



Contemporary Adolescent Literature and Culture

The Emergent Adult

Edited by

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Brain and Behaviour: The Coherence of Teenage Responses to Young Adult Literature

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“The teenage brain” has been a favourite topic of popular writers since the turn of the twenty-first century.¹ Television programs, news features, and radio talk shows have joined ranks with popular science magazines to tell the public about the adolescent brain. These stories suggest that hormonal explosion, sleep deprivation, neuron-pruning, and multiple developmental demands on the teenage system combine to mean that adults must somehow find a way to take charge of what is going on inside the teenage brain. Such news blasts invariably focus on what teenagers do not do, no longer do, cannot do, and what they therefore must have by way of both stimulation and restraint from parents and educators. Centred somewhere in these blasts comes a reminder of the long and consistent history of worrying about how, when, and what young people read or why they do not read or how when they do read they do so in ways that make adults cringe. These defamations of teens have come along with an increasing number of studies that point to the competition for time and resources that electronic media offer adolescents who might otherwise commit to reading. Research reports on the effects of multi-tasking make it clear that reading and writing extended texts, such as those of Young Adult literature, will forever be incompatible with multi-tasking.²

This chapter clarifies some popular-press claims about the “teenage brain” and points to the difficult nature of research on the human brain when subjects are engaged in complex cognitive tasks such as reading. The gist of our argument echoes that of many scholars in the neurosciences: no brain study, especially when reported in the popular press, should be simplified and transformed into implications for practice in other fields.³ The first section of this chapter provides an

¹ See, for example, Feinstein, S.G. *Secrets of the Teenage Brain*. Thousand Oaks, Calif.: Corwin, 2009.

² A useful summary is provided by Wallis, Claudia. *The Impacts of Media Multitasking on Children is Learning and Development: Report from a Research Seminar*. New York: The Joan Ganz Cooney Center at Sesame Workshop, 2010.

³ For a summation of where neuroscience and reading research stand in relation to one another, see Hruby, George. C., and Usha Goswami. “Neuroscience and Reading: A Review for Reading Education Researchers.” *Reading Research Quarterly* 46, no 2.4 (2011): 156-72.

overview of findings regarding brain maturation and cognitive development during adolescence. The second section reviews behavioural evidence on adolescents as they read and reflect on “their” literature — the world of Young Adult fiction. Here we examine anthropological studies of how young adult readers behave in their reading. What do they do with the book in their hand and their eyes on the page? How do they view the book, their reading, and ways of making meaning?

For more than a decade, Heath and Wolf have studied how young people who work in collaboration with adults in theatre, literary reading and writing, and community development projects perceive and shape their own pathways of learning. We have worked with a team of young ethnographers who spend long periods of time hanging out with adolescents while they are engaged in activities outside their hours in school or with their families. We have learned much about what young people do, how they view their own competencies, what they believe they need and want from adults, and how they use language.⁴ The findings we report here relate primarily to what and how adolescents read the literature written for and by teenagers. The chapter needs a brief word about what may seem the odd combination of findings from the brain sciences with research studies done by anthropologists. Heath first became interested in cognitive neuroscience nearly a decade ago when she wanted to push beyond the behaviours of young people recorded through longitudinal observation and participation and interviews to understand more fully what happens as young people learn during those times when they themselves voluntarily undertake cognitively demanding tasks such as reading Young Adult literature. The desire to push beyond observable behaviour to brain behaviour led to the need to stay abreast of findings from the neurosciences.

Wolf’s interests in young people and the arts immersed her in youth theatre, visual arts, and the lives of adolescent readers of Young Adult fiction. She undertook a longitudinal study of young readers in a public library located in an urban centre in northern California. The specific site of her ethnographic research was a section in the library dedicated to Young Adult literature. Here young people were welcome at all times and were expected to review, help select, and take some operational responsibilities for this part of the library. The population of young people who frequented this library on a regular basis included homeless youth, dropouts, irregular school attendees, star academic performers, and students who saw school as part of their lives, to be sure, but not as the most important thing in their lives.

⁴ A perspective on how older children and teenagers in Working-class families changed their views on these matters between 1981 and 2011 is given in Heath, Shirley Brice. *Words at Work and Play: Three Decades in Family and Community Life*. Cambridge: Cambridge University Press, 2011.

Mapping brain maturation

Commonly claimed in the popular media in the first decade of the twenty-first century was the “synaptic pruning” said to happen during adolescence. However, no simple picture emerges from fMRI studies that show that the volume of cortical grey matter and cortical thickness decreases while white matter increases, bringing greater intra-cortical connectivity. Specifically, fibres that connect Broca’s region with Wernicke’s speech region increase. Though more studies remain to be done on the behavioural implications of this increase in connectivity, we can observe that adolescence is a time of increased potential for linguistic fluency and range of genres. Following functionally from the gains in white matter may well be the increased ability of older children and adolescents to share information more rapidly and efficiently between the fronto-cortical circuits and the frontal cortex and other cortical and subcortical regions. In comparison with younger children, adolescents can handle more difficult semantic structures for meaning-making, a skill especially critical in reading, a cognitive process that in contrast with listening requires activation across a greater number of cortical areas.⁵

Methodological challenges confront neuroscientists seeking to improve their understanding of how structural and functional maturation of neural pathways work together for highly complex tasks such as reading. A critical question is whether repeated use of a given structure in the brain leads to morphological change. This question in turn relates to sociocultural factors (e.g., familial and peer-related) that influence frequency, types, and models of reading and readers as well as contextual supports for oral language development in genre variation, metaphor usage, and shifts in key (e.g., irony, parody).⁶

Structural changes such as those examining both the relationship between growth in white matter and grey matter and increases in myelination of cortico-hippocampal relay pathways may be relevant for functional processes that underlie social cognition. For adolescents, these centre in “executive” functions that relate to working memory and response inhibition — both of which are repeatedly and richly illustrated within Young Adult literature, as are emotion-related

5 Broca’s area is usually associated with language output or the production of language, while Wernicke’s area is associated with the processing of language input. For many years, scientists thought of these two areas as distinct regions. However, research in recent years has shown the extent of their interconnectivity through bundles of nerve fibres that increase with maturation. Paus, T. “Mapping Brain Maturation and Cognitive Development During Adolescence.” *Trends in Cognitive Sciences* 9, no 2 (2005): 60- 68; Berl, M.M., E.S. Duke, J. Mayo, L.R. Rosenberger, E.N. Moore, J. VanMeter et al. “Functional Anatomy of Listening and Reading Comprehension During Development.” *Brain and Language* 114, no 2 (2010):1 15-25.

6 For a useful summary on reading and oral discourse or extended text, see Perfetti, C.A., and G.A. Frishkoff. “The Several Bases of Text and Discourse Processing.” In *Handbook of the Neuroscience of Language*, edited by B. Stemmer and H.A. Whitaker, 165-74. Burlington, MA: Academic Press, 2008.

processes. Both structural and functional maturation have strong implications for peer-peer interactions and influences as well as for the processing of verbal and non-verbal cues that are highly critical in the social life of adolescents who constantly need to “read” signals of anger and acceptance and to make judgements about the consequences of actions.

Cognitive and social neuroscience research

Cognitive neuroscientists have led the way in trying to understand executive functions. Their studies relate to key areas of concern about both psychiatric disorders (such as depression, substance abuse, and anxiety disorders) as well as risk-avoidance and integrative understanding of action and consequence⁷ Their findings support the following general points:

- A) Young people who engage with electronic media’s micro-moments more than two hours each day are less likely to sustain visual and attentive focus than those who spend more time in direct personal interactions.
- B) Multi-tasking has a negative effect on concentration, attentiveness, and memory.
- C) Downtime for processing new experiences in learning aids retention of information and depth of skill understanding.
- D) Mobile software developers have successfully turned the entertainment world available in hand-held devices into cognitive retraining for increasingly brief intervals of focused attention. Their games encourage micro-moments of attention, rapid shifts in visual and memory focus, and reduced exposure to extended verbal texts.

The influence of social interactions behind these findings on cognitive functioning has led neuroscientists to propose a new field termed “social neuroscience.”⁸ Highly interdisciplinary, this field challenges social scientists to bring their sustained and systematic observations of oral and written language behaviours to bear in the learning sciences. Their need is especially critical with relation to visual focus, envisionment, embodiment, and emotive engagement. The following discussion suggests areas in which social and cognitive may come together as researchers seek to improve our understanding of adolescent brain development and their reading behaviours. Young Adult fiction offers a body of texts rich in potential for examining some initial linkages.

Most of us know how a young adult reader, immersed in the newest volume of a favourite series, behaves when caught in the obsessive urge to just keep read-

⁷ Paus, T., M. Keshavan, and J. N. Giedd. “Why Do So Many Psychiatric Disorders Emerge During Adolescence?” *Nature Reviews*, (2008): 947-57.

⁸ Meltzoff, A., P.K. Kuhl, J. Movellan, and T.J. Sejnowski. “Foundations for a New Science of Learning.” *Science* 325 (2009): 284—89.

ing—through calls to dinner, friends' phone calls, and homework demands. What we cannot see is the cognitive training of neural structures in the brain that take place as the reader practices the complex interdependent and cross-modal tasks involved in young adult reading. Avid Young Adult literature readers easily log the magical 10,000 hours that make them expert—a popular conclusion essayist Malcolm Gladwell gleaned from his studies of research on what it takes to make an expert. These fiction readers are simultaneously engaged in the tasks of processing extended text, sustaining visual attention, decoding and encoding “rare vocabulary” and complex dialogue, and putting together current actions with a foreshadowing of future events and consequences to come (e.g., “envisioning”). Beyond these tasks, how do adolescents, whose parents and teachers often see them as unable to follow the simplest instructions, voluntarily practice repeatedly the imaginative constructions and deciphering of maps, codes, mathematical riddles, foreign languages, and scientific information that Young Adult novels offer? Answers lie in the relationships and sense of ownership and inclusive role that these texts—whether printed-word, mixture of print and graphic illustration, or graphic novel—give readers.

Teenagers build relationships through the demands from Young Adult literature that readers foresee scenarios from given circumstances, understand character development, and invent and co-create narrative worlds that replicate the actual physical world of teenage readers. Maps, signs, emails, mixed media, multiple messages on the same point, and simultaneous (and often conflicting) narratives come at adolescents incessantly in the information age. However, ways of taking in information from multiple structured symbol systems (alphabetic, numerical, cartographic) must be learned. The interdependence of the brain's modal systems (for vision, language, motor control, balance, etc.) ensures that these ways of taking encompass image and verbal retention in long-term memory, analogical reasoning, reinstigation of skills learned in other settings, and narrative retellings of experiences. Grounded cognition is a field that takes advantage of cognitive models as well as research made possible by fMRI and related technologies that allow neuroscientists to see the neural work of different sections of the brain working in synchrony with one another. This interdependence enables humans to take advantage of specific contextual experiences (such as close involvement with another human being within guided participation) that influence attentiveness, visual focus, eye-hand coordination, and a sense of self within a variety of roles.⁹

Vision is our most efficient sense. The term “envisionment” encompasses both our ability to look and see and our capacity to perceive cognitively and to predict or envision—see in our heads—what can happen. New technologies in the neurosciences allow scientists to see that when we create images in our mind or visualize scenes, characters, or actions, memory, language fluency, and mental

⁹ Barsalou, L.W. “Grounded Cognition.” *Annual Review Psychology* 59 (2008): 617–45.

images benefit.¹⁰ Visual thinking, mental modelling, and envisionment of act and consequence in future scenarios take place in parts of the brain that work in coordination with language centres.¹¹

Taking in words means simultaneously building visual images in the head that often go well beyond what can be expressed verbally. For example, brain research shows the high overlap in neural networks between visual perception of details and mental imagery. Visualizing is essential to verbal processing. Grounded cognition enables us to move back and forth between mental images and verbal recall. In other words, “see it as you read it” is not so simple an instruction as we may think. The more frequently individual readers have either seen or done actions they read about, the more complex the mental images they build as they process words, and the more likely they are to handle analogical reasoning. It may seem curious, but young readers who are likely to say “I don’t know this word” or “what’s that word?” are those who have higher visual acuity and brain activity in the vision centres of the brain than do those who do not admit that they don’t know the meaning of a word. It seems that visually acute readers accept that they have to “look around” to figure out what they don’t know; in other words, the mental picture they create from the words they know point them to the meaning of words they do not know.¹² We see this same phenomenon working in sequence when learners say: “I can see what I want to say, but I can’t put it into words yet.”

For older readers, such as those of Young Adult literature, visual images, whether from the actual world experienced or created as mental images from words on the page, aid both memory and amplification as well as extension of verbal information. Perhaps most important, envisionment through mental images facilitates the use of mental models in problem-solving and reasoning through abstract ideas.¹³ In comparative experiments, imagery appears repeatedly to take precedence over language in developmental learning with regard to both maturational age and levels of conceptual difficulty. A picture that we form in our minds

¹⁰ Ramadas, J. “Visual and Spatial Modes in Science Learning.” *International Journal of Science Education* 31.3 (2009): 301-318.

¹¹ Suwa, M., and B. Tversky. “What Architects and Students Perceive in their Sketches: A Protocol Analysis.” *Design Studies* 18 (1997): 385-403; *The Handbook of Communication Science*, edited by C. Berger, M. Roloff, and D. Roskos-Ewoldsen. 2nd ed. Thousand Oaks, Calif.: Sage, 2009.

¹² Merriman, W.E., and J.M. Marazita. “Young Children’s Awareness of their own Lexical Ignorance: Relations to Word Mapping, Memory Processes, and Beliefs about Change.” In *Thinking and Seeing: Visual Metacognition in Adults and Children*, edited by D.T. Levin, 57-74. Cambridge, Mass.: MIT Press, 2004.

¹³ Kosslyn, S.M., W.L. Thompson, and G. Ganis. *The Case for Mental Imagery*. Oxford: Oxford University Press, 2006; Latour, B. “Visualization and Cognition: Thinking with Eyes and Hands.” *Knowledge and Society* 6 (1986): 1-40; Uttal, D.H., and K. O’Doherty, “Comprehending and Learning from ‘Visualization’: A Developmental Perspective.” In *Visualization: Theory and Practice in Science Education*, edited by J.K. Gilbert, M. Reiner, and M. Nakhleh, 53-72. London: Springer, 2008.

of a concept, scene, or sequence of actions hangs in memory more efficiently than do words of text. In other words, a picture is worth a thousand words, and a picture is all the better when it is a picture created in the reader's mind from words as well as experiences recalled.

Once visually perceived, details tend to transform as depictive and abstracted in both working and long-term memory. This means that making images in the mind (or through active drawing or using other means of visually rendering or representing these images — doodling, sketching, building models, for example) as one reads words on the page helps readers remember and later verbalize what they have read. This boost in memory power works for both depictive material and abstract ideas.¹⁴ Young Adult books increasingly take advantage of this aspect of cognitive learning by using maps, graphic design, and codes that make clear authors' expectations that young readers will carry these visual images in their heads as they read the verbal text.

Authors also expect readers to grasp actions conveyed through words on the page by seeing ahead of the actions described in words on the page. Readers must "see" current actions in order to look ahead to create future scenarios and to visualize possible narrative trajectories. Modal overlapping in the brain enables readers to develop pictures in their heads of what they have not seen. These often become quite fixed — so much so that when Young Adult books become movies, young readers object strenuously to filmmakers' visual images. For readers, the images they create in their own heads as they read can become what cognitive scientists sometimes term "future memories." These enable readers to see ahead in order to foretell and forecast events and consequences that may follow actions currently underway in the text. Cognitive neuroscience makes clear how important this "looking ahead" is for memory and for internal plan-making and mental monitoring.¹⁵

Simulation complements the envisioning that readers do along the way. When successful readers see text that describes an action, they embody the action, simulating associated movements deep within the neural structures of the brain. Humans (along with other higher order primates) have mirror neurons that enable motor neurons to register or simulate an action either physically seen or mentally envisioned while reading about or hearing descriptions of actions. Motor neurons mirror actions we observe attentively. When outside observers watch readers engaged with written texts, it is not possible to see any evidence of actual movement of body parts in the silent still reader. Yet fMRI technology tells us that motor neurons are activated when readers take in information that conveys motor actions.

¹⁴ Intons-Peterson, M.J. "Imaginal Priming." *Journal of Experimental Psychology: Learning, Memory and Cognition* 19, vol 1 (1993): 223-35; Ramachandran, V.S., and E.M. Hubbard, "Synaesthesia: A Window into Perception, Thought and Language." *Journal of Consciousness Studies* 12 (2001): 3-24.

¹⁵ Ingvar, D. "Memory of the Future: An Essay on the Temporal Organization of Conscious Awareness." *Human Neurology* 4/3 (1998): 127-36.

For example, mental rotation of visual objects is accompanied by motor simulations in the brain in making these objects turn. Linkage between visual imagery and the motor system supports theories of language comprehension (a view increasingly evidenced in the work of reading researchers).¹⁶ The modal structuring of the brain enables simultaneous neural work of simulation, situated action, and bodily states. The cognitive work of understanding, “seeing,” or “perceiving” the verbal text does not get accomplished without grounding in simulation, the situating of actions in line with foreshadowing and contextualising, and the sensing of the bodily states of characters behind and within actions.

Though theatre companies that work with young people in the writing and enacting of their own stories may seem to have more claim on embodiment than does Young Adult literature, it is critical when we think of young adult readers to note that their verbal renderings of what they have read, as well as their translation into comics, maps, and visual illustration of any kind, demonstrate the extent to which spatial arrangements and movements through space figure in their memories of these works. Young Adult literature relies on words showing the movements of bodies — on the ground, through the air, and even within the dream images of characters.

Young readers also identify emotionally with characters, creating a sense of the “joint attention” of reader and character on the same situation. Thus as adolescents read, they benefit from the “double exposure” of reading about what someone else does, thinks, or feels and seeing this as being “the same as me.” This doubling is important for Young Adult literature readers, because behaviours in the textual world that they perceive as “like me” serve as proxy for their own behaviours without the inefficiency and dangers involved in their actually taking the risks that literary characters may pursue.

Neuroscientist Anthony Damasio first alerted the field of cognitive neuroscience to the heft that emotional engagement gives to memory, adaptation of what is seen and heard, and facility in developing future scenarios for action of the self.¹⁷ As adolescents recruit what they see, experience, and sense as they read, they bring to bear the worlds of acting, thinking, and feeling with which they identify. Thus they make use of human resources for both reasoning and feeling their way through new tasks and new settings. Young Adult literature, as much or more than most resources upon which adolescents call in their leisure time, facilitates much-needed practice in fundamental cognitive behaviours: envisioning and embodying for positive emotional fuelling. Neuroscientists stress the power of the social nature of environment on cognitive responsiveness. Information is

¹⁶ Speer, N.K., J.R. Reynolds, K.M. Swallow, and J.M. Zacks. “Reading Stories Activates Neural Representations of Visual and Motor Experiences.” *Psychological Sciences* 20.8 (2009): 989-99.

¹⁷ Damasio, Anthony. *Descartes’ Error: Emotion, Reason, and the Human Brain*. New York: Avon, 1998; Damasio, Anthony. *Looking for Spinoza: Sorrow, and the Feeling Brain*. Orlando, Fla.: Harcourt, 2003.

less stored than situated in bodily patterns and senses remembered and projected. “Future memories” enable readers to envision, embody, and reason about future actions by remembering affordances that environments or situations have given them or could provide. The modalities of the brain work as dynamic systems.

As adolescents read, they collect envisionment, embodiment, and emotive engagement toward goals self-derived and adopted. Adolescents make clear in their reports of processes of which they are aware during their reading that they bring their intuitive ideas to bear. These ideas work as productive resources from which more systematic and integrated knowledge come as they reorganize existing pieces of knowledge in line with additional information that is “like me.”¹⁸ The large, complex mental structures that coordinate activation of specific knowledge according to context are termed “coordination classes.” Conceptual understanding, looked at through this theory, amounts to knowing how to see concepts in action in order to learn how to look at the right things and to make correct inferences. As young adults learn to do this, they need representations of actions and consequences that “stand still” (as written texts do) so that they can return to these scenes again and again or through reading books in a series. They need to see and see again specific aspects of a phenomenon or concept, and each time they return to a literary text, they see something different and thereby increase their integration of knowledge.¹⁹ “Conceptual ecology” — the ability to make ideas portable by making them visible for testing against intuitive ideas and grounded action — is what cognitive science terms “a good idea.” This back-and-forth between what characters in Young Adult literature have experienced, want to experience, or could experience (and feel) supports adolescents in developing and testing their own intuitions and considering their own actions. Young Adult fiction readers do this best by relating (that is, developing a relationship with) and re-lating (internally comparing as well as talking with other young adult readers). Relating means participating.

No one knows this better than Young Adult literature readers.

Young Adult literature readers in action

In this second portion of this chapter, we show how adolescents in their behavioural interactions with Young Adult literature put their neuronal capacity for envisionment and embodiment into play. The changing conventions of Young Adult texts draw readers in, and the publishing industry responds to how, when, and

¹⁸ DiSessa, A. “Meta-representation: Native Competence and Targets for Instruction.” *Cognition and Instruction* 22.3 (2004): 293–331; DiSessa, A., and B. Sherin. “What Changes in Conceptual Change?” *International Journal of Science Education* 20, no. 10 (1998): 1155–91; Pamafes, O. “Self-generated Representations for Promoting Conceptual Understanding.” *Proceedings of the Chais Conference on Instructional Technologies Research* 2009. Raanana: The Open University of Israel, 2009.

¹⁹ Scherz, R., and S. Oren. “How to Change Students’ Images of Science and Technology.” *Science Education* 90 (2008): 965–85.

what their readers want. Of primary importance to Young Adult fiction readers is the ability to form social relationships through participating with the characters, plot, and strategies of texts. In what follows, we lay out the features of Young Adult literature that make possible the relationship-building that forms the foundation of readers' participation with the texts they read and write.²⁰

The most obvious feature relished and required by teenage readers is the reordering potential of Young Adult literature. Adolescents take charge of the order in which they will read their books. They want their books to be written so that they may replace the traditional story order of beginning, middle, and end with any one of several means of reordering how events turn out. In Young Adult literature reordering, young readers take control of aspects of both the sequencing and the scope of emergence — their own and those of the characters and actions in the books they read. For example, they do so when they read the endings of books first. Adult readers often see the get-the-ending-first as a form of cheating or evidence of refusal to delay gratification. Teenage readers see this reordering as a way to sharpen their critical perspective on the book. Holding the end in mind, they read and assess “lead-up” elements, asking “Does this fit together?” Such critical reading leads these readers (in general) to assess the first book in almost every series as the best. One young reader had this assessment of the second book in the series in which *The Hunger Games* was the first volume: “In *The Hunger Games*, she [the author Suzanne Collins] tied it all together, but in the second, she was too rushed. It was confusing, and in some parts I didn't get it.”²¹ This young reader hastened to express confidence that the author would get “things straight” by the third book.

Authors of Young Adult literature take note of the fact that the reordering potential must be in place and is likely to be invoked by an end-first approach. In John Green's endnote to *An Abundance of Katherines*, he writes: “The footnotes of the novel you just read (unless you haven't finished reading it and are skipping ahead, in which case you should go back and read everything in order and not try

²⁰ Young Adult works cited in this section: Collins, Suzanne. *Hunger Games*. New York: Scholastic, 2008. Rowling, J. K. *Harry Potter and the Chamber of Secrets*. New York: Scholastic, 2000. Green, John. *An Abundance of Katherines*. New York: Dutton, 2006. Taylor, Lani. Lips Touch, Three Times. New York: Scholastic, 2009. Rosoff, Meg. *How I Live Now*. New York: Random House, 2006. Chambers, Aidan. *Postcards from No Man's Land*. New York: Random House, 1999. Johnson, Angela. *The First Part Last*. New York: Simon & Schuster, 2003. Tolkien, J.R.R. *The Hobbit* (1937). New York: Houghton Mifflin, 2007. Larsen, Rief. *The Selected Works of TS. Spivet: A Novel*. New York: Penguin Books, 2009. Anderson, M.T. *The Astonishing Life of Octavian Nothing, Traitor to the Nation, Volume I: The Pox Party*. Cambridge, Mass.: Candlewick Press, 2006. Meyer, Stephenie. *Twilight*. New York: Little, Brown, 2005. The Harvard Lampoon. *Nightlight, A Parody*. New York: Random House, 2009. Dokey, Cameron. *Beauty Sleep*. New York: Simon & Schuster, 2002. Campbell, Patty. “The Sand in the Oyster.” *The Hornbook* 69, no 6 (1993).

²¹ Collins, *The Hunger Games*.

to find out what happens, you sneaky little sneakster) promise a math-laden appendix. And so here it is.” An additional example comes in the volume *Lips Touch Three Times* by Laini Taylor. This book, mixing text and graphic illustration in three sequenced clumps, tells the story first in graphic form, thereby revealing ending before beginning — of the written text version, that is. The volume also takes advantage of the reality that when we read stories several times over different periods of time (and in different modes), we perceive how the “real” story or plotline or moral can be read differently each time. Thus the graphic “fronted ending” of *Lips Touch Three Times* does not truly capture any finality about what the textual version may reveal. The reverse is also true.

Meg Rosoff, author of *How I Live Now*, captures the end at the beginning, while also noting through reminders of “supposedly,” “mostly,” and “can’t remember much” that we never “actually” relive or accurately remember what happened before, even if we “know” the ending. She writes in the opening pages: “But the summer I went to England to stay with my cousins everything changed. Part of that was because of the war, which supposedly changed lots of things, but I can’t remember much about life before the war anyway so it doesn’t count in my book, which this is. Mostly everything changed because of Edmond. And so here’s what happened.”

Young Adult literature honours the reordering penchant of its adolescent readers through the frequent use of flashbacks (e.g., *Catcher in the Rye* and *The Outsiders*). This device enables authors to foretell as well as to foreground. Patty Campbell, a Young Adult fiction librarian and columnist for *The Horn Book Magazine*, suggests that the generic happy ending of children’s literature grows up and becomes more complicated in Young Adult literature. She tells us that this literature offers “endings that read as beginnings.” Campbell further argues that while clear-cut “happy” resolutions are no longer guaranteed (and indeed may be frowned upon) by Young Adult literature readers, they want to look forward and see development. But we would also add that they acknowledge as well the fact that chance plays a big part in dislodging paths of development for many teenagers. Thus acceptance and adaptation, as well as invention of creative solutions (often through magic realism, science fiction, fantasy, or dreams), come about for young adult characters.

A second means by which these adolescent readers manage their reordering is by putting into place their own navigational routings through Young Adult novels. The case of Cathy, a sixteen-year-old secondary school student illustrates this point. On the day the book group met to critique Aidan Chamber’s novel *Post Cards from No Man is Land*, Cathy stood out as casting the most enthusiastic vote for the title (which went on to win both the Printz and Carnegie awards). While her peers found the book “wordy” and “confusing in the way its chapters bounced back and forth between historical eras and characters,” Cathy prized the book for its dual narration. She explained: “At first, the flashback chapters threw me. So then I decided to just read the teenager’s chapters, the chapters that the modern teenager tells Then I went back and read the chapters from the elderly lady ... At

first I thought I would forget stuff, but this way it really stuck in my mind. It let me see how both the characters were really questioning themselves about life.”

Aidan Chambers alternates between a contemporary teenager’s point of view as he travels through Europe and an elderly woman’s point of view as she flashes back to memories of when she was young during the war. When this order doesn’t work for Cathy, she reorders the narrative to her liking. While Chambers’ choice to alternate between these two characters gives a particular structure to his novel, it also allows, even makes it easier, for readers to enter into and travel through the narration on their terms. A further example comes in the volume *The First Part Last*, by Angela Johnson. Seemingly titled to entice alternative-direction Young Adult literature readers, the novel explores a character often ignored in Young Adult literature and beyond — the teenage father. The slim novel begins with a two-page passage labelled “Now,” followed by another two-page passage labelled “Then.” Passages switch between the *now* after the birth of Bobby’s daughter and the *then* passages before the birth.

A third means by which these readers manage their reordering within their readings comes through the, often unchallenged, dominance and authority teenagers claim over language, mathematical tricks, and the science in science fiction. Young Adult books often seem to adults to have too much fantasy, too many complex science fictive worlds, and an excess of secret codes, formulae, maps, and languages. But we might consider the alternative view that Young Adult fiction readers enjoy donning the mantle of authority for fictive worlds in which they can draw on mathematical, geographic, and scientific reasoning.

Consider the case of Ryan, an eighteen-year-old who dropped out of his urban high school at the age of sixteen and elected to take courses at a local community college in topics and subjects that interested him. He was an avid fantasy reader, who saw Tolkien’s works of the *The Hobbit* and *Lord of the Rings* trilogy as the gravitational centre and standard-bearer for all fantasy. Ryan took every opportunity to draw *The Hobbit* into his conversations, wanting to let others know that he spent significant amounts of time learning the fictional language of Elfin that Tolkien created for his characters. In interviews with anthropologist Wolf, Ryan directed her attention to one of the first pages of *The Hobbit*, where Tolkien writes what reads like a historio-linguistic description of the made-up language, complete with an invented “transcript” of a salvaged portion of its alphabet. Tolkien issues his readers the challenge of cracking the code of Elfin and becoming fluent in this fictional language, a challenge Ryan was proud to have met. It is a written rather than a spoken language, and Ryan showed Wolf the loose-leaf notebook he filled with his Elfin writings, which he explained as illustrating his progress from novice to expert. For the Tolkien books, Ryan could easily turn to text portions in Elfin and translate these into English.

The draw of co-texts is not lost on publishers. *The Selected Works of T.S. Spivet* by Reif Larsen, a volume published to much acclaim in England, Germany, and the United States in 2010, uses maps created by a young boy. It is not possible to read the printed words without also reading deeply into the maps, for without

these, no meaning can be gleaned from the written text. The popularity of this book, marketed entirely for the adult market, may well have come from readers who recall mapping the worlds of Tolkein as teenage readers. All such maps, partial as they are, subscribe to Herman Melville's dictum from *Moby Dick*: "It is not down in any map; true places never are." Maps offer their own narratives, just as do the many other genres collaged into Young Adult novels: emails, letters, diary entries, newspaper articles, receipts. In recent years, the two volumes of M.T. Anderson's *Octavian Nothing* have engaged some Young Adult fiction readers who report that they enjoy the challenge of interpreting multiple modes along with conflicting narratives in order to create their own sense of outcome or ending.

A fourth means by which Young Adult literature readers manage their own reordering comes through the repeat reading habits of adolescents. They read the same types of books repeatedly, and they also read the same individual books again and again. When Wolf asked a teenage reader who seemed to be complaining about "It's just the same genre over again," why he read the same kind repeatedly if he did not like knowing how it would all turn out, he replied vehemently: "But that's not it. You don't know. The books go at it the same, but I like to make them all different in my mind by mixing up what happens in the ones I've read lots." He knew why he liked what seemed to others a punishing redundancy over which he could assume complete control for creating newness.²²

When adults see their adolescent children reading the same books again and again, they often question such repeat reading just as they do reading the endings first. Are teenage readers stuck in certain genres, unwilling to challenge themselves with new reading experiences? Could they be simply doing what comes easily now that they have done the same thing over and over? Adolescent readers see repeat reading differently. They see it as a means of creating close-up and personal relationships. They see their repeat readings as comforting, building their expertise as readers digging deeply into meanings, memorizing certain passages, knowing character traits and idiosyncrasies. With this expertise, they negotiate their roles and status within specific reading communities where this kind of knowledge is prized.

The Harry Potter series allowed, even encouraged, repeat readers. If the first wave of the Harry Potter effect brought young readers (children with the first volumes, teenagers with the later volumes, as Harry himself becomes a teenager) out into the open, proud to carry around long books in public, then the second wave of the Harry Potter effect spotlighted young readers proud to have read the books more than once. Why now? Teenage readers say they take up these books a second time or more for several reasons: to prepare for movie viewing or reading

²² Similar points about repeat and genre reading are considered in John G. Cawelti's *The Six Gun Mystique*. Bowling Green, Ky.: Bowling Green Press, 1975; David Hajdu's *The Ten-cent Plague: The Great Comic Book Scare and How it Changed America*. New York: Farrar, Straus and Giroux, 2008; and Janice Radway's *Reading the Romance: Women, Patriarchy & Popular Literature*. Durham: University of North Carolina Press, 1984.

of a next instalment in the series, to spot re-read to be ready for interactions with other Harry Potter readers, to play Harry Potter trivia with friends and parents, to communicate in Harry Potter chat rooms and on Harry Potter internet social sites, and to secure bragging rights by knowing the most esoteric fine-grained detail about a particular character or event.

Two further notes on the behaviours of teenagers as they read are especially relevant as technologies and multiple media seem to be taking over the world of the book. Apple created in 2011 a virtual bookstore that provided not only text, but also pictures that unfolded, characters that talked, words that could pronounce themselves, and music. Many wonder if this kind of digital interactivity will engender mental passivity and further the inclination of the young to want to be entertained passively rather than to undertake the kind of active engagement with young adult reading we have laid out here. Foretelling this future is best done by looking not only at surveys of the reading habits and preferences of the young, but also by studying closely what they do with reading.²³

How Young Adult literature readers relate to single titles and to rewrites/ re-workings of classics may give some indication of what they will do as options for representing stories increase. Single titles have capitalized on the popularity of re-reading within the adolescent realm. Traditional or nostalgic readers may assume that having read one version or form of a story, a reader may not feel the need to read any other. These literature readers would not agree, since they see that different versions of the same text offer ample rereading and relationship-building opportunities. The mega-best seller *Twilight* by Stephenie Meyer comes in multi-modal ways: Young Adult fiction readers can read the original novel (544 pages of text), listen to the audio reading of the novel (at 12 hours and 52 minutes), read the graphic novel (224 pages of pictures and text), watch the movie (121 minutes), and read the satire novel, *Nightlight* (160 pages).

These readers view fairy tales, as well as the best-known works of writers such as Jane Austen or Charlotte Bronte, in the same way as allowing different channels for rereading — even in parodic forms. Consider the case of Willow, a thirteen-year-old Young Adult fiction reader who frequents her urban library and dresses in ruffled skirts, lacy scarves, and strings of pearls along with her combat boots, shaved hair and safety pin earrings. As her fashion style might suggest, Willow is a reader of fractured fairy tales. Willow reports having read “all the fairy tales” as a child, and she now enjoys reliving her own childhood memories in rewoven Young Adult novels. Beyond triggering nostalgia, Willow enjoys encountering the new: new motivations, new personality components, new kinds of magic, new tests and trials.

Willow engages with reconstructed fairy tales in a particular way. She reads forward into the novel looking for the places where the new story “surprises” her. When it does, that’s a good thing; Willow sees herself as someone who knows

23 See, for example, Gutnick, A.L., M. Robb, L. Takenchi, and J. Kotler. *Always Connected: The New Media Habits of Young Children*. New York: Joan Ganz Cooney Center and Sesame Street, 2010.

fairy tales “inside out, in (her) sleep,” as a reader who has “pretty much seen it all in fairy tales,” and so is a reader who is especially challenging to surprise. Once surprised, she reads backwards, collecting literary verification that the new information actually “fits” into the framework of the original tale. Willow explained what she meant by “fit”: “The author can’t just stick something in there, just to be crazy. It has to, you know, *fit*. It has to, you know, keep with the things that *have* to happen in that fairytale.”

To critique whether a Young Adult author has been successful in both fracturing and reconstructing a favourite fairy tale, Willow re-reads the re-told tale, and also reads back into the original tales — in her own extensive collection, and into library versions of “originals,” such as Andrew Lang’s colour-coded fairy volumes, Hans Christian Andersen’s text, and tales of the Brothers Grimm. She scours the original tales, both text and graphics, for any small hints that might suggest the turn the contemporary Young Adult writer has taken. If she can find such a clue, a symbol, piece of foreshadowing, or subtle motif, that too is a good thing. It tells Willow that the author of the fractured tale read the original “so, so up close” that she saw something that even Willow did not see.

Willow favours the fractured fairy *Beauty Sleep* by Cameron Dokey, and she explains the many things she likes about this adjusted version. She likes that it offers a “finally” plausible explanation of why Aurora pricks her finger on her sixteenth birthday. Many traditional tellings have the King and Queen leave the castle and their daughter unsupervised for that day — a device that always bothered Willow. Why would her parents forget that it was her sixteenth birthday? Willow likes that she can see through the first person narration of Dokey’s novel into what the Princess is thinking, and that she can see the seeds of independent, defiant thinking. In this retold tale, Aurora will ultimately choose to prick her own finger to manipulate the spell against her father’s wishes in order to save the kingdom. And her plan will succeed. Willow likes most of all that this new revelation about the story “fits” into the confines of the original tale about a royal baby born to a fated spell. Willow takes new meaning from her favourite childhood fairy tale: it is possible to transform fate into agency; adolescence has a dark and powerful relationship with magic; and, finally and perhaps best of all — good things can happen when teenagers rebel against their parents.

When Young Adult literature readers take up a series or “follow” (as Willow does) certain aspects of this literature, many do so through loyalty to a particular sub-genre (such as fairy tales), but more often to specific characters (rebellious teens) and, in some cases, to particular authors. In their descriptions of the characters they follow and sometimes seem to adopt from their readings, teens often speak as though through the mind of these characters. They speak with empathy or a sense of the ethical choices that teens face in handling relations with adults (especially parents who abandon, mistreat, or ridicule their children). In their Young Adult literature reading, teenagers “rehearse” the talk of hard choices, deliberated decisions, and rough challenges in forming and sustaining the most common relationship — that between parent and child — assumed to be the norm in modern nations.

Conclusion

To pull together what we have said about brain development during adolescence and habits of reading that teenagers follow, we conclude with the views of author Ursula Le Guin. She expresses a point of view that offers a guiding principle for scholars and educators to consider as they follow the on-going research of neuroscientists and social scientists.

I believe that all the best faculties of a mature human being exist in the child and that if these faculties are encouraged in youth they will act well and wisely in the adult, but that if they are repressed and denied in the child they will stunt and cripple the adult personality. And finally, I believe that one of the most deeply human, and humane, of these faculties is the power of imagination.²⁴

Brain maturation makes the envisionment, embodiment, and empathy that readers of Young Adult literature bring to bear in their reading possible. Together, these give the cognitive insights and social foundations critical to adolescents' development of judgement and foresight. These in turn benefit from the rehearsals and mental practice that result from the "power of imagination" that Young Adult reading expects.

²⁴ Le Guin, Ursula. *Essays on Fantasy and Science Fiction*. New York: Putnam, 1979, 44.