CRITICAL THINKING AND THE LEARNING COMMONS

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In an April 2010 article, "Libraries Reinvent Themselves to Serve Digital-Age Students," Thomas K. Grose examines the role of libraries today in that most pragmatic of disciplines, engineering education:

> Libraries - especially those catering to today's tech-savvy engineering students - are so last century, right? ....don't rule out libraries yet- they're more popular than ever before and are configuring themselves anew to remain relevant. The Grainger Engineering Library at the University of Illinois, Urbana-Champaign, had 750,000 visitors last year, 50 percent more than 15 years ago, when it had newly opened. .... Libraries are prospering by adjusting to the times, providing students unique and valuable services. "We have seen a sea change in technology," says William Mischo, head of the Grainger's information center. "Our philosophy is the library is a place and a function." ..... few students arrive on campus with the skills necessary to find their way through billions of bytes of research and reference materials. Librarians are there to guide them through those digital mazes and to teach them the skills needed to do it on their own (Grose, online.)

All of these successes, as William Mischo says above, depend on seeing the library as "a place *and* a function." [Italics ours] This new model of library as "Learning Commons" engenders a library that is a place containing a lot of bits and bytes: books in Dewey categories, databases, reference, dvds, podcasting and videocasting equipment, overhead projectors and whiteboards, group tables, individual carrels, and Google. In a school library, however, few students and few teachers know how to put these bits together on their own to create meaning. They think that is the teacher-librarian's job, not theirs. So, the challenge for schools and for the teacher-librarian is to educate students, teachers and administrators to work together to 1) examine the properties of new technologies to determine *appropriate use* and 2) to model pattern recognition and

critical thinking in today's electronic environment.

To help libraries and schools to do this, the authors are suggesting that two tools learned from Marshall McLuhan can be very useful. The first tool is called "figure-ground analysis" and the second tool is an arts-based cultural mapping tool; both tools analyze the structure of a situation. We suggest that if teachers and teacher-librarians were to learn and model the use of these analytical tools school-wide, critical thinking and questioning would be easier and more fruitful for everyone in this age of information overload.

WHAT IS FIGURE/GROUND ANALYSIS?

These terms, adapted from Gestalt psychology, give a language to use in the study of media and perception.
Both *figure* and *ground* are products of human awareness: they do not exist apart from human awareness. At any moment, what one notices or pays attention to is, by definition, a *figure*. *Ground* includes all the other possible figures *at that moment*. (It does not include things to which one cannot pay attention, such as things going on across town.) *Figure* is the area of attention; *ground*, that of inattention. So *ground* includes everything that is present to one's perception, but which one does not notice consciously. Inevitably, one's attention will shift from one thing to another: as it does so, first one thing will become *figure*, then another.

When each new *figure* attracts one's attention, the previous one recedes into the *ground*. For example, while reading a book, one may be distracted by some music as a car drives by, return to the book, notice that the chair is uncomfortable, feel hungry, change the lighting and return to reading, and so on.

Figure requires that one pay attention; *ground* requires that one pay inattention. *Ground* is a matter of active ignorance. *Ground* is clearly much vaster than *figure*: *figure* may be 2-3% of what is present; *ground*, the other 97-98%.

Another word for *ground* is environment. *Ground* always provides the terms on which *figures* are noticed; *ground* is the way of seeing whatever is *figure*. *Ground* is *the key element* in shaping perception of whatever we perceive as *figure*. Every restaurateur knows this and so disposes the sounds and smells and lighting to provide a *ground* proper to the effect he wants to induce in his patrons. The food is the *figure*. The identical food in a workplace cafeteria has a vastly different taste. A baroque concerto played (live) in your living room or salon has one effect; played in a large concert hall, it induces a quite different response—and one alien to the expectations of the composer. This latter was a main reason, said Glenn Gould, why he abandoned the concert stage for the recording studio.

The arts use another word for *ground*--style: style is a way of seeing. When one band "covers" another's music, melody and lyrics remain the same (more or less); what changes is the orchestration and manner of playing the music. Such updating occurs exclusively in the area of style. The old song acquires contemporary relevance by being clothed in the new experience. One or another of Shakespeare's plays is occasionally presented in "modern dress" as a way to make it "relevant" to today's audience. The melody and lyrics, as it were, remain untouched—his language is sacrosanct—but the costumes and settings and staging are rearranged or updated (the style) to bring the whole closer to the present imagination and sensibility. In *The Curious Incident of the Dog in the Night-time*, Mark Haddon allows the reader to see and imagine the world about him as an autistic child sees and imagines his world.

Media are *ground* in two ways. Watching a film on TV, one ignores the TV. In a cinema, one ignores the theatre, the screen, and other patrons while attending to the film. Reading a book, one ignores the page, the book itself, the room, even the actual printed words and letters while one's mind looks at meanings and images.

Each new technology brings into play an entire environment (*ground*) of services and disservices without which it cannot function. The *ground* for the car is the road. Regardless what one uses the car for, having cars means having roads and oil companies, air pollution, parking lots, tickets, and an immense service environment consisting of gas stations, repair garages, traffic cops and traffic light systems, pavement, suburbs, sales offices new and used, gridlock, insurance, and a complex, international manufacturing industry, etc. The *figure* is the single car, or even cars-in-general. The *ground*, then, is a service environment configured around the *figure.* These invisible environments are the *ground* for the *figure* of the car (the same is true for the Internet or the book) and they are the main source of change in the user and his or her culture. Their power to change culture inheres in their invisibility. It is no exaggeration to say that each new technology brings with it a *ground* that reshapes the culture of the user from top to bottom. In other words, each new technology brings with it a new culture, wanted or not.

The McLuhan/Innis hypothesis posits that the dominant medium in any culture shapes that culture more than any other factor:

> The railway did not introduce movement or transportation or wheel or road into human society, but it accelerated and enlarged the scale of previous human functions, creating totally new kinds of cities and new kinds of work and leisure.

> This happened whether the railway functioned in a tropical or a northern environment, and is quite independent of the freight or content of the railway medium. The airplane, on the other hand, by accelerating the rate of transportation, tends to dissolve the railway form of city, politics, and association, quite independently of what the airplane is used for (H.M. McLuhan, *Understanding Media,* Ch. 1, 2nd para.)

Elsewhere, he wrote:

> Obsolescence does not mean extinction. Quite the contrary. For example, handwriting has been “obsolete” since Gutenberg, and certainly since Remington, but there is more handwriting today than there has ever been. The word “obsolete” therefore is a *figure-ground* term and the situation of obsolescence is the result of some spectacular shift in the nature of *ground* which alters the status of *figure*. Thus, Gutenberg scrapped manuscript culture and elevated it, as it were, to a kind of art form. In the same way, the motor car has been obsolesced by the jet plane and is increasingly getting acceptance as an art form. The planet and Nature were obsolesced by Sputnik in October, 1957, and have become art forms also. Sputnik saw the birth of ecology, and art replacing Nature. In the same way, the book, more prolific now than ever, has been pushed up into art form by the electronic surround of information. The book had been *ground*, but has now been flipped into *figure* against the new electronic *ground*. In the same way, the entire hardware of Western industrialism has been obsolesced and, as Toynbee says, “etherealized” by the new surround of electronic information technologies. (H.M. McLuhan, “Reading and the Future of Private Identity,” 8)

Nowadays, Cory Doctorow echoes McLuhan's observations as he discusses the new iPad: "The real issue isn't the capabilities of the piece of plastic you unwrap today, but the technical and social infrastructure that accompanies it." (Doctorow, online)

HOW DOES A PRINT CULTURE DIFFER FROM A DIGITAL CULTURE?

Or, the detached individual vs. the group participant (today's students)

Literacy and the library today exist in a *ground* that has produced some unexpected twists and turns. Let us consider several familiar indicators of these changes. Around mid-20th century, the book assumed a new function in our culture: the coffee-table book is the book as furniture, an ornament to add a touch of class, not just a repository of

information. At the same time (the sixties) that the coffee-table book made its debut, the public turned to high-speed reading as a way to enhance its involvement in printed material. Our culture has also been busy redefining literacy since the seventies. Around then, libraries began to re-imagine themselves as Learning Resource Centres. The transition from a print culture to what would become today's digital culture had begun. A commonplace at the time was "the generation gap"—a widespread acknowledgement that adults and their children inhabited very different worlds. Tom Wolfe wrote *The New Journalism* to point out that emphasis had quietly shifted from a "just the facts" approach in news-writing to one that emphasized feelings. Today's news reportage is blatantly less about the item and more and more about the feelings of those involved in the event; with the feelings and sentiments of the audience featured on newscasts and "talk" radio and TV. The experience has overtaken the factual report for the population at large.

At about the same time that news was retuning its effects on the cultural psyche, advertising presented us with the "lifestyle ad." Recognizing that the audience had shifted its preferences from those of consumers to those of participants, advertisers moved the *object* of desire to one side and emphasized instead the beholder's self-image and satisfactions—the beholder as part of a group of like-minded users. Lifestyle ads impart the experience of owning and using the product. The impartial observer, the traditional consumer of information, has clearly been displaced by the participatory group. The ancient world experienced the same transition, in reverse, from a deeply immersive mode of experience to one characterized by individual reflection and

detachment.

By the time of Plato and Aristotle, the technology of the alphabet had produced well-documented effects on its Greek users. These included breaking the mimetic bond which the poetic establishment used to induce deep participation in their hearers and which produced prodigies of memorization. Plato saw *mimesis* as the enemy of rational discourse and, in *Republic*, attacked the oral poets of his day for using it. By *mimesis*, one could hear a poem once and be able to recite it perfectly for years thereafter. By deep mimetic immersion in the poetic experience, the cultural encyclopedia was conveyed and preserved from age to age. But *mimesis* was the opposite of detachment and the new world of abstract thought just emerging with the rise of philosophy and logic.

For the preliterate, *mimesis* is not merely a mode of representation but “the process whereby all men learn”; it was used by everybody for “knowing,” via merging knower and known. That understanding survives in the maxim, “the cognitive agent is and becomes the thing known.” Using *mimesis*, the “thing known” ceases to be an object of attention and becomes instead a *ground* for the knower to experience. It violates all the properties of the visual order, allowing neither objectivity, nor detachment, nor any rational uniformity of experience, which is why Plato was at pains in the *Republic* to denounce its chief practitioners. Under the spell of *mimesis*, the knower (hearer of a recitation) loses all relation to merely present persona, person, and place, and is transformed by and into what he perceives.

Eric Havelock devotes a considerable portion of *Preface to Plato* to this matter:

> You threw yourself into the situation of Achilles, you identified with his grief or his anger. You yourself became Achilles and so did the reciter to whom you listened. Thirty years later you could automatically quote what Achilles had said or what the poet had said about him. Such enormous powers of poetic memorization could be purchased only at the cost of total loss of objectivity. Plato's target was indeed an educational procedure and a whole way of life. (Havelock, 45)

David Booth shows the same mimetic process at work as educational procedure in our present-day world of multiple literacies:

> When students are inside the experience, needing to read and write in order to come to grips with the issues and concerns being discussed or examined, when texts are being interpreted or constructed as part of the learning process, then I can sense that a literacy event is happening. The young person needs not only to inhabit the words and images, but to see herself as a performer of what she has learned, representing and owning the learning. In effect, she herself becomes the literacy. And she reads and writes with her whole self, with her body, with her emotions, with her background as a daughter and student and citizen; she sits in school beside her family members, and she reads every text she meets alongside them, inside her cultural surround. Literacy is constructed through identity (Booth, 53.)

Booth is describing a culture of children fully immersed in their sensory world, one that their parents may find foreign, but which is increasingly a normal state today. Detachment and objectivity are alien to these post-literate children.

The Greeks, however, by putting on the alphabet, absorbed the technique of dissociation of sensibility. They invented the consonant and the phoneme and made each into complete abstractions. Neither the letter nor the phoneme has meaning. They were able to split inner (imaginative) from outer (verbal) experience, action from reaction, and the self from the group. The latter result we recognize as the detached, private individual with private aims and ambitions. (McLuhan, *Laws of Media,* Ch. 1*)* It was the readers in the act of reading who put on these dissociations as the basis of

replaying and re-cognizing.

The printing press produced the reading public as a *ground* for the book. Electric media displaced the reading public and replaced it with the mass audience, which now displays many of the characteristics of pre-alphabetic *mimesis*. The mass audience is above all a group of people who experience the same thing at the same time, courtesy of electric speed. “Mass” is a function not of numbers but of speed. Digital media presently show other effects on the sensibilities of their users such as shortening of attention spans, as evidenced in preference for reduced sentence length and the reshaping of paragraph styles. Average sentence length today in published novels, for example, is half what it was at the turn of the twentieth century. The developed paragraph of seven to ten sentences (mid-20th century) has given place to much shorter forms in popular writing (newspapers, best-sellers), chiefly one- and two- and three-sentence paragraphs.

A series of one-sentence paragraphs allows reader and writer no aesthetic distance from the subject; everything so presented is in-your-face, in extreme close-up. (The usual one-sentence paragraph is for either of two general effects: transition between subjects or dramatic effect. A series, then, gives the feeling of breathlessness and speed, and feels very dramatic, qualities preferred by news writers; so it is no accident that the style is so frequent in newspapers, but now it features in everyday prose such as e-mail.) Further evidence of these changes in sensibility is clearly manifest in the everyday writing of e-mail messages and workplace correspondence, and in the use of

Twitter.

Such shifts in prose style reflect a preference for ever-deeper involvement. The *figure* of the alphabet may remain the same but the *ground* experience reflects the change from the reader as consumer to the reader as participant. Studies in neurology in recent years have explained how this comes about.

In *Proust and the Squid*, Maryanne Wolf describes how the brain rewires itself to meet any environmental contingency. She writes:

> There are few more powerful mirrors of the human brain's astonishing ability to rearrange itself to learn a new intellectual function than the act of reading. Underlying the brain's ability to learn reading lies its protean capacity to make new connections among other structures and circuits originally devoted to other more basic brain processes that have enjoyed a longer existence in human evolution, such as vision and spoken language. We now know that groups of neurons create new connections and pathways among themselves every time we acquire a new skill. Computer scientists use the term "open architecture" to describe a system that is versatile enough to change—or rearrange—to accommodate the varying demands on it. Within the constraints of our genetic legacy, our brain presents a beautiful example of open architecture. Thanks to this design, we come into the world programmed with the capacity to change what is given to us by nature, so that we can go beyond it. We are, it would seem from the start, genetically poised for breakthroughs.
> Thus the reading brain is part of a highly successful two-way dynamics. Reading can be learned only because of the brain's plastic design, and when reading takes place, that individual brain is forever changed, both physiologically and intellectually. For example, at the neuronal level, a person who learns to read in Chinese uses a very particular set of neuronal connections that differ in significant ways from the pathways used in reading English. When Chinese readers first try to read in English, their brains try to use Chinese-based neuronal pathways. The act of learning to use Chinese characters has literally shaped the Chinese reading brain. Similarly, much of how we think and what we think about is based on insights and associations generated from what we read (Wolf, 4.)

Terje Hillesund echoes Wolf's findings:

> Undeniably, many young people are very good at processing and responding to simultaneous stimuli in a highly multimodal and interactive environment, filled

> with games, videos, music and social media, such as YouTube and Facebook. Young people often treat computers with great familiarity and use *Wikipedia* and Google as a matter of course. According to Kress *(Literacy in the new media age*, 2003), the new generation will certainly wire up the brain in new ways, developing skills that are beneficial in the media landscapes to come. Other researchers, however, are concerned that these multitasking skills may come at the expense of valuable abilities related to sustained reading (Wolf, 2007). Becoming a fluent reader — and especially an expert reader — also requires neurological wiring. It takes many years of practice and concentrated reading to develop vocabulary and decoding skills to such a level that time is given for inferences and reflections, that is to form the brain circuitry for proficient reading. Furthermore, reading–related combinations create added neural paths in the brain, positively affecting cognitive capacities (Hillesund, online).

In recent years, a new field called Media Ecology has been formed to examine these matters as well as the larger transformations undergone by cultures that adopt media new to them. Evidently cultures act in much the same manner as Wolf's description of the brain's responses: they rewire their components in response to environmental pressures. The response to sufficiently powerful new media, such as we have seen in the last thirty years, is in effect a substantially new culture. Since these media, such as computers and satellites, have their impact on every discipline and aspect of everyday life simultaneously, we need interdisciplinary means of coming to grips with them. McLuhan's cultural mapping tool is such a device.

UNDERSTANDING WESTERN CULTURE

Marshall McLuhan's interdisciplinary mapping tool compares periods of western culture under several headings: preference for single or multiple points of view; preference for multiple dimensions of reality or single, visual reality; perception of time and space as continuous or discontinuous and centralist vs. decentralist organization. This comparison reveals two main types of media-generated cultures: a literate, or print-type

of culture such as exists in the classical and renaissance eras, and a pre- or post-literate culture such as exists in the mediaeval and modern eras. The authors hope to show how useful this tool is for modelling and developing critical thinking.

Mediaeval western culture loosely covers the period from 450 (end of Roman Empire) to 1450 AD. During this period, approximately the same type of feudal culture existed throughout the British Isles and Europe. The art, music and literature of this period may be compared under the headings mentioned above in order to perceive cultural patterns.

Mediaeval art presents the viewer with a holistic, multi-dimensional and discontinuous ordering of reality. Even a historical artifact like the Bayeux tapestry (11th century) that purports to be an account of William of Normandy's victory over the English in 1066 demonstrates multiple points of view. Although the tapestry is about 70 metres long and half a metre wide, it does not tell a continuous story from a single point of view, left to right.. Rather, the main events are in the centre of the horizontal tapestry while life goes on inside the top and bottom "frames". The frames, however, are not purely decorative borders; the *figures* change constantly and often "comment" on the main action, providing a *ground* - scenes from the ordinary agricultural life of the peasants abound in the frames, as well as some rather lewd images of naked men and women. A popular mediaeval theme, the shortness of life, appears early on in the tapestry where we see King Edward on both the day he is alive and the day he is dead. There is no chronological sequence here; rather, the order emphasizes the now-here-now-gone theme. First, we see Edward seated on his throne, being greeted by the returning

Harold (Bernstein, pl. XXVIII); immediately following, the body of King Edward is carried to the church for burial (pl. XXIX); the next scene shows Edward in his castle, on the top floor - alive and talking, while on the bottom floor, he is dead and shrouded (pl. XXX). The figures are all presented in profile, two-dimensionally, and the servants ringing the bells in the funeral procession are much smaller than the figures of the nobles, indicating their lower social status (pl. XXIX). Thus, there is a spiritual and social dimension here, not just a visual dimension. So-called two-dimensional art is really multi-dimensional in its refusal to sacrifice everything to the purely visual.

As Harold is crowned king, the populace is seen watching (pl. XXXI); immediately, the populace turns in the opposite direction to see Harold listening to an omen-reader (pl. XXXII). In the top frame, there is now an image of Halley's comet and in the bottom frame, some grey, ghostly ships just like the ones that appear later coming from Normandy. Again, the frame is not a decorative frame, but a juxtaposed commentary on the main action. By accepting the crown, Harold breaks his vow to be William's man. The dire consequences of his treachery are here foreshadowed. There is no use of chiaroscuro or shadowing of one colour into another in mediaeval art. Renaissance artists used that technique to create a three-dimensional illusion. The juxtaposition of Halley's comet and the ghostly ships with Harold sitting on his throne here is very sudden and dramatic - a flash forward, if you like. Time and space are discontinuous and the viewer must become involved to make the connections and construct meaning, just as in modern, surrealist art.

In Mediaeval music, the same multi-dimensional, discontinuous ordering of reality is

present. In mediaeval music, polyphony was the order of the day. Many voices sang together, but not in unison. Each voice was distinct. Sporano, alto, tenor, bass - each had its own unique voice that resonated together with the other voices, was equally important and was in conversation with the other voices (counterpoint.) The old English round, "Sumer is icumen in", found in the Harley manuscript (London, British Library, online) is a well-known example. In this lovely spring song, the cuckoo sings loudly, the wind blows, the ewe bleats, the cow moos and the bullock and the buck fart noisily. The mediaeval mind had no problem with disparate points of view. Even more startling to the conventional mind is the fact that the musical notes have two sets of lyrics. "Sumer is icumen in" lyrics are written in black; Latin, sacred lyrics for use in a church service, are written in red. This was a common mediaeval practice. Discontinuous spaces, the sacred and the secular, are placed together with no apparent connection everywhere in the middle ages.

Mediaeval literature betrays the same sensibilities as the music and art discussed above. In *Beowulf*, an Old English oral poem written down probably in the eighth century, discontinuity is everywhere. *Beowulf* is a compendium of traditional wisdom, rather than a linear account of one hero's deeds. Thus, when Beowulf's bravery is mentioned, the poem suddenly flashes back and says so was he brave when he defeated Breca in a swimming contest and then recounts the entire episode of the swimming contest in great detail. This was not considered a "digression" by the mediaeval audience, but rather an example of traditional bravery juxtaposed with the present situation to help the audience understand. Often, these flashbacks and flash

forwards are very dramatic, almost surrealistic. An example from the beginning of the poem occurs at line 82 (Klaeber ed., p. 4), where the building of a great hall called Hart House is described as rising up to the sky "heah ond horngeap; heathowylma bad" [high and horn-gabled; battleflames awaited it]. This flash forward occurs right in the middle of the line of poetry. OE poetic lines are made up of two half lines and often this half-line structure is used to dramatically juxtapose two different times or spaces.

Just so, Chaucer, in his *General Prologue* to the *CanterburyTales,* uses traditional juxtaposition to create his satire. The Cook, for instance, seems to be a fancy French chef who makes “poudre-marchant tarte and galyngale”, until the next line reads, “Wel koude he knowe a draughte of Londoun ale.” (Robinson ed., ll. 381-82) The guttural sounds humorously undercut his apparent gentility!

To conclude, mediaeval cultures are oral and juxtapose many different points of view, presenting a nonlinear (or digital) organization of reality. In feudal society, the same decentralist organization appears. Castles and their lords and peasants (who could not leave the property) were dotted everywhere, each one a unique centre of culture and governance.

CENTRALIZED GOVERNMENT CAME WITH THE RENAISSANCE

The Renaissance is loosely dated from 1450 AD to the early 1600's, but its cultural preferences lasted until the end of the nineteenth century. The authors will refer to this whole period as renaissance-style culture. This culture is characterized by a preference for the visual dimension of reality and the single point of view, as well as continuity of space and time. The printing press with its ability to reproduce exact copies of books,

spread the rediscovered classical Greek and Roman cultures and their values once again, bringing about an upheaval in European culture. Individualism was born of literacy (the ability to read and to make individual judgements.) These developments can be seen most easily in the visual arts.

In art, the illusion of the third dimension began with Giotto and ended with Picasso. John Constable's *Hay Wain*, 1821 (Constable, online) is typical of a renaissance-style culture. One can see exactly where the artist was standing in the foreground in order to paint this landscape. There is only one point of view here. The illusion of the 3rd dimension is created, substituting the visual for the holistic view of the middle ages. Here one can see from the place where the artist stood through consecutive planes, from the beach, through the reflections of the sky on the water, to the sunlight on the fields under the overhanging trees, back to the vanishing point on the horizon above the line of trees in the distance. Constable uses the light to guide the eye of the viewer. He also uses chiaroscuro to blend the visual planes, in a smooth, logical sequence from one plane to the next. For Constable, space and time are continuous and sequential. Seeing is believing.

In music, the diatonic scale system was fully developed in this period as a fixed pattern of intervals that includes 6 whole tones and 2 half-tones, adding up to an octave. All of these intervals are seen from one fixed point of view, the tonic; so, in G major, for instance, F is sharp. Hitting an F natural sounds "wrong" when playing the scale of G major: F is outside the single point of view of G major and Western ears have become accustomed to the fixed conventions of this scale system. In popular vocal music in the

early 17th century, polyphony (many equal voices) gave way to homophony, a style in which a melody (one main voice) was supported by a bass line, a *ground* for the melody. This single point of view dominated until the early 20th century.

In literature, the novel form developed in the early 17th century, exhibiting a single point of view (that of the hero) and a plot that progressed in a linear sequence. *Don Quixote*, published first in 1605, is generally considered to be the first Western novel. Jane Austen's *Pride and Prejudice*, published in 1813, begins with the famous sentence, "It is a truth universally acknowledged, that a single man in possession of a good fortune, must be in want of a wife." This novel is written from the single point of view of Elizabeth Bennet, a sensible young woman whose attitudes are at odds with the superficial values of her society. The point of view does not change during the novel and the plot proceeds in a chronological sequence with lots of suspense right to the end and Elizabeth's marriage to the reformed Mr. Darcy. Austen's world, valued visual appearance at all costs and she satirizes this trait in her exaggerated attention to visual detail. Although Austen's novels are written in a space and time that is continuous, logical and sequential, her satire points out the actual differences between visual appearance and reality.

During the extended period from the Renaissance to the end of the nineteenth century, countries and their governments became centralized and established capital cities and national identities and cultures. Even in the new world, the United States adopted a "melting pot" approach to a single "American" culture, while Canada regarded itself as

British. Marconi's first transatlantic telegram in 1901 blew nationalism out of the water.

THE RADIO TELEGRAPH COLLAPSED SPACE AND TIME

Every culture in the world could now be present at the same time, in the same space. News from Hong Kong and from Westminster was received simultaneously. Cultural differences were suddenly very obvious and questions and conflicts arose quickly. Within a few years, modern art, music and literature responded to the simultaneity created by this new technology. Mediaeval discontinuity and multiple points of view blossomed again in all the arts.

Modern western culture became digital once more. On the visual arts front, Pablo Picasso was the first to respond to the new culture with the *Demoiselles d'Avignon, 1907. (*Picasso, online*)* Visual representation disappears; cubism with its many points of view introduces the viewer to the discontinuity between the artistic nude and the streetwalker: beautiful model from one angle and street-savvy businesswoman from another angle. Mere visual appearance is banished by the many dimensions of reality.

In music, between 1907-1909, Arnold Schoenberg and his students, Alban Berg and Anton Webern, dropped tonality and composed music that was atonal or post-tonal, written outside of any scale or modal system. Once again, there are no "wrong" notes in this music and so it reflects the many points of view of the modern world all at once.

In literature, the poet T.S. Eliot abandoned continuity and verisimilitude for the first time in a poem written in 1910-1911, but published a few years later, "The Love Song of J. Alfred Prufrock." The essential confusion caused by the clash of ideas in the modern

world where everything happens at once and where visual appearance no longer denotes reality is stunningly felt in the opening image of the poem: "Let us go then, you and I,/ when the evening is spread out against the sky/ like a patient etherized upon a table;" (Eliot, p. 11.) The romantic world clashes with the grimy reality of early twentieth-century London. Ten lines later, Eliot abandons the continuity of time in the poem and suddenly flashes forward with no warning to the narrator's destination, where "In the room the women come and go/ Talking of Michelangelo." (*Ibid*.) Here the tinny rhyme undercuts the aura of power associated with Michelangelo. Eliot, like Picasso and Schoenberg, presents so many dimensions of reality simultaneously that people often find him confusing. "But what a poem means," says Eliot, "is as much what it means to others as what it means to the author;" ("The Modern Mind," p. 541b) This is true of all the modern arts: the user creates meaning.

Since the beginning of the twentieth century, the effects of the telegraph have been multiplied by the invention of the telephone, networked television (bringing the world into everyone's living rooms) the computer and most recently, the worldwide web. The incessant invention of handheld devices such as the iphone and the ipad are increasingly turning the world into an oral and tactile global theatre, in which each person performs. The new electronic environment or *ground* promotes the decentralization of work, study, government, socializing, etc. Cultures, as already discussed, readjust their components to meet environmental pressures. Since technologies are being invented at a rate faster than ever before, it is imperative to study the cultures created and to respond critically; otherwise, society runs the risk of

being blindly manipulated by each new technology.

MODELLING FIGURE/GROUND ANALYSIS

Teachers and teacher-librarians can model *figure*/*ground* analysis to help students think critically in all subject areas. The structure of any cultural situation or the effects of any technology become clear when *figure*/*ground* analysis is used. Just as a red *figure* cannot be seen against a red background, a cultural *figure* or a technology cannot be seen clearly against its usual or expected *ground*. However, if one changes the *ground*, the *figure* can be clearly seen, and if one removes the *figure*, the *ground* or environment can be clearly seen. For example, in an exploration of "what is beauty," a teacher-librarian or an art teacher might ask students to bring examples of a beautiful person to class. Pictures of *Vogue* models and rock stars will doubtless be among the figures collected. If the teacher cuts out the *figure* of the model from the fashion background and places the *figure* in a different *ground*, such as a poor village of starving children, is the model still beautiful? Switch in as many different *grounds* as possible to see the meaning of the *figure* and the word "beauty" change. This is the method of all surrealist art.

One can also remove the *figure* of a technology from its usual *ground* to study the effects of that technology, i.e., the environment it has created. A recent, factual example of this technique is the grounding of all airline flights in and out of Europe due to the volcanic eruption in Iceland. Without the airplane, time slows down. The world returns to the railway era. One has only to read the newspaper to see the varied effects. The first two days people were taking enforced vacations, though some were unable to leave on

vacation. By the third day, mozzarella cheese couldn't be shipped from Italy, as it would perish on the train or boat. What would the world do without pizza? Grocers and sellers of fresh produce ran out of stock. Would the world have to go back to canned vegetables and fruits? Leaders in business and government could not meet easily. Students and academics could not go to or get home from conferences. Billions of dollars were being lost by the airlines; their workers, sent home. Prescriptions drugs and vaccines were in short supply. If a catastrophe had occurred, could the military have arrived in time? The weaknesses of the global supply system created by the modern airplane became immediately apparent; normally, these weaknesses are in the invisible *ground*. Teacher-librarians and economics teachers could model *figure/ground* analysis to investigate this and similar situations. What would happen if the telephone or internet were destroyed? How would that affect business? the stock market? schools? universities? operating rooms? doctors' offices? what you eat for dinner? your friendships? support networks, etc.?

The military uses this technique of removing a *figure* from its normal *ground* to try and prepare for disasters, including terrorist attacks. The simulation of such a military exercise using *figure/ground* analysis would provide a rich learning task in any of the social sciences, as well as providing students with the opportunity for role playing.

The sciences too are an area where *figure/ground* analysis can be used effectively. In fact, ecology is another name for *figure/ground* analysis. Take a *figure* out of a *ground*; e.g., bees out of Ontario, and what happens? With no pollination occurring naturally, the price of produce would skyrocket. If it had to be pollinated manually; wildflowers would

disappear and all of the animals and insects that depend on them. The invisible *ground* created by bees appears clearly, allowing scientists to see where human intervention might occur. Tracing these environments or *grounds* makes for a rich learning task at both primary and secondary levels, again including role-playing.

In the arts, *figure/ground* analysis can be applied at the level of the poetic line, the musical phrase, the colour palette: what happens when a *figure* is removed from any of these *grounds*? Switch *figures* and switch *grounds*. What happens? Highly sophisticated critical thinking can occur at this "micro" level.

MODELLING CULTURAL MAPPING

Cultural mapping is a complex type of *figure/ground* analysis in that one is comparing historical cultural patterns (*figure/ground* relationships) with a current cultural pattern in order to solve a problem; in other words, one draws an analogy. Looking at the *figure* of school libraries, for instance, one might ask why some school libraries are bustling and others aren't. Library users and their culture are the *ground* in which school libraries exist; so, attention has to be paid to that *ground*. In the 20th century, why did students come to school libraries? To look up information in books. Most people did not have adequate reference books at home. In the 21st century, how do students look up information? On the internet. How do students access the internet? Increasingly, via mobile devices like the iphone. The electronic environment has radically changed the culture of the school library's users. Many students feel they don't need to go to a library anymore. Everything they need is available on their iphones. E-books, even library subscription databases are available for free without a password using the Gale library

app for the iphone. Everything is available everywhere, all at the same time. However, as teacher-librarians know, the amount of information available on the internet is overwhelming and is expanding at the rate of more than a billion pages per day. Students are lost when it comes to navigating that amount of information and are equally lost when it comes to thinking critically about the information. Teacher-librarians, of course, are the "value-added" feature of school libraries, able to show students and teachers how to navigate and process the information sea. But how to help clients who don't come to the library? The library has to be attractive to them. Cultural mapping can offer some help here.

What other culture exhibited this pattern of discontinuity of space and time, multiple points of view and a decentralized society? Mediaeval culture and social organization exhibited all these characteristics. As discussed earlier, mediaeval society was feudal and people lived, worked and played in small manors/villages or castles all their lives. Multiple dialects and even languages existed within a few miles of each other. Peasants were not allowed to leave their lord's property. The central "common" was the area where everyone met. It would have been land held in common by the villagers and was also where games and celebrations were held. It might have a common well or a brick oven. Today, school libraries are built in the centre of most schools and the new learning commons model is analogous to the mediaeval village common, a space to work and play and a repository of public resources. Libraries that are bustling seem to have a lot of space devoted to "common" activities rather than a lot of individual carrels devoted to silent reading (a model suited to the print-only library.) Looking to the

mediaeval model should help school libraries redesign their environments for our electronic, social networking culture. Might that mean more worktable space for groups and less space for bookshelves? New technology even allows closed stacks with virtual shelf browsing (Grose, online.) Wireless service for student laptops and iphones might be provided. Interactive whiteboards, data projectors, areas for video editing, class pods, art areas might all be included. Teacher-librarians are the master craftsmen to whom classes and students go for research help. Quiet reading rooms are now necessary. In the middle ages, the common also hosted games and celebrations; likewise, school libraries might function as galleries for student work, might have areas for relaxing or eating, and might even have areas for electronic games.

Teacher-librarians can model cultural mapping when helping classes with research. A social studies class studying urbanization may be helped by the teacher-librarian to see that the 20th-century, centralized city where people go "downtown" to work while living in specialized suburbs does not work in a modern electronic culture that allows multiple points of view simultaneously and the ability to live or work anywhere. Cities that retain a centralized organization and highway strip development end up like Detroit with a rotting core where no-one wants to go after dark. Most North American cities were built in the ground created by the automobile with its continuous road system and attendant culture. Again, teachers may ask how electronic technology changes the pattern of work and relaxation. If the electronic environment allows one to work and live anywhere instead of having to go to the same place as everyone else to work, then why would we not redesign our cities? Again, cultural mapping can be a help here, allowing the teacher-librarian to draw an analogy with mediaeval culture and its multidimensional,

discontinuous patterns, as seen in the discussion of school libraries above. Might our cities benefit from a comparison with mediaeval cities? This would provide a rich learning task for students, allowing role playing. The teacher-librarian could provide pathfinders and actual displays of books or other resources detailing mediaeval cities from Western and other cultures that display the same characteristics and could designate an appropriate work space for the class, real or virtual.

Based on his knowledge of mediaeval universities, Jason Rovito recently opened a bookstore in Toronto, in a year when many small bookstores had to close. Rovito has created a literary commons rather than just a bookstore. His space includes a publisher and a writing school as well as a bookstore and the opportunity to discuss literature. Business students could use this example to research other areas that could profitably be developed on the mediaeval commons model (*Toronto Star* 3 May 2010, B1,B3.)

The authors hope this kind of research and questioning will be generated by teachers modelling the use of the tools discussed. Both these tools, *figure/ground* analysis and cultural mapping, can give students a vocabulary with which to begin analyzing situations. They can be included in word walls and may be used to create anchor charts that assist students in the process of critical thinking.

With this in mind, the questions that always need to be asked by students are:

- what is the *figure* in any given situation?
- what is the *ground* in any given situation?
- what can the student learn about the *figure* by switching the *ground*?
- what can the student learn about the *ground* by removing the *figure* from the situation?

- will an examination of the *ground* enable the student to see where intervention in the *ground* is possible to improve the situation?
- what is the dominant technology in the culture being examined?
- what sort of culture does the technology promote?
- is the culture being examined a mediaeval or renaissance-type culture? (multi- or one-dimensional?, discontinuous or sequential? central or decentralized?)
- what characteristics does the given culture share with the historical culture?
- are other aspects of the historical culture missing or different?
- how can the student use the analogous historical culture to see what might improve the culture being studied?

SCHOOL LEARNING COMMONS: PLACE *AND* FUNCTION

Redesigning the physical space of the school library as learning commons will not pose unusual problems for teacher-librarians. It's important to keep up with the latest technology so that students will be attracted, just as it is important to keep the latest fiction on hand. It is also adviseable to use moveable furniture to keep up with the pace of technological change. That is not going to stop anytime soon. The virtual space of the commons also needs attention. Many students now access the library via mobile devices. Does your library website have a mobile version for small screens? Are all your resources available 24 x 7? Are your pathfinders posted on a wiki or a blog or Facebook? Do you have a Twitter feed for library news? Do you have online space to post student work? Can students post their own work? Can students use virtual workspaces while doing projects? Exploring the mediaeval analogy discussed above should generate lots of other ideas.

Redesigning the function of the school library as learning commons will be the difficult job. The teaching program will need to be expanded to include everybody in the school, whether or not they actually come to the library. Find out what is being done in those classrooms and set up small displays of resources for particular assignments all over the library. Set up virtual displays of resources on the library website or blog. Make sure the displays are interdisciplinary enough to catch students' interest. (Think surrealism.)

Use *figure/ground* language and ask provocative questions in your displays. In other words, model the use of the 2 tools described in this paper. Suggest role-playing as a research method. Students learn by mimesis, just as pre-literates did and they get very excited about it. Once students are excited, word travels fast. Vicki Davis (of *Flat Classroom* fame) recently talked to Dr. David Rose about passionate learning in the digital classroom as the key to learning today (Davis, online.)

Partnering with teachers and discussing assignments ahead of time is the preferred method of using the learning commons (but it should be open to all informally if there's space.) Set up an online portal page (use Netvibes or Pageflakes) for an assignment and discuss possible content with the teacher. Post the RSS feed from a topic search in one of your online databases. Every time an article is published on the topic, it will appear in the feed. Post a feed for the same topic from Google news. Post the feed from a student wiki in which students are working on the assignment. Post videos on the student wiki and resource lists that everyone can add to, including students and parents. Participation is the name of the game. See Michael Wesch's podcast lecture on how he does this with anthropology students (Wesch, online.)

Over the longer term, one could design portals for each department in a school showing feeds of major topics in each area, resources created by students and feeds from ongoing work, in the department. (All blogs and wikis automatically produce feeds.) These could be posted on a learning commons resources wiki alongside pathfinders or on the school website, whichever is more used. Involving a student team here from each department would be ideal. An excellent aid for teacher-librarians is the wiki, *The New Learning Commons* (Loertscher, Koechlin, Zwaan, online), a discussion in which everyone can participate.

If *figure/ground* language is included in word walls around the learning commons and

anchor charts are developed for *figure/ground* analysis and cultural mapping, then visiting teachers, classes and students, with the teacher-librarian's help, will eventually develop these critical thinking skills. In turn, they will pass them on to others. Inviting the principal in to see a class in action will expose the principal to these skills and further the conversation. The authors hope that by learning these skills, students will learn how to learn by themselves.

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