Increase Your CW Speed with Wordsworth

Train yourself to comprehend Morse code in your head using *Fldigi*.

George Allison, K1IG

We've always been taught to think with words, but to process CW in our heads, we're taught to think letter by letter. *We have to change the way we think to match the decoding process.* High-speed operators who copy CW in their heads at speeds faster than 60 words per minute (WPM) have learned to process CW by hearing *entire words*.

Although it may seem impossible to process entire words, this is how you learned to read. You learned the alphabet and the associated sounds of the letters, and then you began to form them into words to understand them.

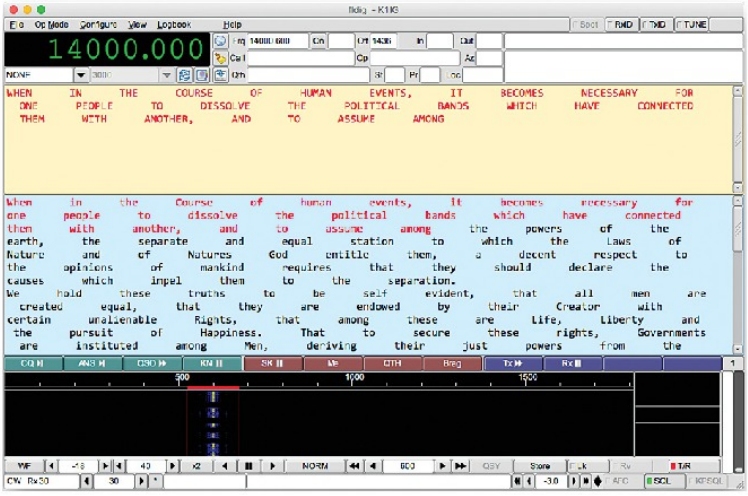

Figure 1 — The Declaration of Independence in *Fldigi*, with 12 spaces separating each word. At 30 WPM, this yields 2 seconds of silence between the words.

Wordsworth: Prerequisites, Tools, and Process

Wordsworth is a method of learning to scan CW. It's an adaptation of the Farnsworth method, which sends individual letters at high speed, with lots of space in between to enable comprehension. In Wordsworth, complete words are sent, instead of individual letters. Thus, we process a "word's worth" of information.

Wordsworth addresses two obstacles of high-speed head copying — ear training and comprehension. *Ear training* gives you the ability to recognize words at high speed by sending the words in rapid bursts. This is a prerequisite for the Wordsworth method, and you should be at a Farnsworth letter speed of at least 25 WPM before you begin with Wordsworth. *Comprehension* is taught by giving you enough time to understand each word in context so you can form complete sentences and thoughts.

To use Wordsworth, you'll need a word processor to edit text files and *Fldigi*[1] to send the code generated from those files. Do not, of course, connect your computer to your transmitter during training — the practice is just for you, not for everyone on the bands!

Once you have your practice text in hand, the Wordsworth process is:

1) Use your word processor to edit out the characters you don't want to hear (e.g., apostrophes, parentheses, and exclamation points).

2) Use the "Find and Replace" function of your word processor to insert the necessary spaces between words (shown in Table 1), which is determined by how much silent time you want between words. (Note that the spaces required are not always a linear function; the number of spaces is determined by how *Fldigi* computes time.)

3) Copy the revised text and paste it into *Fldigi*'s send window (see Figure 1).

4) Adjust *Fldigi* to your desired speed, hit the Tx button, then look away from the screen and start listening.

Table 1
Number of Spaces Needed Between Words

WPM	1 Second	2 Seconds
20	3	8
25	4	10
30	6	12
35	7	14
40	8	16
45	9	18
50	10	20
55	11	22
60	12	24
65	13	26
70	14	28
75	15	31

Practice Techniques

Your initial speed should be at least 20 WPM, or about 5 WPM faster than you usually copy, whichever is higher.

You have to get used to hearing the words in short, fast bursts. Increase the

speed until you can no longer visualize, but you can understand the shortest words (e.g., the, and, for). Visualizing may be the hardest habit to break after years of hard-copy training. Let your brain do what it knows how to do; let the words construct themselves in your head.

Don't try to count dits and dahs, either. Focus on recognizing entire words, and use context to help you. It can help to focus on the tempo and rhythm in the text. For instance, telling the difference between the letters B and D when sent by themselves at 40 or 50 WPM is difficult, but the difference between "webbed" and "wedded" is very noticeable when you hear them as part of a string of text.

It can take 5 or 6 minutes of listening before even the little words start to pop into your head, so be prepared to spend at least 20 minutes at each session. If your mind wanders, don't stop; refocus and continue copying. It's okay to look at the *Fldigi* screen now and then to verify your comprehension, or to see what gave you trouble.

Experiment with speed and spacing. If you're not getting anything, slow the transmission speed until you can hear those short words. If you can understand words here and there but can't get the context, the transmit speed is okay, but you need to increase the word spacing. Two seconds of spacing is actually a long time; you'll probably be able to reduce to 1 second once you start understanding the words.

Table 2
Spacing's Effect on Speed

Spaces	Effective Speed
1	100%
2	93%
3	86%
4	81%
5	76%
6	71%
7	68%
8	64%
9	61%
10	58%
11	56%
12	53%

After a few sessions at your optimum learning speed, you should be hearing words and understanding some of the context. When you think you're at about 75 – 80% comprehension, reduce the word spacing by one or two spaces, and see how you do. When you're down to about ½ second of word spacing, try increasing the transmission speed by 8 to 10 WPM.

Table 2 shows how the word spacing affects the effective speed of the text. For example, sending text at 30 WPM with 12 spaces between the words yields an effective speed of 16 WPM, or 53%.

It may be several weeks until you can comprehend full sentences. Once you can understand text at medium speeds with only a single space between words, comprehension will carry over to higher speeds. You'll then find that your biggest limitation is ear training, which you can practice using the common words found in Table 3. Text from on-air contacts can also be helpful for training.[2, 3, 4]

Conclusion

If you're doubtful of your ability to recognize entire words, remember that you're probably already doing it with at least two words — "CQ" and your call sign. You can do this with all the other words too. It will take dedicated practice, but your brain already knows how the process works — let it do what it knows how to do.

Notes

[1] *Fldigi* is available at **www.w1hkj.com/**.
[2] Learn CW Online (**lcwo.net**) provides text and call sign training.
[3] The CW Academy at the CW Operators' Club (**www.cwops.org**) has MP3 and WAV files that can be set up for Wordsworth training.
[4] Andy, KB1OIQ, has written Perl scripts (available at **sourceforge.net/projects/kb1oiq-k1ig-wordsworth/**) that generate lists of characters or QSO words for import into *Fldigi*.

Life member George Allison, K1IG, was first licensed in 1962 as WB2BEF. He held several call signs while serving on board ships and communications stations during his career in the US Navy. He commanded the frigate USS *Ouellet* (FF-1077) and the naval communications station in Guam, and his last tour before retiring from active duty in 2000 was as Commander of the US Naval Computer and Telecommunications Command, responsible for worldwide communications for the Navy's ships, submarines, and aircraft. After a second career with Raytheon in Massachusetts, he retired for good in 2011, and now enjoys contesting and hunting DX with tiny antennas on the deck of his condo. You can reach George by e-mail at **k1ig@arrl.net**.

Table 3
Common QSO Words

Two-Letter Words															
73	88	BK	CL	CQ	DE	DX	EL	ES	FB	HI	HR	IS	MY	OM	OP	TU
UR	VY	WX	YL													

Three-Letter Words															
ABT	AGE	AGN	ANT	BTU	CPY	CUL	GUD	HW?	PKT	PSE	PWR	QRM	QRN	QRP	QRQ
QRS	QRT	QRX	QRZ	QSB	QSL	QSO	QSY	QTH	RIG	RPT	RST	TKS	TNX	XYL	YRS

Four or More Letters											
BEAM	LONG	LOOP	NAME	RUNS	TEMP	TEST	VERT	WATT	WIRE	YAGI	DIPOLE