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The Science Of Automating And Perfecting Any Skill

Achieving "automaticity" is about making a newly learned skill a part of who you are, as opposed to just a thing you can do.

INTRO

Learning something new is all about memory and how you use it. At first, your prefrontal cortex—which stores your working (or short-term) memory—is really busy figuring out how the task is done.

That's the part of your brain involved with conscious decision-making and planning.

But once you're proficient, the prefrontal cortex gets a break. In fact, it's freed up by as much as 90%; you can now perform that skill automatically, leaving your conscious mind to focus on other things.

That level of performance is called "automaticity," and reaching it depends on what psychologists call "over-learning" or "overtraining." Here's how to over-train your brain to do something so well that you can do it unconsciously—and what to expect once you can.

ABOVE AND BEYOND AUTOMATICITY

If you've learned how to drive, chances are you've spent minutes at a time behind the wheel thinking about something else altogether, not even realizing you've been driving.

Something similar happens with more complex, specialized skills, too. In his book The Art of Learning, chess prodigy and tai chi world champion Josh Waitzkin, explains automaticity this way:

> *Now my conscious mind, focusing on less, seems to rev up its shutter speed from, say, four frames per second to 300 or 400 frames per second. The key is to understand that my trained mind is not necessarily working much faster than an untrained mind—it is simply working more effectively, which means that my conscious mind has less to deal with.*

Developing automaticity, in other words, is the process of going from doing to being—empowering you to become an expert and innovator.

REPETITION, REPETITION, REPETITION

The first step toward automaticity is repeatedly learning small sets of information. If you're playing basketball, for instance, that might mean shooting the same shot over and over. The key here is to go beyond the initial point of mastery.

Overtraining is about continuously practicing something you've already learned inside and out. Once you've over-learned a skill, you no longer need a script but can perform or even teach that skill in different ways and in different contexts.

Great speakers over-learn their talks so they can present their material differently to each unique audience under various circumstances.

Automaticity, in other words, isn't just about being fluent at your craft—it's also about being fluid and flexible. As Pablo Picasso once said, "Learn the rules like a pro, so you can break them like an artist."

THE MORE YOU SWEAT IN TRAINING, THE LESS YOU BLEED IN WAR

The second step toward automaticity is making your training progressively more difficult. Simple enough. This is akin to increasing the weight and intensity of a workout.

You want to make the task harder and harder until it's too hard. Then you bring the difficulty back down slightly, in order to stay near the upper limit of your current ability.

As you increase the intensity of your training, you'll also begin adding time constraints. Some math teachers ask students to work on difficult problems with increasingly shortened timelines.

Adding the component of time challenges you in two ways. First, it forces you to work quickly, and second, it saps a portion of your working memory by forcing it to remain conscious of the ticking clock.

The fourth and final step toward automaticity is practicing with increasing memory load—that is, trying to do a mental task with other things on your mind. Put simply, it's purposefully adding distractions to your training regimen.

Again, math teachers might have students remember an obscure fact then ask them to recall it immediately after finishing a math problem.

In his book Relentless, Tim S. Grover tells of basketball players chugging a few beers during halftime in order to prove they can outplay their competitors under impaired conditions.

GOING FROM DOING TO BEING

This overtraining process is meant to push you through each of the three stages involved in acquiring procedural knowledge, the kind associated with doing a specific task.

We start at the "declarative stage," where we learn to describe how something works and our understanding is theoretical.

Then we begin to apply and practice what we're learning, in what's called the "associative stage," where we can both think about and perform the skill simultaneously.

Automaticity comes at the third and final "automatic stage." But over-learning takes us further; there's some evidence that exceeding automaticity makes the procedural knowledge you've just acquired more flexible, explicit, manipulable, and available to consciously access.

In other words, you can now do something so unconsciously that it's become a part of who you are, not just a thing you can do.

That comes about in an internal shift right around the third, or "automatic" stage. You see it clearly in children learning how to read or do math. In the beginning, it's difficult and many resist it.

But as they get better, they begin to associate meaning and see the value in the new skill. If they don't, then this internal shift won't happen.

Once the learner begins to believe they can get beyond automaticity —when they can see intelligence as fluid rather than fixed—their motivation shifts from extrinsic to intrinsic.

In layman's terms, it's about having your heart line up with what you know in your head. I've recently seen this change in my 8-year-old foster son. He's now reading because he wants to, not because he has to, and we now have to force him to stop reading.

When you first start doing something, you have to focus on the mechanics; the knowledge you're trying to gather truly is procedural, so your performance is guided by mimicking others—by rules, procedures, and guidelines.

But automaticity unlocks a much wider sphere of action, and at that level, performing a skill becomes more natural and individualized. It's here that what you *do* becomes a natural extension of who you *are*.

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