

## Productive Laminar Flow

Mushin is a state of mind, a byproduct of training, and a way of life.

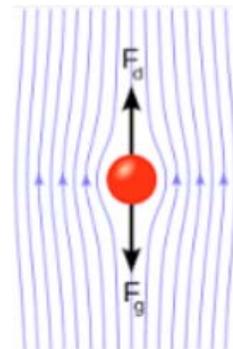
Another way to describe what we are going for – a desired output of Mushin – is what I call Productive Laminar Flow.

Productive Laminar Flow can apply to an excellent trading process, or to any process at all for that matter. It represents adjusting the inputs and steps of a process (including psychology) to achieve maximum results in terms of efficiency and power.

“Laminar flow” is a physics term. As defined on the web:

Laminar flow is a flow regime characterized by high momentum diffusion and low momentum convection. When a fluid is flowing through a closed channel such as a pipe or between two flat plates, either of two types of flow may occur depending on the velocity and viscosity of the fluid: laminar flow or turbulent flow.

“Laminar Flow” occurs when the fluid is moving through the channel as smoothly and efficiently as possible.



The opposite, “turbulent flow,” occurs when there is volatility in the flow, causing resistance and pushback and diffusion of force.

Laminar flow as a concept has significant industrial uses.

In the design of aircraft and automotive vehicles, laminar flow is pursued for the sake of fuel efficiency.

When air flows over the wings of an airplane in flight, for example, that airflow creates channels of resistance – the airplane is literally pushing against the air as it moves forward.

The same thing happens with cars and trucks on the highway, which is why the process of “drafting,” where one vehicle gets behind another, saves fuel by reducing the force of wind resistance.

In the design of an airplane wing, tiny imperfections in the surface, or raised elements like the rivets or bolts holding the wing together, can create disturbances in the flow of air over the wing. The same thing happens with the body of a car or truck.

These disturbances reduce laminar flow and contribute to turbulent flow. This in turn reduces fuel efficiency, with the airplane or car having to “push” with that much more resistance against the air in front of it.

The more laminar flow that an aircraft or vehicle design achieves, the more that the airplane or car in question “cuts like a knife through butter” in terms of moving through the air in front of it.

As such, laminar flow can lead to dramatic gains in fuel efficiency. Aircraft and auto manufacturers thus go to great lengths to try and increase laminar flow – like Boeing putting tiny holes in the tail of its aircraft, for example.

The gains can be great because of the constant resistance. A plane that flies six hours cross-country is pushing against the air for every second of that six-hour flight. Consider the amount of air pushed out of the way by planes flying all day, every day, nonstop for the entirety of their commercial life, and small improvements in laminar flow can save insane amounts of fuel. Even a fraction of a percent worth of improvement has major implications over that kind of timespan.

The second common use of laminar flow is in maintaining purity for highly sensitive manufacturing processes or delicate scientific research. Laminar flow “cabinets” and “hoods” provide steady streams of filtered air that keep out airborne contaminants and impurities. The smoothness of the air flow creates a kind of contamination barrier, with no dirty air touching the components being worked on.

As a metaphor, Productive Laminar Flow takes these concepts and applies them to execution of a day-to-day process.

The more well-designed the process, the more smooth and efficient the execution of that process, which saves both time and energy (in terms physical and mental activity).

A process with laminar flow has minimal friction, uncertainty, and drag.

A process with turbulent flow, on the other hand, is messy, chaotic, prone to stops and starts, and likely accompanied by frustration or other low-level emotional disturbances that drain energy.

Then too, it is easy for the mind (and the process) to be derailed by “contaminants” or “impurities” that dilute a train of thought or throw it off completely. How many times have we all been focused on something, then had an interruption of some kind that completely destroyed that concentration, or at minimum disturbed it significantly.

Productive Laminar Flow can be achieved both within the context of trading – internal to the trading process – and external to trading, in respect to the day-to-day life and habits that unfold around the trading process (and are inevitably intertwined with it).

Developing Productive Laminar Flow goes hand in hand with Mushin in ways that are non-separable. Productive Laminar Flow is dependent on an excellent, well developed process, along with training in that process; and then excellent psychology is required (and practice with elements of that psychology) to keep contaminants and impurities out.

There is a kind of working in concert with the dual goals of 1) making the process as smooth and efficient as possible, and 2) developing psychological tools and techniques for removing emotional distractions while enhancing discipline. These things together create a window for achieving Productive Laminar Flow, with Mushin surrounding and enveloping that – the mental training, the focus and way of being, enabling the productive processes which produce desired results.

The opposite of laminar flow is turbulent flow.

Instead of smooth and controlled, turbulent flow is chaotic and erratic, possibly even violent.

And while the goal is maintaining laminar flow – smooth, efficient execution for maximum output and efficiency with minimal drag – managing turbulence is a necessary skillset.

There are also regular spikes in turbulence – times when complexity and chaos surges well above the baseline.

When you start looking for evidence of turbulence spikes, you see them in a lot of places.

For example, my first job out of school was becoming a commodities broker (working up from assistant level) with a boutique international firm in 1998.

It was a mix of commercial hedging clients, trading funds (my best client was a Russian hedge fund) and retail speculators. (Some of the most aggressive speculators were farmers and cattle ranchers. Maybe they were used to large amounts of risk in their normal business.)

One interesting quirk of being a commodity broker was the non-linear nature of order flow. For two or three days in a row, sometimes even a week, everything would be relatively quiet. The office would have almost a sleepy feel to it, very relaxed and slow paced.

And then, out of the blue, chaos would hit. For no discernible reason, other than the random nature of how the universe works, the phones would explode.

When this happened the normal trickle of orders – most of which had to be called into a physical pit back then – would turn into a flood. The office would feel like a paper factory in a typhoon, the sound of shouted instructions and time-stamp machines reverberating every few seconds.

The chaotic days were physically exhausting, but then the calm period would come again. There was a rhythm to the chaos, even though it didn't come on a schedule. It was more like a weather pattern, where if it hadn't shown up for a while you knew it would be coming.

The “turbulence spike” brought about by clustered orders in volatile markets – or just by random happenstance if a glut of orders came through the system in one day – was a normal aspect of things.

Cash game poker is even more notorious for turbulence spikes, which run completely contrary to long stretches of calm and dead quiet.

Poker has such a high degree of variance, it is possible to play for 100 hours with a sense that very little is happening at all. This can feel like being adrift at sea in a sailing ship with almost no wind, inching along and doing next to nothing. Great long stretches of poker can simply feel immensely boring (if one does not have other things to focus on).

And then, out of nowhere, a perfect storm can hit – either good luck or bad luck relative to the average – and last for hours, days, or weeks. The same game that felt quiet and sleepy for endless sessions on end can become a wild roller coaster ride of confrontation and volatility and challenge.

In the big scheme of things this is all just probability distribution. The total “probability landscape” of poker covers the whole gamut from fat tails of extreme good luck, to extreme bad luck at the other tail, to all of the “normal” conditions in between, which cover those long periods where nothing seems to be happening.

The key thing is recognizing that natural states can vary dramatically, and parts of the probability landscape will look very, very different from other parts. To be complacent in a period of relative calm is to make a mistake if one does not recognize that chaos is part of the mix too.

Alternatively, to experience the thrill of a profitable roller coaster ride is to be mistaken if one does not mentally adjust for other, less exciting parts of the curve.

Turbulence spikes are also a natural part of business, for reasons bad and good. The original idea for Amazon Web Services, for example, found its seed in the extremely uneven nature of Amazon’s rate of order flow.

Amazon’s Christmas season required a massive amount of infrastructure and computing firepower in order to handle the huge flow of orders – but for the rest of the year, the company had lots of idle capacity that was only in place to serve the Christmas rush. This led to the insight that excess computing capacity could be sold to customers when Amazon wasn’t using it, and the kernel of the future Amazon Web Services was born.

The takeaway for Productive Laminar Flow – and for trading in general – is that an excellent process is not just good at running smoothly and efficiently under “normal” circumstances, but also good at handling inevitable turbulence spikes, the buffers of chaos and strained output that are unavoidable in day-to-day life.

This too is where psychology comes in, and specifically the idea of preparatory psychology, where one has access to useful mental models well before the turbulence hits.

All too many people try to manage their mental state in the midst of some high turbulence event throwing them off kilter – but this is too late. The time to prepare for a crisis, or develop mental tools and train for a calm state of mind under stress, is before the crisis happens and before the stress has taken hold.

Psychology plays one of its biggest roles, then, in managing these turbulence spikes, and quickly returning one’s mind to a state of calm focus, in addition to normal smooth operating efficiency. We have to be prepared for things to get nutty, and not get flustered when they do.

Spikes of activity or chaotic motion, relative to a more “normal” baseline, are usually a form of external turbulence.

Sometimes things are the opposite of smooth. Sometimes things get jagged and ragged and crazy, and there has to be preparation for that.

A good system, like an e-commerce order delivery system in the Christmas rush, needs the ability to handle peak stress loads.

Even if those conditions only appear 10 percent of the time... 5 percent of the time... or one half of one percent of the time... they still show up.

The same thing is true on an internal level, with respect to emotional turbulence.

To the extent that a random disturbance can cause destabilizing emotional swings -- anger, frustration, resentment, anxiety -- that swing can throw off performance, and inability to handle emotional turbulence is a form of weakness.

Inappropriate emotion spikes, left uncontrolled, are literally a time and energy drain.

Concentration is burned up or broken by distracting emotion-driven thoughts. Energy is expended on rising stress levels and subconscious adoption of a fight or flight posture. Decision making capacity is degraded or distorted.

All of this can happen on levels that are obvious, or levels that are subtle.

As an example of the obvious, imagine someone sending an email with comments so unreasonable, or wording so inflammatory, the result is instant and extreme anger.

If the anger is strong enough, it is possible in that moment to lose all capacity to think whatsoever.

If provoked enough, one's entire muscle structure and nervous system shifts to a state of onslaught under physical attack, or perhaps a state of preparation to launch a counterattack.

With the time required to calm down and refocus, this kind of thing can blow an hour or a whole afternoon. And it can seemingly come out of nowhere.

But anger is only one example of a destabilizing emotion. There are many others, and they can come in flavors or degrees that are much more subtle versus just getting mad.

Alternative to complete loss of control, there is degradation and dilution at the margins.

It is possible to be annoyed, distracted, or absorbed by some element of petty distraction not just for a moment or a minute, but almost all day long.

Such is like running a personal computer that has been hijacked by a virus, diverting a chunk of processing power below the surface, to a non-approved program that is functionally useless and quite possibly harmful. Many people live their lives doing this without realizing it.

So we can think about external turbulence -- chaos spikes from the outside environment, relative to a smooth baseline -- and also internal turbulence, spikes of emotion or low level sources of continuous negative emotion, that disturb the equilibrium of the system and reduce its power.

Psychological control is about finding ways to manage these spikes, or better yet to dismantle them in real time subconsciously, or even prevent them from arising at all by adopting mental models that transcend them or work around them.