TAKING THE *MEASURE* OF MACHINE SHORTHAND

Are today's realtime theories "longer" – i.e., more stroke intensive and more key intensive – than pre-realtime theories?

There's no question that writing realtime machine shorthand is more demanding mentally, requires a higher standard for academic skills, and demands a level of technical knowledge and facility that would have been unimaginable pre-realtime. But the question of the moment is: Are today's theories ***longer*** than pre-realtime theories? If so, how *much* longer?

The only way to answer that question conclusively is to physically ***measure*** the theories with a word by word, stroke by stroke, key by key comparison of (1) steno written with a pre-CAT theory and (2) steno written with an NCRA-approved realtime theory.

The source for the pre-CAT steno is Stenograph's *Touch Shorthand, Dictionary/ Handbook*, copyright 1968. Source for the realtime theory steno is the Phoenix Theory translation dictionary.

The body of material compared consists of 3,000 words and steno outlines taken in alphabetical order from the *Touch Shorthand, Dictionary/Handbook*. That's approximately 20 percent of the entire *Dictionary/Handbook,* a sampling large enough to be representative, within reasonable margins, of the result were the entire book to be compared. When alternative outlines were available in the *Dictionary/Handbook*, a best effort was made to use the least stroke intensive and/or least key intensive stroking option. No briefs are included. The fact that *Touch Shorthand* offers approximately 640 abbreviations for words/phrases, whereas Phoenix Theory offers approximately 6,000, would skew the results.

The comparison chart was created on an Excel spreadsheet, and the stroke/key totals were computed by Excel rather than my not-always-infallible calculator skills.

Total strokes required to write the 3,000 words:

Stenograph's *Touch Shorthand*	**6,852 strokes**
Phoenix Theory	**6,742 strokes**

Note: The total for Phoenix Theory includes 78 strokes for adding inflected endings as recommended by the NCRA Theory Review Task Force and required by Vitac for captioners. Stenograph's Touch Shorthand includes inflected endings with the root word. Otherwise the totals would be: Touch Shorthand 6,852; Phoenix Theory 6,664.

However, the number of ***strokes*** doesn't tell the whole story. The key intensity of the strokes is equally important but is a much more difficult comparison to make. Stenograph's *Touch Shorthand* is steno at its simplest, what is affectionately referred to by people with very long memories as "baby shorthand": No long vowel distinction (its only recognition of the need for long-vowel distinction is to use AEU for words *spelled ai*); no distinction between *al* and *aul* sounds; no distinction between initial *s-* and *z-*; no distinction between final *–f/-v, -s/-st, -t/-th, -ng/-nk/-nj, -k/-kt, -x/-xt, -ks/-x*; minimal use of memorized one-stroke briefs; no homonym distinction; no concern for conflicts created by incorporating inflected endings; and concern about word boundary conflicts was still an unknown concept.

How do you compare the key intensity of such "baby shorthand" with a realtime theory which ***must*** include long vowel distinction, ***must*** distinguish initial *s-/z-* and final *–f/-v, -s/-st, -t/-th, -ng/-nk/-nj, -k/-kt, -x/-xt, -ks/-x* (the only available option being to include at least one ***additional*** key in every syllable beginning/ending in those sounds); which ***must*** distinguish all homonyms; which ***must*** add inflected endings in a separate stroke when to do otherwise would create a conflict; and which ***must*** eliminate word boundary conflicts?

The answer, of course, as that comparing them is like comparing apples and oranges; you can't compare them with total accuracy. But we need at least a "ballpark" measurement. So I modified Stenograph's *Touch Shorthand* outlines to include ***minimal*** long vowel distinction, although certainly not to the level of a realtime (or even computer-compatible) theory. No other modifications were made to the *Touch Shorthand* steno; all the other "short" non-computer compatible elements remain – the result being, as you can see from the chart, a theory that even with long-vowel distinction is still so replete with conflicts as to be unsuitable for computer-aided translation.

Total keys required to write the 3,000 words:

Stenograph's *Touch Shorthand*	**27,163**
Phoenix Theory	**26,376**

The question now becomes: How can a virtually conflict-free, realtime theory actually be ***shorter*** – both stroke-wise and key-wise – than an "old standard" pre-computer theory?

There are four major factors:

1. Using a patented Vowel Omission Principle (which the U.S. Patent Office determined "exceeds prior art in machine shorthand). This VOP omits indistinct vowel sounds which are unnecessary for writing/reading steno, resulting in a significant reduction in spelling dependence, automatic elimination of the majority of word boundary conflicts, elimination of one word/two word conflicts other realtime theories have been unsuccessful in resolving, and *simplifying* strokes by ***reducing the number of keys.*** **Examples**: TRUPL/P-T, HEL/PH-T, TPRE/KW-PBT, KAP/KH-R, TKAOUB/KWR-S, PAT/-RPB, HREPBLG/-PBD, SRAL/KWR-PBT,

PWED/R-PL, PUZ/-LG, REUB/-PB, KHAP/T-R, TPEUL/T-RD, PEUS/T-L, PWUPBG/-LD, KHART/-RZ, TPAOEUR/PH-PB, TPRUPBT/W-RD, PORT/HR-PBD, HAUL/PH-RBG, WAUL/TPH-T, OUT/SK-RTS, REPBLG/PH-PB, PHOR/PW-D, PWAR/TKPW-PBZ, PWHRABG/PW-RD, etc.

2. Cutting ***groups*** of "big words" down to size with consistently applied shortcuts for high-frequency, multisyllable word beginnings and endings. Some examples:

micro-	PHAOEURBG
poly-	POEUL
hydro-	HOEURD
hyper-	HAOEURP
ante-	AEPBT
auto-	AOT
super-	SPR-
iso-	AO*EUS
beta-	PWA*ET
-(c)able/-(c)ible	/(C)-BL
-(c)ability/-(c)ibility	/(C)-BLT
-(c)ably/-(c)ibly	/(C)AEBL
-(c)ory	/(C)OEUR
-(c)orily	/(C)OEURL
-(c)ary	/(C)AER
-(c)arily	/(C)AERL
-uate	/KWRAUT
-uation	/KWRAUGZ
-tuate	/KHAUT
-tuation	/KHAUGZ
-ulate	/KWR-LT
-ular	/KWRARL
-graphic	/TKPWR-FBG
-logical	/HR-PBLG/K-L
-erally	/RAEL
-cally	/KHRAE
-istic	/ST-BG
-ification	/TP-BGZ
-(c)ology	/(C)AULG
-(c)ologist	/(C)AULGS
-(c)ation	/(C)GZ
-(v)sis	/(V)SZ
-(c)it is	/(C)AO*EUTS
-icide	/S-D
-(c)ize	/(C)-Z
-(c)ater, (c)eter, etc.	/(C)AEURT, (C)AOERT, etc.
-(v)nshal, (v)nchul	/(V)LGS
-(c)ectomy	/(C)OEUBGT
-(c)otomy	/(C)OEUPLT

3. ***Blending*** the *eeh* sound endings (the highest-frequency English ending). All *eeh* sound endings are stroked AE. When the vowel has been omitted from the preceding stroke, the AE is *blended* with the preceding stroke, ***except***. *–dy*, *–ry* and *–ty*. Examples:

SKWREP/-RD/AE	*SKWREP*/AERD
HRAOEPB/KWR-PBS/AE	*HRAOEPB*/KWRAEPBS
APB/-RBG/AE	*APB*/AERBG
PEPB/-LT/AE	*PEPB*/AELT
KU/TAS/TR-F/AE	*KU/TAS*/TRAEF
HREUB/R-L/AE	*HREUB*/RAEL
SKWRAOEPB/KWR-L/AE	*SKWRAOEPB*/KWRAEL
TPHORPL/-LS/AE	*TPHORPL*/AELS
PWURG/-PBD/AE	*PWURG*/AEPBD
TPORS/TP-L/AE	*TPORS*/TPAEL
SEUPB/-RPBLG/AE	*SEUPB*/AERPBLG
EBGS/T-S/AE	*EBGS*/TAES
TKPWAL/-BGS/AE	*TKPWAL*/AEBGS

While this principle does avoid conflicts such as finely/finally, hardly/hardily, curtsy/courtesy, etc., its main purpose/contributions are: eliminating strokes, reducing finger travel, lessening the burden on the left hand.

4. Inflected endings. The NCRA Theory Task Force recommends, and Vitac requires of its captioners, that inflected endings be added in separate strokes to avoid the hundreds of homonyms and stenonyms which are created when inflected endings are added to strokes for root words. Phoenix Theory structure and principles make it possible to *include* the majority of inflected endings ***without*** creating homonyms/stenonyms. For example, the Brown Corpus of 5,000 most-frequently-used words includes 1,459 inflected endings, 1,031 of which the ***keyboard*** allows to be incorporated but which NCRA and Vitac proscriptions require to be written in separate strokes. With Phoenix Theory, only 399 of the 1,031 inflected endings require second strokes, a savings of 632 strokes when writing these 5,000 words.

Although they have minimal impact on either stroke intensity or key intensity, there are additional elements which contribute to the ease of learning/writing Phoenix Theory relative to other realtime theories – and the hallmark of each is ***consistency***.

1. Phoenix Theory is written primarily by sound. A syllable of sound is ***consistently*** written the same way, regardless of spelling. Once the theory is completely assimilated, writers know almost intuitively how even unfamiliar words can be stroked for realtime translation. There's no unnecessary hesitation between strokes deciding how a sound/word is *spelled* or how it *must* be stroked to conform to a translation dictionary entry.

2. The ending *eeh* sound, the highest-frequency ending sound in English, is ***consistently*** stroked AE. With some other realtime theories it's stroked as many as four different ways, depending on how it's *spelled*. Decision-making equals hesitation.

3. Beginning consonant-plus-long-vowel strokes must be distinguished from other consonant-plus-long-vowel strokes to avoid one word/two word conflicts such as *female/fee mail, saline/say lean, biplane/by plane, Beirut/bay route, ketones/key tones*, *belaboring/be laboring, hero/he row, latents/lay tents, melee/me lay, primates/pry mates,* etc. Phoenix ***consistently*** writes beginning and medial consonant-plus-long-vowel sounds as A, E, EU, O, AOU. Another realtime theory strokes them as (1) short vowel, (2) short vowel plus asterisk, (3) long vowel, and (4) long vowel plus asterisk, depending on the word structure. Decision-making, hesitation.

4. Phoenix eliminates vowel/consonant word boundary conflicts with one simple, ***consistently*** applied vowel omission principle. Another realtime theory has 20-plus rules which must be memorized and applied when writing steno just to resolve this one area of word boundary conflicts, including doubling a consonant regardless of spelling or pronunciation. Others require ***adding*** an asterisk in vowel/consonant word beginnings or endings; others require ***adding*** KWR to all medial and ending strokes beginning with a vowel. These word boundary rules cause stroking hesitation and/or add to the key intensity of the strokes.

Are today's realtime theories longer than pre-realtime theories? It all depends on ***which*** realtime theory.

See also:

(1) PDF spread sheet comparing the stroke and key count of steno outlines from Stenograph's Touch Shorthand and Phoenix Theory.

(2) Article AU vs. O (An aspect of Phoenix Theory which seems "foreign" or gratuitous to writers of theories whose steno is dependent on vowel spelling is that we stroke both the **au** *and* **aw** *sounds as* **AU**. *This article explains why this theory principle is both necessary and beneficial when steno is actually* ***written by sound***. Phoenix Theory has, in fact, been thoroughly reviewed by a retired professor of linguistics whose written critique praised Phoenix Theory for its phonetic/linguistic accuracy and its teaching methodology.)