The Professional Learner

A Research Paper By:

Steven Bancroft

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Jim Morton, Instructor
Automotive Training Center, Warminster PA Campus
http://www.autotraining.edu/

Table of Contents:

Jim Morton, Instructor
Automotive Training Center, Warminster PA Campus
http://www.autotraining.edu/

This is a research paper written to describe the theory and summarize the point of an article published in Motor Magazine, issue November 2007. The article is titled "Think Different: Get Ahead By Putting It In Reverse" authored by Jorge Menchu. I choose this particular piece of literature from a laundry list of very informative and thought provoking automotive related articles because it seemed to present a simple and also challenging lesson. After reading it several times I would argue that Jorge Menchu's ideas in this article could be some of the most important and fundamental information on the Motor.com website for any diagnostic technician. It does not contain a lot of technical theory or processes. It deals with the mind-set of the technician

We are going back to the basics. Every year there is new technology coming out in cars and things are getting more complex. When you go to look up the information about a system and you are trying to diagnose it. It can be overwhelming. That's where preparing our brains with self-awareness comes into play. It means to observe the process your brain takes to collect, organize and analyze information to decide the next course of action. To figure out any problem in an automotive system you have to know how it works. When you know exactly how your brain works too, then it can make learning easier. Jorge's goal of the article is to "…prepare for increased automotive complexity, we have to learn to think more clearly and be

more organized, developed the ability to deal with greater amounts of information and be quicker at knowledge assimilation." On the path to this goal we must employ self-awareness, meaning knowing our strengths, weaknesses and limitations. Strengths and weakness you will have to observe and decide for yourself but there is a rule for our brains limitation. It's called the 7 plus or minus 2 rule. It is based on research and it means that it doesn't matter who you are or how smart you are, everyone can process seven plus or minus two things at a time. The idea is then to develop strategies for overcoming this limitation. For example, documentation and/or forms of presentation of information to help us comprehend more data faster.

Now I will discuss in more detail the thought process of diagnosis as described by Jorge Menchu. It is called diagnostic reverse engineering. When you reverse engineer something, quite simply you gather as much information about something and figure out how it works. But it's usually never that simple. There are things that you know about the circuit and things you do not. You cannot figure out what you do not know by focusing on it. You must start with what you do know to solve your problem. Then you follow the clues you have to reverse engineer the situation. It sounds simple and every professional technician knows real life tasks in diagnostics are rarely this easy. But if you allow yourself to follow this thought process you may realize the power it has in achieving your goal.

When you're faced with a difficult problem to solve first remember to ask yourself a few very important questions. First, what is the problem? Next, how is the system supposed to act and what is it capable of? The knowledge of the system is the more difficult part. That is why we discussed information assimilation earlier. That is a powerful skill in itself because you must have an excellent understanding of your system and what it is capable of. Next up in the process is what Jorge calls "taking inventory." The inventory is your knowledge of the problem and the system. What do you know and what don't you know? But remember to solve the problem you must focus on what you know, not what you don't. A complete inventory should include understanding: "the players-key components that make up the system, the functions- the main building blocks of the system, the relationships- the threads that tie the functions together, the flow of information- the energy and the information used to carry out the system strategy, the strategies- which define what the system is supposed to do and how it will do it, stimulus, process, outcome- from user input to all the steps that take place and lead to the system output. "Once you have taken inventory you imagine your situation from many perspectives. Jorge describes it as putting the object or situation in a see-through box. Each side of the box is a different perspective. After contemplating different perspectives it is time to follow your clues. Everything before this step have been a gathering and assessment of information and knowledge. Now, use all the evidence and information you have assembled to develop a theory of why the problem exists and what is the root cause.

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Automotive Training Center, Warminster PA Campus
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The first few times I read Jorge Menchu's article on reverse engineering I thought I got the basic gist of it but I knew I was missing a more useful understanding of the lesson. Then I realized there was something about how he organized his thoughts in the article that made me feel like he was jumping around and I could not follow. Once this dawned on me it was apparent that I was beginning to understand my own brain's limitations. I began breaking down the article into more fundamental servings that my mind could digest easier. Reverse engineering is a very theoretical process. The goal is to be the best professional learner possible. "Think Different: Get Ahead By Putting It In Reverse" by Jorge Menchu is a concrete foundation for that school of thought.

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Bibliography

- "Get Ahead By Putting It In Reverse" by Jorge Menchu, Motor Magazine, Nov 2007

Additional articles by Jorge: http://www.aeswave.com/Articles-by-Jorge-Menchu-17.html

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