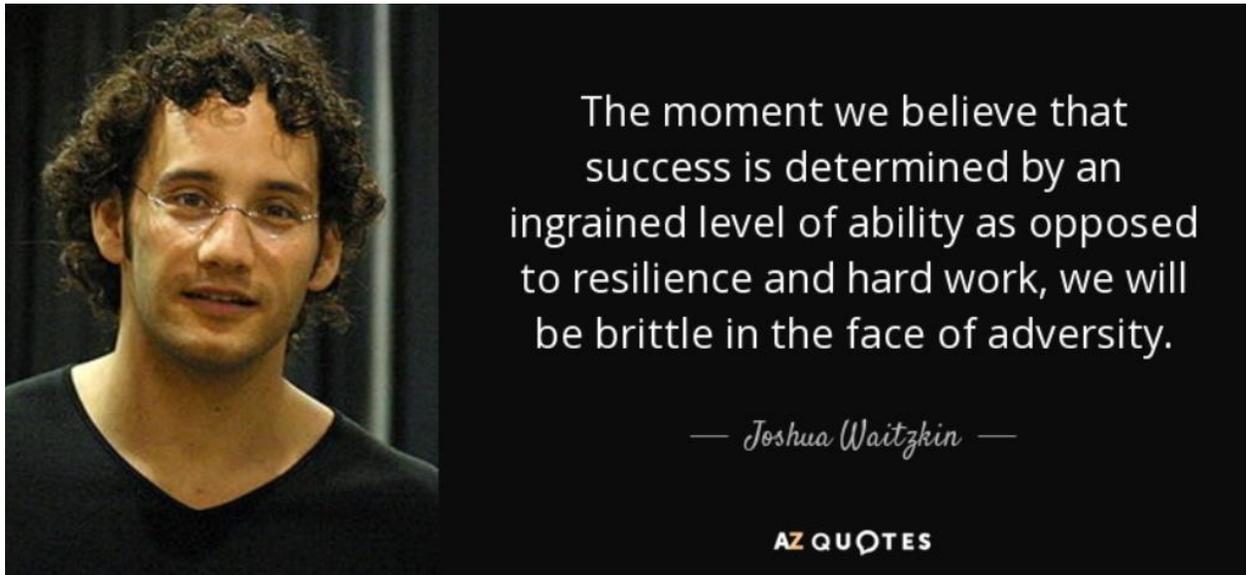


The Art of Learning

By Josh Waitzkin



Summary

1. Josh Waitzkin reflects on his path and process of becoming a Chess Grand Master and later world champion in Tai Chi Chuan. These learning techniques can be applied to any endeavor. “Start with the fundamentals, get a solid foundation fueled by understanding the principles of your discipline, then expand and refine your repertoire, guided by your individual predispositions, while keeping in touch, however abstractly, with what you feel to be the essential core of the art. What results is a network of deeply internalized, interconnected knowledge that expands from a central, personal locus point. The question of intuition relates to how that network is navigated and used as fuel for creative insight.”

Key Takeaways

1. Fundamentals of Learning

- One has to investigate the principle in one thing or one event exhaustively... Things and the self are governed by the same principle. If you understand one, you understand the other, for the truth within and the truth without are identical.
- The study of numbers to leave numbers, or form to leave form. A basic example of this process, which applies to any discipline, can easily be illustrated through chess: A chess student must initially become immersed in the fundamentals in order to have any potential to reach a high level of skill. He or she will learn the principles of endgame, middlegame, and opening play. Initially one or two critical themes will be considered at once, but over time the intuition learns to integrate more and more principles into a sense of flow.
- Eventually the foundation is so deeply internalized that it is no longer consciously considered, but is lived. This process continuously cycles along as deeper layers of the art are soaked in.
- Whenever there was a concept or learning technique that I related to in a manner too abstract to convey, I forced myself to break it down into the incremental steps with which I got there. Over time I began to see the principles that have been silently guiding me, and a systematic methodology of learning emerged.
- Each loss was a lesson, each win a thrill. Every day pieces of the puzzle fell together.

- Was private about chess, as if it were an intimate fantasy world. I had to trust someone to let them into my thought process, and Bruce had to overcome this shield before the work could begin.
- For me, competitive chess was not about perfection. It was more of a mental prizefight, with two opponents trading advantages, momentum going one way and then the other.
- Confidence is critical for a great competitor, but overconfidence is brittle. We are too smart for ourselves in such moments. We sense our mortality like a cancer beneath the bravado, and when things start to go out of control, there is little real resilience to fall back on.
- I have come to understand that these little breaks from the competitive intensity of my life have been and still are an integral part of my success.
- I responded to heartbreak with hard work. I was self-motivated and moved by a powerful resolve
- Some of the brightest kids prove to be the most vulnerable to becoming helpless, because they feel the need to live up to and maintain a perfectionist image that is easily and inevitably shattered.
- It is critical to realize that we can always evolve in our approaches to learning.
- The key to pursuing excellence is to embrace an organic, long-term learning process, and not to live in a shell of static, safe mediocrity. Usually, growth comes at the expense of previous comfort or safety.
- I was also gradually internalizing a marvelous methodology of learning—the play between knowledge, intuition, and creativity.
- From both educational and technical perspectives, I learned from the foundation up.
- I often sensed a logical thread to positions that seemed irrational—playing exciting chess felt like discovering hidden harmonies.
- Whenever I noticed a weakness, I took it on.
- It is important to understand that by numbers to leave numbers, or form to leave form, I am describing a process in which technical information is integrated into what feels like natural intelligence. Sometimes there will literally be numbers. Other times there will be principles, patterns, variations, techniques, ideas.
- A key component of high-level learning is cultivating a resilient awareness that is the older, conscious embodiment of a child’s playful obliviousness. This journey, from child back to child again, is at the very core of my understanding of success.

- Believe that one of the most critical factors in the transition to becoming a conscious high performer is the degree to which your relationship to your pursuit stays in harmony with your unique disposition. If we take away our natural voice, we leave ourselves without a center of gravity to balance us as we navigate the countless obstacles along our way.
- Along the same lines, I have found that if we feed the unconscious, it will discover connections between what may appear to be disparate realities. The path to artistic insight in one direction often involves deep study of another—the intuition makes uncanny connections that lead to a crystallization of fragmented notions.
- Study fundamentals, absorb them and transcend them.
- Creative leaps are grounded in a technical foundation.
- The Tao Te Ching’s wisdom centers on releasing obstructions to our natural insight, seeing false constructs for what they are and leaving them behind.
- My understanding of learning was about searching for the flow that lay at the heart of, and transcended, the technical.
- I have long believed that if a student of virtually any discipline could avoid ever repeating the same mistake twice—both technical and psychological—he or she would skyrocket to the top of their field. So the aim is to minimize repetition as much as possible, by having an eye for consistent psychological and technical themes of error.
- The theme is depth over breadth. The learning principle is to plunge into the detailed mystery of the micro in order to understand what makes the macro tick.
- Everyone races to learn more and more, but nothing is done deeply. Things look pretty but they are superficial, without a sound body mechanic or principled foundation. Nothing is learned at a high level
- Break down anything into its small, core components and master one at a time
- My understanding of this process, in the spirit of my numbers to leave numbers method of chess study, is to touch the essence (for example, highly refined and deeply internalized body mechanics or feeling) of a technique, and then to incrementally condense the external manifestation of the technique while keeping true to its essence. Over time expansiveness decreases while potency increases. I call this method “Making Smaller Circles.”
- We have to be able to do something slowly before we can have any hope of doing it correctly with speed.
- I want to punch without punching. No intention.

- In both fields, players tend to get attached to fancy techniques and fail to recognize that subtle internalization and refinement is much more important than the quantity of what is learned.
- The importance of undulating between external and internal (or concrete and abstract; technical and intuitive) training applies to all disciplines, and unfortunately the internal tends to be neglected.
- In all athletic disciplines, it is the internal work that makes the physical mat time click, but it is easy to lose touch with this reality in the middle of the grind.
- I have to take risks others would avoid, always optimizing the learning potential of the moment and turning adversity to my advantage.
- When aiming for the top, your path requires an engaged, searching mind. You have to make obstacles spur you to creative new angles in the learning process. Let setbacks deepen your resolve.
- Once we learn how to use adversity to our advantage, we can manufacture the helpful growth opportunity without actual danger or injury. I call this tool the internal solution —we can notice external events that trigger helpful growth or performance opportunities, and then internalize the effects of those events without their actually happening. In this way, adversity becomes a tremendous source of creative inspiration.
- Once we reach a certain level of expertise at a given discipline and our knowledge is expansive, the critical issue becomes: how is all this stuff navigated and put to use?
- The clearest way to approach this discussion is with the imagery of chunking and carved neural pathways. Chunking relates to the mind's ability to assimilate large amounts of information into a cluster that is bound together by certain patterns or principles particular to a given discipline.
- In a nutshell, chunking relates to the mind's ability to take lots of information, find a harmonizing/logically consistent strain, and put it together into one mental file that can be accessed as if it were a single piece of information.
- By “carved neural pathways” I am referring to the process of creating chunks and the navigation system between chunks.
- Soon enough, learning becomes unlearning. The stronger chess player is often the one who is less attached to a dogmatic interpretation of the principles.
- The master is looking at very little and seeing quite a lot.
- When the transition from the familiar to the foreign takes place, it feels like the mind is flying downhill over fresh snow and suddenly hits a patch of thick mud.

- 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.
- The similarity is that a life-or-death scenario kicks the human mind into a very narrow area of focus. Time feels slowed down because we instinctively zero in on a tiny amount of critical information that our processor can then break down as if it is in a huge font. The trained version of this state of mind shares that tiny area of conscious focus. The difference is that, in our disciplines of choice, we cultivate this experience by converting all the other surrounding information into unconsciously integrated data instead of ignoring it. There is a reason the human mind rarely goes into that wild place of heightened perception: if an untrained fighter were to focus all his energy on his opponent's breath pattern or blinking eye, he would get punched in the face or thrown on the ground.
- Was during these years that I began to draw the parallels between people's life tendencies and their chessic dispositions. Great players are all, by definition, very clever about what they show over the chessboard, but, in life's more mundane moments, even the most cunning chess psychologists can reveal certain essential nuances of character.
- In virtually every competitive physical discipline, if you are a master of reading and manipulating footwork, then you are a force to be reckoned with.
- If, through incremental training as described earlier in the book, your unconscious understanding of your discipline of choice has become sufficiently advanced, and you have learned how to trust your physical and intuitive intelligence to handle the technical components of your moment, then your conscious mind can zoom in on very small amounts of data
- In every discipline, the ability to be clearheaded, present, cool under fire is much of what separates the best from the mediocre.
- While more subtle, this issue is perhaps even more critical in solitary pursuits such as writing, painting, scholarly thinking, or learning. In the absence of continual external reinforcement, we must be our own monitor, and quality of presence is often the best gauge.
- Those who excel are those who maximize each moment's creative potential—for these masters of living, presence to the day-to-day learning process is akin to that purity of focus others dream of achieving in rare climactic moments when everything is on the line.

- The secret is that everything is always on the line. The more present we are at practice, the more present we will be in competition, in the boardroom, at the exam, the operating table, the big stage.
 - I believe an appreciation for simplicity, the everyday—the ability to dive deeply into the banal and discover life’s hidden richness—is where success, let alone happiness, emerges.
 - The real power of incremental growth comes to bear when we truly are like water, steadily carving stone. We just keep on flowing when everything is on the line.
 - My method is to work backward and create the trigger.
 - At a high level, principles can be internalized to the point that they are barely recognizable even to the most skilled observers.
 - The beautiful thing about this approach to learning is that once we have felt the profound refinement of a skill, no matter how small it may be, we can then use that feeling as a beacon of quality as we expand our focus onto more and more material. Once you know what good feels like, you can zero in on it, search it out regardless of the pursuit.
 - While this principle of penetrating the macro through the micro is a critical idea in the developmental process, it is also an absolutely pivotal foundation for a great competitor.
 - Tactics come easy once principles are in the blood.
2. Meditation, Intuition and Doing Away With Thought / Ego
- I could spend hours at a chessboard and stand up from the experience on fire with insight about chess, basketball, the ocean, psychology, love, art. The game was exhilarating and also spiritually calming. It centered me.
 - My fascination with consciousness, study of chess and Tai Chi, love for literature and the ocean, for meditation and philosophy, all coalesced around the theme of tapping into the mind’s potential via complete immersion into one and all activities. My growth became defined by barrierlessness. Pure concentration didn’t allow thoughts or false constructions to impede my awareness, and I observed clear connections between different life experiences through the common mode of consciousness by which they were perceived.
 - I had to come to a deeper sense of concepts like essence, quality, principle, intuition, and wisdom in order to understand my own experience, let alone have any chance of communicating it.

- I was unhindered by internal conflict—a state of being that I have come to see as fundamental to the learning process.
- Virtually all situations can be handled as long as presence of mind is maintained
- One idea I taught was the importance of regaining presence and clarity of mind after making a serious error.
- As I consciously released the tension from one part of my body at a time, I experienced a surprising sense of physical awareness. A subtle buzzing tickled my fingers. I played with that feeling, and realized that when deeply relaxed, I could focus on any part of my body and become aware of a rich well of sensation that had previously gone unnoticed. This was interesting.
- A huge element of Tai Chi is releasing obstructions so the body and mind can flow smoothly together.
- A key movement at this stage of my Tai Chi learning experience was the coordination of breath and mind.
- William Chen’s humble vision of this issue is that breathing should be natural.
- In William Chen’s Tai Chi form, expansive (outward or upward) movements occur with an in-breath, so the body and mind wake up, energize into a shape.
- Then, with the out-breath, the body releases, de-energizes, like the last exhalation before falling asleep.
- It is Chen’s opinion that a large obstacle to a calm, healthy, present existence is the constant interruption of our natural breathing patterns.
- It was remarkable how developing the ability to be physically introspective changed my world. Aches and pains dissolved with small postural tweaks. If I was stressed out, I did Tai Chi and was calmed. Suddenly I had an internal mechanism with which to deal with external pressures.
- The essence of Tai Chi Chuan as a martial art is not to clash with the opponent but to blend with his energy, yield to it, and overcome with softness.
- On a basic level, the idea of Push Hands is to unbalance your opponent.
- If aggression meets empty space it tends to defeat itself. The problem is that we are conditioned to tense up and resist incoming or hostile force, so we have to learn an entirely new physiological response to aggression.
- One of the most challenging leaps for Push Hands students is to release the ego enough to allow themselves to be tossed around while they learn how not to resist
- With the fading of tension comes a whole new world of sensation
- Learn to create ripples in our consciousness, little jolts to spur us along, so we are constantly inspired whether or not external conditions are inspiring.

- A deep mastery of performance psychology involves the internal creation of inspiring conditions.
- Nearly all of my revelatory moments emerged from the unconscious. My numbers to leave numbers approach to chess study was my way of having a working relationship with the unconscious parts of my mind. I would take in vast amounts of technical information that my brain somehow put together into bursts of insight that felt more like music or wind than mathematical combinations. Increasingly, I had the sense that the key to these leaps was interconnectedness—some part of my being was harmonizing all my relevant knowledge, making it gel into one potent eruption, and suddenly the enigmatic was crystal-clear.
- In my opinion, intuition is our most valuable compass in this world. It is the bridge between the unconscious and the conscious mind, and it is hugely important to keep in touch with what makes it tick.
- Much of what separates the great from the very good is deep presence, relaxation of the conscious mind, which allows the unconscious to flow unhindered.
- This is a nuanced and largely misunderstood state of mind that when refined involves a subtle reintegration of the conscious mind into a free-flowing unconscious process. The idea is to shift the primary role from the conscious to the unconscious without blissing out and losing the precision the conscious can provide.
- The return to breath is the key to this form of meditation.
- Once the routine is internalized, it can be used before any activity and a similar state of mind will emerge.

3. Competing and Losing

- In my experience, successful people shoot for the stars, put their hearts on the line in every battle, and ultimately discover that the lessons learned from the pursuit of excellence mean much more than the immediate trophies and glory. In the long run, painful losses may prove much more valuable than wins—those who are armed with a healthy attitude and are able to draw wisdom from every experience, “good” or “bad,” are the ones who make it down the road. They are also the ones who are happier along the way. Of course the real challenge is to stay in range of this long-term perspective when you are under fire and hurting in the middle of the war. This, maybe our biggest hurdle, is at the core of the art of learning.

- One of the most critical strengths of a superior competitor in any discipline—whether we are speaking about sports, business negotiations, or even presidential debates—is the ability to dictate the tone of the battle.
- Losing was part of my regular experience. I believe this was important for maintaining a healthy perspective on the game.
- I was a competitor who knew winning and losing and the hair's breadth between. My rivals didn't care about reputation—they just wanted to crush me and I had to keep it real.
- The first obstacle I had to overcome as a young chess player was to avoid being distracted by random, unexpected events
- This Soft Zone is resilient, like a flexible blade of grass that can move with and survive hurricane-force winds.
- He explained that in the climactic moments of the struggle, when I had to buckle down and patiently work my way through the complications to find a precise solution, this boy would start to tap a chess piece on the side of the table, barely audible, but at a pace that entered and slightly quickened my mental process. This subtle tactic was highly effective and I later found out that it was an offspring of the Soviet study of hypnosis and mind control.
- He would push me to the point of utter exasperation and I would often self-destruct. I have come to believe that the solution to this type of situation does not lie in denying our emotions, but in learning to use them to our advantage.
- Mental resilience is arguably the most critical trait of a world-class performer, and it should be nurtured continuously.
- Left to my own devices, I am always looking for ways to become more and more psychologically impregnable. When uncomfortable, my instinct is not to avoid the discomfort but to become at peace with it. When injured, which happens frequently in the life of a martial artist, I try to avoid painkillers and to change the sensation of pain into a feeling that is not necessarily negative. My instinct is always to seek out challenges as opposed to avoiding them.
- The first mistake rarely proves disastrous, but the downward spiral of the second, third, and fourth error creates a devastating chain reaction.
- At a high level, pressing for wins in equal positions often results in losing.
- As a competitor I've come to understand that the distance between winning and losing is minute, and, moreover, that there are ways to steal wins from the maw of defeat.

- Have always visualized two lines moving parallel to one another in space. One line is time, the other is our perception of the moment.
- Worked on the game tirelessly, but was now moved less by ambition than by a yearning for self-discovery.
- Felt like I was living, breathing, sleeping in that maze, and then, as if from nowhere, all the complications dissolved and I understood. When I looked at the critical position from my tournament game, what had stumped me a few days or hours or weeks before now seemed perfectly apparent. I saw the best move, felt the correct plan, understood the evaluation of the position. I couldn't explain this new knowledge with variations or words. It felt more elemental, like rippling water or a light breeze. My chess intuition had deepened. *This was the study of numbers to leave numbers*
- Fascinating offshoot of this method of analysis was that I began to see connections between the leaps of chess understanding and my changing vision of the world. During my study of the critical positions, I noted the feeling I had during the actual chess game. I explained above how in the pressure of tournaments, the tension in the mind mounts with the tension in the position, and an error on the board usually parallels a psychological collapse of sorts. Almost invariably, there was a consistent psychological strain to my errors in a given tournament, and what I began to notice is that my problems on the chessboard usually were manifesting themselves in my life outside of chess.
- Once I recognized that deeply buried secrets in a competitor tend to surface under intense pressure, my study of chess became a form of psychoanalysis. I unearthed my subtlest foibles through chess, and the link between my personal and artistic sides was undeniable. The psychological theme could range from transitions to resilient concentration, fluidity of mind, control, leaps into the unknown, sitting with tension, the downward spiral, being at peace with discomfort, giving into fatigue, emotional turbulence, and invariably the chess moves paralleled the life moment.
- Was no longer primarily refining the skill of playing chess, but was discovering myself through chess.
- Investment in loss is giving yourself to the learning process. In Push Hands it is letting yourself be pushed without reverting back to old habits—training yourself to be soft and receptive when your body doesn't have any idea how to do it and wants to tighten up.

- Then as I became more relaxed under fire, Evan seemed to slow down in my mind. I noticed myself sensing his attack before it began. I learned how to read his intention, and be out of the way before he pulled the trigger. As I got better and better at neutralizing his attacks, I began to notice and exploit weaknesses in his game, and sometimes I found myself peacefully watching his hands come toward me in slow motion.
- My response is that it is essential to have a liberating incremental approach that allows for times when you are not in a peak performance state. We must take responsibility for ourselves, and not expect the rest of the world to understand what it takes to become the best that we can become. Great ones are willing to get burned time and again as they sharpen their swords in the fire.
- So, in my Tai Chi work I savored the nuance of small morsels. The lone form I studied was William Chen's, and I took it on piece by piece, gradually soaking its principles into my skin.
- The fact is that when there is intense competition, those who succeed have slightly more honed skills than the rest. It is rarely a mysterious technique that drives us to the top, but rather a profound mastery of what may well be a basic skill set. Depth beats breadth any day of the week, because it opens a channel for the intangible, unconscious, creative components of our hidden potential.
- One thing I have learned as a competitor is that there are clear distinctions between what it takes to be decent, what it takes to be good, what it takes to be great, and what it takes to be among the best.
- The experience was profoundly calm with a razor's edge—the epitome of what I think quality presence should be all about.
- One of the most telling features of a dominant performer is the routine use of recovery periods. Players who are able to relax in brief moments of inactivity are almost always the ones who end up coming through when the game is on the line.
- The better we are at recovering, the greater potential we have to endure and perform under stress.
- The physical conditioners at LGE taught me to do cardiovascular interval training on a stationary bike that had a heart monitor. I would ride a bike keeping my RPMs over 100, at a resistance level that made my heart rate go to 170 beats per minute after ten minutes of exertion. Then I would lower the resistance level of the bike and go easy for a minute—my heart rate would return to 144 or so. Then I would sprint again, at a very high level of resistance, and my heart rate would reach 170 again after a minute. Next I would go easy for another minute before

sprinting again, and so on. My body and mind were undulating between hard work and release. The recovery time of my heart got progressively shorter as I continued to train this way.

- At LGE they had discovered that there is a clear physiological connection when it comes to recovery—cardiovascular interval training can have a profound effect on your ability to quickly release tension and recover from mental exhaustion. What is more, physical flushing and mental clarity are very much intertwined.
- If you are interested in really improving as a performer, I would suggest incorporating the rhythm of stress and recovery into all aspects of your life. Truth be told, this is what my entire approach to learning is based on—breaking down the artificial barriers between our diverse life experiences so all moments become enriched by a sense of interconnectedness. So, if you are reading a book and lose focus, put the book down, take some deep breaths, and pick it up again with a fresh eye.
- Fueling up is much more important than last-minute cramming
- The more seasoned competitors relax, listen to headphones, and nap. They don't burn through their tanks before stepping on the mats.
- So how do we step up when our moment suddenly arises? My answer is to redefine the question. Not only do we have to be good at waiting, we have to love it. Because waiting is not waiting, it is life. Too many of us live without fully engaging our minds, waiting for that moment when our real lives begin.
- The ideal for any performer is flexibility. If you have optimal conditions, then it is always great to take your time and go through an extended routine. If things are less organized, then be prepared with a flexible state of mind and a condensed routine.
- There are those elite performers who use emotion, observing their moment and then channeling everything into a deeper focus that generates a uniquely flavored creativity. This is an interesting, resilient approach based on flexibility and subtle introspective awareness. Instead of being bullied by or denying their unconscious, these players let their internal movements flavor their fires.
- The only way to succeed is to acknowledge reality and funnel it, take the nerves and use them. We must be prepared for imperfection. If we rely on having no nerves, on not being thrown off by a big miss, or on the exact replication of a certain mindset, then when the pressure is high enough, or when the pain is too piercing to ignore, our ideal state will shatter.

- Instead of denying my emotional reality under fire, I had to learn how to sit with it, use it, channel it into a heightened state of intensity.
- It has been my observation that the greatest performers convert their passions into fuel with tremendous consistency.
- Instead of being dominated by or denying my passions, I slowly learned how to observe them and feel how they infused my moment with creativity, freshness, or darkness.
- I believe that at the highest levels, performers and artists must be true to themselves. There can be no denial, no repression of true personality, or else the creation will be false—the performer will be alienated from his or her intuitive voice.
- Every dirty move made me just a little steelier, and what was interesting was that the less his rage affected me, the more flustered he got.
- The former World Chess Champion Tigran Petrosian was known by his rivals to have a peculiar way of handling this issue. When he was playing long matches that lasted over the course of weeks or even months, he would begin each day by waking up and sitting quietly in his room for a period of introspection. His goal was to observe his mood down to the finest nuance. Was he feeling nostalgic, energetic, cautious, dreary, impassioned, inspired, confident, insecure? His next step was to build his game plan around his mood. If he was feeling cautious, quiet, not overwhelmingly confident, he tended to choose an opening that took fewer risks and led to a position that harmonized with his disposition. If feeling energized, aggressive, exceedingly confident, he would pick an opening that allowed him to express himself in a more creative vein.
- Once you are no longer swept away by your emotions and can sit with them even when under pressure, you will probably notice that certain states of mind inspire you more than others.
- Once you understand where you lie on this spectrum, the next step is to become self-sufficient by creating your own inspiring conditions.
- In my experience the greatest of artists and competitors are masters of navigating their own psychologies, playing on their strengths, controlling the tone of battle so that it fits with their personalities.
- Embrace the chaos
- The technical afterthoughts of a truly great one can appear to be divine inspiration to the lesser artist.

- This happens all the time in chess at the highest levels; top players discover hidden resources in opening positions that had been considered theoretically weak. They become masters of a forgotten or undiscovered battleground and then guide opponents into the briar patch.
- To be honest, I also felt a lot of love for my opponent in this match. The whole stadium was against me, except for our U.S. contingent of ten. I didn't blame the Taiwanese for wanting their man to win.

4. Other

- I think a life of ambition is like existing on a balance beam.
- The human mind defines things in relation to one another—without light the notion of darkness would be unintelligible
- You guide the horse toward doing what you want to do because he wants to do it. You synchronize desires, speak the same language. You don't break the horse's spirit. My mom goes on: "If you walk straight toward a horse, it will look at you and probably run away. You don't have to oppose the horse in that way. Approach indirectly, without confrontation. Even an adult horse can be gentled. Handle him nicely, make your intention the horse's intention.
- I had an idea that I might be able to keep my right side strong by intense visualization practice. My method was as follows: I did a daily resistance workout routine on my left side, and after every set I visualized the workout passing to the muscles on the right. My arm was in a cast, so there was no actual motion possible—but I could feel the energy flowing into the unused muscles. I admit it was a shot in the dark, but it worked.
- Eat five almonds every forty-five minutes during a long chess game, to stay in a steady state of alertness and strength.

What I got out of it

1. Making smaller circles is critical – the more you practice something, the sooner it becomes part of your subconscious, freeing up your brain to focus on other, smaller details that can make all the difference. In the end, mastery involves discovering the most resonant information and integrating it so deeply and fully it disappears and allows us to fly free

