies are central to New Literacies (Leu et al., 2014). These new literacy principles are probably claims that Jenkins could agree with. However, the concept of transliteracy goes further to refer to whatever it is that enables people to communicate across and through all forms of communication media:

The word 'transliteracy' is derived from the verb 'to transliterate', meaning to write or print a letter or word using the closest corresponding letters of a different alphabet or language. ... transliteracy extends the act of transliteration and applies it to the increasingly wide range of communication platforms and tools at our disposal. From early signing and orality [speaking] through handwriting, print, TV and film to networked digital media, the concept of transliteracy calls for a change of perspective away from the battles over print versus digital, and a move instead towards a unifying ecology not just of media, but of all literacies relevant to reading, writing, interaction and culture, both past and present. (Thomas et al., 2007)

This notion of an 'ecology' of media raises the question of through what medium ultimately are we communicating? I meant how can we characterize the communication medium that enables us to cross between print and video and social media etc. in a way that preserves something essential of what it is that is being communicated? Here the dialogic account of literacy for the Internet Age that I have been sketching in this paper potentially has a role to play (see also Bereiter & Scardemalia, 2005, and Korhonen, 2010). People do not just communicate, they are motivated to speak and express themselves through relationships. Relationship is the medium of meaning where meanings are not to be understood on the model of things but on the model of differences within a flow just as putting a twig in a stream might alter the flow of the water (Goodwin, 2011). The relationships that carry meaning are not just relationships with this or that specific other person or bounded community but also, as has been argued above, with various generalized others and also, always, if only often implicitly, a relationship with the Infinite Other. Another way of putting this is simply that there is always infinite and unbounded context and that this ultimate context is not simply passive and 'in the background' but actively enters into our lives because it, in a very real sense, calls us to speak and then gives meaning, if always transitory and provisional, to our actions through and beyond all the communities and specific voices that we interact with.

11. CONCLUSION

Applying dialogic theory to understand the new literacy practices of the Internet Age reveals a convergence between two areas that have traditionally been seen as separate: teaching thinking and teaching literacy. When print was the unchallenged dominant mode of communication, the mode of law codes, encyclopedias and text-

books, the focus of literacy education on 'learning one's letters' or alphabetization could seem relatively unproblematic. This view of literacy as a discrete set of skills could be separated from an understanding of thinking as logic and abstract reasoning. The advent of the Internet Age forces us to locate such literacy practice and views of thinking back into a larger history. If we extend literacy to include oracy, as is common in many curricula around the world, we can see that 'literacy education' in oral societies, or education into speaking and listening, cannot be disembodied from induction into dialogues that carry meaning, not only dialogues with specific others but also with disembodied cultural voices. Socrates' argued that we cannot divorce this kind of literacy, i. e. dialogic oracy, from thinking since thinking only occurs in the context of living relationships. We are able to see this now only because the Internet Age has led to a return to dialogism. The literacy skills required in Internet mediated communication are not only those of decoding and encoding signs but also of using a range of different media to communicate with other voices including disembodied absent voices. As with original dialogic oracy it is not possible to separate out the thinking from this new form of dialogic literacy. Both the new literacies of the Internet Age and the new forms of thinking of the Internet Age are aspects of dialogues and are characterized by dialogic processes. The communications technology does not just carry the thinking, it is part of the thinking and informs it from within. From this perspective we can see that decontextualized understandings of literacy education and of thinking were twin manifestations of a temporary monological illusion that arose from practices associated with print. This monological print-based literacy phase can now be located within a larger story of the evolution of dialogue from face to face dialogues in small groups to global dialogue mediated by the Internet and associated technologies.

Applying new dialogic theory that adapts Bakhtin to the Internet Age I have argued in this paper that literacy only occurs as part of a larger flow of meaning that draws each one of us out because we are part of relationships. We are always already part of relationships that call us out, even before we are born. Not only relationships with specific others and with specific communities but also with general others and with the paradoxical idea of an Infinite Other or otherness in general. Of course it is useful to teach for that critical thinking that enables students to judge the quality of information and that creative thinking that enables play and re-mixing of media but the first thing to teach for is that openness to the other and to otherness in general that allows students to be pulled out into dialogue. Dialogic literacy education for the Internet Age therefore, can be considered as that ability to be responsively open to all that is other. This ability to listen to, engage with and respond to other voices, visible or invisible, can be taught as a form of teaching thinking that is also the basis of new literacy practices (Wegerif, 2010). This is about teaching in a way that promotes empathy and curiosity and, perhaps more importantly, it is about no longer teaching in a way that closes down empathy and curiosity. Students (and children) need first to be put in the way of a flow of meaning that motivates them and then it is possible to work with them to help them to

equip themselves with the more specific skills (the various literacies) that they need to understand others and to express themselves in the various contexts that they are drawn into, both face-to-face and online. I have argued that it is this process of, in a sense, 'becoming dialogue', through identifying with relationships with others that underlies what it means to learn to think and that could be called the ultimate literacy. But this ultimate literacy, dialogic literacy, is not really just another literacy, it is about raising our attention from particular practices to see the larger context of literacy which is responsive relationship to others and to otherness.

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