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## THREE PARADIGMS IN READING (REALLY LITERACY) RESEARCH AND DIGITAL MEDIA

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I will first briefly discuss two related paradigms for studying reading and writing (“literacy”). The first I will call “the social practice paradigm”; the second I will call “the language development paradigm.” I will contrast these two with what I will call “the mental processes paradigm.” Then, in discussing the ways in which digital media are transforming literacy, I will introduce another paradigm which I will call “the situated/embodied meaning paradigm.” I use the term “paradigm” loosely and nontechnically in the sense of a philosophical or theoretical framework.

### **The social practice paradigm**

Reading and writing are skills used to accomplish specific goals within specific activities or practices (Gee, 2004, 2011). We read and write in different ways for different purposes and contexts. It follows, then, that how we study reading will, of necessity, change when the social practices within which reading is used change in significant ways. The same is true, of course, for writing. Changes in social practices involve both the emergence of new practices and the transformation of old ones (which rarely entirely disappear). What changes, in reality, is the “ecology” of reading and writing, the ways in which various reading and writing practices link to each other and to other practices and values in society.

This “practice” approach to reading and writing does not eliminate the need to study reading and writing as cognitive and psycholinguistic processes. However, the mental processes that sub-serve reading and writing are put to use out in the world to enact various new and old ways of reading and writing. Furthermore, and importantly, ways of reading and writing are almost always coupled with ways of doing things, valuing, interacting, thinking, and using various sorts of

tools and technologies at various sorts of times and places (Gee, 2004, 2011). Thus, what is consequential for reading and writing in the world and for research on reading and writing are things like “reading a manga as an otaku” or “reading words in a school mathematics problem in order to be a successful student”; not “processing a written clause,” which is, of course not a practice, but a procedure. This does not mean research on mental processing is not important, but it is important because it is part of a larger picture, a picture that plays out both inside and outside our heads.

So far I have sketched the reading and writing as social practices paradigm. But there is also another and related paradigm, the language development paradigm.

### The language development paradigm

Learning to read and write are forms of language development (Dickinson & Tabors, 2001; Gee, 2004). They are not forms of language development in the sense that literacy is part of a human biological capacity that facilitates acquisition as an “evolutionary gift.” Literacy (unlike oral language) is not old enough to be an “evolutionary gift” (Dehaene, 2009). Rather, literacy is language development in the sense that it is an integral part of the acquisition of what we can call “registers” or “social languages” (Gee, 2010a, 2010b). Social languages are styles of language (unique collocations or patterns of lexical and grammatical resources) that carry out or enact specific socially-situated identities and activities. The language of carpenters, lawyers, anime fans, gang members, mathematicians, and hip-hop are all social languages.

We can distinguish between two types of social languages: vernacular social languages and specialist social languages. Vernacular social languages recruit vernacular (relatively “informal” and nontechnical) language to enact what we can call “everyday” or “lifeworld” (Habermas, 1984) identities and activities. We use some form of a vernacular social language when we are acting and communicating as an “everyday person” and not as a specialist of any sort. Thus, a sentence like “Cats vary a lot in how they look” is in a vernacular variety of language. Of course, people from different cultures and different social groups have different vernacular varieties.

Specialist social languages recruit specialist language to enact ways of acting and communicating as a specialist or expert of some sort. Thus, a sentence like “Feline appearance exhibits a statistically significant amount of variation” is in a specialist variety of language. Of course, the vernacular is the basis of all specialist social languages, each of which extends and patterns vernacular resources in certain characteristic ways. By “patterning” I mean here such common combinations as complex subjects, nominalizations, copulative and stative verbs, and restrictive relative clauses in certain forms of talking and writing science (just as wearing sandals, a bathing suit, a sun hat, and suntan lotion is a pattern we associate with beachgoers and beach activities).

Some caveats: When I say “specialist” I mean anime fans, religious devotees, and video gamers as much as I mean lawyers, doctors, and accountants. I count “academic languages” (e.g., the language of theoretical linguistics or physics) as one family of specialist languages.

Almost all specialist social languages have both spoken and written forms which are related to and interact with each other. A biologist or a real-time strategy gamer has to talk the talk, walk the walk, and read and write in certain ways. So, if someone is learning to read or write a specialist variety of language, it does them little good if they do not also know how to talk a form of this language and integrate their talk and texts with ways of doing, thinking, and valuing things associated with the (big “D”) “Discourse” (Gee, 2011) of biology or real-time strategy gaming. This is why learning to read and write is always a form of language development, since one is learning the spoken and written forms of a specialist language. It is also always a form of Discourse development, that is, learning how to enact and recognize certain sorts of socially meaningful identities (e.g., a cellular biologist or a real-time strategy gamer) and the socially meaningful activities or practices associated with these identities (e.g., culturing colonies of cells in biology or “rushing” in real-time strategy gaming). Discourses, with a big “D” (Gee, 2011), are just ways of enacting and recognizing socially situated and socially meaningful identities and activities or practices (“discourse” with a little “d” just means “oral or written language in use”).

Learning a vernacular social language (a vernacular variety of language) as part of one’s socialization early in life or later as a “second language” is also a form of language and Discourse development. Our vernacular is the language we use when we are enacting and recognizing the identities and activities of “everyday people” (which varies across cultures and social groups). Such an identity and the activities we associate with it are part and parcel of a “lifeworld Discourse,” the space of words, values, acts, and deeds that constitute the “everyday world” where we communicate and make claims not as specialists or experts, but as “everyday people” using our “common sense.”

I have briefly described two related “paradigms”: reading and writing as social practices and learning to read and write as language and Discourse development. These paradigms have been partially instantiated in the world of literacy research (not “reading research” *per se*, since the two paradigms imply that research should integrate cognitive, psycholinguistic, and social studies of reading, writing, talking, acting, valuing, and using various sorts of tools and technologies in the service of studying language and Discourse development). But as far as I can tell, neither has ever become truly entrenched and “mainstream,” for example at the level of government policy, though others may disagree. The paradigm that sees reading and writing as mental processes and studies them within the discipline of psychology seems still to be the mainstream paradigm, though obviously a contested one. It is a paradigm I will call the “reading and writing as mental processes paradigm.”

## Digital media

It is possible that the emergence of modern digital media (and concomitant “digital literacies”) will demand a new paradigm (or transformations of old ones), just as did the technological and cultural transition from handwritten manuscripts to print (Gee & Hayes, 2011). Digital tools (like websites and video games) deliver language, oral and written, which is consumed (“heard,” “read”). They also allow people to produce language, oral and written (therefore, to “speak” and “write”). In addition, digital tools allow for the distribution and production of hybrid forms of language that blend features of oral and written language. For example, real-time chat can be written, but it also has many of the features of face-to-face interactive language. When people are engaged in real-time video chat, they can see and respond to each other, sometimes orally and sometimes in writing. When they write in such a context, the language they use is similar in many respects to when they speak, though, of course, it is not identical. Digital media are giving rise to a plethora of new social languages.

Digital media do not just allow for the delivery and production of oral and written language within old and new social languages. They allow for a massive increase in “multimodal texts,” that is (oral and written) texts that combine words, (still and moving) images, and sounds (Kress, 2003, 2010). Such pervasive multimodality has implications for how people mentally process language in multimodal contexts and for the creation and transformation of social practices involving ways with oral and written words.

Neither blended forms of language nor multimodality are new, however. Formal lectures were an oral form of language that worked something like writing (and sometimes were read out loud), and personal letters were a written form of language that worked something like oral face-to-face interactive language. Pictures and sounds have long accompanied words, as in songs and illustrated manuscripts (e.g., bibles). However, digital media have greatly increased new social languages and Discourses and new ways with multimodality (Gee & Hayes, 2011). The question, of course, is whether these changes are so extreme as to necessitate new paradigms for the study of reading and writing, multimodality, “digital literacies,” “digital texts,” or hybrid forms of language and communication.

At one time—during the reign of the reading and writing as mental processes paradigm—we thought that human language represented something like an externalization of internal human thought, since we believed that human thought was carried out in a universal “language of the mind” (“mentalise”; see Fodor, 1975). This language of thought was made up of propositions composed of subjects and predicates, just as were external human languages (Field, 1978; Pylyshyn, 1984).

Over the last few decades a new view of human thought and the human mind has arisen. On this view, which we can call the situated/embodied view of

thought, humans store all the experiences they have had and think and problem solve through these experiences (Barsalou, 1999; Churchland, 1990; Gee, 2004). The experiences they store are not “raw data,” but rather they are “edited” in terms of having certain elements in the experience foregrounded (focused on) or backgrounded, as well as in other ways. Furthermore, humans can “replay” (or simulate) these experiences, or versions of them, with themselves as actors or “stars” in the experience. For example, we can role play our upcoming role at a wedding. We can even imagine ourselves as the minister or the bride or groom. Humans can certainly generalize, but they generalize bottom up from actual experiences in the world (or via media) on the basis of patterns and associations they find in the experiences they have had.

On the situated/embodied view, the human mind works something like an internal mental simulation or “video game.” We try things out, make hypotheses, in our mind to see how they might work before we act in the world. Thus, we can view digital simulations and video games (and other forms of model building in general) as externalizations of thought. In many respects, this was the role of books, as well, and it was what we meant when we called novels “vicarious experience.” On the situated/embodied view of the mind, humans think (and learn) best when they have a clear goal and are taking an action whose outcome matters to them. Digital media, like video games, can put people in just this role, even in cases they could never experience in real life (e.g., being a firefly trying to attract another firefly). Books can also do this, of course, but their focus on content and not the reader’s own actions and decisions makes it harder. It requires proactive emphatic readers who are reading like “writers” and “re-writing” the texts in their minds.

### **Do digital media require a new paradigm?**

At one level, digital media do not require a new paradigm if we use the social practice and language/Discourse development paradigms I explicated above. This is so because digital media (such as video games or social media) are, like literacy, technologies for meaning making. Much that we have learned about books is equally true of video games, for instance. For example, consider the ten claims below. I believe these are well founded claims about books, but they are equally true of video games and other forms of digital media (Gee, 2004; Gee & Hayes, 2011):

1. Books are a powerful technology. They can lead to aggression and violence (witness the Bible, the Koran, and the Turner Diaries in the wrong hands). Nazi Germany was a highly literate society. Games, so far, do not have this much power, but some day they may.
2. Books can lead to peace, tolerance, and charity if (and only if) they are read in a society and in families devoted to peace, tolerance, and charity.

3. For good learning, books require talk and social interaction with others about interpretation and implications.
4. Books can make you stupid if you don't question what they say.
5. Books can make you smart by supplying vicarious experience, new ideas, and something to debate and think about.
6. Books are often best used as tools for problem solving, not just in and for themselves.
7. To get the most out of them, books require the reader to read like a "writer" (a type of designer).
8. Just giving people books does not make them smarter; it all depends on what they do with them and who they do it with. For young people, it depends, too, on how much and how well they get mentored. Mentoring is, in fact, crucial.
9. Connecting books to the real world and to other media is good for learning; not doing so is bad for learning.
10. Books tend to make the "rich" richer and the poor "poorer" (those who read more in the right way get to be better and better readers and get more and more out of reading; those who don't get to be poorer and poorer readers and get less and less out of reading. The former become more successful; the latter, less). This is called "the Matthew effect" (Stanovich, 1986).

However, video games do have some special properties that set them apart from books (and books have special properties that set them apart from games). Some of these are (Gee 2007):

1. Games are based not on content but on problems to solve. The content of a game (what it is "about") exists to serve problem solving.
2. Games can lead to more than thinking like a designer; they can lead to designing, since players can "mod" many games (i.e., use software that comes with the game to modify it or redesign it).
3. Gamers co-author the games they play by the choices they make and how they choose to solve problems, since what they do can affect the course and sometimes the outcome of the game.
4. Games are most often played socially and involve collaboration and competition.

Both books and games are tools that can be used powerfully in the service of learning. But we need to focus first on the learning and then on the tools as servants of that learning. So, for me, the question becomes this: Do we need to change the practice and development paradigms in order to accommodate digital media alongside print and language as forms of giving and getting meaning?

### **A third paradigm: Situated/embodied meaning**

Digital media show us clearly the important role of what I will call "situated/embodied meaning" (Barsalou, 1999; Gee, 2004). This is a paradigm of how

language or any other form of representation acquires a certain type of meaning. It very much applies to reading and writing and, in my view, was true of reading and writing before the advent of digital media. However, digital media have made us see that this is really how reading and writing always operated, something that was obscured by older reading research paradigms that stressed meaning as a “language like” translation of spoken and written language in the head in terms of “mentalise” or some other proposition-based or “logic like” representational system (or “word”-based schemas, frames, or scripts).

There is an easy demonstration one can do to see what “situated/embodied meaning” is. Video games used to come with manuals. If one read the manual first, without having played the game or at least having played similar games before, the manual made little sense. For example, consider the passage below from the manual for a game called *Deus Ex* (Gee, 2007):

Your internal nano-processors keep a very detailed record of your condition, equipment and recent history. You can access this data at any time during play by hitting F1 to get to the Inventory screen or F2 to get to the Goals/Notes screen. Once you have accessed your information screens, you can move between the screens by clicking on the tabs at the top of the screen. You can map other information screens to hotkeys using Settings, Keyboard/Mouse. (<http://www.scribd.com/doc/52467084/Deus-Ex-Manual-v6>, p. 5)

This makes perfect sense at a literal level, but that just goes to show how worthless the literal level is. When you understand this sort of passage at only a literal level, you have only an illusion of understanding, one that quickly disappears as you try to relate the information in this passage to the hundreds of other important details in the booklet. First of all, this passage means nothing real to you if you have no contextually specific ideas about what “nano-processors,” “condition,” “equipment,” “history,” “F1,” “Inventory screen,” “F2,” “Goals/Notes screen” (and, of course, “Goals” and “Notes”), “information screens,” “clicking,” “tabs,” “map,” “hotkeys,” and “Settings, Keyboard/Mouse” mean in and for playing games like *Deus Ex*.

Second, though you know literally what each sentence means, they raise a plethora of questions if you have no contextually specific understandings of this game or games like it. For instance: Is the same data (condition, equipment, and history) on both the Inventory screen and the Goals/Notes screen? If so, why is it on two different screens? If not, which type of information is on which screen and why? The fact that I can move between the screens by clicking on the tabs (but what do these tabs look like? will I recognize them?) suggests that some of this information is on one screen and some on the other. But, then, is my “condition” part of my Inventory or my Goals/Notes—doesn’t seem to be either, but then what is my “condition” anyway? If I can map other information screens (and what are these?) to hotkeys using “Settings, Keyboard/Mouse,” does this mean there is no other way to access them? How will I access them in the first place to assign them to my own chosen hotkeys? Can I

click between them and the Inventory screen and the Goals/Notes screens by pressing on “tabs”?

Of course, all these terms and questions can be defined and answered if you closely check and cross-check information over and over again through the little booklet. You can constantly turn the pages backwards and forwards. But once you have one set of links relating various items and actions in mind, another drops out just as you need it and you’re back to turning pages. Is the booklet poorly written? Not at all. It is written just as well or poorly as, in fact, any of a myriad of school-based texts in the content areas. It is, outside the practices in the knowledge domain from which it comes (gaming), just as meaningless, however much one could garner literal meanings from it with which to verbally repeat things or pass tests.

Of course, you can utter something like “Oh, yea, you click on F1 (function key 1) to get to the Inventory screen and F2 to get to the Goals/Notes screen” and sound like you know something. The trouble is this: In the actual game, you can click on F2 and meditate on the screen you see at your leisure. Nothing bad will happen to you. However, you very often have to click on F1 and do something quickly in the midst of a heated battle. There’s no “at your leisure” here. The two commands really don’t function the same way in the game—they actually mean different things in terms of embodied and situated action—and they never really *just* mean “click F1, get screen.” That’s their general meaning, the one with which you can’t really do anything useful until you know how to spell it out further in situation-specific terms in the game.

Something quite remarkable happens when you play the game first and then read the manual. You then have an image, action, goal, experience, or dialogue from the game world that you can associate with each word and phrase in the book. You have lived and acted in the world the game is about. This is what I call “situated/embodied meaning.” If all you can do is associate general definitional sorts of meanings for the words and phrases in the text (that is, all you can do is substitute words for words), then I say you have a “verbal understanding.” Situated/embodied meanings lead to deep comprehension and deep learning. Verbal understandings do not when they are not coupled with situated/embodied meanings.

When you can spell out such information in situation-specific embodied terms in the game, then the relationships of this information to the other hundreds of pieces of information in the booklet become clear and meaningful. And, of course, it is these relationships that really count if you are to understand the game as a system and, thus, play it at all well. *Now* you can read the book if you need to in order to piece in missing bits of information, check on your understandings, or solve a particular problem or answer a particular question. Many games today have dispensed with the manuals and put the information which used to be in such manuals into the game itself in terms of “just in time” and “on demand” verbal information.

It is a common idea in more traditional paradigms of reading research that oral “everyday” language is “contextualized” but academic language is

“decontextualized” (Snow, Cancino, De Temple, & Schley, 1991)—that is, it is understood according to the language in the text and not the contexts to which the language applies and from which it comes. But the game example above would argue this is not true. Participation in the game is what gives the booklet real, useful meanings. All meaning, if it is deep enough to lead to deep learning and problem solving, is “contextualized.” So, too, I would argue that the academic language below, from a science textbook, is just like a game manual. It is hard to understand if you have not played the “game” of geology (engaged in its activities, values, goals, and dialogue). It is easy to understand if you have played the game, and then it is useful as a reference book and guide for better understanding and learning through further “play” (from Martin, 1990, p. 93):

The destruction of a land surface by the combined effects of abrasion and removal of weathered material by transporting agents is called erosion. . . . The production of rock waste by mechanical processes and chemical changes is called weathering.

## Conclusion

I would argue that the practice paradigm, the development paradigm, and the situated/embodied meaning paradigm together are adequate, in large part, to engage in research on literacy even in a digital world. “Literacy events” (which today often include digital media and multimodality) are best studied as specific practices (e.g., “reading a manga as an otaku”) based on the development of ways with words (“social languages”) associated with specific Discourses (ways of enacting and recognizing specific socially meaningful identities and activities) through the development of situated/embodied meanings for words (and indeed deeds, too), meanings that require that one has experienced the worlds and contexts in which the words live and mean and change.

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