Reading by Hand

How the Hands Prompt the Mind

*The Hand* by Frank R. Wilson, is a book about the influence of the human hand on the evolution of our species. The Wilson book discusses how the evolution and use of the hands has shaped "the brain, language and human culture" and, for us, how the development of the brain follows this other development. The fact is, the hands prompted the mind.

Wilson describes how the development of the hand moved in front of the advance of human intelligence and how exceptional primate dexterity is older than the entire human fossil series. The important transition of our own speciation was the descent from an arboreal life to foraging on the ground. Hominids adopted upright posture, but mysteriously, unlike say...the kangaroo, we did not abandon development of our upper limbs. Some complex upper limb usefulness emerged at this earliest transition.

Then, for millions of years primate dexterity preceded the increase of brain size in the hominid genealogy. This circumstance engendered a learning pathway based on discovery by manipulation and tactile observation. This perceptive channel of primate dexterity then prompted the mind toward conceptual thought.

The African savanna of the Pliocene was a dangerous and unpredictable place. To survive, small ground foraging primates had to be dangerous and unpredictable as well. The complex feat of rock throwing was achieved and practiced. It was practiced for hundreds of thousands of years...which is not that surprising if you remember endless childhood hours playing "catch". Gestures, the first simulations, emerged, again using the hands and upper limbs. Grooming gave way to gossip. Most importantly, as neurologist Wilson points out, practiced manipulation actually embedded concepts in the mind and these began to compile into a useful database. The practiced manipulations of tools and fire added to the manipulations of food and projectiles. The hand signs engendered layers of social interaction. Slowly, the slow brain began to develop, just to keep up with the disciplined
hands.

That is pretty much the end of the story...except for one factor; the hands still prompt the mind. We have not escaped this deep learning pathway. In accord with this circumstance, cultures have directed young learners to hand skills for thousands of years, including the expressive skills of crafts, visual arts and instrumental music. We may be the first generation to demote this educational approach as we seek to strip education of manual activities and supplant them with purely visual learning. What has become of wooden blocks, real sea shell collections or battleships made from Popsicle sticks? What is achieved in such displacements is the amputation of the hand to mind discovery pathway. Even more risky is the influence of such displacement at an early age.

The Manual Act of Reading

I also read the Wilson book wondering about the manual act of reading. It is apparent that the action of computer keyboard manipulation leads not to kinetic insight, but to repetitive motion syndrome. Codex book manipulation has a longer history...still instantaneous in evolutionary terms...but free of any crippling manual effect. It is probably not irrelevant that the codex reading mode arose in context with with cultures dependent exclusively on manual craft skills.

My question here is whether it possible that the practiced manipulation of codex reading also conveys conceptual patterns to the mind. The Wilson book is a matrix for this question, but is this even a useful question? Does the physical paper book somehow enable the manual understanding of print concepts? Stranger still, does the action and physicality of a bookbinding impose a particular receptivity to the content of a book? Is there a haptics of comprehension?

Watch yourself reading. You will find that you begin to turn the page at the start of the page reading and that your fingers will glide under the leaf to coincide the page turning with the completed page reading. You will also find, pages later, that you can recall the physical location of an encountered idea.

As Wilson says, our understanding of the world is too "cephalocentric"
overlooking the role of dexterity. Specifically, and with regard to the relevance of the reading manipulations:

"There is growing evidence that H. sapiens acquired in its new hand not simply the mechanical capacity for refined manipulation and tool using skills but, as time passed and events unfolded, an impetus to the redesign, or reallocation, of the brains circuitry. The new way of mapping the world was an extension of ancient neural representations that satisfy the brain's need for gravitational and inertial control of locomotion. ...a new physics would eventually have to come into this brain, a new way of registering and representing the behavior of objects moving and changing under the control of the hand. It is precisely such a representational system - a syntax of cause and effect, of stories and of experiments, each having a beginning, a middle, and an end - that one finds at the deepest levels of the organization of human language."

So are laboring bookbinders history's progenitors of the mechanisms of the appreciation of literature? Are bookbindings, in their actions, mechanisms of literary criticism, inviting or offending the reader? Perhaps the practiced deftness of page turning is a clock that moves us through content; a punctuation of the page.

**Conceptual Grasp**

John Seely Brown and Paul Duguid build a matrix for the physical and social environment of information transmission in their book, *The Social Life of Information*. Their point is that the physical and social transactions that surround off-line knowledge transfer are not process obstacles, but process attributes. Malcolm Gladwell, “The Social Life of Paper”, offers further examples of the haptic uses of paper in its interactivities with electronic communication.

The paradox of transmitting concepts via physical media is ultimately befuddling unless we do acknowledge and weigh the social function and haptic components of knowledge transfer. Seely and Duguid examine transmission of concepts via physical media, like paper, as a social behavior but the specific role of a hand to mind learning path seems to be omitted from their book. They come close to consideration of manipulation of concepts. They mention that "Shared and circulating documents, it seems, have long provided interesting social glue." But do hands prompt the mind at such a deep level that the linkage itself engenders social behavior?
"So while paper may seem a constraint on the circulation of information, readers and writers have made it a powerful resource for making, shaping, warranting, interpreting, and even protecting information. The example of paper suggests to us that, for design more generally, before an apparent constraint is dismissed, it's important to consider the social resource that people may have developed around it."

Isn't it then possible that conceptual transactions are embodied to paper because this act itself mimics the deep efficiency of discovering concepts by physical manipulation? Gladwell points specifically to such a concept. He easily explains the behaviors of air traffic controllers handing off slips of paper representing specific planes in the air or the behavior altering post-its on the monitor.

At first the hand-to-concept path seems difficult to define and historians remark on the lack of documentation of the hand skills. The needed realization is that dexterity itself is a medium of information. Hand skills have been conveyed for hundreds of thousands of years by direct exchange from hands to hands.

**Missile Missal**

Another recent consideration of a hands prompting the mind perspective has appeared in American Craft magazine, August/September, 2000. This is Bruce Metcalf's article, "The Hand at the Heart of Craft". Again we can construe this narrative from our particular interest in the physical act of reading.

Metcalf is a jeweler with a long experience in craft education. He describes his research and understanding of bodily-kinesthetic intelligence and his observations of students gifted with a dexterity that prompts the mind. It can only be noted that others are gifted with efficiency and insight in reading and, of course, we can only wonder what portion of that scholarly gift is dependent on a dexterity at reading.

This is a stretch perhaps...but connect the dots here. "...brachiation allowed a new skill: the overhand throw. ....this made early hominids into dangerous predators." Throwing and catching and the immense bodily-kinesthetic intelligence and grace of dexterity needed is not that distinct from conveying concepts in physical objects...especially objects conceptually accessed via graceful dexterity. Just tossing out an idea.

Further who can say what portion of our double hand and arm waving induced our propensities toward duplicities, constrasts, polarities and polemics. Perhaps the utilization of the two hands together is not just the vise and tool but a dicotomy of sinister and dexter, good and evil.

So reading must be, in part at least, a handcraft. It would be interesting to compare books in languages with cover lifting to the left and those with cover lifting to the right to see if that reflects the 11% species left handedness. I would like to know if the adoption of the codex format by sectarians in the deserts of north and eastern Africa reflected a need to thrown or project a scripture and if the codex was invented in a context of a new craft of sending off folded letters. These are weird,
manual questions.

At least we see...from this perspective...that eBooks are obsolete. The new on-line reading technologies take a backward step to try to mimic the hand induced off-line reading mode. How did we somehow know that all along...contrary to all the hype and hyperbole? Do the hands prompt the mind?

**T.rex and the Rat Reader**

T.rex was awesome, but this magnificent creature is diminished in our evolutionary scenario as soon as you notice its atrophied upper limbs. Continuing evolution brought returning upper limb development to dinosauria yet that path did not result in tool making but in bionic flight.

In passing it is worth considering the options of upper limb development. The evolutionary path to conceptual thought enabled by dexterity or the evolutionary pathway to flight enabled by feathered wings. We admire both, but were eventually able to acquire flight through conceptual design.

But metabolism and genetic code, the fundamental symptoms of life, emerge in non bionic neural networks as well. Now we are in evolutionary competition with a new genre of non-bionic organism. In this evolutionary scenario the rats will take over again, beginning first in nocturnal behavior as WebBots, crawlers and spiders. Reading rats. These reading rats use a different reading mode, but will they manipulate concepts?

**EndNote**

As reported in American Libraries, September, 2000;"A study conducted at Ohio State University this year discovered that college students who read essays on a computer screen found the text harder to understand, less interesting, and less persuasive than students who read the same essays on paper, the Associated press reported August 10."

Is this an image of the hands not prompting the mind?

(\text{the illustrations in this commentary, except the last one from the U of Iowa Library homepage, are from "The Young Jesus with the Doctors" painting and hand studies, Albrecht Durer, 1506})

For a magnificent essay/talk by Frank Wilson go to http://www.edletter.org/past/issues/2000-jf/forum.shtml#talk For hands prompt the mind research see: http://
For a companion narrative by Frank Wilson go to http://www.washingtonpost.com/wp-srv/style/longterm/books/chap1/hand.htm

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