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I wrote this story for my Morse Code Ninja website's Advice page — https://morsecode.ninja/advice/index.html . I thought at least a few in the club would find it of interest, perhaps even inspiring. Have you ever wondered what is involved in copying Morse code at high speed? Read on!

## Morse code Speed vs Proficiency:

At some point in our Morse code journey, we all yearn to copy faster. However, as a reminder, accuracy should always trump speed in the real-world. If you are working at a higher speed than your proficiency or band conditions allow, at best, you may frustrate yourself and the other operator. And at worst, you may fail to communicate successfully.

So what does it take to go faster? In short, it requires learning to operate at a higher proficiency, as shown in the picture below. Knowing this and achieving it are two different things. First, let us cover some theory, and then we will look at approaches to move from one proficiency level to the next.

There are two types of mental processes — conscious and unconscious. The conscious mind is amazing. It allows us to solve complex and difficult problems, such as a calculus homework assignment. It empowers us to engage in abstract, logical, and analytical thinking. Anytime we stop to focus and concentrate, we are almost certainly employing our conscious mind. The downside is how slow it is compared to the unconscious mind!

By comparison, the unconscious mind is lightning fast. It is effortless, automatic, and continuous. It is also where the majority of our information processing takes place. The unconscious mind feeds higher-level information to the conscious mind. For example, in everyday conversation, our unconscious mind does all of the hard work of interpreting phonemes, words, and grammatical structure. It also allows our conscious mind to focus on the meaning of what is being said, and it enables us to understand someone casually talking at 150wpm effortlessly.

The unconscious mind's lightning-fast ability to process information is the key to copying code faster. As a general principle, as the Morse code speed increases, a larger amount of the processing and interpretation must be done by the unconscious mind. And this is directly related to the four levels of Morse code proficiency.

**Levels of Morse code proficiency:**
1. Conscious decoding of Dits and Dahs
2. Instant Character Recognition
3. Instant Word Recognition
4. Focus on the Meaning

Before we dive into these levels, it is helpful to understand that they are not used exclusively. It is not uncommon to shift back and forth. As an analogy, consider the act of breathing. It is nearly always under the control of the unconscious mind. But by drawing our focus to it, we may control it with our conscious mind. With enough experience, it is possible to shift our Morse code proficiency level to best match the context and speed of the code being copied. For example, a callsign must be copied character by character, while a word can be copied as a complete sound pattern.

So what are the four proficiency levels? And how do they relate to your ability to copy at higher speeds?

### 1. Conscious decoding of Dits and Dahs:
At this proficiency level, you actively listen to the dits and dahs. Once there is a word or inter-word space, the sequence of dits and dahs is looked up in your conscious mind to identify the character being sent. For example, you might hear Di-Dah-Dit, think Dit – Dah – Dit, and then look up the sequence to identify it as the letter R.

If you find yourself repeating the sound pattern in your mind, you may also be at this level.

At this basic proficiency level, the conscious mind is doing all of the work to decode and interpret the Morse code! And because the conscious mind is so much slower than the unconscious mind, you will be unable to go faster than 10 to 13 words a minute at this level.

If you learn Morse code at 5wpm, using sound-a-likes, memorization charts, or other learning-aids, you will inevitably start your Morse code journey at this proficiency level. This is not advised since you may inevitably get stuck and unable to copy code beyond 13wpm. Some people get stuck for years despite heroic efforts to overcome it! And others transition to higher speeds without much of a problem.

### 2. Instant Character Recognition:
At this level of proficiency, the unconscious mind is doing the hard work of instantly recognizing each letter as it is sent. The characters are recognized instantly and effortlessly. For example, when you hear di-dah-dit, you think of the letter R. Then the

slow, conscious mind follows letter by letter to form words, abbreviations, and callsigns.

To begin learning Morse code with ICR (Instant Character Recognition), you will need use either the Farnsworth or Koch Method.

The **Koch Method** is a learning technique named after German psychologist Ludwig Koch. With this method, the full target speed is used, starting with just two letters. Once strings containing those two characters can be copied with 90% accuracy, an additional character is added. This step is repeated until the full character set is mastered.

The **Farnsworth method** is a learning technique named after Donald R. "Russ" Farnsworth (F6TTB). With this method, you are taught to copy characters at their full and standard speed. However, the spacing is lengthed between characters and words, which gives you time to think about the sound pattern you just heard. Typically students start with a character speed of 20wpm and an effective speed of 10wpm. Like the Koch method, students start with two characters and continue to add characters as soon as they reach 90% accuracy.

The key to mastering ICR with the Koch Method and Farnsworth Method is to ensure that you learn the sound pattern of characters at a speed of at least 20wpm. If you can count the dits and dahs at 20wpm, you will need to learn at a higher speed, probably 25 to 30wpm. Otherwise, it is almost impossible to avoid counting the dits and dahs. And with the Farnsworth method, you will need to use an overall speed that prevents you from repeating the sound pattern in your head. Typically an overall speed of 10wpm is sufficient.

Does it matter how you copy with ICR? Yes! It will affect the maximum speed you can achieve, which may be anywhere from 20 to 30wpm. There are three ways that you can copy Morse code using ICR and the previous proficiency level of Conscious Decoding of Dits and Dahs.

**Pencil-Copy:** With this method, each letter is written down on paper after being instantly recognized. The speed limit comes down to the fact that people can not write very fast, and it is tiresome. Even using a modified printing style for speed, most people will only sustain 20wpm while putting each letter down on paper.

This method is often employed at slower speeds since it does not require a computer, it is simple to learn, and it alleviates the conscious mind from having to keep track of a sequence of letters to form words and abbreviations. And it frees the conscious mind from keeping track of more higher-level statements and sentences.

**Keyboard-Copy:** With this method, each letter is typed on a keyboard. Instead of hearing di-dah-dit and thinking of the letter R, you associate the di-dah-dit sound pattern with pressing the letter R on a keyboard.

With keyboard-copy, the unconscious mind is doing even more of the work compared to ICR with pencil-copy. And the interpretation of the meaning often comes from reading the words and abbreviations formed on the screen! This can create an odd sensation when the conscious mind does not know what is being sent until it is read on the screen!

Keyboard-copy is faster than pencil-copy. Our continuous keyboard-copy ability will be half our steady typing speed. For instance, most proficient touch typists can sustain a typing speed of 60wpm, which puts their maximum sustained keyboard-copy speed at 30wpm.

**Head-Copy:** With this method, nothing is recorded outside of the mind's eye. Using this method with ICR, the unconscious mind does the hard work of instantly recognizing the sound patterns and prompting the conscious mind with each character. The conscious mind must then take on the hard work of following character-by-character to identify words, abbreviations, and then the higher-level meaning of statements and sentences.

If you are head copying, this method is sometimes described as the process of affixing letters on a blank blackboard or ticker-tape in the mind's eye as each letter is received. Then you read what is on the board. Perhaps, this description is more of an analogy than reality for most people.

Using ICR and head copy, most people will max out somewhere between 25 and 30wpm. This maximum speed refers to continuous copying. At higher speeds, it is possible to copy a short burst of characters such as a callsign or serial number, which is often a skill developed to participate in contests at 30 to 40wpm. The world record for unaided callsign copy is 195 wpm!!

I recommend starting your Morse code journey learning to head-copy with ICR. This will allow you to quickly achieve 25 to 30wpm real-world speeds operating on the air, and it will enable you to progress to the next two proficiency levels.

### 3. Instant Word Recognition:

At this proficiency level, the unconscious mind does most of the hard work. You hear the sound pattern of entire words and abbreviations as a whole, and then you instantly and effortlessly recognize them. While the unconscious mind does a lot of hard work, the conscious mind must keep track of words and the grammatical structure to form meaningful statements and sentences. For example, you hear dah-di-dah-dit dah-dah-di-dah, and think CQ.

This proficiency level often allows users to achieve speeds of 50wpm or greater with enough practice, and it is nearly always done with head-copy. It is interesting to note that this level of proficiency often develops early on with real-world practice. It is common to learn the sound pattern of CQ, 599, 5NN, TEST, and your callsign without trying to learn them as sound patterns, and you can copy them at much higher speeds than anything else.

Gaining proficiency at this level is a matter of building up a vocabulary of sound patterns. Consider the following ABC's of

success to master IWR (Instant Word Recognition).

**The ABC's of success:**
A) Learn the sound pattern of words and abbreviations at or slightly above your maximum ICR speed. Working at that speed will encourage you to focus on the word's entire sound pattern and not follow letter-by-letter. It's analogously to why we learn ICR at a character speed of 20wpm or faster — in that case, we want to avoid focusing on individual dits and dahs.

B) After learning to copy the sound pattern of individual words, strive to copy two and then three words at a time. You may find my n-gram Morse code practice sets useful in developing this skill — Sets of 2 Words, and Sets of 3 Words — and perhaps using them at 30wpm. ( https://morsecode.ninja/practice/index.html ) They are based on the most common two and three-word combinations in the English language. And because they are so common and familiar, it helps ease copying multiple words for the first time. If you copy one of the words, you may easily guess the missing word(s).

Copying multiple words at a time is mostly a matter of giving your conscious mind enough space or mental capacity to take on the challenge of remembering several words at a time.

C) After learning to copy handfuls of words at a time, strive to master copying an entire sentence. I recommend starting with the easiest sentences made up of the most common 100 words in the English language. And then move on to sentences that use larger vocabularies. You may find my practice sets — Sentences from the Top 100 Words, Sentences from the Top 200 Words, and so on — very useful.

Once you have built up a vocabulary of sound patterns at a given speed and understand them in statements and sentences, it is straightforward to increase your maximum copy speed. Diligently and incrementally, practice at ever faster speeds to reach your goal.

As a tip, if you listen to Morse code without headphones, pay close attention to any echo in the room. You may need to make adjustments to minimize echo, which can interfere with clearly hearing Morse code at or above 40wpm.

### 4. Focus on the Meaning:
At this proficiency level, the unconscious mind is doing all of the hard work! The conscious mind is free to focus on the meaning of what is being sent. This level of proficiency is the nirvana that most aspire to achieve. It is equivalent to listening to someone talk to you in your primary language. It is easy and effortless.

This level of proficiency develops with extensive practice and experience. As the unconscious mind takes on ever greater responsibility, it increasingly frees up the conscious mind to focus on the meaning.

### Postscript:
So there you have it — Speed vs Proficiency. I hope that you found this useful! If you would like to watch my talk on Morse code Proficiency vs Speed, feel free to watch the 17-minute YouTube video — https://www.youtube.com/watch?v=5BlhhBK1CBw .

I wish everyone all the best on your Morse code journey!

73,

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