Preface to the Mutext Version

The monograph that follows delivers the same words as the preceding monograph. The difference is in the way the words are displayed. The preceding version presents the words as lines of print. When reading text presented in the linear typography, adult readers of English average four fixations per second and 1.1 words per fixation. Such movements would yield a rate of 264 words per minute if no regressions (backward glances) were made. But, the perceptually illogical display of text in lines of print leads to frequent regressions by readers when attempting to apprehend the words in the text. So, the average reading rate of adult readers in the U S is considerably less than 264 wpm – probably around 225 wpm.

The version that follows is displayed in the mu typography. When reading digital text set in interactive movable type, the reader can choose to have the text displayed in the linear typography or in a one-line, two-line, three-line, four-line, or five line mu format. (In addition, text set in interactive movable type can be printed in the linear typography or any of the five mu formats.) As you'll see, the mutext version that follows is displayed in a four-line mu format. If you read this version at four fixations per second – and make no regressions – your rate will be 960 words per minute. The display of text as muglyphs (two-dimensional meaning units) instead of linear word strings is expected to reduce the need for, and the frequency of, regressions by readers.

As an alternative to the visual presentation of digital text set in interactive movable type, readers can have the text read aloud to them as compressed speech. Compressed speech is speech that can be delivered at any rate desired by the reader – up to 700 or 800 words per minute – without changing the tone or pitch of the speech. Or, the reader can have the text presented as "simultext," text that is heard as it is being presented visually. (Simultext is demonstrated in the video presentation, "MuvieTime.")

The spoken presentations in simultext will be either digitized human speech or synthetic speech that simulates human speech. The digitized speech will be delivered by professional readers or, in many cases, by the author of the text. It is likely that a substantial percentage of authors will choose to make the voice recordings of their written products for use in simultext presentations.

The text in this mutext version cannot be read as simultext because the mudoc software is not yet operational. But the linear version can be heard using one of the synthetic speech applications that are available on Macintoshes and some PCs.

Using Interactive Movable Type to Capitalize on the Capabilities of the Human Brain

	In the future	most of the text	that is consumed	will be text	that has been set
in interactive movable type,	a new kind of movable type	that will employ a software invention,	*the mudoc software.*	The mudoc software	will be used
to prepare	most of the text	that will be delivered	in digital publications.	(It will also be employed.	in setting much of the text
that is delivered	in print-on-paper publications.)	Because it is easier to say.	and to read,	the four-syllable term	*“muvable type.”*
is ofter used in lieu	of the eight-syllable term,	“interactive movable type.”			
	Text set in muvable type	can be assimilated	more easily	and more rapidly	than conventionally delivered text.
Muvable type enables readers	to make better use	of their perceptual	and cognitive capabilities	than they can with text	displayed in the conventional way,
that is, as lines of print	presented in static displays.	Increasing readers’ capabilities	through the use of muvable type	– along with ready access	to great collections
of affordable text	– may soon bring about	a many-fold increase	in the consumption of text	around the world.	

	Interactive movable type	is described and demonstrated	in a movie entitled “MuvieTime”	at mudoc.com	and at YouTube.com.
MuvieTime is also available on a DVD	for $10 from	The Mudoc Corporation	at 616 East Julie Drive,	Tempe, AZ 85283-2914	Viewing MuvieTime
before proceeding further	in this paper	will help facilitate	your understanding	of the information and ideas	that are discussed below.
	One of the abilities	of Homo sapiens	that distinquishes them	from the other species	on our planet
is the ability	to develop,	acquire,	utilize,	and analyze	verbal information.
The invention of	movable metal type	in the fifteenth century	made it possible	for many members	of our species
to use that ability	to communicate	with large numbers	of other members	– and to learn	from the experiences
of many other members.	Printing presses	with movable type	greatly increased	the consumption of text	around the world
and brought about the transition	from the Middle Ages	to the modern era..			
	While the use	of movable type	in printing presses	made the production	of print-on-paper publications

much easier,	there were many other factors	that continued to limit	their consumption.	The great multiplicity	and variability
of the languages	that had been developed	limited the potential audience	of each publication.	While printing presses	increased the number of publications,
the great majority of the people	never learned	to read and write.	With the illiteracy	and the widespread poverty	that existed
in most population groups,	few publications	from the early printing presses	achieved wide circulation	in spite of the fact	that they were
easier to produce.	Bibles and other religious works	were the most common type	of printing press products.	Scholarly works	had much smaller distributions.
	Other factors that limited	the consumption of text	in print-on-paper publications	were the psycho-linguistic factors.	The practice
of printing text	in lines of print	that had usually been employed	before the development and use	of printing presses	with movable type
became the standard method	of displaying text	in printed publications.	Linear typographies	require readers	to severely constrict
their visual fields	when consuming text.	When reading tèxt	displayed as horizontal lines of print,	as we do with English,	readers must learn to limit
their vertical spans of apprehension	to the single line they are reading	and to blind themselves	to the lines above	and the lines below	the line they are reading.

(The same kind of problem	exists with those languages	that are displayed	in vertical lines of print.)	In addition, when making successive fixations	along lines of print,
readers must make	overlapping fixations	to avoid gaps in the messages.	The need to overlap fixations	further reduces the efficiency of readers	in assimilating printed text..
With the limitations	that are imposed	on readers of linear text,	only a small portion	of their visual capabilities	is utilized.
	Vision is Homo sapiens' primary sense.	As far as we know,	it is the universe's most powerful	natural information processing system.	Each human eye has
about 125 million photo-receptors	(rods and cones)	that collect data	and transmit that information	to the visual cortex of the brain	through the optic nerves,
each of which has	over one million nerve fibers.	The neural impulses processed	in the over half billion neurons	in the brain's visual cortex	comprise about two-thirds
of all the impulses	processed by the brain	of a normally-sighted person.	Homo sapiens'	second most powerful sense,	hearing,
is another powerful,	but somewhat simpler,	system.	The brain's auditory cortex	has about 100 milllion neurons	that process sound impulses
delivered through the 30,000 nerve fibers	in each of the auditory nerves.	Considered separately,	our visual and aural systems	are powerful information processors	– and when effectively coordinated,
each sense can	support and amplify	the power of the other,	especially	in the processing of verbal data.	

	Unfortunately,	the methods of writing and reading	that we now use	often make	our visual systems
and our aural systems	work at cross-purposes.	For most readers of text	in phonographic languages,	such as English	and the other Indo-European languages,
reading is primarily a listening activity.	Their visual systems	are subordinated	to their aural systems.	The words delivered	to their visual cortexes
from their eyes	are translated into speech sounds	– and they, if effect,	listen to themselves read.	It is estimated that about 90% of readers	of phonographic text
are, to a greater or lesser extent,	"listening readers."	With many of these readers	you can hear them reading	– or, at least, see their lips move.	But, even if you can't see or hear them reading,
electrodes attached to their larynxes	detect micro-movements,	indicating that they are,	to some degree,	translating the text to speech	and are "listening" to themselves read.
Only about 10% of the readers	of English text	don't produce such micro-movements.	They learn to interpret text	directly as visual data	without being impeded
by the visual-to-aural translation process.	Such "visual readers"	tend to become	the most proficient readers	and to achieve the highest levels	of comprehension.
In comparing listening readers	with visual readers,	it might be said that,	while listening readers	read at the speed of talk,	**visual readers read at the speed of sight.**
	With the avaibility of text	set in interactive movable type,	many more readers	will become visual readers	– especially those who

first learn to read	with text set in this new movable type.	These readers will be much less inclined	to develop the delimiting habit	of converting printed text to speech sounds.	Muvable type will help sighted readers
learn to optimize	their particular visual and aural capabilities	when consuming text	– and, when reading,	to subordinate their sense of hearing	to their sense of sight.
	Text presented to readers	as meaning units	(the logical word groups	that comprise sentences)	will help listening readers
reduce the sub-vocalization	carried out in the reading of linear text.	Reading mutext will help them	learn to make better use	of their visual capabilities,	expecially as they learn to apprehend
larger and larger meaning units.	In human speech	the basic sense unit is the word.	With text set in the mu typography,	the basic sense unit is the muglyph,	word clusters that are usually comprised
of two or more related words.	Conceptually, mutext sentences	are series of “thought units”	instead of strings of related,	but, individual, words.	Word-by-word reading,
with the required constriction	of our vertical spans of apprehension	and the necessity of overlapping fixations	along the line of print,	reduce our text processing efficiency	to a small fraction of our potential capabilities.
	The subordination	of one’s sense of sight	to one’s sense of hearing	is not the only impediment to reading	that handicaps readers
of phonographic languages.	The complete passivity and inflexibility	of words printed on paper	(or static reproductions	of such documents displayed on a screen)	is another handicap
imposed on these readers.	To process the static text	that is laying on the paper	in a state of “rigor mortis”	readers must cope as well as they can	with whatever capabilities

they possess at the moment	and whatever supporting tools	they have at hand.	On the other hand,	interactive movable type	will enable each reader
to design each document	to capitalize	on his or her own particular perceptual	and cognitive capabilities	– whether those capabilities	are extremely limited
or extraordinarliy extensive.	And, the reader will be able	to modify the design of the document	at any time	and in any way desired.	In contrast to the one-size-fits-all character
of print-on-paper documents,	each digital document delivered with muvable type	will be tailor-made	to suit the unique capabilities	of the individual	who is consuming it.
	A number of other obstacles	prevent readers of linear text	from attaining high levels of efficiency.	These obstacles are outlined in	“How We Handicap Readers,”
a Web page at mudoc.com/ handicap.htm.	This page includes statistical data	about the extent of illiteracy	in the less-developed countries,	including Afghanistan, Pakistan, and Haiti.	Two newly-posted Web pages at mudoc.com are
“Building a Healthy Haiti”	(mudoc.com/ haiti.htm)	and “A Practical Plan for Pacifying	Pakistan and Afghanistan”	(mudoc.com/ Pplan.htm).	These pages offer proposals
for the implementation of	national information dispensary systems	in those nations	to bring them to full literacy	at costs they can efford.	
	Readers of *mudocs,*	digital documents set in muvable type,	will have another great advantage	over readers of conventional text.	Mudocs will be read on top of
mudoc reference substructures,	reference libraries that will include	millions of documents	that will be immediately available to the reader.	Any word found in a mudoc	can be immediately researched

in the reference substrucure	that is supporting the mudoc.	The reader can find any kind of information	about any particular word,	including such information as	pronunciations,
definitions,	grammactical characteristics,	etymology,	examples of use,	and, when they exist,	synonyms,
antonyms,	homophones,	and homographs.	Other information about the word	that may be available in a reference substructure	could be pictures,
drawings,	maps,	charts,	tables,	voices,	music,
sound effects,	video clips,	computer graphic presentations,	and other descriptive information.		
	In short,	interactive movable type	and the other tools	of the mudoc technology	could change the role
of Homo sapiens	on our planet.	At present, we are a species	that is only partially literate	and that makes very limited use	of our powerful
natural information processing systems	in dealing with our problems.	The mudoc tools	could enable us to acquire	whatever knowledge and information	is needed to turn our planet
into a prosperous,	healthful,	non-violent,	and self-sustaining	place to live.	With the mudoc tools
we may be able to realize	the kind of	“Life in a World of Superreaders”	that is described at	mudoc.com/ crwr/ crwrscr8.htm.	