

# The role of semiotic resource complexes in emergent multimodal reading processes: Insights from a young student's reading of a comic book

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## ABSTRACT

*In this article, I present a young student's (age 6) multimodal reading of an Incredible Hulk comic book in order to illustrate the concept of a semiotic resource complex and explore its role in emergent reading. I define a semiotic resource complex as a conglomeration of individual semiotic resources that have been brought into relation with one another through the process of making meaning. This article illustrates how Jeremy used and accessed several different types of semiotic reading resources from multiple modes, assembling these in the construction of a semiotic resource complex that enabled his interpretation of the comic. This look at how semiotic resource complexes play a role in multimodal reading processes lends insight into how students create meanings multimodally as they read, the role that teachers can play in facilitating this process – as well as pedagogical considerations related to maximising students' meaning-making potential while reading through the synergistic combination of resources from multiple modes.*

Scholars of multimodality working from a social semiotic perspective have recently developed theories for understanding of how, during the process of making and communicating meanings, sign-users arrange multiple semiotic resources from across modes, combining and coordinating them in the process of producing multimodal semiotic *ensembles* (Jewitt, 2007; Kress, 2010; Mavers, 2007, 2009). Defining the idea of a semiotic ensemble, Mavers (2007) wrote:

Composing meaning is not just a case of selecting semiotic (meaning-making) resources. It also involves decisions about how they will be combined ... What each resource will do is not isolated but works in relation to what other semiotic resources are doing elsewhere ... the ways in which signs are juxtaposed, integrated and interwoven creates an apt semiotic ensemble ... The combination of resources is a complex orchestration. (p. 156)

Semiotic ensembles are ubiquitous, occurring in all forms and in all domains of multimodal meaning-making and communication. For example, Kress

(2010) characterised the safety demonstration that flight attendants present at the beginning of an aeroplane flight as a multimodal ensemble whose message is comprised of the following elements: the spoken instructions; action-based demonstrations of the operations of the seatbelts, life jackets, and oxygen masks; gestures (pointing toward exits); and the visual and written instructions on the safety cards provided to passengers (pp. 160–161). Though the concept of a multimodal ensemble is helpful for understanding meaning-making processes in general, it also holds much potential for understanding how young students engage in multimodal literacy processes through engagement in sign use and production in the social and interactive contexts that emerge in classrooms. Mavers (2009) has explored this terrain, conceptualising child-written emails as semiotic ensembles of resources such as lexis, syntax, punctuation, spacing, letter case, taps of the space bar, and spelling. Mavers (2007) has also conceptualised young children's drawings and writing on whiteboards (as part of their work on the understanding of the

operation of magnets) as semiotic ensembles comprised of visual resources such as shape, line, shading, positioning, as well as linguistic resources such as nouns, pronouns, tense, and punctuation.

Though Mavers (2007, 2009) has explored the concept of a semiotic ensemble in young students' composition of written and drawn texts, and Kress (2010) has developed this concept to describe a variety of other semiotic processes, its potential has not been developed for understanding emergent multimodal reading processes. In this article, in order to add a social semiotic perspective to existing research on multimodal reading processes (Callow, 2006; Walsh, 2006), I extend and adapt the concept of a multimodal ensemble to explore emergent multimodal reading of visually inflected texts. I develop and apply the concept of a semiotic ensemble by presenting an example of Jeremy's (pseudonym, age 6) multimodal reading of a comic book featuring the Incredible Hulk (Marvel Comics, 2005). By closely examining a key juncture in his reading of the comic book, I conceptualise his reading processes as a process involving the assemblage of a multimodal semiotic resource complex comprised of semiotic resources of different types.

Due largely to the increasing prominence of new media – but also an increased awareness that all meaning making is multimodal – the study of multimodality and its implications for emergent and early literacy have been given greater attention in recent years (Mavers, 2011; Pahl, 2001, 2003, 2009; Ranker, 2006, 2007a, 2009). In conjunction with this focus, literacy scholars have specifically explored the potential of using new media (Burn & Parker, 2003; Mills, 2011) and elements of popular culture (Dyson, 2003; Ranker, 2006, 2007a, 2007b; Vasquez, 2003) – which have their own multimodal components – in early literacy teaching and learning. These new directions in literacy research, pedagogy, and learning point to the importance of continued development of approaches and concepts that literacy educators can use to recognise, understand, and support their students' multimodal reading. I will thus use this study of Jeremy's reading processes as a heuristic for exploring concepts that apply more generally to emergent and early multimodal reading processes, and in particular to the reading of highly visual texts, which often occurs in early childhood literacy classrooms. This question of what constitutes the processes involved multimodal reading takes on particular importance in early literacy pedagogy, since the visual mode can act as an important referent for meaning (for example, through photos, illustrations, drawings, and other types of images) while students' print-based literacies are still emerging.

In response to this need for understandings of multimodal reading processes, literacy scholars have begun to explore this area of study. For example, Walsh (2006) examined the processes involved with reading visual or multimodal texts as compared with print-based texts, noting several similarities as well as differences: 'The process of meaning-making itself might occur in similar ways for print-based and multimodal texts, yet the "processing" of modes is very different' (p. 36). At its heart, reading is a meaning-making process, whether the sources of meaning making are visual or linguistic. Thus, literacy scholars have studied young students' visual readings of picture books (Azripe & Styles, 2003; Crawford & Hade, 2000; Mackey, 2003) and other types of images or multimodal texts (Bromley, 2003; Callow, 2006; Styles & Bearne, 2003; Walsh, 2006). Crawford and Hade (2000), for example, studied young children's readings of wordless picture books, noting that 'young readers become actively involved in their readings of wordless texts; they interpret signs, construct meaning, and offer responses in ways similar to those that might accompany the reading of traditional storybooks' (p. 78). According to Dade and Crawford, the similarities between visual and linguistic reading include the following: uses of intertexts, multiple perspective taking, and using prior knowledge and experiences to interpret the text being read. Using a visual literacy framework, researchers examining young students' reading of picture books have described students' uses of visual elements as involving attention to visual detail, colour, depth, tone, and determining saliency of images or aspects of images (Azripe & Styles, 2003; Bromley, 2003), noting how 'the eye moves between one part of the picture and another, piecing together the image like a puzzle' (Azripe & Styles, 2003, p. 201).

Though the literature on emergent and early multimodal reading has been established, much more knowledge is needed in this area in order to compliment the language-only-based understandings of reading that have historically dominated the field. This article, which looks closely at the role of semiotic resource complexes in emergent reading processes, thus seeks to build upon the available body of knowledge about emergent and early multimodal reading by taking a specifically social semiotic direction. This social semiotic look at multimodal reading offers concepts such as the *semiotic resource complex* and *semiotic reading resources* – as well as an exploration of their role in emergent and early multimodal reading processes. These concepts offer literacy educators ways to recognise, validate, and support the development of multimodal conglomerations of meaning as they emerge during students'

moment-to-moment reading processes. For example, a clearer understanding of multimodal reading processes and the various types of semiotic reading resources involved in these processes can enable teachers to interact more effectively with young students as they engage in emergent multimodal reading – as well as offering ways to consider emergent multimodal reading processes as significant and literate. By getting a clearer picture of which semiotic resources students are and are not using, teachers can more effectively prompt students to make use of available reading resources and to access other resources that may broaden their interpretation of the texts that they are reading.

### *Conceptualising multimodal reading processes from a semiotic and social semiotic perspective*

In recent years, scholars studying multimodal literacies in early childhood settings have applied and developed social semiotic approaches to gain valuable insights into multimodal literacy processes involving drawing and writing (Kress, 1997; Ranker, 2007a, 2009) and digital technologies (Bjorkvall & Engblom, 2010; Mills, 2011) – including the examination of multimodal ensembles (Mavers, 2007, 2009) and multimodal intertextual chains and multimodal artifacts (Pahl, 2001), specifically. However, there has been relatively less work done that applies and develops semiotics or social semiotics to examine reading as a multimodal process, though some work is available in this area (Kress, 2003a, 2003b, 2010; Siegel, 1995). Working within a social semiotic framework, Kress (2003a, 2003b, 2010) has theorised multimodal reading as semiosis or design by drawing attention to how visual texts offer the reader more flexible reading pathways – rather than needing to proceed in a predetermined pathway (left-to-right; top-to-bottom), as with print-based reading. Kress posited that readers of multimodal and visual texts thus use a greater degree of agency in choosing which information and representations are most useful to the ongoing construction of meaning. While reading a website or a museum exhibit, for example, the reader is afforded a degree of agency for deciding on the pathway through the text, and thus the constitution of the text itself. Kress (2003a) has also noted how the affordances of images operate using different logics than language (which influences multimodal reading processes), noting how images effectively display meanings such as spatial configurations, while the affordances of language more readily offer meaning potentials related to action and possession.

From a semiotic perspective, Siegel (1995) examined the role of ‘transmediation’, or movement between

modes, as an aspect of reading processes. In Siegel’s study of transmediation, students sketched their meanings after reading, thereby generating new, yet related meanings, in a different mode. In this article, I seek to build upon semiotic and social semiotic approaches to multimodal reading by developing and extending two specific points of focus within a social semiotic perspective. This first has to do with what constitutes a semiotic resource within the domain of multimodal reading of a visually inflected text in an early literacy setting. The other point of focus has to do with conceptualising this type of multimodal reading as involving the assemblage of semiotic resources into a semiotic resource complex.

### *Background of this study of Jeremy’s reading processes*

In this article, I focus on one example of Jeremy’s reading, since my aim is to illustrate the full detail of the concept of a semiotic resource complex as it occurs at discrete moments in emergent reading processes. This example is drawn from my qualitative case study (Merriam, 1998; Stake, 1995) of Jeremy’s (age 6) multimodal reading processes in a primary-level (grade one) class at a public school in an urban location in the US. My primary selection criterion for focusing on Jeremy as a focal student was that he consistently chose comic books to read (which was one option amongst many other children’s literature selections). His reading processes thus offered particularly salient insights into multimodal reading processes since comic books are highly visual texts, and I observed that Jeremy was markedly drawn to exploring the visual representations available in the comic books for extended periods of time. In addition, Jeremy’s case offered a unique opportunity to look into the use of comic books as reading material in early literacy settings – a topic that has been examined in a few studies (Bromley, 2000; Ranker, 2007b), but is in need of further development. My aim was to closely examine Jeremy’s reading processes, using his case as a heuristic for developing knowledge about the role of semiotic resource complexes in multimodal reading processes. I thus closely studied Jeremy’s multimodal reading processes from a social semiotic perspective, asking the following research questions: What are the form and character of the semiotic reading resources that the Jeremy uses during his multimodal reading processes? How are these semiotic reading resources related to one another? How does this relation and use of resources factor into Jeremy’s reading processes?

With my specific focus on his multimodal reading and the development of the concept of a semiotic

resource complex, I thus ‘formalised’ (Firestone & Herriott, 1984) this case study toward this focus – thereby developing an ‘instrumental’ (Stake, 1995) case study that was aimed at conceptual development rather than the more ‘intrinsic’ properties of the case. Once each week over a period of seven months, I visited Jeremy’s urban, public school classroom as a participant-observer during the class’s reading period, which lasted approximately one hour. During this reading period, I observed Jeremy reading, meanwhile gathering detailed qualitative data so that I could understand Jeremy’s moment-to-moment reading processes. I used qualitative research methods and procedures (Glesne, 1999; Merriam, 1998), gathering the following types of data during my visits to the class: fieldnotes; photocopies of the read texts; audio/video recordings of Jeremy’s readings; and audio recordings of my conversations with Jeremy about his reading as it unfolded.

Jeremy was a competent reader who read for meaning, yet also demonstrated the ‘sounding out’ strategies that he was learning in class. During the reading workshop, he usually sat next to his friend, Noel, and chose to read comic books. While reading, he and Noel would comment on each other’s reading, noticing and discussing certain images or aspects of the texts that they were each independently reading. One particular feature of Jeremy’s reading was his affinity toward the visual aspects of reading and accessing of visual reading resources while reading. He extensively used the images available in the books, often becoming animated, creating sound effects, acting out portions of the narrative, and playing with language. For example, during one reading session, he read *The Foot Book* by Dr. Seuss quickly and relatively accurately, but also played with the text, adding words and inserting high quality miscues that both preserved and deliberately changed meanings. Below is an excerpt from Jeremy’s reading of *The Foot Book*:

Jeremy: [Reading] wet foot, dry foot. Low foot, high foot. Front foot, back foot. Red foot, black foot. Left foot, right foot. Foot, foot, foot. How many many feet you might make? Slow foot, quick foot. Jumping foot. Jumping foot.

Noel: You’re weird.

Jeremy: [Reading] up foot, down foot. Here comes the clown foot.

Noel: Clown foot? Clown foot did you say? Clown foot?

Jeremy: [Reading] small foot, big foot. Weird foot ... Here foot, there foot. Furry? Fuzzy? Furry foot. In the house. On the ... and on the street. How many many feet you might make. Up on the earth foot. Over a chair foot. The end.

Jeremy occasionally read other types of books, but primarily was interested in the visuality and popular cultural representations available in the comic books. He was also drawn to the advertisements in the comic books, which were primarily for video games, but also for cellular phone ring-tones and movies. Through his readings of these advertisements, his experiences with video games became evident. For example, in the following excerpt from a comic book reading event, Jeremy became intrigued by an advertisement for a Playstation 2 video game, *Ty 2: The Tasmanian Tiger Bush Rescue*. As was typical of much of Jeremy’s comic book reading processes, he primarily read the images, but also attempted small bits of text:

Noel: Hey, what is that [pointing to the video game advertisement, which Jeremy was silently (visually) reading]?

Jeremy: [Reading, sounding out] Ti the Ti ... Tazmannin ... Taz ... tiger bus ...

Noel: Who’s ... he’s a ... he’s a tiger?

Jeremy: Yeah. It’s a cartoon. See?

Author: Do you ever play that?

Jeremy: Yeah, but that’s not ... I didn’t play that one. That’s a ... that’s a new one.

Author: Oh, this is a newer one. What do you do with this?

Jeremy: You kill people.

Noel: Kill people. You’re crazy. But no blood coming out.

Jeremy: Because it’s only a robot. Yeah, I mean ... but the first one – it’s not like that.

Using tools from video-based research analytical methods (Heath, Hindmarsh & Luff, 2010) and approaches to multimodal analysis (Bezemer & Mavers, 2011; Flewitt, 2006), I identified the semiotic resources that Jeremy used to understand the comic books, and how these individual semiotic resources were combined into resource complexes. Drawing upon the fundamental semiotic concept of a ‘sign’, social semioticians have developed the concept of *semiotic resource* to refer to ‘signifiers, observable actions and objects that have been drawn into the domain of social communication and that have ... potential uses as might be uncovered relevant by the users on the basis of their specific needs and interests’ (van Leeuwen, 2005, p. 4). The concept of a semiotic resource extends beyond the notion of sign by emphasising how signs are used in social contexts, as well as how they are not fully determined in their meanings by structures or cultural codes. Rather, semiotic resources have potentials for meaning that become realised through communication, and in a situated manner.

From a social semiotic perspective, semiotic resources

take on a variety of forms, and are used according to the purposes of the individuals involved, the modes under question, and the influences of the social context. For example, Jewitt and Oyama (2001) characterised visual semiotic resources such as the following: contact, distance, salience, point of view, etc. Similarly, Mavers (2009) identified the visual semiotic resources of drawing, specifically, as line, shape, positioning, and orientation. Semiotic resources originate from and occur in all modes, and are used for all types of communicational and meaning-making purposes. In literacy educational settings, semiotic resources are part of processes such as talking, drawing, writing, and reading – and the identification and conceptualisation of their varied and specific forms lends unique insights into the meaning making processes under question. In this article, I seek to contribute to a characterisation of the particular types of semiotic resources that young students use during multimodal readings of visual texts, using a young student's reading of a comic book as an example. Such semiotic resources take on particular forms that I will illustrate in this article as I present Jeremy's uses of these specific types of semiotic resources, which I will refer to as *semiotic reading resources*.

### ***Jeremy's multimodal semiotic resource complex: Hulk and The Abomination***

In this section, I will present an example from Jeremy's reading of an issue of an Incredible Hulk comic book published by Marvel Comics (2005), entitled 'The Abomination!' I will focus on a particular juncture in his multimodal reading processes where multiple semiotic resources became visible as Jeremy discussed his reading with another student, Noel and me. 'The Abomination!' features an epic battle between the Incredible Hulk and a powerful rival, the Abomination. The story begins with Bruce Banner (Hulk's human form) approaching a city that has been destroyed by the Abomination. Bruce decides to find the Abomination and convince him to stop his destruction. He finds the Abomination in cave, where, angry and jealous, he blames Bruce for his state as a monster. This interaction causes Bruce to transform into the Hulk, and the battle between these two powerful monsters begins.

'The Abomination!' did not include the background story on Hulk and the Abomination, but, instead, moved quickly to the battle between the characters. This background story is as follows: Both the Abomination and Hulk used to be human friends who worked together at a lab, where they experimented with gamma radiation. When an experiment went awry, some of the dangerous radiation escaped, and it caused Bruce (who

became the Hulk) and Emil (who became the Abomination) to obtain the ability to change into monsters. Bruce retained the ability to transform back and forth to and from his human form. However, Emil did not, and, so, he remains a monster, and becomes destructive and angry as a result. Though these aspects were not included in the comic book issue that he read, Jeremy was able to bring other semiotic resources into play, which allowed him to make sense of these complexities in the plot.

At the particular reading juncture that I feature here, Jeremy was reading the image made available by a particular panel, four pages into the comic book. This panel illustrated Bruce looking out onto destruction caused by the Abomination: Cars are overturned and smoking, and the road is destroyed and broken where the Abomination's path has gone through town. The following conversation took place as Jeremy visually read this panel:

Jeremy: *He* did that [pointing to Bruce Banner, suggesting that he, when in his Hulk form, caused the damage depicted in the focal comic book panel].

Noel: He didn't do that.

Author: You don't think he did that?

Noel: No, there was another one – another guy who did that.

Jeremy: Yeah, he did [flipping pages to look back at the cover]. *He* did that [pointing to a large illustration of the Abomination].

Noel: No, it was him [pointing to an illustration of the Hulk]. Maybe it was *him* [pointing to the Abomination].

Jeremy: Yeah, it was. He's [the Abomination] bigger than him [Hulk].

Author: Who is that guy [pointing to the Abomination]?

Jeremy: That's his friend.

Noel: Yeah, that's his friend.

Jeremy: That's his friend – because in the game [video game] that's his friend.

Author: Why is he fighting his friend?

Jeremy: Because he wasn't like that and he didn't used to have problems. But they put some stuff on him and it made him change. I saw the movie.

Noel: Me, too.

This conversation indicates several of the semiotic reading resources that were part of the semiotic resource complex that Jeremy was constructing. One of the primary types of visual resources that Jeremy used was the panels or frames that are characteristic of comic books (usually several panels per page). Panels are framed sections of pages in comic books, and they are the means by which time, sequence, movement, and change are established in this static medium (McCloud, 1993). At the beginning of the conversation above,

Jeremy was looking at the focal panel illustrating the Abomination's destruction as he said, 'He did that.' This panel served as an important fixing point for his unfolding comprehension of the story. Like sentences or paragraphs might in a written text, panels serve as small units of sequence, time, and meaning, and allow the reader to focus on one aspect of the story through an illustration. At this juncture, Jeremy was using the panel to focus in on the idea that a monster had come through town, leaving a path of destruction in its wake. Jeremy had used the previous panels in the comic book to access the idea that Bruce was on the bus heading to town, and so this entire sequence of events was established using frames or panels. The panel design represented a highly visible visual semiotic resource that was present in the text during the reading event. Jeremy also used discrete visual resources within the panel, such as the illustration of Bruce Banner, the broken roadway leading into town, and the illustrations of the overturned and burning cars featured in the panel.

In the discussion featured above, when Jeremy said to Noel, 'He did that', he was pointing to Bruce Banner, Hulk's human form, who was not the cause of the depicted destruction (rather, the Abomination was). Initially, he thus did not correctly identify the Abomination as the cause of the destruction. This prompted Joel to say, 'No, he didn't do that', and, 'There was another one – another guy who did that.' Jeremy then turned the pages back to the comic book cover (another design-level visual resource) for reference. The cover of the comic book features a close-up, detailed illustration of the Hulk and the Abomination engaged in battle. The comic book cover is a visual design feature that allows for a succinct visual summary or overview of what the comic book is about. In this case, the central plot element was the battle between the Hulk and the Abomination, so the cover gives a close-up and detailed view of this battle. In addition to the cover being a visual resource as a whole, each of the individual depictions of these characters on the cover also served as discrete visual reading resources in their own right. Through his discussion with Noel and use of these visual resources at this reading juncture, Jeremy correctly identified Bruce Banner, the Hulk, and the Abomination, using the discrete visual depictions of these characters that were made available by the comic.

Table 1 provides a summary of the visual reading resources that I have identified Jeremy as using at this reading juncture up to this point, and thus a partial summary of the individual elements of the multimodal semiotic resource complex that he was assembling during his reading. These resources were all materially present during the reading event. The visual semiotic

**Table 1. Semiotic reading resources drawn from the visual mode.**

semiotic reading resource	origin	uses
iconic character depictions of Hulk	comic book, video game, movie	used to identify Hulk character, his characteristics, and probable actions
image of the Hulk on the cover of book	comic book	used to focus meaning making on Hulk
illustration of destruction caused by the Abomination	comic book	prompted investigation of question of who caused destruction
iconic character depictions of the Abomination	comic book, video game, movie	used to identify Hulk character, his characteristics, and probable actions
image of the Abomination on cover of comic book	comic book	used to focus meaning making on the Abomination
comic book panels	comic book	used to establish sequence
comic book cover	comic book	used to confirm the identity of Hulk and the Abomination

resources included discrete visual features such as the image of the Hulk on cover of book, the illustration of destruction caused by the Abomination, and the image of Abomination on cover of book. Jeremy also used visual design elements such as the following: iconic character depictions of Hulk; iconic character depictions of the Abomination; the comic book panel layout; and the comic book cover. Table 1 also characterises each of these visual resources according to its mode, origin, and uses during this focal reading event.

Jeremy also used linguistic resources, such as questions, responses, and declarations to construct his meanings about the Hulk and the Abomination at this reading juncture. The questions that Noel and I asked Jeremy prompted him to refer back to the cover and figure out that the Abomination had caused the destruction, as well as to clarify the relationship between Emil/the Abomination and Bruce/Hulk. Individual gestural resources were also central to his multimodal reading processes. For example, in order to clarify meaning, Jeremy flipped back and forth between the page that displayed the focal panel (depicting the destruction that the Abomination caused) and the cover of the comic book. As he did so, he pointed to various visual

**Table 2. Semiotic reading resources drawn from the linguistic and gestural modes.**

semiotic reading resource	mode	origin	uses
pointing	gestural	reading event, students themselves	direct one another's attention to individual images or aspects of images
displaying	gestural	reading event, students themselves	to bring relevant page into view so that meanings can be made and hypotheses about the text contrasted
declarations	linguistic	reading event, students themselves	to assert interpretations
responses	linguistic	reading event, students themselves	answer questions and clarify meaning or assert new interpretations
questions	linguistic	reading event, Jeremy, Noel, author	clarify meaning and search for new explanations

resources that were available on those pages in order to direct Noel's attention to the images and further clarify the plot juncture. Table 2 provides a summary of the linguistic (questions, declarations, responses) and gestural resources (pointing, displaying) that Jeremy used while reading, as well as a summary of how these resources were used. These semiotic resources represent more elements of the semiotic resource complex that Jeremy was multimodally constructing during this reading event.

Up to this point, all of the semiotic reading resources that I have identified have been visible resources that were present in the text and during the reading event. However, Jeremy also used visual reading resources that were not visible or present in the text, but, rather, originated from other events and contexts. For example, though the iconic depictions of the Abomination and Hulk were visible in the text, in another sense these images as reading resources were not visible, but were, instead, located in Jeremy's mind. Of course, these 'inner' resources were once 'external' – visually and multimodally represented in the comic books, movie, and video game that Jeremy had previously experienced. In other words, this was not the first representation of the Hulk or the Abomination that Jeremy had ever seen. On the contrary, he had seen images of these characters before in previous comic books, a video game, and a movie. These characters were thus iconic, which is a feature of comic books that allows the reader to quickly recognise the characters and move straight to their interactions without the need for extensive character development (McCloud, 1993). During Jeremy's reading processes, several of these types of visual resources 'surfaced', and were put to use in combination with the resources that were visible in the text. For example, Jeremy drew upon meanings from a Hulk video game in order to correctly identify

the Hulk, the Abomination, their human forms (Bruce and Emil), their history, and their relationship with one another. When Jeremy said, 'That's his friend – because in the game that's his friend', he indicated this section or aspect of the video game as a resource for making meaning. This video game and its specific segments thus served as a resource for his reading, yet originated in previous events and contexts, and were not visible in the text.

Jeremy also used a Hulk movie in much the same way as he used the video game as a semiotic reading resource. For example, once Jeremy had established who the characters were, he indicated how he used the Hulk movie to access meanings about the history of the relationship between Hulk/Bruce and the Abomination/Emil. Regarding this relationship, in the conversation above, I asked, 'Why is he fighting his friend?' Jeremy responded by saying, 'Because he wasn't like that and he didn't used to have problems. But they put some stuff on him and it made him change. I saw the movie.' He thus used the movie as a whole as a backdrop, as well as the specific aspect of the movie relating to the origin of Bruce and Emil's ability to change into monsters, in order to specify the history between these two characters and the reasons why they would battle one another.

Video games have a highly visual character, but they are also characterised by sounds and music, and so I categorised them as multimodal resources. Video games also have varying degrees of text and numbers that are used to record player actions and the outcome of the game, and are played using hand-controlled devices. They are thus also realised through the gestural mode as the player interacts with the game. Movies are highly visual in character, though are more accurately described as multimodal, since they are comprised of images (moving) and

**Table 3. Multimodal and kineikonic semiotic reading resources used by Jeremy during the focal reading event.**

semiotic reading resource	mode	origin	uses
Hulk movie	kineikonic	watching movie at home	used to identify Hulk
segments of Hulk video game relevant to reading juncture	multimodal	playing video games at home	used to identify friendship between Bruce and Emil
segments of Hulk movie relevant to reading juncture	kineikonic	watching movie at home	used to identify why Bruce and Emil change forms, and why the Abomination can't change back into his human form
Hulk video game	multimodal	playing video game at home	identification of Hulk, the Abomination, and their probable actions

sound. Since films synthesise more than one mode in this way, Burn and Parker (2003) have suggested 'a new term for the mode of the moving image, then – the kineikonic, from the Greek words for *move* and *image*' (p. 59). Table 3 summarises additional semiotic resources that Jeremy used while reading multimodally. These included the Hulk movie and video game, which were whole kineikonic and visual/multimodal texts that originated from elsewhere, but were used during the reading event. He also drew upon more discrete aspects of these texts, such as specific segments of a Hulk movie and segments of a Hulk video game that were relevant to the reading juncture. Table 3 also characterises each of these reading resources according to its mode, origin, and uses during the reading event.

### Conclusion

In this article, I have illustrated how Jeremy arranged and assembled both internal and external reading resources. He combined visual resources with linguistic, multimodal, and gestural resources to form a semiotic resource complex through which he constructed his interpretation of the text at this particular juncture in his reading. Semiotic resource complexes, which students use in the construction of their interpretations of the text being read, occur at distinct junctures in a student's reading processes, and are centred around a particular node of meaning such as the relationship between Hulk and the Abomination that Jeremy considered. Semiotic resource complexes are thus emergent and socially constructed conglomerations of meaning are used by the reader in the process of constructing an 'orchestrated' (Kress, 2010; Mavers, 2007) understanding or interpretation of the text overall as a multimodal ensemble in its own right. Jeremy's reading processes can be used as a heuristic for insight into how part of the process of reading involves accessing

the relevant multimodal resources, then bringing these resources into relation with one another in the form of semiotic resource complexes – thus multiplying the meaning potentials out of which interpretations can be produced. Figure 1 presents a visual representation of the semiotic resource complex that Jeremy constructed at this juncture in his reading. This figure illustrates how Jeremy integrated multimodal, kineikonic, gestural, linguistic, and visual semiotic resources of multiple types as he interpreted the comic book around the node of meaning having to do with the relationship between Hulk and the Abomination, and their related actions. The individual resources that were part of this semiotic resource complex are featured around this point of integration, and are grouped according to mode.

The multiple semiotic resources from across modes that are evident in Jeremy's semiotic resource complex, featured in Figure 1, entered into a synergistic relationship with one another in a way that multiplied Jeremy's interpretive capacity. This insight resonates with research that has looked at the ways that images and texts interact as students read multimodally (Chan & Unsworth, 2011) and efforts to characterise the relations between text and image in multimodal texts, though not focusing on reading processes, specifically (Chandler, 2010; Daly & Unsworth, 2011). For example, Unsworth & Cleirigh (2009) have studied the multimodal reading of texts that involve both images and writing, elaborating on the ways that these two modes interact in order to produce 'the synergistic construction of meanings that cannot be derived from either mode separately' (p. 159).

Several further pedagogical implications follow from these insights provided by a social semiotic approach to early multimodal reading processes. For example, during reading conferences or in small reading groups, teachers can attempt to get



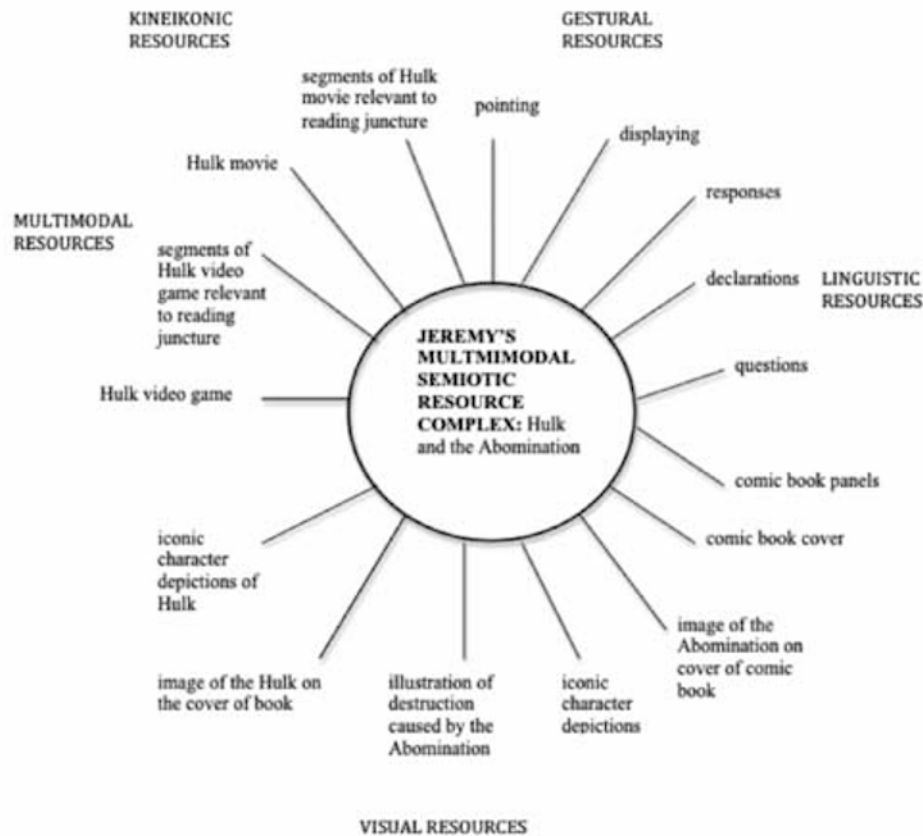


Figure 1. Jeremy's multimodal semiotic resource complex at the focal reading juncture.

a mental picture of students' unfolding semiotic resource complexes. Asking students to discuss their reading and reading processes can be seen as a way of bringing inner semiotic resources to the surface or into play during the reading event. Such a process can also lead to possible insights about which semiotic resources might also be provided to the student in order to fill out the available semiotic resource repertoire for making sense of any given text. Through such multimodal reading processes, young students who are emerging in their literacies can learn that reading is a process of constructing meaning from as many possible sources of information as possible in order to establish a comprehensive understanding of a text. This article also points toward the importance of discussion while reading as key to students and teachers being able to identify and access available semiotic reading resources. Since much of what happens during reading is internal, discussion (amongst readers, like Jeremy and Noel) is essential so that semiotic reading resources can surface and then be pedagogically framed.

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