



Each player has a limited amount of concentration. Spending this concentration intelligently requires us to weigh the benefits of exerting concentration in one place while sacrificing concentration in another place. The overall effect of these decisions are what gives players their own unique styles, but some decisions are clearly bad.

In all games we know that it is important to make units. We also know that it is important not to squander those units. One might call this a dichotomy between macro and micro, the two fundamental drains on concentration. One cannot play StarCraft with only one of these fundamentals, but one can emphasize one over the other, either throughout an entire game or on a case by case basis.

The point at which this becomes an error and not a stylistic choice is when a player chooses to micro over macroing, and does not obtain a benefit greater than if he had just macroed. This becomes more true as the game progresses and each player takes more expansions. Say, for example, a Zerg has 6 Zerglings and 16 hydralisks. The opponent has a large collection of Zealots and a few dragoons. With good micro the Zerg is able to kill most of the army, but still loses all his hydra. Or maybe he does kill the Protoss zealots, but only survives with 2-3 hydra. However, while he was microing he did not possess the concentration to macro and now has 3 larvae at every hatchery and 800 minerals. Maybe he thinks 'no problem' and uses all those larvae on hydra to get his money down to 400, and builds a random hatch. However, while his hydra are building the second wave of Zealots are already at his base and his hydra morph mid-attack, basically just to die to Zealots and lose the game. This player made a choice to micro instead of macro when it was inappropriate to do so.

Let us assume that the battle against the Zealots is unwinnable without micro. It might feel like a critical time to drop everything and just survive this one attack. However, let's say that without micro the Zerg still kills about half the zealots or so. He loses his hydra, the Protoss has 5 zealots left that are going to be reinforced soon, but thinking he's won something important, he runs to the zerg base to see if he can do damage. But this time, because the Zerg didn't micro and macroed instead, 20 hydras are waiting for him and his zealots get cleaned up easily.

Let's further supposed that instead of spending the time to tediously micro hydralisks, the Zerg just runs them away and macros while the zealots either chase them down or retreat. This act of running away is a little bit of micro, but not enough to destroy the players concentration on his macro. He then joins his army with his newly macroed units and feels safe enough to make a round of drones if the Protoss doesn't attack. A round of drones that might not be possible if the Zerg were worried about trying to build up his tiny army.

That's the basic idea. When do we macro, when do we micro? If we call tactics a sort of subset of micro, what tactics require little concentration but allow us to macro really well. If we set up a flank, is it best to watch the battle and micro it a little while our minerals build up to 1000, or is it better to let the battle occur as it may with the simple flank and to have 1000 minerals worth of units after the battle is over that we can reinforce with? Is our micro actually doing 1000 minerals worth of damage to justify the money build up? Is the position we might gain from a won battle important enough to neglect macro for 20 seconds? These are the questions we must contemplate in macro theory.



Many of us look to the number of minerals we have as the primary indicator of whether or not our macro is good or not. Indeed, it is the first place alarm bells should be going off when it does not look right. However, even if we keep our minerals low, we do not necessarily have good macro. The following is a list of ways we may not necessarily be keeping our macro in check even if our minerals are low:

We have more than one unit queued In the blitz of StarCraft we sometimes press a key twice when macroing. Those are minerals that could have been units, or they could have been a faster expansion, or an upgrade, or quicker tech.

We have 3 larvae at a hatchery Some Zergs think that because they can build units simultaneously from larvae, it's not as big a deal to let them build up. However, at 3 larvae your hatchery is no longer spawning larvae. Those are larvae that could have been units or drones or anything.

We build a bunch of ultralisk or x-expensive unit Obviously carriers and ultralisks have their purposes, but that purpose must be strategic, rather than to keep your money down. If we have 1500/1500 and suddenly spend it all on ultra so that we have no resources, we are probably building them at a foolish time. What could we have done with that money while it was building up? A faster expansion? Upgrades?

We make drones/scvs/probes, but we don't send them to minerals right away. Mining time is mining time. Every timing we have will be slowed down dramatically by the mining time lost from workers idling after being built. That lost mining time better have been worth it!

We build pylons or overlords way in advance of when we need them Getting supply stuck sucks, but sinking 500 minerals into early overlords, especially in the early game, can be dramatic. Again, if we're building stuff like this ahead of time, it better have a strategic purpose (like blocking vulture harass for pylons) or be worth its price in the concentration we spend elsewhere. I make these reservations

because it IS very common for pros to be 30 supply ahead of where they need to be when they've got 3-4 bases and 100 or so supply in units.

We don't build units as soon as you have the money to. Whether building that drone right when 50 minerals are gathered, or researching that upgrade right when the evo chamber finishes. Getting a drone when we have 80 minerals is the same as lost mining time. Having an evo chamber early is the same as lost mining time.

Basically anytime you are not spending money as we get it Building expos as soon as you have 300 or 400 minerals is extremely important. A slow expo is more or less lost lavae and lost mining time.



Allow me to start with a bold statement: Macro validates Strategy. Strategy is not a replacement for macro. You might have seen me say many times that players should not only focus on mechanics but rather feel free to explore strategies. I said that in a different mindset, however I will still justify it here. Strategy is important to our enjoyment of the game. If we focus on strategy, especially one-base strategy, we will learn a lot. However, we need to be learning at the same time how to macro on that one base strategy so that we execute it as quickly as possible. If our reaver drop comes one minute late because of lost mining time and slow tech due to the various errors listed above, we'll struggle a lot and won't necessarily learn proper StarCraft. Likewise, if we blindly execute FE builds intended to take 3rds and fourths, we might find ourselves overwhelmed by the difficulty of macro. Learn and get used to the interface, then step it up with builds that are more and more challenging to execute in terms of macro.

Second bold statement: Bad macro invalidates strategy. Whether it is our bad macro or our opponent's, the replay and game are meaningless. The timings are off. We cannot apply what happened in a game with bad macro to another game. One, because our and the opponent's poor macro will vary a lot, and two, because many of the timings will not even exist in a properly macroed game (and many others will). The only way we can apply what we learn to other games is if both our and the opponent's macro are very good, nothing is late. That is when we can start making decisions based off what the opponent can have right now, where the opponent's units will be, what tech we have that we can use to judge how far along in tech our opponent is. Bad macro, especially our bad macro, is a guessing game. Good macro provides the consistency and foundation for good strategy.

I should also note that there are many exceptions. Especially midgame TvZ, bio armies are so resilient if you micro them that it can often be worth it to let your minerals build up and queue up units in barracks, since a well microed bio army kills an absurd amount of stuff (and by contrast a poorly microed bio army can be

almost useless). Especially when you have the opportunity to kill a hatchery with 8 marines and 2 medics, while you have standing armies all over the map of 20 marines and medics and vessels, that situation the trade off is often worth it. HOWEVER, especially in the early game, little things like making sure you aren't losing mining time and aren't delaying tech is too important to mess up. I would also say that people tend to err more on the side of too much micro when they should be erring on the side of too much macro. Whether you can kill one extra overlord with a wraith is less important than getting everything else in your base running for the midgame in time.

Most of this is just food for thought. I hope it helps some of you think about the game in a new way. Tsunami once wrote in his 1999ish guide that he did not know how to describe macro and if someone would do it for him. We've learned a lot since then and I hope this has served as a good introduction to the concepts of good macro.

[Originally posted by Chef on teamliquid.net Broodwar Strategy forum]