

THE FARTHER REACHES OF HUMAN LEARNING:
AN INTERPRETATIVE STUDY OF MASTERY

by

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CERTIFICATE OF APPROVAL

I certify that I have read THE FARTHER REACHES OF HUMAN LEARNING: AN INTERPRETATIVE STUDY OF MASTERY by Peter Richard le Breton and that in my opinion this work meets the criteria for approving a dissertation submitted in partial fulfillment of the requirements for the Doctor of Philosophy in Transformative Studies at the California Institute of Integral Studies.

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Abstract

This study investigates masterly learning, artistry in learning, and learning to learn. In the spirit of Abraham Maslow and other scholars exploring “the farther reaches of human nature,” the research is based on the premise that individuals and society can benefit enormously from studying the growing tip of humankind, and not just the mediocre and pathological. Self-actualization (in Maslow’s sense) rather than self-aggrandizement is the point of the study. The main focus of the inquiry, and an exemplar of this growing tip, is Josh Waitzkin, who achieved expertise or even mastery in both chess, a mental art, and Tai Chi Chuan, a martial art. Waitzkin’s masterly achievements in two disparate domains—a decidedly rare phenomenon—raise many questions, explored in this research, about the mindset (or self-theories) and strategies (or processes) most conducive to high-level learning, including learning to learn. In particular, the key role of intuition in masterly performance is examined.

The study carries forward research in the learning sciences in the fields of *expertise and expert performance*, and *achievement motivation*. The approach is qualitative, discursive, and transdisciplinary—driven by the inquiry rather than disciplinary agendas. The research method is *heuristic*, anchored in Waitzkin’s

experience and theorizing, and interpreted through the lens of the researcher and his own immersion in the phenomenon of seeking to excel.

There are four interconnected research questions: (a) how did Waitzkin experience and interpret his learning and performance journey in the pursuit of excellence? (b) what principles and meanings has Waitzkin derived from this journey? (c) how can these principles and meanings be extended and developed? and (d) how can masterly learning be cultivated?

The study unravels the interconnected threads of Waitzkin's meta-learning tapestry. Principles are distilled and themes are synthesized—in particular, the concept *resilient presence*. Learnings about masterly learning and the farther reaches of human learning are indicated. Meanings drawn from the study have implications for educators, parents, coaches, students, and anyone aspiring toward excellence.

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PART 1: THE NATURE OF MASTERY

In this chapter I provide a context for mastery. I connect mastery not only with outstanding performance, but also with transformation and the Maslovian notion of self-actualization. The interpretative nature of the inquiry is distinguished from the quantitative research that has dominated the fields of expertise and expert performance, and achievement motivation. Some key terms, such as “meta-learning” and “mindset” are introduced, followed by a section on the meanings of “mastery” and “expertise,” and the way these terms are used in the study. The contentious nature of expertise is examined, and a distinction is made between bright and dark expertise. The key role of motivation in the pursuit of mastery is introduced, and the chapter ends with an account of the researcher’s life-long relationship with the pursuit of excellence in various fields of endeavor.

Chapter 1: Statement of Intent

Over forty years ago, Abraham Maslow (1971) asked:

One hundred and fifty years from now, what will historians say about this age? What was really important? What was going? What was finished? My belief is that much of what makes the headlines is finished, and the “growing tip” of mankind is what is now growing and will flourish in a hundred or two hundred years, if we manage to endure. (p. 174)

Whether we have moved in the direction Maslow predicted is debatable.

News headlines are still for the most part as dismal as ever. Despite some enchantment with humanistic, transpersonal, and more recently, positive psychology—for example, Seligman (1990)—on the fringes of the academy, and the recent championing of transformative, integral, and holistic learning and education by various scholars (such as Esbjorn-Hargens, Reams & Gunnlaugen, 2010; Mezirow, 2000; Mezirow & Taylor, 2009; Naranjo, 2010; O’Sullivan,

1999; O’Sullivan, Morrell, & O’Connor, 2002; Palmer & Zajonc, 2010), our universities and schools are still a long way from embracing a new paradigm. Social research in higher education is still constrained by its focus on the ordinary and the pathological—as distinct from the growing tip of humankind that interested Maslow. That which is investigated and taught is still arranged within disciplinary silos, even when attempts are made to introduce multidisciplinary or transdisciplinary perspectives, and qualitative research methods. As a result, much research leads to findings that are either trivial, or to action that, paradoxically, *forms* problems in human affairs, rather than resolves them (Watzlawick, Weakland & Fisch, 1974). Although there is no longer any justifiable philosophical or theoretical underpinning for prevailing research and pedagogical practices in the academy (if ever there was), obsolete practices persist for psychological, political, and financial reason, as Parker Palmer and Arthur Zajonc (2010) persuasively argue in their analysis of higher education.

In the spirit of Maslow (1971), my study focuses on the “growing tip” of humanity—that is, those individuals (and groups) who excel and approach mastery in some domain, and in the process move toward what Maslow called self-actualization. Like Maslow, I contend this focus is extremely worthwhile, because by inquiring deeply into the thinking and behavior of outstanding individuals (and groups), and the context in which their extraordinariness arose, we can learn more about what is possible for humanity.

This study falls within the realm of the learning sciences. The sciences of learning include cognitive science, neuroscience, computer science, educational

psychology, education, anthropology, sociology, and other disciplines (Sawyer, 2006). Within the learning sciences there are fields or branches of science that bear specifically on my area of inquiry. The most directly relevant are the fields of *expertise and expert performance* (Ericsson, Charness, Feltovich, & Hoffman, 2006), and *achievement motivation* (Elliot & Dweck, 2007).

Although expertise, expert performance, and achievement motivation have become fashionable fields within the learning sciences, and have thrown much light on the nature and acquisition of expertise, I agree with Denzin and Lincoln (2011) that these fields tend to be constrained by positivist and post-positivist paradigms. These paradigms are premised on assumptions of ontological realism, and the existence of objective truth. These assumptions are questioned or rejected by *transdisciplinarity*,¹ (Montuori, 2005) and by interpretative approaches in the human sciences with postmodern sensibilities, such as critical theory, participatory theory, constructivism, phenomenology, and heuristics.

This study of extraordinary or supernormal functioning follows in the footsteps of William James (1902/2002), Frederick Myers (1903/2001), Marghanita Laski (1961), Michael Murphy (1992), and other scholars who aim to

¹ Transdisciplinary research is distinguished from traditional disciplinary, interdisciplinary, and multidisciplinary research, in many ways. Transdisciplinarity is driven by the inquiry, rather than by disciplinary agendas and methodologies. Informed by complexity theory and cybernetics, transdisciplinarity values holistic and integral knowledge, as distinct from reductionist and fragmentary knowledge. Transdisciplinary inquiry integrates the researcher into the research, thereby dispelling the illusion of objectivity. A transdisciplinary orientation is *meta-paradigmatic*, a paradigm about paradigms, for it questions philosophical assumptions underlying the construction and organization of knowledge, including its own paradigm. Transdisciplinary inquiry evokes a spirit of creativity and transgressiveness, for it is able to cross, ignore or transcend disciplinary boundaries.

extend the reach of science and other forms of inquiry into the farther reaches of human nature. In the spirit of natural history exemplified in the work of such scholars, my study focuses on data—or text, a preferable term for qualitative research (Piantanida & Garman, 2009)—gathered from a superlative performer, interpreted through his reflexive lens, as seen through the lens of my own learning and performance experiences. This dissertation is not another quantitative or post-positivist study into expertise and expert performance, or achievement motivation, of which there have been hundreds over the last fifty years (Elliot & Dweck, 2007; Ericsson et al., 2006). Instead, the inquiry is qualitative and interpretative; it is intended to complement quantitative studies. The focus is on learning to learn or *meta-learning* at the highest level, and on the cultivation of a learning *mindset* and capability that transcends particular domains or fields of endeavor.

Meta-learning refers to “learning *about* learning,” a use of the term that has academic connotations (Novak & Gowin, 1984). In this study, I use the term in the more practical or pragmatic sense of “learning *to* learn” or “learning *how to* learn.” Meta-learning in this work refers to an awareness and understanding of the process and phenomenon of learning itself, as opposed to subject knowledge and skills know-how. An analysis of Waitzkin’s (2007a) *The Art of Learning*, and his other works on the public record, reveals that his theory is essentially a meta-learning theory.

In the context of this study, mindset—after Carol Dweck’s (2000, 2006) fixed and growth mindsets—refers specifically to a person’s learning mindset, the

implicit theories each of us hold about our own intelligence, athleticism, personality traits, and other attributes. These self-theories are often unconscious, and therefore unquestioned. However, they strongly influence our capacity to learn and achieve. Learning about mindsets can enable individuals to change their mindset, which leads to enhanced motivation, learning and performance. More broadly, mindset refers to a person's habitual thoughts and feelings, their lens through which the world is seen, their internal frame of reference, their worldview or *Weltanschauung*.

Expertise or mastery: What's in a name?

To clarify the intent of the study, it is useful at the outset to consider some terms with similar and overlapping meanings—*mastery*, *expertise*, and *extraordinariness*. I prefer “mastery” to “expertise,” because expertise is a problematic term. Expertise has a dark side and a bright side. However, “expertise” is the more common term in the literature (e.g., Ericsson, Charmers, Feltovich & Hoffman, 2006), and I use it often, but only in the sense of *bright expertise*. I happily admit a bias: my focus is *not* the fascinating dark side—expertise built on exploiting others and motivated by the quest for power or driven by fanaticism (Hitler and Stalin spring to mind), but the bright side—those individuals who live in fellowship with humanity and make positive contributions to the social good (Maslow, 1997).

It has also been suggested that while there are many experts in any domain, there are only a few masters (S. E. Dreyfus & H. L. Dreyfus, 2008). Mastery, from this perspective, is a form of enhanced expertise, which I consider in the literature review chapter in the section “Intuition and Expertise.”

Expertise is usually associated with specialized knowledge in scientific or technical fields and, as Collins and Evans (2007) point out, experts in the same field often hold opposing views, and the public is (often justifiably) suspicious of experts. In this sense, pursuing, acquiring, and even studying expertise has its dark side. Although experts are respected, valued, and even revered for their expertise, experts are also often regarded with distrust. We live in a world in which expertise is seen as specialized knowledge with earning power. People seek to create a little niche of expertise that, as Indian writer and social activist, Arundhati Roy observes, they carry off to their “lair and guard against the unauthorized curiosity of passers-by....There is a whole industry working hard at trying to prevent people from understanding what is being done to them” (Barsamian & Roy, 2004, p. 120). Specialized knowledge does of course have value, but it should be shared and used for the social good. Some kinds of special knowledge are privileged in Western societies under the guise of market forces. This logic is then used to justify CEOs being paid tens of millions of dollars a year, while farmers and laborers starve in the Third World (Barsamian & Roy, 2004), and millions struggle to survive in the First and Second Worlds.

Another good reason for questioning the value of expertise is that experts—even those who are experts at studying experts—tend to become

invested in a particular point of view and closed to alternatives. As Robert Sternberg (1996) argues, expertise has costs as well as benefits, and one of these is increased rigidity, fueled by “confirmation bias...[a tendency] to seek and interpret evidence as supporting what we believe, in the face of inconclusive or even contradictory data” (p. 347).

I use the adjective “masterly” rather than “masterful,” because I am interested in mastery in the sense of skill, rather than in the sense of dominance. It should be acknowledged that in common usage, if not in good writing, “masterful” is often used in the skillful sense. It should also be noted that I use all forms of “mastery” as gender-neutral terms, even though I am aware of the gendered nature of the term, as sexism continues to be embedded in our language.

Howard Gardner (1997) makes a distinction between expert minds and extraordinary minds—extraordinary minds being that “tiny percentage of individuals who stand out by virtue of creative achievements” (p. 1). Gardner chooses Mozart, Freud, Virginia Woolf, and Gandhi as exemplars. He argues that achieving domain expertise is not the same as extraordinariness, because such expertise is within the grasp of many people, provided they are motivated and conditions are favorable. Although, by definition, we cannot all be extraordinary, Gardner (like me) is interested in “features of extraordinariness that find resonance in the lives of the rest of us” (p. 5). However, this study deals more with expertise than with extraordinariness.

There is a sense in which we are all experts. We walk, talk, and perform countless other actions and activities within our cultural traditions every day,

expertly. These actions include ethical behavior. Most of us behave ethically most of the time, because of the socialization process. That said, some individuals are deemed to be more expert than others—for example, wise elders in traditional societies and technical specialists in modern societies. Francisco Varela (1999) notes that in modern Western society it is much more difficult to identify role models for ethical expertise than role models for, say, sports expertise. Varela conceives expertise as embodied know-how—that is, knowing intuitively what is right to do and good to be. Of course, there are occasions when we carefully deliberate to arrive at moral judgments. But such occasions are comparatively rare, even if rational assessment of obligation, rather than the nature of good life, has preoccupied the attention of moral philosophers.

In my mind, ethical expertise is commensurate with the bright side of expertise. My interest is in high level learning that entails (a) creativity—in the profound sense of a “quest for meaning” (Barron, Montuori, & Barron, 1997, p. 2); (b) cultivation—in the Buddhist sense of character development through the body-mind, the goal of which is “wisdom, seeing the true profile of Being in no-ego” (Yuasa, 1987, p. 98); and (c) self-actualization—in Maslow’s (1971, 1997) sense of a drive to become fully human, to realize one’s potential. I am not suggesting that we can or should rank individuals in terms of creativity or wisdom or self-actualization. Nor am I suggesting that exemplars of (bright) expertise have no character flaws, shortcomings, or failings. On the contrary, as Carl Jung (1989) said, there is a dark or shadow side to every human being. Maturation of

the Self into a well-functioning whole requires consciously integrating all aspects of the psyche, a process Jung called individuation.

So, I am not claiming that all or even most experts are the epitome of healthy functioning. In fact, some individuals are outstanding achievers in a particular domain yet hopelessly incompetent in other areas, and deeply unfulfilled. Individuals who are brilliant vocationally are sometimes sadly wanting in other aspects of their lives. Obsession is not the same as ambition and love of learning. Derelict vagrants who are brilliant chess players are not uncommon in the United States. I am, however, claiming that pursuing excellence, almost irrespective of domain or field of endeavor, can have many benefits, both for the would-be master and for society. I contend that exemplars of expertise or extraordinariness—be they unsung heroes, or celebrities such as da Vinci, Mozart, Shakespeare, Thoreau, Einstein, or Jobs; Joan of Arc, Eleanor Roosevelt, Marie Curie, Mother Theresa, or Aung San Suu Kyi—are inspirational beacons of light that can help individuals and societies evolve beyond the mediocre and dysfunctional, and toward excellence and health.

Although I use the word “excellence” frequently, favorably, and unapologetically throughout this study, I acknowledge at the outset that the term has become central to the rhetoric of our institutions, including contemporary universities, and in that context “excellence” is often meaningless. As educational administrators know, we can all agree on the need for excellence, whether in research, teaching, or parking services (Readings, 1996).

Motivation to achieve.

In this study I argue that motivation to achieve arises primarily from passion, a notion I consider and revisit throughout this study. I use the term “passion” in the sense of a strong enthusiasm for a specified activity or outcome, or way of approaching a particular activity. If one is passionate about golf, then one loves such things as playing golf, watching golf, or talking about golf. Passion or love of a pursuit (I use “passion” and “love” more or less interchangeably) is an internal state. Passion may be ignited by external events, such as having an enthralling experience of golf as a youngster, but unless the seed of “golf love” is present, passion for golf is unlikely to germinate and flourish.

Some individuals, especially some children, are driven to excel not because of their own love of an activity, but because of the passion or obsession of a parent, often a father. In his aptly named autobiography, *Open*, tennis champion Andre Agassi (2009) describes his atrocious childhood, bullied by a father who was possessed by the desire to make his son the world’s top player. Agassi only began to heal from his childhood wounds late in his playing career, and only when he found meaning and purpose beyond himself and tennis.

Some individuals excel in a particular domain, driven by an insatiable need to prove their self-worth, to themselves and often in reaction to a strongly disapproving, faultfinding, and love-withholding parent. Matt Fitzgerald’s depiction of the epic rivalry between two incredible athletes, Ironman triathletes Dave Scott and Mark Allen, suggests that the superhuman achievements of both

men may at least in part have been motivated by a dysfunctional relationship with their respective fathers (Fitzgerald, 2012).

A very different kind of parent-driven (or parent-ignited) expertise is evident in the childhood of the Polgar sisters from Hungary, all three of whom became champion chess players at a very young age under the dedicated and loving tutelage of their father. As the oldest sister Susan Polgar (2005) explains, the Polgar girls were so good that they transformed the public perception of chess and broke age and gender barriers. In the case of the Polgars—and many other youngsters who rise to the top in their respective fields of endeavor under the guidance of a loving parent or parents, including my research participant—the ambition of the parent is in harmony with the (emerging) passion of the child for the activity. If there are periods of disharmony, parental love takes precedence over parental ambition.

Although public recognition of high achievers draws our attention to expert performance, most experts or masterly performers do not have a public profile. Private mastery is no less mastery than public mastery. The expert cabinetmaker or kindergarten teacher is no less masterly or creative than the high-profile entertainer or entrepreneur—and in many cases may be more so.

My study focuses on one such exemplar of outstanding performance, partly because he has expertise in two disparate domains, an extremely rare phenomenon, and partly because he is reflective, articulate, and a bountiful source of insight into his process. Interpreting and elucidating what this person has

learned about the art of learning, the joy of learning, and what others can learn from his journey toward excellence, is the point of my inquiry.

Pursuing expertise is by no means self-evidently desirable, even if we better understand the factors that make it more likely individuals or teams can excel in a particular field of endeavor. If ambition is likely to lead to disappointment (only one person can be “best” and only a few can be elite), what is the point of pursuing excellence? It is not unusual for Olympic athletes who win (only) a silver medal to be devastated that they missed the gold. My research participant, Josh Waitzkin, contends the answer to both the “how to achieve mastery” and the “why bother” questions can be found in an approach “that inspires resilience, the ability to make connections between diverse pursuits, and day-to-day enjoyment of the process” (Waitzkin, 2007a pp. 29–30). His account of his learning journey is an elaboration of relations between these three core elements—resilience, joy, and connection. Pursuing excellence builds resilience, including the ability to recover from disappointment. Giving oneself 100% to the mastery of a task (or discipline, subject, craft, etc.) can be joyful and deeply fulfilling. Outstanding performance in one domain can provide connective insights into other domains, and transferable competencies that enhance life in general. Waitzkin (2007a) calls this phenomenon *barrierlessness*.

Personal connections with mastery.

My fascination with mastery began when I was a schoolboy. It started on the sporting field rather than in the classroom. My childhood heroes were older boys who excelled in athletics, football, or cricket. I was in awe of my cricketing

heroes. When I was 10, I would happily perch on the scoreboard at the school oval all day Saturday, poised to change the black metal plates with white numbers on them, whenever runs were scored or wickets taken.

I was not just an eager spectator. My sporting heroes inspired me to plunge into the experience of pursuing sporting excellence with a vengeance. I wanted to be the best I could be in whatever sport I pursued. My passions were cricket and athletics in the summer, and Australian Rules football in the winter. I loved every minute of training and competition. My dad supported my penchant for the high jump by building a stand and landing pit in our back yard, so that I could practice to my heart's content. The thrill of these activities was intoxicating. Accomplishments were icing on the cake. Running faster, jumping higher and longer as I grew up, were incentives to greater effort. Of course, winning and breaking records was delightful. But exhaustion from training, being beaten by better athletes or teams, and occasional injuries did not dampen my enthusiasm. Nor did walking home late, in the dark, on cold, wet winter nights.

My immersion in sport was an alternating current of action and reflection. I would spend hours in review and self-dialogue, which often led to changes in strategy and technique. I read the biographies of sporting greats, such as the legendary Don Bradman, the doyen of Australian cricket. My passion for sport was (and still is) intense. For example, I saw the famous Boxing Day Ashes Test between Australia and England at the Melbourne Cricket Ground in 1958. The game lasted five days. I did not miss a single ball. I went to the ground every day

by myself (I was 14) with a packed lunch and a pair of binoculars, which left black rings around my eyes.

I found joy in sport on both an individual and team level. Track and field are largely solo events, but cricket and football performance depends very much on team cohesion. Although teams do have stars, my experience as a schoolboy showed me that a champion team could win against a team of champions. At 16 I was appointed captain of the First Eleven, our school's number one cricket team. I spent long hours studying the game at the highest level and learning coaching strategies. I studied the strengths and potential of every player on our squad. I organized team meetings, bonding sessions, extra practices, and did everything in my power to bring out the best in every player including myself.

These years were the early steps of my research into the pursuit of excellence. My experience was anchored in self-reflection, study, practice, inspiration, and joy. I felt the pull of what I much later (and particularly when researching mastery) identified as *quality* (a theme running through this study)—something done very well, or done in a beautiful way. For me quality resonated with integrity, being both aesthetically and functionally pleasing.

In my final year at high school, my enchantment with quality and excellence expanded into intellectual domains. The catalyst was a teacher of English literature, whose passion for learning and scholarship was contagious, at least for this young, idealistic student. He stood out like a beacon of light in a sea of mediocrity. I felt the pleasure of diving deeply into Shakespeare and Chaucer

and Wordsworth. I began to be able to write more nuanced prose, and to connect my intellect and imagination with my life experience, limited as it was.

My quest for knowledge and meaning spread to economics, a subject I was determined to master, because I wanted to understand the workings of human society. I pursued economics through to a Masters degree. Learning macroeconomic theory, and the elegant idealizations of neoclassical microeconomics, was satisfying. I found even greater satisfaction in deconstructing this framework from the perspective of radical political economy, and Thorstein Veblen's institutional economics, inspired as I was by two aging economists, who were my teachers in graduate school in Kansas City.

As a graduate student I found disciplinary boundaries in the human sciences problematic and disconcerting. One might pursue mastery in a discipline, but it would be a sterile mastery, because it seemed obvious to me that life cannot be reduced and fragmented into discrete departments. I believed that as self and society are complex, nothing less than an interdisciplinary or multidisciplinary orientation is required. I found more profound insights into human relationships and the human condition in English literature than I did in academic philosophy, and the search for understanding, irrespective of disciplinary boundaries and agendas, has influenced all my inquiry.

For my Master's thesis I researched the "value problem," which refers to the tradition, perhaps inherent in economics and capitalism, of equating value with price. It is self-evident to everyone (except perhaps the most ideologically gripped economists) that value is *not* equivalent to or measured by price, and that

the systemic equation of the two is problematic for human wellbeing and ecological sustainability.

My inquiry into value introduced me to a distinction I have made in this study between dark expertise and bright expertise (see the section “Expertise or mastery: what’s in a name?”), and to why the public, paradoxically, is both suspicious and revering of experts. A world that overvalues technology, and undervalues human sensuality (honoring and attending to our directly felt experience of things), has inevitably led to a “cult of expertise” (Abram, 2010, p. 4). I began to see much academic work, especially in the social sciences, as apologetics rather than critical inquiry, much less scholarship in the service of transformation. The eminent economist, John Kenneth Galbraith (2010), lamented that economics, disregarding power and pretending to be value-free, serves the vested interests of particular groups and institutions rather than the general good. Deeply held implicit assumptions, such as the value-neutrality of science and objective knowledge, continue to serve this purpose, often outside the awareness of scientists and other scholars.

I have come to understand bright expertise as a quality of more open and less ideologically encumbered minds, willing to sing different songs. Public intellectuals, such as Edward Said, epitomize this courage and honesty. Within the academy, or on its fringes, I have been inspired by the bright expertise of scholars who were or are to some extent outsiders, such as Gregory Bateson (1979), Michael Polanyi (1966/2009), and David Bohm (2002).

My interest in mastery, as it manifests in others, and as I have aspired to it personally, has driven my search to understand its nature, make distinctions between its different expressions, and glean how mastery might be cultivated toward individual and social betterment. Unlike many people whom I admire and learn from, I am not and have never been particularly masterly in any domain. I suspect this has in part been due to my peripatetic life, both geographically and occupationally. Like the iconic Leonard Cohen, I have savored the art of wandering. Unlike the famous singer-songwriter-poet, I do not have superlative accomplishments to praise. However, like most human beings, I have sung “hallelujah!” in my heart at those moments when quality, beauty, and truth were present, when subject–object and other dichotomies dissolved into harmonious accord.

I see strong links between my topic of inquiry and my own learning and personal development. My experience of learning as “learning by doing,” one of John Dewey’s (1938/1997) key precepts, and Gregory Bateson’s (1979) “acting to know,” accords with my understanding of the experience of expert learners and performers. This principle, largely disregarded in secondary and postsecondary education, was clearly described by radical educator, John Holt (1976), when he pointed out that the word “learning” contains the mistaken idea that learning and doing are two different kinds of acts. We do not learn to write and then write. Learning and doing are the same process; we learn to do something by doing it.

From my perspective, the topic of inquiry, the proclivities of the researcher, and the research method are three interrelated variables. Good

research requires a good fit. My stance as a researcher is scholar–practitioner. My intention is to craft a contribution to discourse and praxis—in learning and performance, learning to learn, artistry and mastery in learning, and the interface between the externals of learning (such as techniques, skills, and practice) and the internals of learning (such as mindset, intuition, and flow), which manifest in the pursuit of excellence.

Chapter 2: Josh Waitzkin: A Consummate Exemplar of Artistry in Learning

My research participant, Josh Waitzkin, was a world-class performer in two seemingly disparate domains—chess and a martial art. In his book, *The Art of Learning* (hereafter *AOL*), Waitzkin (2007a) reflects on what he learned about mindsets and learning strategies on his journey toward excellence in two domains. Waitzkin’s insights open avenues of inquiry to guide my search for a deeper understanding of learning.

AOL (Waitzkin, 2007a), with its emphasis on the subtle, the psychological, and the unconscious, has connections with the work of many other writers on learning and creativity, such as Mihaly Csikszentmihalyi (1990, 1996), Robert Fritz (1989), George Leonard (1974/2001, 1991), Timothy Gallwey (1974), Eugen Herrigel (1954/1999), and Malcolm Gladwell (2005, 2008). Whereas Gladwell (2005) explored the paradox of thinking without thinking, Waitzkin (2007a) provides a first person account of himself playing chess without playing chess, doing martial arts without doing martial arts, and—even more bizarre—playing chess when doing Tai Chi and doing Tai Chi when playing chess! Waitzkin’s analysis and insights can be generalized beyond chess, sport, or the

performing arts to any kind of learning that requires deliberate practice. The seminal value of his work, I argue, lies in his fresh elucidation of the paradoxes and nuances inherent in *optimal learning*² and performance in any area of inquiry or endeavor. Chess and Tai Chi are metaphors not only for sports and performing arts, but also for learning and action in all areas of life.

One of Waitzkin's (2007a) key contentions, based on his elite performance, is that the art of learning can transcend domains, even when those domains appear to be diverse and disconnected. This conception runs contrary to the prevailing view in the field of expertise and expert performance that expertise is domain specific. Another of Waitzkin's claims is that how well we learn and perform has more to do with our implicit attitude to learning, our mindset, than with any supposed natural talent. As a young chess player, Josh was branded a prodigy. He dislikes and rejects this term because he believes it obscures the truth that mindset is as important as talent in high performance and achievement. The world is full of apparently highly gifted people who underachieve.

AOL addresses these and related issues, both theoretically and in the lived experience of the author. Waitzkin (2007a) reflects deeply on his experience, and views it through various Eastern philosophical lenses. He makes sense of his success in chess, and then in a martial art, in a way that goes beyond inadequate

² As I use the term in this text, optimal learning refers to learning at a level that is effective enough (and in a manner that is efficient enough) to meet the intentions and purposes of the learner. Optimal learning is not necessarily high-level learning, as not everyone wants to be masterly in a domain, and masters neither want to be, nor are able to be masterly in every domain. However, an implication from this study is that when people have a better understanding of learning and motivation principles, they can learn and perform at a higher level than they otherwise could, or could imagine themselves doing.

abstract explanations such as “parallel learning and translation of feel” (p. xvi). Initially, he thought he had transferred the essence of chess into his Tai Chi practice. But this account did not make sense to him or explain anything. As he puts it: “What does essence really mean anyway? And how does one transfer it from a mental to a physical discipline” (p. xvi)?

It would be hard to overstate the importance of learning and education to our future. In my view, Waitzkin’s insights have invaluable implications for learning (and teaching) in general, irrespective of *what* is learned or *who* is learning. Notwithstanding the benefits that formal education has brought us, Waitzkin’s (2007a) experience and analysis show how many of our prevailing learning theories and practices, and the paradigms that underlie them, do not serve us well. If we humans are to survive and thrive in the future, then surely—as French transdisciplinary scholar Edgar Morin (1999a, 1999b) persuasively argues—we need to deconstruct and then reconstruct the entire learning process. This is a dynamic and ongoing project, of course, and one that can and should be as much informed by the daily experience of learners (and teachers), as by academic research and scholarship.

Waitzkin is not a scholar, but he is undoubtedly a thinker. More important, he is a doer who also thinks, and thinks deeply. His knowledge is based on action more than study, although he has read widely or—perhaps more accurately—deeply. Waitzkin (2007a) finds learning without self-inquiry and personal reflection to be abstract, sterile, and more confusing than meaningful. Likewise, he considers the emotions and the unconscious, typically ignored or

undervalued by traditional scholarship and science, to be of paramount importance in learning and performance. Waitzkin loves learning and knows what it takes to be an excellent learner and performer. His love of learning, or passion for the activity, invites exploration, because one of the elements of deliberate practice according to the research literature (see “Purposeful practice and favorable circumstances”) is that it is hard work and not fun.

Waitzkin’s (2007a) insights have profound implication for teachers, trainers, coaches, parents, and others. He believes we unwittingly set children up to be mediocre learners at home and in school. His aim is to communicate what he knows about learning so that others can gain inspiration and guidance from his experience. His life demonstrates that learning does not have to be onerous and wherever possible avoided in favor of play, leisure, or fun. Maria Montessori (1995) understood that the dichotomy, still supreme in our culture, between work and play, is meaningless to young children. Their play is their work, and adult work is (at times) their play. I have vivid memories of my 3-year-old son energetically pushing the vacuum cleaner—usually switched off—around the house. Nor is learning a necessary hardship only to be tolerated because it is an undesirable means to a desirable end—a gauntlet to be run to achieve credentials. Instead, my study indicates that learning, for all its challenges and at times pain, can be a source of profound fulfillment, deep self-discovery, intimate connection, and sublime happiness.

Waitzkin’s (2007a) interpretation of his journey toward excellence revolves around two poles: (a) learning mindset or attitude, which is the deep

belief an individual (or team) has toward his or her capacity to learn and perform, and (b) learning strategy or process, which is the practice an individual (or team) follows. These two elements—mindset and strategy—are the twin pillars of masterly learning. Acquiring cognitive and physical skills is both an inner game (a phrase coined by Timothy Gallwey [1975]) and an outer game, both mental and physical. Both games are equally important. At the highest levels of learning and performance, mental factors can be decisive. As this study investigates, the *inner game* opens the door to a deeper understanding of intuitive, unconscious, and seemingly magical aspects of supernormal performance that defy scientific explanation, and perhaps even investigation.

Extraordinary achievements.

Josh Waitzkin was born on December 4, 1976 in New York City. He started playing chess at the age of six in Washington Square Park in Greenwich Village, where he would walk with his mother to and from school, past the 21 chess tables in the southwest corner of the park. Unless the weather was inclement, these tables were alive with fierce board battles, and the sounds and smells of colorful characters. Josh's first opponents, much to his mother's alarm, were in Josh's words "chess hustlers, ex-cons, drug dealers, a homeless Russian chess genius, foul-mouthed gamblers, big jokers, and crafty tactical players who tried to lure passersby into a game for fifty cents or a dollar" (Waitzkin, 1995, p. 9). Mesmerized by the battles on the board, he played his first game at age six

with David Hechtlinger in Washington Square Park.³ Josh would plop down in front of some big, scruffy guy and say “Wanna play?” There he would play blitz⁴ chess so well for “just a kid” that he was being touted as “the next Fischer.”

Robert James “Bobby” Fischer was the first and only U.S. citizen to win a World Chess Championship, which he did by beating Boris Spassky in 1972, at the height of the Cold War. This victory had deep symbolic significance for the United States and the Nixon administration in its ideological war against the Soviet Union and communism. By the time Waitzkin began playing chess in Washington Square in 1983, the United States was desperately seeking a new star to replace Bobby Fischer, who had vanished from the scene and become a recluse. Young Josh, at the tender age of 7 and 8 was being hailed as the new Fischer (Waitzkin, 1988). This explains the name Fred Waitzkin (1988), Josh’s father, gave to the book he wrote about Josh’s early chess life and their father-son relationship, and why Mirage Entertainment produced and Paramount Pictures released a feature film in 1993 under the same name—*Searching for Bobby Fischer*.

³ The movie, *Searching for Bobby Fischer* (Pollack & Zallian, 1993) about Josh’s early life took some liberties in its portrayal of the characters in Washington Square. Hechtlinger was in fact a distinguished looking gentleman, not the mumbling, scruffy vagabond portrayed in the film. It was Hechtlinger, not Vinnie the loud-mouthed hustler with a kind heart, who wrote down Josh’s name on his newspaper, because the youngster had used pieces in combination to launch an attack, a sign of chess potential in a beginner (J. Waitzkin, personal communication, January 20, 2010).

⁴ Blitz is fast or speed chess in which players are given far less time to make their moves than under normal tournament time controls. In blitz chess each player typically has 15 minutes or less to make his/her moves. If no result (win or draw) is reached in the course of play, the player who first runs out of time on his/her clock loses the game (FIDE Handbook, 2008).

Waitzkin was the top ranked chess player for his age in the United States from ages 8 through 17 and won eight national scholastic championships (see Appendix A for a chronology of Waitzkin's achievements).⁵ The nationals are held annually during spring, and attract hundreds of players, parents, and coaches from around the country. There are both team and individual awards at each grade and skill level. Tournaments consist of seven rounds (games) spread over three days (two days when Josh was playing). To become a national champion, a player must win all seven games in a knockout competition, or at least score six wins and a draw (Waitzkin, 1988). As Fred Waitzkin (1988) notes:

The competition is fierce, and no matter how good you are, it takes luck to win. One sleepy game, a brief lapse in concentration, the careless touch of a wrong piece, and it's wait till next year—unless you're too old to compete in the tournament next year. (p. 114)

One gets a sense of the pomp and ceremony, and the electric atmosphere at the nationals, from the movie *Searching for Bobby Fischer* (Pollack & Zallian, 1993). Anxious parents, disconsolate children, proud victors, dubious tactics, and outraged protests are all part of the scene. To reduce cheating and emotional flare-ups, parents are banned from the playing room in the Primary division. Games between the top players are televised into other rooms, where parents on tenterhooks watch their kids, and chess masters comment on the position and moves. Journalists conduct interviews between rounds wherein, at least in Josh's day,

⁵ The National Scholastic Chess Championship consists of four divisions—Primary (K–3), Elementary (K–6), Junior High School (K–9), and Senior High School (K–12) (Waitzkin, 1988).

proud teachers and parents of winning children are asked “Is your kid the next Bobby Fischer?”....Parents are both excited and burdened by winning and losing, results which seem to portend the future. Such intensity plays havoc with one’s perspective—immortality itself may seem like the prize—and even the weakest players and their parents dream of winning. (Waitzkin, 1988, p. 115)

Josh’s chess achievements as a boy, and martial arts achievements as a young man are, when taken together, unparalleled. Waitzkin won the National Primary Championship in 1986 (he was 8), the National Junior High Championship in 1988 (while in the fifth grade) and 1990, and the National Elementary Championship in 1989. Josh is one of only two players in history who have won nationals in each of the four divisions—primary, elementary, junior high, and senior high. In addition, between the third and ninth grades, Josh led New York City’s Dalton School to win six national team championships (Waitzkin, 2012).

At the age of 11, Waitzkin drew a game with World Champion Garry Kasparov in a simultaneous exhibition. Josh attained the rank of National Master a few weeks after turning 13. At 16, in 1993, he became the youngest U.S. International Master (when the legendary Bobby Fischer achieved that high ranking he was six months older than Waitzkin). Josh won the U.S. Under 21 Championship twice, at 16 and 17, and was within a whisper of winning the World Under 18 Championship. He is the only person to have won the National Primary, Elementary, Junior High School, High School, U.S. Cadet, and U.S. Junior Closed chess championships (Waitzkin, 2012).

When the movie about Waitzkin’s early life was released, Josh was 16. The film put him in the media spotlight. Overnight he became a celebrity. He

found himself playing for the cameras and admirers, rather than for the love of the game. Adoring fans came to his tournaments to watch him play and to get autographs. Girls handed him their phone numbers and asked him to sign their legs and stomachs (Waitzkin, 2007a).

Although such attention was appealing to a young man coming of age, although Josh understood the danger of being distracted by the adulation, and although he was winning everything in sight, he was a mess on the inside. There was an agonizing dissonance for him between losing himself in the game, and losing himself watching the game. He would catch himself thinking about how he looked, instead of losing himself in thought. As he puts it, “I was living in two worlds, and I started having a peculiar sensation of detachment during tournament games. Sometimes I seemed to play chess from across the room, while watching myself think” (Waitzkin, 2007a, p. 69). Josh could not tolerate this divided life, and withdrew from competitive play. He spent the next few years travelling in Europe, experiencing the joys and pains of young love, reading books from the U.S. counterculture and Eastern religion, and (when he returned to the United States) studying philosophy at Columbia University (Waitzkin, 2007a).

At 21, Waitzkin took up Tai Chi Chuan under Grandmaster William C. C. Chen in downtown Manhattan. Six years later, in 2004, he won the Tai Chi Chuan World Championship in Taipei, Taiwan. This was an amazing achievement for a non-Taiwanese, in view of Taiwan’s dominance in the sport, and the daunting challenges foreigners face competing in Taiwan. It was also remarkable because Waitzkin did not take up Tai Chi until he was an adult, yet

within just six years he won 21 national championships and several world championship titles (Waitzkin, 2012). The feat is astounding for a third reason, too. Tai Chi, being a martial art, is highly physical. Chess, by contrast, is quintessentially mental.

Waitzkin's learning journey is a work in progress. As a child he climbed the chess mountain. As a young man he reached the peak in Tai Chi Chuan. He has written and spoken extensively about what he has learned about "mountaineering." He has embarked on a third expedition, toward the summit in Brazilian Jiu Jitsu. This "third mountain" is the most challenging he has faced. He would not have it any other way. Josh carries some chronic physical injuries that seem to add fuel to his fire (J. Waitzkin, personal communication, 20 January, 2010). He was married in April 2011 and has become a father. He is exceptionally busy with daily training, as well as business and educational obligations. Just 37 years old (in December 2013), he is still a young man, but not young, perhaps, for competitive success in BJJ. We will see. And it hardly matters. For Josh, the real journey has always been the inner journey. The thrill of battle in the black and white jungle as a child, the bodily joy of flow in Tai Chi, and the love of learning—always with a beginner's mind—as he climbs his third mountain.

When I think of Josh Waitzkin, I think of vitality. Love has driven his supernormal learning and achievements. When I seek words that best point to his character and values—passion, joy, introspection, intuition, integrity, authenticity, creativity, self-expression, and unlearning come to mind. When I look at Josh in

my mind's eye, I see a young man wise beyond his years, very private yet very public, alive with energy yet deeply relaxed, supremely confident yet genuinely humble, intensely focused on his own journey yet abundantly contributing to the social good.

Questions and meanings.

Many questions arise in my mind: what factors enabled Waitzkin to achieve top ranking and unparalleled success with chess at such an early age? How did one person achieve excellence in two disparate domains, and what can be learned from such achievements about the mind–body relationship that has engaged philosophers and their descendants, human scientists, for thousands of years? What did Waitzkin know or learn about learning on his journey toward chess excellence that helped him in his pursuit of martial arts excellence? How precisely did he experience this meta-learning? This study explores these and related questions, distills findings from the analysis, proposes a synthesis of key concepts, points to a theoretical framework for meta-learning and mastery, and considers some directions for future research.

Waitzkin (2007a) reports that having performed skillfully in chess at a very high level, he was then able to transfer what he had learned about learning, to become masterly in another, very different, discipline. But what does this “transference” mean and can it be cultivated? Josh discovered that although chess and Tai Chi seem to be very different, the deeper he went into learning and performing in Tai Chi and chess, the more similarities, interconnections, and cross-fertilization he found between them

as if the two arts were linked by an essential connecting ground....I began to feel as if I were studying chess when I was studying Tai Chi...[and when playing chess] I wasn't calculating with chess notation or thinking about opening variations—I was feeling flow, filling space left behind, riding waves like I do at sea or in martial arts. This was wild! I was winning chess games without playing chess. (Waitzkin, 2007a, p. xiv)

As Josh moved beyond proficiency toward mastery, it was as if unconscious creativity was unleashed, a mysterious and ineffable experience that enabled him to perform beyond himself, achieve incredible results, and experience sublime fulfillment. The profound satisfaction and ongoing rewards, it is important to note, were not in the achievements (much less the trophies and the adulation); they were in the action, the training, and the performance.

In my judgment, Waitzkin's journey and his reflections on that journey hold treasures of insight (many still to be mined) for the renewal of learning and education. Josh was an expert practitioner of his arts; he is also reflective, philosophical, and articulate. His major offering is not what he has learned and can teach about chess or Tai Chi, but what he has learned and can teach about learning. In 2008 Waitzkin established the JW Foundation, a nonprofit forum that provides resources for educators, parents, coaches, and students, as well as a place to share stories and insights, and to find support (Waitzkin, 2008).

In the following chapter I consider the literature that bears most directly on my topic, and meanings gleaned from it for this study. In particular, I am interested in how the literature bears on themes and concepts in Waitzkin's (2007a) learning framework, such as joy in excellence, introspection, barrierlessness, embracing adversity, cultivating mind-body integration, adopting a beginner's mind, nonduality, unlearning, and freedom from the known. My

evaluation of the literature is intended to lay a foundation for a rich understanding of Waitzkin's approach to masterly learning and performance.

Chapter 3: Literature Review

The scholarly literature on mastery, masterly learning and performance, expertise and its acquisition, is vast and diverse. The literature comprises hundreds of quantitative studies, some of which I considered in Chapter 1. The literature also contains qualitative or interpretative inquiries into expertise, including narrative-based approaches, which have been used in researching expertise in nursing and other domains (S. E. Dreyfus, 2011).

The works reviewed in this chapter have been selected to represent scholarship that makes a significant contribution to an interpretative understanding of mastery. The review is organised into the following nine sections for convenience; however, it should be borne in mind that themes interweave and overlap different sections:

1. *Genetics and developmental noise* reviews the genius phenomenon, the age-old nature versus nurture debate, and suggests that the debate may have been transcended.
2. *Intelligence and ability* extends the discussion on innate talent by examining changing notions of intelligence and other attributes thought to underlie expertise.
3. *Purposeful practice and favourable circumstances* considers the literature on the crucial impact of effort, and of conditions or external factors, on the acquisition of expertise.

4. *Self-theories and motivation* reviews research by Carol Dweck (2000, 2006) on the impact of mindsets—which are part of an individual’s conscious and unconscious internal frame of reference—on motivation, learning, and achievement.
5. *Brainsets and creativity* indicates how brain science is discovering some neurophysiological correlates of psychological phenomena that are conducive to masterly learning.
6. *Flow and tacit knowledge* reviews the seminal contributions of Mihaly Csikszentmihalyi (1990, 1996) on the flow state, and Michael Polanyi (1966/2009) on tacit knowing, to our understanding of learning and expertise.
7. *Embodiment and embodied consciousness* considers philosophical perspectives—in particular Merleau-Ponty’s (1962) phenomenology of perception, and Lakoff and Johnson’s (1999) philosophy in the flesh—that undercut mind–body dualism, by highlighting the necessarily carnal nature of human experience and learning.
8. *Cultivating the flowering spirit* reviews the Eastern idea that mind–body unity is a potential to be cultivated in service of masterly performance and a good life, rather than an ontological given.
9. *Intuition and expertise* discusses the pivotal importance of intuition in expertise, and how recent findings in neuroscience are changing our understanding of masterly learning and performance.

Genetics and developmental noise.

For most of recorded history, outstanding individual performers were explained as geniuses, which is tantamount to not explaining anything. Genius was thought to be a gift that nature or God bestowed on a few individuals. According to the 18th century French economist Turgot, “Genius is spread throughout humankind somewhat like gold in a mine” (as cited in Sills & Merton, 1991, p. 239).

Exceptional performance in most domains of expertise has been explained in terms of inborn talent at least since the publication of Sir Francis Galton’s famous book, *Hereditary Genius*, written nearly one hundred and fifty years ago. Although Galton, and many scholars since (e.g., Ericsson, et al, 2006), acknowledged the need for training or practice to reach high levels of performance, he argued that training could only get a person so far (as cited in Ericsson et al., 2006).

Even today the belief that innate talent explains extraordinary learning and performance remains widespread. Despite innumerable scientific studies (e.g., Ericsson, Krampe, & Tesch-Romer, 1993) that have failed to provide support for the innate talent hypothesis, the idea still has a firm grip in our psyches. The idea of child prodigies and geniuses holds a romantic mystique. As recently as 2009, a scholarly book was published that continues to feed the idea that talent is a thing, a special aptitude, a (presumably) genetically acquired gift, that exists in expert performers. Even the title of the book, *Talent Abounds* (Arnone, 2009), contains this implicit assumption.

Although Aronson (2009) asks the question, “Is exceptional talent an innate quality?” (p. 2), that question implies that talent, innate or not, is some quality that exists and can be identified. The question also implies that talent, whatever it may be, is a key ingredient in outstanding performance. This is a circular description. If we describe a person as an expert or an expert performer, and consider this description as evidence of talent or genius, all we have done is given a name (talent or genius) to the phenomenon we are claiming to explain (expertise or expert performance). Accounting for an individual’s unhappiness by attributing it to depression is the same kind of pseudo-explanation, and the effects of such labelling can be to make matters worse. Escalating instances of natural unhappiness into clinical depression can maintain and deepen the unhappiness. Similarly, explaining extraordinary or supernormal performance as primarily a product of talent is a non-explanation and, consequently, one that closes our minds to the phenomenon, and keeps us in the dark about expertise.

The talent question is of course related to the broader ongoing question concerning the relative importance of nature or nurture, genetics or environment, to development and competence. Environmental extremism, partly to combat the reactionary sociopolitical agendas of some genetic determinists, was intellectually fashionable until the Human Genome Project unfolded in the 1990s. That project led to overblown claims by some scientists and the media about the all-powerful role of genes, indicated by metaphors such as “blueprints,” which have entered the popular lexicon (Lewontin, 2000). More recently, a kind of rapprochement has been reached between the genetic and environmental camps, based on

recognition that it is always and inevitably the interaction between genes and environment that shapes development, so that it makes no sense to speak about the relative contribution of each.

Yet, as one esteemed biologist has pointed out, variations in development (and consequently human performance and achievement) may depend on more than gene-environment interaction (Lewontin, 2000). Variations may in part depend on “developmental noise, a consequence of random events within cells at the level of molecular interactions” (Lewontin, 2000, p. 36). Furthermore, a leading current theory of brain development is that “neurons form random connections by random growth during development....Such a process of neural development could give rise to differences in cognitive function that were biologically and anatomically innate, yet neither genetic nor environmental” (Lewontin, 2000, p. 38).

It seems clear that we simply do not know enough about human developmental processes, both physical and psychological, to understand how environment, genetics and developmental noise interact and co-evolve. Moreover—and this is a key point for this study—although innate factors undoubtedly contribute to variations in potential and development, we do not know the nature or magnitude of those variations or their significance for a particular individual. This is especially so for cognitive and skills development. Consequently, we do not know what is possible (the limits) for any particular individual, which is very different from the radical and absurd claim that anyone can do or achieve anything.

Nevertheless, even renowned scientists, such as Lewontin (2000), make speculative claims, which beg the unknown (and perhaps unknowable) question as to what is possible for any individual. He writes,

I am certain that even if I had studied the violin from the age of five, I could not play a Paganini caprice as Salvatore Accardo does, and Accardo no doubt has neural connections that I lack and has had them since an early age. (p. 38)

We simply do not and can not know how well Lewontin could have played the violin, although we do know he could never have played it as Accardo does, because everyone has a unique style. Nor do we know, or may ever know, which neural connections of elite performers are innate, and which are a result of brain plasticity and many years of intense, purposeful practice.

In summary, then, although there are innate differences, genetic and epigenetic, between individuals, we cannot identify what these differences are or how they play out in development. This has led contemporary commentators to claim that (a) talent is effectively a meaningless term (“genius” is in all of us), (b) talent is a process and not a thing, and (c) talent is the outcome of exceptional learning and performance, rather than something that precedes it (Colvin, 2008; Coyle, 2009; Howe, 1999; Shenk, 2010; Syed, 2010). In other words, we only recognize talent after we see outstanding performance.

The concepts of genius and prodigy are, to say the least, contentious. My research participant is highly critical of the common practice of labelling an individual a prodigy—in his case, a child prodigy. Waitzkin (2007a) contends that such labels ignore factors far more important than innate talent or predisposition in the acquisition of expertise. The tragic consequence of our

focus on innate talent (which the labels “genius” and “prodigy” imply) is that many individuals (and groups) fail to achieve or even approach their learning and performance potential, because they falsely believe they do not have the requisite native talent or intelligence to do so.

Intelligence and ability.

The research literature in achievement motivation, expertise and expert performance, and related fields, indicates that many abilities can be acquired or developed. This trend is mirrored in popular literature—as in “backward” children learning calculus, or fifth-graders who speak English as a second language performing Shakespeare and playing Vivaldi (Esquith, 2004), or nonreading sixth graders becoming avid readers within a few months (Miller, 2009). Instances of individuals deemed to have average ability, or lower than average ability, achieving at elite levels are plentiful in sport, business, the arts, and other domains. These phenomena are consistent with the views of Alfred Binet, the founder of the IQ test, who strongly endorsed the idea that intelligence can be grown. It is ironic that IQ tests have been used to pigeonhole “bright” and “dull” students, as if intelligence were a fixed entity, rather than an ability that can be developed (Sternberg, 2007). Intelligence is like muscular strength; it can be changed (unlike eye color) and grown (unlike height). In a nutshell, as Sternberg (2007) succinctly puts it, “the conception of abilities as fixed or even as predetermined is an anachronism” (p. 27).

In addition to the assumption that intelligence is relatively fixed by heredity, two other assumptions about intelligence that have been held by

psychologists for a hundred years have been seriously challenged. The first is the notion of a unified or general intelligence (e.g., Gardner, 1983; Sternberg, 1996); the second is the idea that intelligence is distinct from and precedes the competencies that formal education develops (e.g., Sternberg, 2007).

For thirty years, at least since Howard Gardner (1983) proposed his theory of *multiple intelligences*, debate about the nature and importance of general intelligence and multiple intelligences has continued among psychologists and other human scientists. Robert Sternberg (1996) conceives intelligence not as unified, but as composed of analytical, creative, and practical dimensions, all three of which comprise *successful intelligence*.

Schools (and intelligence tests) tend to focus on the analytical aspects of intelligence—such as discussing, comparing and contrasting, and critiquing. IQ tests primarily measure what philosophers call *logico-deductive reasoning* and *propositional knowledge* (Robinson, 2009). If a person is good at reasoning she might get into Mensa, the club for the “highly intelligent.” If she has much knowledge—that is, knowledge of facts—she might win the popular TV show, *Mastermind* (Robinson, 2011). However, apart from being able to join exclusive clubs or win on quiz shows, the type of intelligence measured by IQ tests has limited value in everyday life.

Creative thinking skills—such as discovering, inventing, and imagining—tend to be undervalued in formal education, as are practical thinking skills—such as applying, using, and practising. The irony and tragedy is that creative and practical intelligence are just as—if not more—important to real-world action and

success than are the limited, analytic intelligence and associated competencies and expertise that are fostered in school. Furthermore, emotional competencies, as Daniel Goleman (1995) claims in his work on *emotional intelligence*, may be just as important as intellectual competencies to life success and sustainability.

Beyond emotional intelligence, some neuroscientists—for example, Cooper (2002)—argue that we have heart intelligence, and an intestinal tract “brain” known as a *second brain* or *enteric nervous system* that is independent of and interconnected with the brain in the cranium. This may explain why our first response to events is often felt as a gut or heartfelt reaction.

The second assumption about intelligence—that is it is psychologically separate from competencies—is contested by the alternative view that rather than intelligence and other abilities being seen as relatively distinct from competence and achievement, as they tend to be in cognitive psychology, they are better seen as aspects of a developmental continuum. From this perspective, experts “are people who have developed their competencies to a high level; competent individuals are people who have developed their abilities to a high level” (Sternberg, 2007, pp. 15–16). The main constraint in achieving expertise is not, according to Sternberg (2007), some fixed capacity, but “purposeful engagement involving direct instruction, active participation, role modelling, and reward” (p. 17).

The deeply ingrained cultural tendency to think of intelligence as fixed has profound adverse consequences for individuals and society. Belief in a fixed theory (of intelligence, personality traits, or other attributes) leads people to

become overconcerned with measuring attributes, at the expense of fostering learning, which could improve the attributes being measured (Sternberg, 2007).

Purposeful practice and favorable circumstances.

Susan Polgar (2005), the first woman to achieve the Grandmaster title in chess, claims that genius is a product of hard and smart work, and favourable circumstances. Scientific findings tend to confirm her view. In 1993, Ericsson, Krampe, and Tesch-Römer published a landmark article, which established the key role of effort and practice in expert performance. The article challenged the view that exceptional performance can be attributed to innate differences in talent. Since the publication of this and related studies (e.g., Starkes, Deakin, Allard, Hodges & Hayes, 1996), the scientific research focus, in attempting to understand and predict outstanding performance, has shifted from talent to training or effort.

In recent years, a third element, namely context or circumstances—such as parents, gender, race and ethnicity, time and place of birth—has received increasing attention. For example, Mozart, the Polgar sisters, Andrea Agassi, and Tiger Woods, all had fathers who were consumed by a desire to make their offspring consummate performers, and who instituted a rigorous deliberate practice regimen for their children from a very young age.⁶ Gladwell (2008) argues that place and year of birth (even month of the year in the case of elite Canadian hockey players), chance meetings, forks in the road, opportunities, and many other situational factors play a significant role in success.

⁶ On Mozart, see Howe (1999). On the others, see Agassi (2009), Polgar (2005), and Woods (1997).

However, of the three ingredients—(purported) talent, effort, and circumstances—in the masterly learning and performance pie, only the second ingredient, effort, is within the control of the individual learner and performer. Nevertheless, individuals have some control, or at least decision-making power, over their environment, and neurologists now assert that the way we develop and live actually changes our brains (e.g., Doidge, 2007; Taylor, 2009). It seems that the complex relationships between internal and external factors are reciprocal and recursive—that is, move backwards and forwards from one to the other as ongoing dynamic cycles of change. However, it is clear that learners have more (potential) control over effort (how much and well they study or practice) than they do over their neurology or most of the circumstances of their lives.

In a review of the mainstream scientific literature, Ericsson and Lehmann (1996) found that (a) measures of basic mental capacities, such as intelligence or musical aptitude, are *not* valid predictors of expert performance in a domain; (b) differences between expert and non-expert performers are nearly always acquired during lengthy training; and (c) the superior performance of experts is often very domain specific, such that transfer outside that domain is limited. Clearly, Josh Waitzkin is an exception to measure “c.”

Much of the scientific research in the past decade or so has studied the characteristics of the lengthy training—indicated by the much-touted “ten-year rule”—that underpins expertise (Chase & Simon, 1973; Ericsson, 1996; Gladwell, 2008). However, years of experience do not necessarily lead to outstanding performance. In fact, studies of clinical psychologists, physicians, and others

have revealed an experience trap or experience paradox, in which performance levels can actually *fall* with experience (Camerer & Johnson, 1991; Sengupta, Abdel-Hamid, & Van Wassenhove, 2008). Such findings are to be distinguished from what is now called deliberate, deep, or purposeful practice or, more formally, the *deliberate practice framework*, which was articulated in the seminal paper of Ericsson et al. (1993).

The scientific literature suggests that deliberate practice is characterized by several elements: (a) It is designed specifically to improve performance, often with a teacher's help; (b) it involves much repetition; (c) feedback on results is continuously available; (d) it is highly demanding mentally (whether the activity is mental, such as chess, or physical, such as Tai Chi); and (e) it isn't much fun (Colvin, 2008). However, the above list of attributes of deliberate practice is limited, and is not always accurate. For example, Bobby Fischer, the United States' one-and-only world champion chess player, was almost entirely self-taught, unless we consider the chess grandmasters in the chess books Fisher devoured as his teachers.

Self-theories and motivation.

The research findings on self-theories of intelligence have important implications for understanding exceptional learning and performance. According to Dweck (2000, 2006), individuals have either an *entity* (fixed) theory of intelligence, and consequently of learning ability, or an *incremental* (growth) theory. People who see their learning as primarily dependent on some fixed, innate ability, such as intelligence or athleticism, interpret challenges, mistakes,

and failure as evidence that they are deficient in that ability. As a result, their learning and performance suffers, and they may even give up. By contrast, individuals who see learning primarily as an incremental, growth process—the outcome of hard work and persistence—relish challenges and do not mind failure as much, because they realize they can continue to learn and improve.

Research on the links between motivation and achievement has a long history, dating back to William James (1902/2002). Two contemporary leaders in the study of achievement motivation, Elliot and Dweck (2007), contend that *competence* rather than *achievement* should be the core concept in the field. Such a claim is consistent with the importance of self-theories to competence motivation and acquisition or, in other words, to learning. Whereas a growth mindset holds *learning* (be it competent or masterly) as the fundamental goal, a fixed mindset holds *results* (be they satisfactory or outstanding) as all-important. Put another way, people with a growth mindset are motivated by a desire to *acquire* competence, whereas people with a fixed mindset are motivated by a desire to *validate* competence—their achievement is driven by a psychological need to demonstrate their innate competence or ability.

Although competence goals and achievement goals are in no way mutually exclusive—students can love learning *and* earning high grades—a wealth of research supports the claim that a person's self-theory of intelligence can have a significant and often momentous bearing on his or her learning, achievement, and self-esteem (Elliot & Dweck, 2007). The research suggests an unequivocal link between (a) self-theories, (b) the meaning systems created from these theories, (c)

the strategies arising from these meaning systems, and (d) “how these strategies, in turn, result in different levels of self-esteem, interest, and competence, especially in the face of challenge or threat” (Dweck & Molden, 2007, pp. 122–123).

In summary, motivation to acquire competence, let alone mastery, in any domain is strongly impacted by the implicit theories one holds about one’s abilities. Researchers also indicate how socialization (at home and school) fosters self-theories, how self-theories can change, and how shifting from a fixed to a growth mindset can have transformative effects on meaning systems, academic outcomes, and quality of life (Elliot & Dweck, 2007).

Self-theories in the context of this study are people’s beliefs about the changeableness of their personal qualities, such as their intelligence. Self-theories are assessed by asking people to agree or disagree with statements, such as “Your intelligence (or aptitude for university education) is something in your nature that you can’t really change” or “No matter who you are, you can substantially increase your level of intelligence.” Agreement with the first statement indicates a belief in the idea that intelligence is a fixed, innate entity. By contrast, agreement with the second proposition points to a belief in the idea that intelligence can be increased, incrementally, through one’s efforts.

Research suggests that both theories are equally common—at least within the U.S. population, and as measured by endorsement. Approximately 40% of people (children and adults) endorse the entity theory, 40% the incremental theory, and 20% are undecided (Dweck & Molden, 2007, p. 123). There may

well be intercultural differences in the prevalence of fixed versus growth theories, and conscious endorsement in response to surveys and tests can hide deep-seated and often unconscious contradictory beliefs, which tend to show themselves when we are under pressure (Dweck & Molden, 2007).

Moreover, people can hold different theories about different abilities. For example, they can believe their personality is malleable but their intelligence is fixed. Or they can believe (as I have since high school) their math ability is naturally weak, but their verbal abilities can be developed.

Although self-theories are relatively stable beliefs that individuals hold, they can be changed. In many studies, researchers have taught participants an entity or incremental theory through persuasive articles, or by presenting a task as one that measures or requires either inherent abilities or abilities that can be acquired through practice (Dweck & Molden, 2007).

The focus of my study is excellence or mastery, which can be seen as extreme competence or extreme proficiency, at the top of the competence continuum or, as Waitzkin (2007a) prefers, in another dimension altogether. He writes:

Let's say we have become very good at something, and we are capable of performing reliably under pressure. How do we become exceptional? How do we make that leap from technical virtuosity to unique creativity? The real art in learning takes place as we go beyond proficiency, when our work becomes an expression of our essence. (pp. 217–218)

Brainsets and creativity.

If mindset is the cognitive expression of our attitude toward learning, and the implicit theory of intelligence and ability each of us carries, *brainset* may be the neurological correlate of mindset. Brainset (Carson, 2010) refers to a model of brain function derived from findings in contemporary neuroscience, which underpins human creativity and learning. Carson (2010) proposes a CREATES model of the brain comprising seven brainsets, which are “hypothetical constructs based on our current knowledge of human psychology and how the brain works” (p. 15). Each brainset corresponds with an aspect of creativity (imagination, productivity, and innovation), which is reflected in their names: Connect, Reason, Envision, Absorb, Transform, Evaluate, and Stream. Significantly, Carson discusses the neuroscience of each brainset in some detail, which anchors and enriches the developmental exercises that are the core of her book.

To take just one example, the *stream brainset*, which corresponds with *flow* (considered below), is elucidated by researchers who have studied the brains of expert pianists during musical improvisation (Carson, 2010). These studies show that during performance there is: (a) deactivation of the left brain, the controller of consciously directed behavior, which corresponds with Jill Bolte Taylor’s (2009) stroke experience; (b) activation of areas of the brain that select motor or action programs; (c) activation of the music and language center, which helps with musical and possibly other forms of extemporization; and (d) activation of the reward center, which provides continuous feedback (Carson, 2010, p. 246).

The point of this research is that, although we are only scratching the surface of understanding the brain, we are beginning to learn something of the patterns of activation and deactivation of particular neural loop complexes that underlie experience and behavior. As brain scientist and stroke survivor Taylor (2009) reports, “Ultimately everything we experience is a product of our cells and their circuitry” (p. 182). She adds, “I learned the hard way that my ability to be in the world is completely dependent on the integrity of my neurocircuitry” (pp. 185–186).

Brainsets and mindsets are different perspectives on the same phenomenon—the body-mind-spirit that is the human being. Brain science suggests that consciousness is mediated through the nervous system and is, therefore, embodied consciousness. In this respect, contemporary neuroscience is consistent with some psychospiritual perspectives on the human condition, such as *integral yoga*, in the Sri Aurobindo tradition. Haridas Chaudhuri (1977), inspired by Sri Aurobindo, argues that contrary to what is taught in many mystical traditions, neither thought nor the body are (necessarily) impediments to spiritual growth or liberation.

Flow and tacit knowledge.

Understanding the leap from technical virtuosity to unique creativity lies at the heart of this dissertation. My interpretation of Waitkin’s interpretation of his learning journey is especially informed by four thinkers and lines of inquiry, each of which is discussed below: (a) The work of Mihaly Csikszentmihalyi (pronounced MEE-hy CHEEK-sent-me-HY-ee; 1990, 1996) and his colleagues

(Csikszentmihalyi, Abuhamdeh, & Nakamura, 2007) on the flow experience, which throws light on mastery motivation and masterly performance; (b) Michael Polanyi's (1966/2009) notion of *tacit knowledge*, which challenges the hubris of modern scientific rationalism and demystifies intuition and creativity; (c) Maurice Merleau-Ponty's (1962) focus on human embodiment, which cuts through the mind-body dualism that has dominated Western thinking since Plato, and places the body at the center of our lifeworld; and (d) Yuasa Yasuo's (1987) interpretation of Eastern and some Western approaches to mind-body theory, which suggests mind-body integration is not so much an intrinsic connection or ontological fact as it is a unity that can be acquired or cultivated over a lifetime.

Passion is at the heart of the flow experience. The flow concept emerged from studies of rock climbers, chess players, athletes, and artists who love what they do and get lost in the experience:

Flow is a subjective state that people report when they are completely involved in something to the point of forgetting time, fatigue, and everything else but the activity itself. It is what we feel when we read a well-crafted novel or play a good game of squash, or take part in a stimulating conversation. The defining feature of flow is intense experiential involvement in moment-to-moment activity. Attention is fully invested in the task at hand, and the person functions at his or her fullest capacity. (Csikszentmihalyi et al., 2007, p. 600)

Persons in flow typically report a loss of self-consciousness and a loss of the usual dualism between actor and action. Persons in flow have a feeling of control (or lack of anxiety about losing control), and a sense of time passing quickly. The disappearance of self-consciousness reported by someone "in the zone" (a chess player absorbed in a game or a reader lost in a book) is often followed by a stronger or expanded sense of self. The explanation for this

paradox may be satisfaction at having met a difficult challenge, or a sense that one has temporarily moved beyond the boundaries of one's ego (Csikszentmihalyi, 1996).

Although flow experiences are thought to be relatively rare in everyday life, almost anything is able to produce them. Having clear goals encourages flow because goals channel attention. Other conditions of flow include perceived balance between challenges and skills, without which anxiety or boredom are likely, and clear and immediate feedback, which enables the individual to adjust activity appropriately (Csikszentmihalyi, et al., 2007).

The phenomenological experience of flow is a powerful motivator. Whatever the original motivation for playing chess or studying psychology, these activities will stop unless they are enjoyable, or unless people are motivated by extrinsic rewards. The research also demonstrates a positive relationship between flow and skill development, and between flow and resilience, both of which are critical to masterly performance (Csikszentmihalyi, 1996; Csikszentmihalyi et al., 2007).

Moreover, “the ability to enjoy challenges and then master them is a fundamental metaskill that is essential to individual and to cultural evolution” (Csikszentmihalyi et al., 2007, p. 606). This conclusion is consistent with conceptions of meta-learning (learning how to learn), and the art of learning (artistry in learning) explored in this dissertation. Flow researchers lament the barriers to flow in modern Western societies. Addiction to passive entertainment, reliance on extrinsic rewards, and “the excessive concern of schools with testing

and with disembodied knowledge all militate against learning to enjoy mastering the challenges that life inevitably presents” (Csikszentmihalyi et al., 2007, p. 606). Even more do they militate against facing the greater challenges to be mastered by those who aspire to excellence.

Learning is the name we give to the process of acquiring or creating knowledge and know-how. Knowledge and know-how are, of course, closely related. Knowledge focuses on the cognitive aspect of learning, whereas know-how refers more to the practical application of knowledge and technical expertise. Cognition has been of central concern in Western philosophy and modern science. However, what Polanyi (1966/2009) calls the *tacit dimension* of knowledge has been largely ignored or flatly denied by the majority of ancient and modern philosophers and contemporary psychologists.

Polanyi (2009)⁷ conceives experience as having two dimensions—awareness and activity. A person’s awareness can be either *focal* or *subsidiary*, to use Polanyi’s terms. For example, the reader is now focally aware of the meaning of these words and only subsidiarily aware of their spelling and grammatical arrangement. The second dimension of experience, activity, Polanyi conceives as more or less either conceptual or bodily. For instance, a person deeply involved in solving a chess problem has very little awareness of embodiment, whereas a person in the heat of battle in a martial arts contest is unlikely to be thinking at all.

⁷ That Polanyi was an internationally acclaimed scientist before he turned to philosophy strengthens the credibility of his radical epistemological insights. Polanyi’s notion of tacit knowing is a theory that, as Mitchell (2006) notes, “neither succumbs to rational hubris nor retreats into the hovel of postmodern despair” (p. 20).

The point of these distinctions for Polanyi (1966/2009), and for this study, is that explicit knowing—the kind of knowing that can be clearly articulated and that follows from logical inference and verifiable evidence—is based on focal awareness and conceptual activity. But the scope and dynamics of knowing, according to Polanyi, extend far beyond that which can be made explicit. Tacit knowing, which is rooted in unfocussed or ineffable awareness and is embodied or *indwelling*—Polanyi’s term for the innumerable physical, psychological, and social interactions we have with our environment of which we are only subsidiarily aware or completely unaware—is integral to epistemology and learning. We cannot say how we walk, talk, or form sentences, or how our bodies grow and heal, but we know how to do these complex actions. As Polanyi puts it: “we know more than we can tell and we can tell nothing without relying on our awareness of things we may not be able to tell at all” (as cited in Gill, 2010, p. 125). Not only is tacit knowing a legitimate part of human cognition, it is more fundamental than explicit knowing and logically prior to it. Indeed, explicit knowledge, including scientific knowledge, could not exist without the tacit, embodied and nonverbal knowing that underpins it.

Polanyi (1966/2009) makes reference to intuition, not as some mystical ability, but as “a skill, rooted in our natural sensibility to hidden patterns and developed to effectiveness by a process of learning” (Polanyi, as cited in Mitchell, 2006, p. 40). Polanyi’s philosophy resonates with Waitzkin’s (2007a) experience of *pattern recognition* and reading opponent’s “tells” or signals, which masterly

performers develop in the process of learning. This study digs deeper into these phenomena.

Embodiment and embodied consciousness.

As Polanyi's (1966/2009) explication of tacit knowing indicates, we are not "talking heads;" we are body-minds. Merleau-Ponty's major contribution to phenomenology (and to heuristic processes) is his explication of how the body shapes the fundamental character of our knowing, and therefore learning, about the world. We are necessarily embodied, and of course embedded in a particular culture, time, and place. Although the blend of sensory and physical processes, on the one hand, and cognitive and emotional processes, on the other, varies for different activities, ages, and other factors, the place of the body as a central component of experience is ever present and critical (Smith, Flowers, & Larkin, 2009, pp. 16–21).

Appreciating the crucial element of embodiment counterbalances the overly mentalistic approach of both traditional philosophy and deconstructive postmodern philosophy. As Merleau-Ponty (1962) succinctly puts it, "The body is our general medium for having a world" (p. 146). This perspective contrasts with the mind-body dualism that has dominated Western philosophy since Plato, and underpins the scientism of much modern science. Csikszentmihalyi (1990, 1996) Polanyi (2009), and Merleau-Ponty (1962), along with other scientists and philosophers, argue that the "ghost in a machine" or metaphor of a psyche joined to an organism are deeply misleading and damaging to both individual and social development.

Merleau-Ponty's philosophy anticipates the embodied consciousness movement within cognitive science, expressed in the work of Varela (1999), Lakoff and Johnson (1999), and others. I will briefly consider a contribution from Varela (1999), and from Lakoff and Johnson (1999), that bears directly on my study, and in so doing acknowledge that cognitive science is on the boundary of my dissertation but outside its limits.

There is a well-known expression in Taoist philosophy, known as *wu-wei*. The term is often translated as “not-doing,” which leads to the highest virtue. The contradiction contained in the idea of actionless action cannot be solved rationally, but the paradox of non-action in action can be resolved when the actor becomes the action—that is, the action becomes nondual. As Varela (1999) suggests:

When one is the action, no residue of self-consciousness remains to observe the action externally....To forget one's self is to realize one's emptiness...Every expert knows this sensation of emptiness well; in the West, for example, athletes, artists, and craftsmen have always insisted that self-consciousness interferes with optimal performance. (pp. 34–35)

We all know the difference between self-conscious or intentional action, and self-less or intentionless action. We walk, we talk, and we are considerate toward others “without intention because we are experts at them. Through...attention and by training over time we have transformed these actions into embodied behavior” (Varela, 1999, p. 35).

The importance of attention and awareness to pursuing mastery—as well as to peace and joy—has long been emphasized by various esoteric traditions, such as Buddhism and Taoism, as well as modern philosophers and teachers, such as Martin Buber (1971) and J. Krishnamurti (1969). As with contemporary

cognitive science and consciousness studies, which have embraced attention, awareness, and intuition as important topics of investigation and discourse, esotericism will remain beyond the limits of this dissertation.

Lakoff and Johnson (1999) draw on recent findings from cognitive neuroscience to build a cogent case for embodied realism or, more colorfully, “philosophy in the flesh.” In so doing, these scholars, armed with findings from cognitive science and cognitive linguistics unavailable to their philosophical antecedents, are continuing the fight for embodied philosophy. Merleau-Ponty (phenomenology), John Dewey (pragmatism), and Alfred North Whitehead (process philosophy) each in their different ways, argued for embodiment, but with limited scientific weaponry to challenge deeply entrenched epistemological paradigms—in particular, the metaphysics of Aristotle and the rationalism of Descartes.

According to Lakoff and Johnson (1999), there are three levels of embodiment: the neural circuitry, phenomenological conscious experience, and the cognitive unconscious. Neural embodiment is captured by the circuitry metaphor used by neuroscientists. Phenomenological reflection yields everything we can be aware of—sensations, thoughts, and the “feel” of experience. The cognitive unconscious refers to “the massive portion of the iceberg that lies below the surface, below the visible tip that is consciousness” (p. 10)—reminiscent of Polanyi’s tacit knowing.

The cognitive unconscious is, by definition, inaccessible to conscious study. It is a hypothesis invoked to illuminate the relationship between neurology and consciousness.

Cultivating the flowering spirit.

According to Japanese philosopher Yuasa Yasuo (1987), the nondualism that is central to many Asian traditions contrasts with such Western dichotomies as mind–body, reason–emotion, spirit–matter, subjective–objective, and theory–praxis. At least since Descartes, the Western tradition has generally rejected the unity of mind and body. Where such unity has been postulated in the West, it has usually been conceived as a given, a metaphysics thought to occur via the soul, the brain, or even the pineal gland—not via the evolution of the mind–body system, not as a way of being in the world that can be cultivated. In his comparative study of mind–body philosophy, Yuasa contends that in Japanese thought, mind–body unity, or body–mind, is an achievement, not an essential or innate relation. Mind–body unity is not constant and universal; it can be developed and it is variable among individuals.

As Yuasa (1987) points out, the main focus of Western intellectual history, including modern science, has been on the universal or ordinary, rather than on the exceptional. Where there has been interest in the exceptional, as in psychoanalysis and neurophysiology, for example, the focus has been on disease, on the abnormal rather than the supernormal. As discussed in the previous section, some Western philosophical traditions, notably phenomenology and existentialism, champion embodiment (especially Bergson and Merleau-Ponty)

and mind–body unity, but generally as a universal human condition rather than as an achievement on a continuum to be cultivated. Nevertheless, themes that concern the evolution of consciousness, and body–mind integration are evident in Freud and especially Jung’s depth psychology, parapsychology, and psychosomatic medicine.

In Eastern traditions, especially Buddhism, cultivation is the road to consummate learning and performance in any area of endeavor. Cultivation is a distinctively Asian term with nuances that are different from the Western notion of praxis (Yuasa, 1987).

Brilliant sportsmen or sportswomen, musicians, painters, scientists, entrepreneurs, and so on, cultivate the flowering spirit⁸—they carry the seeds of flowers for every occasion, which enable them to perform gracefully and effectively even under the most dire circumstances.

Intuition and expertise.

The Western equivalent to the Eastern notion of “flowering spirit” is intuition, a concept that has tended to be ignored, or thought to be meaningless, in academic circles until recently. As we have seen, the metaphor of cultivating the flowering spirit depicts how a person brings to situations seeds that can bloom into beautiful flowers of performance, even under difficult conditions. These seeds are intuitive insights, which can be developed or cultivated. Each of us has access to intuition, but, as Stuart Dreyfus (2004) points out, experts have a much

⁸ The Flowering Spirit is the translated title of Zeami’s (2006) 15th century classic on the art of Nō, a form of traditional Japanese drama.

richer and more accessible intuitive repertoire to draw upon than non-experts.

Stuart Dreyfus (2004, 2011) and Hubert and Stuart Dreyfus (1986, 2008) argue that human intelligence and expertise is linked far more to intuition, and far less to calculation and rationality, than commonly believed. The Dreyfus's publications contend that intuitive knowing or knowing-how is the norm in living—as when we recognize a face or say the right thing. We simply jump to the act without considering alternatives. Intuitive knowing is even more developed in experts. Experts just see or know what to do, without figuring it out, and react appropriately. Of course, experts reflect, and consider deeply and consciously, when time and circumstances permit. But in the performative moment, more often than not there is no time for calculation, yet appropriate and sometimes masterly decisions are made, almost instantaneously. That is because the intuitions of experts have been developed to such a degree that they can transcend the rules, because they have internalized them, and simply react to the context at hand.

Stuart Dreyfus (2004) has put forward a five-stage model of adult skill acquisition. The essence of the model is that as a learner progresses from novice, to advanced beginner, to competent, to proficient, to expert, his or her performance becomes less rule-based, more context-dependent, less analytical and more intuitive, and he or she becomes more emotionally involved and immersed in the learning/performing situation. As I shall consider in later chapters, the findings of Stuart and Hubert Dreyfus are remarkably consistent with the findings of this study concerning the key role of intuition in expertise.

Expertise comes down to perspective, or what one sees. The “expert experiences one of not only a large repertoire of intuitive perspectives, but immediately sees what to do” (H. L. Dreyfus & S. E. Dreyfus, 2008, p. 117). For example, a chess grandmaster’s compelling intuitive perspective allows him/her to sense the best move. Expert chess players can make a move every 10 or even 5 seconds without any significant degradation of performance. To do this they must depend almost entirely on intuition, and hardly at all on analysis and calculation. It has been estimated that brilliant chess players can distinguish around 100,000 types of positions. When confronted with a particular position, the appropriate intuitive perspective will allow them to see the best move (S. E. Dreyfus, 2004).

More recently, Hubert and Stuart Dreyfus (2008) have identified a sixth stage in the process of acquiring skills—mastery—which they describe as beyond expertise, and achieved by only a handful of the thousands of experts in any domain. All animals, the authors point out, tend to become experts at survival in their natural environments. Paradoxically, it seems that most humans, with our attachment to deliberate rule-based thinking typical of the first three stages of skill acquisition, and afraid to take risks, only perform competently (Stage 3) despite vast experience within a domain. “Also, however, only human beings can become masters” (H. L. Dreyfus & S. E. Dreyfus, 2008, p. 121). This is a pertinent observation for (as I discuss in later chapters) it resonates with the experience of Josh Waitzkin, and other experts or masters. In the performative moment, masters are not thinking (as non-experts tend to do), or acting

instinctively (as animals do): masters are seeing or sensing intuitively what to do, and just doing it, as it were, sometimes in less than the blink of an eye.

Although Hubert and Stuart Dreyfus (2008) conceive mastery as a distinct stage beyond expertise, mastery or enhanced expertise can also be seen as a continuum. Some experts are more expert or masterly than others. At one level of explanation, masters are experts who, because they are so highly motivated to excel, are not satisfied with performing as experts. As a consequence, they are forever seeking new opportunities to improve that are invisible to experts, and are prepared to risk a drop in their performance, at least temporarily or if the trial proves to be unsuccessful.

For this study, any distinction between expertise and mastery is less important than unearthing that which is conducive to the pursuit of excellence. The inquiry seeks to distill crucial characteristics of the art of learning for anyone journeying toward expertise or mastery. It may be, as Dreyfus and Dreyfus (2008) suggest, that masters savor successes more highly, and feel the pain of mistakes more deeply than mere experts. And that masters deliberate more thoroughly about what should have been done so that they can respond differently the next time a comparable situation arises. However, more important for this study than such distinctions is that both experts and masters feel more deeply and introspect more thoroughly than do non-experts. The terms “expert” and “master” are used interchangeably in this study, except in those rare instances where it seems important to make a distinction between expertise and enhanced expertise or mastery.

The traditional dual model of expertise holds that expert behavior is a product of two systems: System 1, *declarative memory*, is memory of similar previously experienced situations with successful outcomes (S. E. Dreyfus, 2011). From this perspective, expertise involves *pattern recognition*, an idea first proposed by Chase and Simon (1973) and refined by many others since. System 2 is calculation and reasoning, which is slow and effortful, compared with System 1, which is relatively fast and effortless.

Stuart Dreyfus (2011) draws on findings in neuroscience to propose a tripartite model, which includes a quite different brain system, System 0, *procedural memory*, to explain intuitive expertise. The procedural brain learns to accomplish the skilful actions of elite chess players or martial artists, *not* by using stored and indexed knowledge or recognizing patterns, but by bypassing thought and “*directly mapping* input stimuli or factual knowledge into actions or ideas” (p. 5). In essence, declarative memory (System 1) is knowing-that, whereas procedural memory (System 0) is knowing-how.

Although Waitzkin (2007a) and other experts (e.g., Kasparov, 2007; Polgar, 2005; Syed, 2010) sometimes refer to pattern recognition in explaining their experience, the notion of procedural memory throws brighter explanatory light on these still little understood processes. Stuart Dreyfus (2011) maintains that the current educational system almost exclusively values System 1’s declarative knowledge, and System 2’s rational decision making. This can, he suggests, inhibit the natural progression, with experience, to the use of the System 0 brain. Dreyfus’s thoughts are consistent with findings from this study, which

highlight the vital importance of creative expression, choiceless awareness, beginner's mind, and unlearning, as emerging masters transcend the thought barrier.

This chapter has reviewed the literature on the nature of genius and talent (e.g., Arnove, 2009; Ericsson, et al., 2006), both highly disputed concepts in the scholarship on expertise, about which there is no consensus. In addition to talent, works pertaining to the other two elements in the expertise trinity—effort and circumstances—were examined (e.g., Chase & Simon, 1973; Ericsson et al., 1993). Research on the importance of mindsets to motivation and learning was also reviewed (Dweck, 2000, 2006), together with a brief discussion of brainsets (Carson, 2010). The literature on flow, tacit knowing, and embodied consciousness was considered and juxtaposed with Asian ideas of cultivating mind–body unity (Csikszentmihalyi, 1990, 1996; Lakoff & Johnson, 1999; Polanyi, 2009; Yuasa, 1987). Finally, the pivotal role of intuition in mastery was discussed (H. L. Dreyfus & S. E. Dreyfus, 2008; S. E. Dreyfus, 2004, 2011). It was noted that contemporary neuroscience is throwing new light on experience (S. E. Dreyfus, 2011), including the experience of masterly learning and performance, which is leading to a questioning of assumptions.

Many of the ideas and concepts considered in this chapter are revisited in the discussion below. Because mastery is a complex phenomenon, transdisciplinary approaches and diverse methodologies can lead to a more nuanced understanding and deeper appreciation of the phenomenon under investigation. And because one of the contentions of this study is that pursuing

mastery or bright expertise can be highly beneficial for individuals and communities, I hope that transformative elements are integral to the analysis and synthesis that follows.

Chapter 4: Method

In this chapter, drawing on Moustakas's (1990) classic book, I delineate the concepts and processes of heuristic research, and the main phases of a heuristic approach to inquiry. While all phases are important, heuristic research culminates with a synthesis, which entails distillation of meanings, and the emergence of new visions for the phenomenon being investigated. A short section is devoted to research questions, followed by a section on data sources. Although many texts are drawn from, Waitzkin's (2007a) book is the prime source, followed by my face-to-face interview (Waitzkin, 2010) with him. The chapter ends with a brief consideration of questions of validity, in which I invoke triangulation as a test of validity, and the crystal metaphor.

Heuristic inquiry.

This study uses a heuristic research method developed by Clark Moustakas (1990) to explore the experience of masterly learning and performance. Heuristic research is a process of inquiry by which one discovers the nature and meaning of experience. "Heuristic" comes from the Greek *heuriskein*, meaning to discover or to find. The exclamation "eureka!" (attributed to an excited Archimedes upon discovering the principle of buoyancy while taking a bath), captures the "aha" phenomenon and new meanings that can arise from discovery.

Heuristic inquiry is an internal process in which the researcher is deeply immersed in the phenomena being investigated, both in himself/herself and in research participants. Unlike Husserl's classical, descriptive phenomenology, where through "bracketing" and other techniques, the researcher keeps distance from the phenomena, the researcher is always present in a heuristic approach. As a result of the researcher's immersion in the phenomenon, self-awareness increases as the investigator comes to understand the phenomenon in increasing depth (Moustakas, 1990. p. 9).

As described by Moustakas (1990), heuristic research is anchored in seven concepts or processes:

- Identifying with the focus of the inquiry;
- Self-dialogue;
- Tacit knowing;
- Intuition;
- Indwelling;
- Focusing; and
- The internal frame of reference.

Identifying with the focus of inquiry is foundational to the heuristic process. The researcher must get inside the question or the topic of investigation (Moustakas, 1990). In my case, this process began when I was very young and imagined myself in the position of my sporting heroes, performing masterfully as they did. As I matured, I experienced vicarious excellence in other domains by imagining myself in the position of a person whom I admired, or accomplishing

an achievement by which I was inspired. Individuals whose passion to excel in a particular domain, evident in many years of deep involvement with their calling, have always impressed me. I admired a few of my teachers for their dedication to excellence, men and women who stood out like beacons in a sea of mediocrity.

For example, my philosophy professor inspired me by his erudition, his cheerful demeanor, and his quiet wisdom. Vivid images of our fireside chats half a century ago still sit with me. Reflecting now, I see that his presence—to himself, his work, and his students—nurtured my own engagement with presence, quality, and the joy of pursuing excellence.

From two aging institutional economists (men who had spent a lifetime as outsiders from mainstream neoclassical economics, arguing for an unpopular perspective on political economy) I learned, albeit tacitly, the value of intellectual and moral integrity. These scholars taught me that that which is popular or conventional is often wrong, serves vested interests, and maintains the status quo. Neither bitter nor defeated, their peace of mind showed me that the consolations for unpopularity (de Botton, 2000) are invaluable. These men embodied such consolations—integrity, contentment, empathy with others, and love of truth. I now see that because learning and performing at the highest level is deviant in a world conditioned to mediocrity and conformity, the consolations of journeying toward excellence can be more rewarding than money, fame, and other marks of popularity.

My identification with the pursuit of excellence is reflected in my training for and completing an Ironman at age 61, by my engrossment with Josh

Waitzkin's learning journey, and by my decision to pursue a PhD in a non-Australian institution, despite extraordinary financial challenges, and in an area of inquiry and approach to scholarship I am passionate about.

Self-dialogue is the ongoing conversation between the researcher and phenomenon under investigation. To discover the qualities and constituents of mastery, my own awareness and understandings of expertise were the first stages in the process. As the research proceeded, my understanding of masterly learning has deepened "through the eyes and voices of others" (Moustakas, 1990, p. 16), and through self-reflection. It is important to emphasize that words, principles, theories, and the like, are, as Maslow wrote, "useful only because people know them experientially" (as cited in Moustakas, 1990, p. 17). Knowledge grows out of direct human experience, which makes honest self-inquiry necessary.

Self-dialogue in search of meaning and purpose, in search of areas of endeavor in which I could be true to myself and excel, have characterized my life. For example, although as a 30-year-old I was established in a secure and well-paid position within the Australian Federal Government, replete with promotional opportunities, the authentic "me" won out over the "me" that wanted to be secure and comfortable, as I reflected for months on my future. I spent the next 20 years pursuing excellence in retail bookselling, driven by the joy of the pursuit, savoring successes and suffering failures.

Tacit knowing, as set out by Polanyi (2009), underlies all knowledge, and is a kind of knowledge that cannot be put into words. We know a person's face, or how to ride a bike, but we cannot tell how. Similarly, we know the essence or

treeness of a tree through a tacit process that enables us to sense the unity or wholeness of something from an understanding of its qualities or parts. My experience resonates with Polanyi's remark about the emergence of knowledge from the tacit dimension. I have discovered particular aspects or components of mastery, which have taken on "sharp outlines of certainty, only to dissolve again in the light of second thoughts or of further...observations" (Polanyi, as cited in Moustakas, 1990, p. 21). For example, I had thought the pursuit of excellence required enormous self-discipline. But I learned, from my conversation with Waitzkin (2010), and deeper reflection on my own experience, that this idea misrepresents the relationship between practitioner and practice. I played squash at a high level because I loved playing squash, not because I was self-disciplined. Polanyi proceeds: "Yet from time to time certain visions of the truth, having made their appearance, continue to gain strength both by further reflection and additional evidence" (as cited in Moustakas, 1990, p. 21). I now have a more nuanced understanding of mastery, an understanding that continues to evolve.

Tacit knowing, as I argue, is vital in masterly learning, just as it is to human research. Incorporating the tacit dimension opens the door to insights, and unearths deeper meanings in human experience, such as mastery. According to Polanyi, elite chess players have *speculative skills*: they see, rather than calculate, the best moves (as cited in Moustakas, 1990, p. 22). Tacit knowing, then, underlies and precedes intuition—in mastery *and* in research. Tacit knowing guides the practitioner into novel directions and sources of meaning. Tacit

knowing is an outcome of what S. E. Dreyfus's (2011) procedural memory or System 0 seeks to explain (see "Intuition and expertise").

Intuition is the bridge between tacit knowledge and expressed knowledge, between that which is implicit and that which is explicit, between the unconscious mind and the conscious mind. The stronger the researcher's intuition, the more likely she is to find original and sometimes surprising meanings from her investigations. Polanyi conceives intuition as a skill (Moustakas, 1990, p. 23) that can be developed. Waitzkin (2007a, 2010) conceives intuition as a muscle that can be strengthened through introspection and self-dialogue. From a phenomenological perspective, *intuiting* is the perceiving of things as wholes, even though we only ever see parts. Intuiting is an essential characteristic of being human. Intuition underlies our capacity to see patterns and relationships, ask promising questions, integrate perspectives, and synthesize knowledge. Intuition guides the heuristic researcher, just as it shows the way forward to budding experts, as researchers (such as S. E. Dreyfus, 2004) and masters (such as Kasparov, 2007) contend.

Indwelling is Moustakas's term (borrowed from Polanyi) for the process of turning inward in search of ever deeper and more nuanced understandings of the phenomenon being investigated. *Dwelling in* something is more complete, more carnal, than merely *looking inwards* (introspection) at something. As a heuristic researcher of masterly learning I *live with* the phenomenon in my own body-mind. And a second kind of indwelling meets the first. As an investigator, I seek to dwell from the outside in the experience and interpretation of the master

I am studying. Polanyi (2009, p. 30) considers these two types of indwelling in the context of a student learning skills from a teacher. By such exploratory indwelling, I seek the feel of the master's meaning. If I achieve empathic understanding, I am better able to explicate the phenomenon, and move toward a "creative synthesis that captures the essential qualities and meanings of an experience" (Moustakas, 1990, p. 25).

Focusing is a phenomenologically grounded personal growth and therapeutic process developed by Eugene Gendlin (1982). To focus is to be inwardly attentive, in a relaxed and receptive state that enables one to see more clearly the essence of what matters. In focusing language, when one *pauses*, one gets an authentic *felt sense* within one's body about the matter at issue.

As a researcher, focusing allows me to set aside preconceptions, internal chatter, reactive emotions, and other clutter, and to make contact with qualities of the experience of masterly learning that have been hidden from my awareness. This process can yield fresh insights and changes in behavior. For example, pausing at various stages to savor the nuances of my various readings by, and conversations with, Waitzkin, has deepened my understanding of the nature and importance of the faculty of mindfulness—awareness to *what is* in the present moment—in the pursuit of excellence. When Waitzkin injured his left hand shortly before a national Tai Chi championship, his focus was entirely on healing his hand. He neither gave up on the chance of competing (a common error many make by projecting into the future), nor did he delude himself that his injury was not serious (thereby denying the reality of the injury; Waitzkin, 2007a). At first, I

interpreted these events as courageous; now I see them as a manifestation of mindfulness. Waitzkin, it now seems to me, was courageous, but his courage was rooted in awareness. To focus on courage rather than mindfulness suggests a more superficial and less accurate interpretation of his masterly behavior.

In my quest to complete an Ironman, there were many occasions during the months of grueling training leading up to race day when I paused to confront the reality that I simply did not know my limits, or even if I could finish the event. Nothing in my training performances indicated that I would or could complete. But somehow, that did not matter to me. I had faith that provided I prepared as well as I could prior to the event, and provided my pacing and nutrition strategy on race day were sound, I could do it, even if I couldn't explain how (which I still can not). In any case, finish or not, I would be at peace, because I knew I had left no stone unturned in pursuit of my goals.

The internal frame of reference is the last of Moustakas's (1990) key concepts. The phrase, which is akin to the notion of *worldview*, is associated with Rogerian psychotherapy (Rogers, 1967), and refers to the amalgam of beliefs, values, perceptions, and feelings through which each one of us experiences the world. Knowledge is born from tacit, intuitive, or observed phenomena, and develops through indwelling, self-dialogue, and focusing. One's most significant awarenesses (whether therapist or researcher) arise from one's empathic understanding of the perceptions, feelings, and meanings of the experiencing person—that is, his or her internal frame of reference. As a heuristic researcher, I must become empathically attuned to the other (in this study, Waitzkin), if I am

going to create a climate of openness, trust, and connection “that will inspire that person to share his or her experience in unqualified, free, and unrestrained disclosures” (Moustakas, 1990, p. 26).

Beyond these seven concepts and processes, Moustakas (1990) identifies five phases of heuristic research—immersion, incubation, illumination, explication, and creative synthesis. Although in practice the phases overlap in a heuristic inquiry, characterizing each phase is theoretically important.

Immersion entails swimming around, within, and across all aspects of the experience being investigated: “People, places, meetings, readings, nature—all offer possibilities for understanding the phenomenon” (Moustakas, 1990, p. 28). For several years I have been submerged in the world of the masterly learning experience, especially Josh Waitzkin’s learning journey, as presented on the public record, and as revealed to me through conversation. I have also explored masterly learning and expertise in the scholarly literature, and in experiential narratives by outstanding performers. In addition, I have drawn on my personal experience of pursuing excellence and my indwelling knowledge.

In the second phase, *incubation*, the researcher rests from active, deliberate inquiry, and waits for insights and meanings to surface in their own good time (Moustakas, 1990). There have been alternating periods of intense activity and quiet recovery as this inquiry proceeded and the writing was brought forth. Just as recovery and consolidation are critical phases in the training programs of endurance athletes—which I have experienced as a triathlete—so too

unfocused contemplation can yield fresh insights and new meanings for the researcher—as I have found in investigating mastery.

In the *illumination* phase, expanding awareness of the phenomena and deepening meaning coalesce in new knowledge and insights. The experience comes to be known vividly and in all of its essential qualities. Themes, clusters, and patterns become clear, which give structure and life to the new discoveries (Patton, 2002, p. 487). In this inquiry, major and minor themes emerged for me as my understanding of Waitzkin’s masterly learning experience—and Waitzkin’s interpretation of that experience—deepened. Such illuminations fed naturally into explication of meanings and connections, the fourth stage in the heuristic process.

In the *explication* phase, the heuristic inquirer integrates his/her own perspectives with the experience of the individual(s) who participated in the study (Moustakas, 1990). Much of this dissertation, especially Part 2, entails explication of masterly learning—description, analysis, interpretation, and integration. Explication paves the way for a synthesis and distillation of meanings in Part 3.

Creative synthesis is the bringing together of themes, the highlighting of nuggets of meaning, the delineation of patterns and relationships, and the portrayal of new visions of the experience. In this phase, findings or learnings from the study are communicated, and further research questions or directions about the experience are indicated (Moustakas, 1990).

Research, theorizing, and writing are closely linked processes in heuristic inquiry and other qualitative methods. The whole endeavor can lead to “the

cultivation of one's being" (van Manen, 1990, p. 8), a notion that resonates with Yuasa's (1987) vision of body–mind cultivation (see "Cultivating the Flowering Spirit"), and with Waitzkin's (2007a, 2010) experience of pursuing excellence as expressing the essence of who we are, a recurrent theme in his writings and talks.

Delineating heuristic research in terms of specific concepts and phases (as I have done, following Moustakas [1990]), runs the risk of putting the cart (the method of inquiry) before the horse (the phenomenon being investigated). For me, the processes and stages articulated by Moustakas (1990) are guidelines, rather than a recipe with ingredients (each of which must be explicitly present in the narrative), and steps (each of which must be followed in sequence), in order to produce good heuristic research. As indicated in this section, I participated in the phases outlined by Moustakas, and honored the key concepts of the heuristic method, at various stages of the research, including the writing.

Research questions.

This study addresses questions about masterly learning or the pursuit of excellence. What is the nature of the experience of mastery (or pursuing excellence), and how can masterly learning and performance be cultivated?

There are four interconnected research questions: (a) how did Waitzkin experience and interpret his learning and performance journey in the pursuit of excellence? (b) what principles and meanings has Waitzkin derived from this journey? (c) how can these principles and meanings be extended and developed? and (d) how can masterly learning be cultivated?

Focusing on a consummate exemplar of masterly learning and performance, the study explores Josh Waitzkin's experience, and his interpretation of that experience, in the pursuit of excellence. I explicate principles and meanings derived from this investigation of Waitzkin, seen through the reflexive lens of my own experience. Finally, I extend and synthesize meanings and findings about learning, learning to learn, and mastery.

The study uncovers interconnected themes and threads in Waitzkin's meta-learning tapestry. Four major themes are identified—passion, resilience, effort, and presence (for which *PREP-aration* serves as a mnemonic)—together with minor themes, which are explored in Part 2. In Part 3, two major themes are combined into *resilient presence*, a synthesis that captures an essential learning from the inquiry. The conjoining of themes is followed by a summary of findings drawn from Waitzkin's perspective on deep learning. The study culminates with a meta-analysis—a discussion of key learnings about the farther reaches of human learning, their meaning and significance. The inquiry ends with a note on the application of Waitzkin's ideas, suggestions for future research, and a conclusion.

Sources of data.

The analysis and interpretation is based primarily on my study of Waitzkin's (2007a) *AOL*, and our in-depth interview. In addition, the research is informed by material on Waitzkin's websites, his first book, *Attacking Chess*, his extensive commentary embedded in *ChessMaster* (2007), and many interviews he has given that are on the public record (Waitzkin, 1995, 2007b, 2008). The inquiry draws from Josh's father's book on his son's early chess life, and the

subsequent feature film based on that book (F. Waitzkin, 1988; Pollack & Zallian, 1993). I gained valuable information and inspiration from Fred Waitzkin's (1994) book about world chess champion Garry Kasparov, who had a big influence on Josh's development, and Frank Brady's (2011) book about the U.S. champion Bobby Fischer, in whose shadow Josh lived as a brilliant and promising young player. Beyond these texts, the research was enhanced by my direct observations of Waitzkin, and ongoing conversations with him. As I read, listened to, and watched the data multiple times, and as I transcribed, pondered, and analyzed the texts, I became ever more deeply immersed in the investigation of masterly learning. There were also periods of unfocussed contemplation, from which fresh insights into mastery arose.

Waitzkin is an exemplary research participant for investigating masterly learning and closely related topics, including learning to learn, artistry in learning, and unlearning. An important data-gathering instrument in this study is an in-depth "reflexive dyadic interview" (Ellis, 2004, p. 61) with my research participant. In my reading of Waitzkin—from written and oral texts on the public record, private communications and conversations, and our interview—I seek interactively produced meanings and interpretations. The inquiry has an *idiographic* focus—that is, an in-depth examination of one particular case. I am interested in Waitzkin's detailed, sensually rich descriptions of his experience of learning and performing. I am also interested in Waitzkin's interpretation of the meaning of his experience, and my interpretation of Waitzkin's interpretation—the so-called "double hermeneutic" of interpretive inquiry. Of course, the

researcher can never really know what it was like for the participant to experience some thing—such as learning to play chess brilliantly or coming within a rejected handshake of winning the World Under 18 Chess Championship (as Waitzkin did; Waitzkin, 2007a, 2010). The researcher can never get inside the head or body of the participant. And the participant himself only has retrieval access to memory of experience (and to memory of memory of experience), but never to the original experience itself. Only in imagination can we re-experience the original experience. Even then, re-experiencing can never be identical to the original experience—it might be more painful, vivid, or less so. It would be more accurate to speak of a new experience, triggered by, or based on, an old experience, rather than a re-experiencing.

Our face-to-face interview took place in New York City on January 20, 2010. The interview lasted for 90 minutes and was video recorded (Waitzkin's consent and release is appended at Appendix B). The interview was semistructured and guided by questions I had prepared to address what I deemed to be important themes emerging from Waitzkin's work that is on the public record. My interview questions (appended at Appendix C) were organized around several themes, such as passion, resilience, and the expertise trinity—talent, effort, and circumstances.

I watched the video recording several times and transcribed the entire interview. Analysis and reflection suggested clusters of themes. It became apparent to me that themes, principles, and meanings distilled from Waitzkin's

experience are in alignment with the work of others, including other masters, as considered in the chapter titled “Literature Review” and throughout the writing.

The meanings drawn from this study are in two forms—implicit and explicit. Implicit meaning is embedded in the nuances of the analysis and the research/writing as a whole, just as the meaning of a poem is embedded in the work itself, its impact on the listener or reader, and cannot be summarized easily. Explicit findings—although, like Carl Rogers (1969), I prefer the term “learnings”—are presented in Part 3 of the narrative.

Questions of validity.

Current thinking on validation measures ranges from calls to radically reconceptualize validity—for example, McTaggart (as cited in Gergen & Gergen, 2000)—to the claim there can be no meaningful criteria for validity—for example, Schwandt and Scheurich (as cited in Lincoln & Guba, 2000).

Having considered these debates, I have decided to address the question of validity in this inquiry by integrating triangulation and crystallization, which provides rich and multifaceted perspectives on meaning. Triangulation—a term used to describe looking at the phenomenon under study from different perspectives—can be seen either as a test of validity or as an alternative to validity (Flick, as cited in Denzin & Lincoln, 2011, p. 5). This study uses multiple data sources—documents, interviews, and observation—to clarify meaning and to corroborate evidence. As researcher, I have compared (a) Waitzkin’s writings with his talks; (b) his documents on the public record with our private interview, conversations, and correspondence; and (c) his perspectives

with the perspectives of other masters or experts. These different data sources are shown to be consistent and mutually reinforcing. I have also noted occasional inconsistencies and changes over time (since the publication of his first book in 1995), which deepened insights into the phenomenon. By triangulating data, I have sought to add rigor, complexity, and richness to the inquiry.

Richardson (as cited in Lincoln & Guba, 2000) invokes the metaphor of a crystal to indicate how validity might be described and deployed. Whereas the triangle is a rigid, fixed, two-dimensional object, the crystal has an infinite variety of shapes, properties, and angles of approach. Crystals grow and change, but they are not amorphous. Crystals are prisms that both reflect what they receive, and refract from within themselves colors and patterns. What we see depends on our point of view, including our internal frame of reference. From this perspective:

Crystallization, without losing structure, deconstructs the traditional idea of “validity” (we feel how there is no single truth, we see how texts validate themselves); and crystallization provides us with a deepened, complex, thoroughly partial understanding of the topic. Paradoxically, we know more and doubt what we know. (Richardson, as cited in Lincoln & Guba, 2000, p. 181)

The quality of findings or meanings discovered via heuristic inquiry boils down to whether the research tells the reader something significant, even if he or she might question the findings or interpretations. Another validity check might depend on whether individuals in communities affected by the research are moved to change their thinking, emotions, and behaviors. One might think of this as the *transformative* component of validity, represented in this study by Waitzkin’s impact (and my interpretation) on discourse and praxis in learning and education.

From this perspective, the “test of validity” only comes into play after the research and after its dissemination, once its impact becomes apparent.

PART 2: THE ART OF MASTERY

In Part 2 I provide an in-depth, thematic analysis of Waitzkin’s experience of his journey in the pursuit of excellence, and his reflections on deep learning and learning to learn. The analysis is built around four overarching themes—passion, resilience, effort, and presence—which lie at the heart of artistry in learning, and the acquisition of expertise or mastery.

Chapter 5: Interpreting Waitzkin’s Experience

In his introduction to *AOL*, Waitzkin (2007a) writes:

“What I have realized is that what I am best at is not Tai Chi, and it is not chess—*what I am best at is the art of learning* [emphasis added]. This book is the story of my method” (pp. xviii–xix).

In truth, his book is about more than method, unless “method” is construed to include philosophical speculation and intuitive insights. Josh takes pains not to reduce the art of learning and performance excellence to method, in the sense of techniques and skills, a step-by-step process, or to any external or “physical” formulas, such as the “ten-year rule.” That said, Josh takes equal pains to dispel “the illusion of the mystical” (Waitzkin, 2007a, p. 149)—the belief that expertise or extraordinariness are primarily the result of magic-like, inexplicable qualities, such as giftedness or genius. In Josh’s mind, excellence can be cultivated, none of us know our limits, and most of us are capable of achieving far more than we think we can.

In the film about Josh’s early life, the boy’s first coach, Bruce Pandolfini (played by Ben Kingsley), says that for non-chess players or weak players chess is

a game, for many good players chess is a science, whereas the best of the best experience chess above all as an art (Pollack & Zallian, 1993). A comparable ambiguity of meaning exists with the martial arts. Despite the name “martial arts,” most people, practitioners and non-practitioners alike, think of the martial arts as sport—competitive, combative, violent, and often staged as exhibitions and contests with prizes. The focus is on the “martial” rather than on the “art,” and on the external or physical aspect of martial rather than the internal. In their purest form, as envisaged, taught and lived by the giants of the tradition, past and present, the martial arts are fundamentally about cultivating character, health, mental and physical flexibility and strength, morality, and spirituality (see, for example, writings from the founder of judo, Kigoro Kano, 2005). Although the origin of some martial arts lies in striving for advantage or excellence in military combat (attack and defense), those cultural needs have almost entirely disappeared. Some martial arts and artists now focus on the art of cultivating the internal warrior and mind–body integration. Even within the martial version of Tai Chi—known as Push Hands competition—in which Waitzkin (2007a) reached the pinnacle of competitive success, his passion and focus was predominantly internal—presence, learning, joy.

I emphasize the internal dimension of Waitzkin’s (2007a) journey, because *AOL* is more inspirational memoir than how-to manual. *AOL* is both trans-genre and transdisciplinary (or perhaps “nondisciplinary,” as the notion of disciplines is essentially an academic one, rather than a pragmatic one). The book is part autobiography, part philosophy, and part theory of learning and performance.

Waitzkin draws on some scientific research in developmental psychology and sports psychology to support his views, although this is perhaps unnecessary for those readers for whom the narrative of his experience is compelling enough. It is, however, a useful nod to “evidenced-based research,” which is necessary for legitimacy or credibility in the eyes of many readers.

Much of what Waitzkin (2007a) presents in *AOL* about learning is not new. What is fresh and creative is the way his constructions and insights are anchored in his life experience, rather than in abstract theory and academic discourse. The result is an engaging story of his “journey in the pursuit of excellence” (the subtitle of the hardback edition of *AOL*) in chess and Tai Chi, how his journey relates to learning and living in general, and how others can learn from his reflections and experience. Although his focus is *high-level*⁹ (Waitzkin, 2007a) learning and performance in competitive performing arts, he contends his insights and principles are relevant to learning at any level, and at any age, a claim that is interpreted and extended by this study.

Waitzkin (2007a) “shows” about learning more than he “tells.” As readers and good writers know, showing is often more effective than telling. Josh’s narrative engages many readers from the outset, and engagement, as any good teacher knows, is the first requirement for effective learning. Many readers of *AOL* have been inspired to take their game or study to a higher level, or even to

⁹ *High-level learning*, *masterly learning*, and *supernormal learning* are similar terms for learning at a level that can transport an individual (or group) beyond proficiency, toward expertise or mastery. If a person is learning at a high level, she is either moving toward expertise, or is already an expert. Waitzkin (2007a, 2010) uses the term *deep learning* for learning that drills down to the essence of things, in contradistinction to learning that is superficial or shallow. Masterly learning is deep learning.

take up pursuits they believed were beyond them. Some readers give copies of the book to their children, friends, and colleagues. I recommend the book to my undergraduate students. Having an interest in chess or martial arts could be helpful, but is by no means necessary.

Much the same can be said for Frank Brady's (2011) *Endgame*, a fascinating account of the spectacular rise and fall of Bobby Fischer. Because Brady is a superb storyteller, his book appeals to a wide audience. Similarly with the movie, *Invictus*, an inspiring account of Nelson Mandela's first year in office (Barber, Birnbaum, Freeman, Moore, & Eastwood, 2009). One can have little or no interest in South African politics, and dislike rugby, yet still be gripped and moved by the film. To my mind, Josh's story is powerful because it is *his* story and he is an accomplished storyteller. As intellectual luminaries, such as psychologist Jerome Bruner (2002) and philosopher Richard Rorty (2010) have persuasively argued—and millions of readers know—narrative can be more powerful and meaningful than abstract discourse.

Of course, some readers are not engaged by *AOL* (Waitzkin, 2007a), and are critical of the author (much of what follows in this section is based on my analysis of more than a hundred reviews of *AOL*—average rating four-and-a-half stars—on Amazon.com). Critics see hubris, Eastern philosophical clichés, and well-known ideas in sports psychology presented as if they were revelations. Where many readers (including myself) see humility, other readers see egotism (Amazon.com, 2014). I think this is because, being a memoir, the word “I” appears many times on most pages. However, writing in the first person no more

indicates arrogance or narcissism than are such qualities contra-indicated by third person writing. Josh values both his wins and his defeats. In *AOL* he explains how some of his most profound learnings arose from excruciating losses and injuries (Witzkin, 2007a).

Some intellectually inclined readers are put off by the author's failure to connect his ideas with the large body of literature on learning theory and learning science, or with educational philosophy. Other readers fail to connect with the book because they do not personally aspire to learning or performing at a high level, or being the best they possibly can be, at or in anything. Either they cannot see the point, believe pursuing excellence is obsessive, or think the sacrifices required are too high a price to pay. Conditioned by a diet of self-help books, step-by-step manuals, and quick fixes, some readers see little practical value in Josh's seemingly esoteric principles and narrative structure. I think such critiques point in part to minor shortcomings in the book, and in part to a poor fit between the intentions of the author and the expectations of the reader.

Waitzkin, as some reviewers of *AOL* claim, may be better at learning than he is at teaching. There is some truth in this assertion, but in no way does it diminish the value of what students in any field of endeavor can learn from Waitzkin, because his learning journey *is* his teaching. Josh does not claim to be a teacher, instructor, trainer, or coach—although he wrote a more than useful instructional book on chess when he was still in high school, taught children who achieved scholastic chess success, and created a very successful computerized teaching program, which incorporates human and psychological dimensions into

chess learning. Josh is a learner, and learning is his passion. In practice, learning and teaching are interwoven and inseparable. We are all teachers, whether we know it or not, and all learners. It is true that we learn a great deal when we teach, and not only or primarily about the subject we are teaching: we learn about the art of teaching, about our students, and about ourselves.

Chapter 6: A Thematic Analysis of Waitzkin's Principles of Masterly

Learning

This chapter introduces twenty principles of learning, drawn from Waitzkin's (n.d.) Art of Learning Project website, and my thematic framework for the analysis that follows in the remaining chapters of Part 2. I use PREP-ration as a mnemonic device to identify Passion, Resilience, Effort, and Presence as superordinate themes.

Twenty principles.

Waitzkin has distilled 20 core principles or concepts from *AOL*. (Waitzkin, n.d.). The principles are designed to guide learners and teachers—much as the North Star guided travelers looking for direction—to work with the ideas that are embedded in the narrative of *AOL*. The cite provides resources, links, and The Learning Journal Blog, to which contributors post stories of their learning and teaching journeys.

Waitzkin's (n.d.) 20 principles are arranged into four modules: Resilience, Peak Performance, The Art of Introspection, and Advanced Learning. Each module comprises five principles. Each principle is briefly described and followed by an audio recording of Josh reading a short excerpt from *AOL*, and

suggestions for further reading from within the book. Waitzkin's description of each of his 20 learning principles is appended as Appendix D.

The cluster of principles within each module is listed below:

- Resilience
 - Value Process Before Results
 - Investment in Loss
 - Beginner's Mind
 - Using Adversity
 - The Internal Solution
- Peak Performance
 - The Power of Presence
 - The Soft Zone
 - The Downward Spiral
 - Stress and Recovery
 - Building Your Trigger
- The Art of Introspection
 - Listening First
 - Loving the Game
 - Breaking Down Walls
 - Intuition: Developing the Internal Compass
 - The Middle Way: Navigating Grayness
- Advanced Learning
 - Master the Fundamentals

- Learning the Macro from the Micro
- Making Smaller Circles
- Numbers to Leave Numbers
- Bringing It All Together

Analyzing this cluster of headings has helped me to identify salient points and connections in Waitzkin’s learning framework. It is evident that the four modules, and the five principles within each module, have no relation to any sequence of events or steps in the learning process. For Josh, there is no single, one-approach-suits-all, cookie-cutter strategy that works for all learners and teachers. Quite the contrary: Josh urges anyone aspiring toward excellence to find his or her own unique way. There may be general guiding principles, but they are always subject to specific individual interpretation (Waitzkin, 2007a, n.d.).

The name given to each of the four modules is somewhat misleading, as it suggests that the labels resilience, peak performance, introspection, and advanced learning represent discrete components of learning. Clearly, Josh does not think of the principles in this way. The organization of principles is designed to help teachers and students discover and work their own way through what Josh calls “the material” (Waitzkin, n.d.).

All of the 20 principles, bar one, are aimed at the learner. The exception is “Listening First,” which is sound advice for teachers, coaches, mentors, trainers, and other facilitators of learning. Of course, listening is equally important for

learners, not only in the sense of listening to the teacher, but in the self-reflective sense of listening to one's body, gut feelings, hunches, and intuition.

Some of the principles have more to do with attitude or mindset than with strategy or process, but even this distinction can be misleading. For example, to “master the fundamentals” of any craft or body of knowledge presupposes a particular attitude—namely, an understanding of the importance of a solid grounding in basics, rather than covering the material quickly so that one can move on to more advanced techniques or content. Mastery of fundamentals also requires a particular strategy or way to proceed. Waitzkin refers to this process variously—as “numbers to leave numbers” (Waitzkin, 2007a, p. 95), “form to leave form” (Waitzkin, 2007a, p. xvi), “deep presence” (Waitzkin, 2007a, p.142), and “making smaller circles” (Waitzkin, 2007a, p.120). The meanings Waitzkin attaches to these and other notions will be explained in the chapters that follow.

Waitzkin's approach to learning—his “methodology”—is best construed as a tapestry, rather than a hierarchy or taxonomy. In practice, the interwoven threads comprise the fabric of learning and performance in the pursuit of excellence. Nevertheless, identifying major threads or themes is a useful heuristic for structuring the analysis and interpretation.

Four themes.

That good preparation is the key to good performance is conventional wisdom. If a student wants to do well in an exam, her best strategy obviously is to prepare thoroughly for the exam. This would most likely entail understanding the course content, key concepts, and relevant issues, as well as being able to

apply the theory learned. The word “preparation” contains a handy mnemonic, PREP-eration, which captures four key themes I have distilled from my research, which delineates the essence of masterly learning. I have named these superordinate themes passion, resilience, effort, and presence.

A thematic analysis is helpful in discovering and explicating the essence of masterly learning. The PREP framework allows me to describe, analyze, and interpret the phenomenon of masterly learning that is illuminated within this study. It should be emphasized that these four themes are in no sense disparate. Rather, they are interconnected and mutually reinforcing, as I hope the narrative reveals. Moreover, other themes can be identified in the framework of masterly learning, such as “quality” and “intuition.” I have chosen to subsume such additional themes within the PREP framework, with a view to structuring the narrative in a way that makes meanings and learnings from the study readily accessible to the reader.

The first *P* in PREP represents *passion* or love. Waitzkin and I use the two terms interchangeably. Passion for something (an activity, a project, a cause) drives effort and immersion in learning-cum-doing. Love is the incentive (the pull) and the reward (the hit or fix). When I asked Josh why he exhausts himself on the mats in the dojo every night, he said, matter-of-factly, “I just *love* it” (J. Waitzkin, personal communication, January 20, 2010). When I ask myself why I exhausted myself training 16 hours a week for 6 months and completing an Ironman, I get a similar answer. I found the activity exhilarating, somewhat intoxicating, and deeply fulfilling. I felt sensually alive and energized, living

fully within and through my body. I felt mentally strong, clear, and sharp. The stronger the intrinsic rewards associated with pursuing an activity, the greater the impetus toward doing one's best, and, for some individuals in some circumstances, approaching mastery.

The *R* in PREP stands for *resilience*. Resilience is the quality or act of rebounding from setbacks, such as defeat, failure, illness, or injury. When Waitzkin (2007a) lost in the final round of the scholastic championships as an 8-year-old, a tournament he was expected to win, he was devastated. But after licking his wounds and recovering during a month-long, chess-free fishing trip with his dad, young Josh bounced back more determined than ever. In his journey toward excellence, Waitzkin demonstrated on many occasions the importance of using adversity to one's advantage, and as he puts it, *investing in loss*. If passion is the spark that gets the engine fired up and running, resilience is the quality that keeps it running when the going gets tough.

I now come to *effort* (the *E* in PREP), the act of striving to do or accomplish something. Although the quantity or amount of effort is important, the *quality* of effort is even more important in masterly learning. How *well* one trains or studies can affect learning and performance more than how *much* one trains or studies. For Waitzkin and other outstanding learners and performers, quality of effort entails valuing process before results, striking a balance between activity and introspection, alternating periods of stress and recovery, and being mindful. Mindfulness, a quality from the Buddhist tradition, is being attentive to and calmly aware of the reality of one's body, thoughts, and feelings, in the

present moment. Mindfulness is closely allied with the notion of presence, the fourth major PREP theme.

Presence is the quality of being here in the moment, open to what is and to what might be. Presence entails being true to oneself, and to the collective of which one is a part. In team sports and business teams, for example, presence entails awareness of other team members, the team as a whole, and the impact of one's actions on the team as well as on oneself. In societies less individualistic than most Western cultures, being present also includes a strong communal component. Presence also means openness to the inner world of one's being as well as the external environment. Presence entails introspection (looking within), intuition (seeing what arises from within), full engagement (getting "lost" in an activity), and flow (loss of ego or control).

The next four chapters analyze the four themes in detail, exploring their connections with each other, and various patterns and threads within the tapestry of masterly learning. The description, analysis, and interpretation in these chapters provide a platform for a synthesis of meanings in Part 3.

Chapter 7: Passion: Loving the Game and Being True to Oneself

Nowhere does Waitzkin define passion or love, but his narrative, written and spoken, oozes with passion. People who know him well, or meet him briefly, describe him as a passionate man. First, he loved chess, totally enraptured by the ferocious battles between colorful figurines in the black and white jungle. Second, he was entranced by the beauty, grace, and energetic flow of Tai Chi. In both domains he relished the exquisite feeling of each lunge toward excellence.

His conversation is littered with “sublime,” “ecstatic,” and similar adjectives, when he talks about his journeys toward excellence (Waitzkin, 2010). Third, Waitzkin’s (2007a) passion for learning, and for learning to learn, superseded his love of chess, and his love of martial arts. His mission is to transform our understanding of learning, and our learning/teaching praxis. In each of the sections below, I explore passion—a human quality that is difficult to define, but which we tacitly know is present or not—in relation to authenticity, learning, rewards, talent, quality, obsession, and freedom.

Authenticity.

For masterly learning (and a happy life) it is not sufficient to be good at something, or to have a natural ability in a particular field. One must love, even be intoxicated by, what one does. Only then does the pursuit of excellence in a particular endeavor allow genuine expression of one’s true nature, and an uplifting of the spirit, despite periods of physical and mental exhaustion, and sometimes pain. In other words, one must be authentic—know, love and be true to oneself—if one is to choose wisely what one does and how one does it.

To move beyond proficiency and toward mastery in any pursuit, a person must not only love the activity, but must also love continually improving and excelling in the activity. After Waitzkin (2007a) lost as an 8-year-old to David Arnett, he returned to chess even more determined to improve his game, because he was passionate about excelling. In martial arts, after Josh’s first defeat in Taiwan in Push Hands, in the first round, in 2000, he responded by training harder and smarter than ever. By studying the videotapes of Taiwanese masters in detail,

he was able to improve his game. When Josh returned to Taiwan in 2002 he thought he could win, but finished third, losing to Chen Ze-Cheng, the best of the many excellent Taiwanese players, who became World Champion. Not only did Waitzkin lose his match with Chen Ze-Cheng, he finished the match with a badly damaged shoulder. In his words, “I was wrecked” (Waitzkin, 2007a, p. 224).

Waitzkin could have settled for a bronze medal at the World Champs, or chosen to use the next two years before he would have another chance at the Worlds to take his game to a new level. His description is telling:

I had felt up close and personal what the best in the world was all about and I knew it was within reach. This next phase of my learning process would be about building and refining a competitive repertoire that was uniquely my own. Immediately after coming home to New York, my work began. (Waitzkin, 2007a, p. 224)

Waitzkin had a sniff of what was possible for him. His desire, his passion, to reach the top was strong enough to take him beyond the state of (to use Dreyfus’s terms) “satisfied expert,” to build and refine his “intuitive repertoire.” As he was not as big, strong, or athletically talented as his opponents, he would have to find a strategy that would neutralize his opponents’ assets. In 2004 Waitzkin (2007a) defeated the power-effusing Buffalo, the name given to the man the Taiwanese considered unbeatable, to win the World title. Paradoxically, because aggression was his natural style, Waitzkin drew on his chess experience of prophylaxis or defensive play to, anaconda-like, shut down his more athletic opponents’ strengths.

Josh was a naturally attacking chess player, but to be a better player he had to learn defensive styles as well. To work on the weaker side of his chess game, Josh was persuaded to switch to a coach (International Master Mark

Dvoretsky, a famous Russian trainer of many top grandmasters) known for his defensive, positional style of play. This relationship did not work for Josh, because the coach's natural style violated Josh's natural style. Later, however, Josh did develop the positional side of his game with a different coach (Grandmaster Yuri Razuvaev) who, like Josh, was a naturally attacking player. (Although they may be known for possessing particular strengths, all top grandmasters have few if any weaknesses, and are masters of both attacking chess and positional chess.) This experience taught Waitzkin the importance of building on one's strengths, rather than focusing on one's weaknesses (Waitzkin, 2007a, 2010).

Waitzkin was fortunate enough to have parents and chess teachers who encouraged him to express himself through the game, to play chess when, and how, he wanted to. As he puts it:

Chess became an extension of my being, a natural channel for play and growth and introspection. As a young player, I was remarkably true to myself. I liked to mix it up and create chaos on the board. Everyone called me Tiger. I was aggressive, loved the battle, and was at my best when conditions got stormy. Most of my young rivals were focusing on results, feeling tremendous pressures from coaches and parents, and trying to control everything over the board. This tends to be a less resilient and inspired mindset. (Waitzkin, 2008, para. 2)

For Waitzkin chess was totally engaging and numinous, an awe-inspiring and aesthetically delightful window to the world. In his words:

Since childhood I had treasured the sublime study of chess, the swim through ever deepening layers of complexity. 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. (Waitzkin, 2007a, p. x)

For children, curiosity, which is a form of desire, leads to playful adventures and to learning. Children are masters of the most fundamental

heuristic approach to learning—trial and error. When a child falls over, she gets straight back up again. As we mature, as Waitzkin notes, learning and performing can seem frightening; we prefer the comfort of remaining with what we know and can do (Waitzkin, 2007a).

As we grow older we become more self-conscious and socialized to the norms of our families, communities, schools, and country. The enculturation process in Western societies seems to produce a general dulling of the natural curiosity and playfulness we had in childhood. Life becomes serious; mistakes and failure are dreaded. Finding or rekindling one’s passion in a way that is authentic to the individual can be the key—to paraphrase Rogers (1967, 1969)—to being free to learn, and finding the person one really is.

Waitzkin (2007a) emphasizes that although it is at times necessary to take on new ideas and approaches that may not be natural, it is vital that a learner’s relationship with his pursuit stays in harmony with his unique disposition. Following one’s own natural “voice” is critically important to success in any field of learning. Trying to imitate others can lock one into competent but ultimately crippling patterns that do not synchronize with one’s predispositions and rhythms.

The lesson for writers, students and scholars, for example, is that we must find our natural voice and keep it, even if we learn to use other voices from time to time. Success (achievement and fulfillment) depends not on trying to be like someone else, but on expressing oneself through one’s art:

I guess if I had to boil [success] down to any one thing, it would be to live a life that is true to yourself. I think that any meaningful question in life has more than one answer and we should all strive to discover our unique voice. Of course this is not to say that we should be self-indulgent.

Excellence takes hard work any way you cut it—but learn in a manner that resonates with your spirit. Play chess by expressing yourself with as little obstruction as possible. Break down the walls between the conscious and the unconscious, between life and art, between you and me....The more honestly we learn, the more freely we flow when everything is on the line. (Waitzkin, NPR interview, 2007b)

One might think of Waitzkin, and other masters, as extremely self-disciplined, and that self-discipline is an attribute that is essential to masterly learning. Although many people have told Josh that he is the most disciplined person they know, Waitzkin flatly rejects this label. Josh does not think of himself a disciplined, because he just does what he loves, loves what he does, and loves the *way* he does what he does.

Josh explained:

When I'm working on a specific technique or skill, I'm enjoying it. Feeling the beauty of it, the tactile beauty of the movement. To me this is very different from discipline. Discipline to me feels like an external word. I don't feel disciplined. (Waitzkin, 2010, p. 16)

Learning.

Passion is essential to what Waitzkin calls *deep learning*, and to a fulfilling life, as captured in Joseph Campbell's advice—"follow your bliss" (Flowers, 1988, p. 113). Deep learning is learning that goes beyond the superficial, is mindful rather than mechanical, and is something to which the learner gives full attention and effort. According to Waitzkin (2007a), deep learning entails digging down to the heart or essence of things, exploring every nook and cranny of a thing, topic, subject, activity, or whatever one is aspiring to master. Deep learning means acting *and* reflecting, then acting and reflecting again, and so on, recursively. Gradually, competence develops and, if the learner is persistent, the learning may deepen to a point where the learning/performing

moves beyond proficiency and toward mastery. Reflection often leads to adjustments to action—doing something a little differently or sometimes very differently. For example, Tiger Woods, already a champion golfer, made radical changes to his swing, and became an even better player.

Deep learning entails openness to challenges and a willingness to put oneself on the line. Merely going through the motions halfheartedly sabotages learning and enjoyment, because it does not allow the learner to become mindfully engaged or stretched in a way that makes profound fulfillment and outstanding achievement possible. Deep engagement in something, anything, one loves can be blissful and beautiful. That said, one must add a caveat to distinguish passion from compulsion, which I consider in the section, “Obsession” below.

Waitzkin’s taking on martial arts opponents, in training and in competition, who were in weight divisions above him, illustrates the point of putting oneself on the line and confronting demanding challenges. As a competitive squash player, I would seek opponents better than me, as I knew that playing them would extend me and improve my game. It didn’t matter if I lost: the thrill of being stretched to the limit was enough. One’s most important and valuable lessons, Waitzkin (2007a) claims, come at the point of resistance, when one is stretched to one’s limits.

As I explore in a later chapter, deep learning is built on a foundation of fundamentals (techniques, numbers, form) that have been mastered and transcended. Mastering fundamentals integrates them into the unconscious, the

body–mind, and results in unconscious competence, a process Waitzkin (2007a, 2010) refers to as “crystallization.”

Rewards.

Love or passion is at the core of motivation—and consequently of action, reflection, competence, and achievement. Waitzkin attributes his extraordinary achievements first and foremost to his love of chess:

I think what initially drove me was *a deep love for the struggle at the heart of chess* [emphasis added]. I was a young kid and the art was an exciting window into an intensity I had never dreamed of. (Waitzkin, 2008, para. 2)

Josh’s experience is consistent with the findings of Jim Loehr, a well-known performance psychologist. Loehr works with elite athletes, business leaders, and others seeking to perform and achieve at the highest levels. Ironically for a performance coach whose clients crave success, Loehr (2012) emphasizes the hollowness and emptiness of pursuing achievement or success—a chronic disease of our Western culture—for extrinsic or egotistic rewards.

Outstanding achievement isn’t the key to happiness. As Loehr puts it:

the blind pursuit of external achievement can, even when successful, result in profound emptiness for all of us. Years of work with superstars, high achievers, and otherwise rich and famous clients have profoundly affected my understanding of achievement motivation and goal setting. (p. 3)

As happiness researchers, Diener and Biswas-Diener quip: “Income appears to buy happiness, but the exchange rate isn’t great” (as cited in Loehr, 2012, p. 4). It is not just Olympic athletes and CEOs, lawyers and doctors, musicians and scientists, and university graduates who often feel emptiness and dissatisfaction in the wake of achievement—anyone can.

What is relevant to happiness and fulfillment, according to Loehr (2012), is (a) the goals we seek—are they worthy and fitting for who we are? and (b) what motivates us to achieve particular goals—is it intrinsic enjoyment of the activity and desire to contribute to society? The key question for each of us is “Who have I become in the process of pursuing my goals?”

When it comes to wellbeing, high and aspiring achievers consistently report that “integrity, caring for others, trustworthiness, compassion, kindness, and humility invariably top the list. [By contrast]...money, power, status, titles, material possessions, etc. rarely make the cut” (Loehr, 2012, p. 8).

As Waitzkin (2007a, 2010) emphasizes and demonstrates, the passion that fires the pursuit of excellence is passion for the game, activity, subject, or knowledge—not for extrinsic rewards, such as money and fame. Intrinsic rewards can include pride and satisfaction in achievement, the honor of winning, competing gallantly or with distinction. But celebrity status and media attention, adulation from fans, prizes and glory, are *not* motivating usually, and certainly not fulfilling. Fame and fortune can be exciting, but such emotions are fleeting, and may be followed by depression, as some winners of major sporting events, such as Andre Agassi (2009), have attested.

External “rewards” are ultimately unfulfilling, as Waitzkin (2007a) discovered in the wake of his sudden stardom, following the release of the movie *Searching for Bobby Fischer*. Josh became disconnected from himself. Instead of losing himself in thought at chess championships, he was overwhelmed by media and fan attention. He was also hurt by the disgust of some experienced

masterly chess players at the sudden celebrity status of this upstart 16-year-old. Although Josh was flying externally, he was a mess inside and slipping. These experiences confirmed to Josh, if he was ever in doubt, that fame, status, and money were not his drivers.

Talent.

Waitzkin downplays his own natural abilities and talks up those of his opponents. His aversion to the “child prodigy” label is palpable. Waitzkin’s thoughts on talent, a complex and contested topic discussed in Part 1, are enlightening:

I think there are many different forms of talent. There are different kinds of mind. When you associate talent with chess you tend to think about this kind of mathematical ability to calculate fifty moves ahead or wildly fast computational work. I was never very good at that, I mean relatively speaking compared to the top kids who I competed with at world championships. I always felt like they had better calculating machines up top than I did. That wasn't my strength. I had certain strengths though. I was a good fighter. I loved to fight. My greatest strength, whether it's natural or something that is cultivated, is in finding connections, finding hidden harmonies. And that's really the core to everything that I do. (Waitzkin, 2010, pp. 14-15)

Josh expands the notion of talent to include many kinds of attributes beyond, say, calculation speed (in chess) and athletic ability (in martial arts). His response aligns with the popular idea of multiple intelligences. To paraphrase Sir Ken Robinson (2009), the appropriate question is not “How talented are you?” but “How are you talented?”

Josh had fighting talent, always eager for cutthroat battles on the chessboard, and later for robust bouts on the mats, even against heavier and stronger opponents. Josh is also able to find meaningful connections, invisible to most of us, between apparently disparate things. Who would have thought a

brilliant young chess player could, within a handful of years of taking up Tai Chi, win a world championships against masters who had been groomed to win world titles all their lives? Yet, as Josh (2007a) recounts in *AOL*, what he learned as a chess player, about chess, about learning, and about himself, paved the way for his meteoric rise to the top in Tai Chi. Waitzkin is uncertain whether his ability to find hidden harmonies and his aggression are natural or cultivated. Not knowing makes sense because, as discussed in the “Literature Review” chapter, one can never separate the innate from the learned; every action is an inextricable combination of the two. One only recognizes “talent” *after* superior performances, but one can neither legitimately attribute the performance to talent, nor assess the respective contributions of talent and other factors to the outcome.

Is introspection (looking inwards) a talent? Is intuition (sensing or knowing what is and what to do) a talent? Waitzkin values both introspection and intuition highly. Are such attributes innate or can they be learned? Waitzkin (2007a) is clear that individuals can develop their introspection muscle, a theme explored in a later chapter, and that anyone aspiring to excellence needs to do so.

Waitzkin also has a deep sense of intuition, and its connection with related concepts, such as essence, quality, and wisdom (Waitzkin, 2007a, p. xvi). World champion chess player, Garry Kasparov (2007), makes a similar point about the supreme importance of intuition, as distinct from analysis and calculation, in elite chess competition:

Over and over again these legendary figures [past world chess champions], at the most crucial moments in their careers, intuitively found the best moves....The things we usually think of as advantages—having

more time to think and analyze, having more information at our disposal—can short-circuit what matters even more: our intuition. (p. 176)

Waitzkin discovered that as he advanced in chess, and then in martial arts, intuition played an increasingly important role in his performance. In both chess and Tai Chi, he found himself thinking less and feeling more as he internalized knowledge and techniques, so that “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 lived” (Waitzkin, 2007, p. xvii). Waitzkin’s experience is consistent with Dreyfus’s (2011) notion of intuitive expertise and procedural memory (System 0) as discussed in the section “Intuition and Expertise” in the Literature Review chapter.

Josh acknowledges that “talent” is a meaningful word, in the sense that some individuals are more naturally drawn to, and better at, some activities than other activities. He hastens to add, however, that that does not mean one cannot be extremely good at many things. He maintains, for example, that “virtually any kind of mind can learn chess at a high level” (Waitzkin, 2010, p. 15). Much depends on how one is taught and how one learns. Each person has a preferred learning style and favored strategies. Because people learn in different ways, no one way of teaching will engage all students. Josh referred to his experience teaching chess at a public school (P.S. 116) in New York City. Working with classes of 12 to 15 teens he discovered that if he taught a chess lesson in only one way, several students would miss the point. However, if he taught in several different ways, all students would “get” the lesson and be fully engaged

(Waitzkin, 2007a, 2010). Different minds respond to different stimuli, and respond to the same stimuli differently.

In the context of exploring the nature and source of talent, and in light of Waitzkin's exhilarated immersion in chess as a young child, I asked him about reincarnation. My question was prompted by Josh's statement that when he first saw chess being played in Washington Square as a 6-year-old, and then started to play at school, it felt as if he was unearthing a lost memory. It all seemed very familiar to him. I also wanted to dig deeper into his thinking on the question of inherited talent, and thought that asking him what he meant by "a lost memory" might yield fruitful insights. Josh explained that he neither believes nor disbelieves in notions of personal consciousness surviving death, and rebirth. Having spent years exploring Asian philosophies—including studying at Columbia University with renowned Buddhist scholar, Robert Thurman—Waitzkin is more focused on intuiting things in the moment than in finding rational explanations for phenomena that may well be ineffable. In his words:

I sense things. I might have inclinations of things in the moment. That experience when I first played chess just felt like discovering a lost memory. That's what it felt like. I can't give answers to that. I don't have them. I have the question. (Waitzkin, 2010, p. 14)

Quality.

Josh speaks of touching quality (Waitzkin, 2007a, 2010) through chess. "Quality" is a value that resonates throughout his work. Quality for Waitzkin is both a process and an outcome. It is the process of learning to do something exceedingly well, or learning an exceedingly good way to do something. And it is the result that one savors or relishes. One can experience quality in whitewashing

a fence, knitting a sweater, tending a garden, or tuning a motorcycle engine. Quality is a product of attention, care, craftsmanship, artistry, and is of metaphysical, ethical, aesthetic and practical importance. Quality is a value that sustains the world. In an important sense, Waitzkin's drive to excel is a drive for quality, for always doing his best, giving his all, in training and in competition (Waitzkin, 2007a). The loss of quality as a value in the modern world is a phenomenon that has been explored by many scholars—for example, Guenon (2004), in which the author critiques modern and postmodern culture and laments the reign of quantity, and Sheldrake (2013), in which the author (mirroring Richard Dawkins' god delusion), critiques the science delusion.

Waitzkin laments the loss of quality in educational publishing. He spoke to me about his conversation with the CEO of a prominent educational publication, who told him that “we look for what people want to see and we give it to them” (Waitzkin, 2010, p. 14). Waitzkin was deeply saddened by this comment, which he interpreted to mean that marketing had become the governing principle in education, rather than the search for truth and understanding.

Waitzkin's preoccupation with quality is reflected in everything he does and how he does what he does. To improve his chess skills as a child he would, under the guidance of his first coach, reduce the complexity on the board so that he could gain in-depth know-how around the meanings and possibilities contained in various simple configurations. He was then able to slowly, gradually, increase the complexity by adding more pieces, forever integrating new learning with past learning, as distinct from trying to do too much too soon. Mastering the endgame

gave Josh confidence to cautiously survive his young opponents' trap-laden openings, following which he would unleash blistering attacks or create chaos on the board, confident that he would be strong in the endgame, if the game went that far (Waitzkin, 2007a).

In martial arts, quality for Waitzkin also entailed mastering the fundamentals, which he would do by hours and hours of mindful practice, breaking down complex movements into their respective components, repeating each component slowly until he had internalized it (could do it without thinking), linking the components into one seamless movement, practicing the whole movement slowly, making subtle adjustments along the way, and gradually increasing the speed, power and effortlessness within the movement. Attention to detail. Going deep. Making smaller circles. Studying the micro to learn the macro (Waitzkin, 2007a). These are Waitzkinian constructs that appear and reappear in his narrative and this study, which capture something of the nature and importance of quality.

When a beautiful chess combination unfolds, or a sweet martial move is unleashed with lightening speed and devastating results, quality is savored and deep fulfillment ensues. The emotional feedback drives the ongoing quest for quality or excellence, recognizing that the process is never-ending and exquisite (Waitzkin, 2007a).

Waitzkin was much inspired by Pirsig's (1974/1999) iconic *Zen and the Art of Motorcycle Maintenance*. The two men's understanding of Quality (with a capital Q in Pirsig's work) has much in common. Waitzkin (2007a) devotes the

first section of his chapter “Making Smaller Circles” in *AOL* to a story in *Zen and the Art*, to illustrate the importance for Waitzkin of quality, and starting with reduced levels of complexity, in order to get the ball rolling, as it were. The story had a powerful effect on Waitzkin, for it showed him how creativity and quality can be manifested, once we get the clutter out of the way. A student who had to write an essay on her town just couldn’t get started. Phaedrus (the protagonist of quality in Pirsig’s classic) advised her to start by writing about a particular brick in a particular building, and that all would follow from there. It did. More than twenty inspired pages flowed out of the student, whose writing had previously been blocked (Pirsig 1974/1999).

A metaphysics of quality lies at the heart of Waitzkin’s lifeworld. For Josh, quality is a verb and a noun, a subject and an object, a process and an outcome, an event, an experience. “Quality is the parent, the source of all subjects and objects” (Pirsig, 1974/1999, p. 247). That is why, when we touch quality in our lives—and experts touch quality more often and more deeply than do non-experts—subject–object, agent–action dichotomies dissolve.

Obsession.

Obsession may be a form of passion, or distorted passion. Is it consistent with masterly learning? Although passion for school learning is noticeably lacking in many young people, passion for other pursuits, such as online gaming, abounds. Can we have passion for the wrong (unhealthy) things?

Online gaming has been praised (see McGonigal, 2011) for the problem-solving and strategic decision-making skills that players learn. Although the

technology is in its infancy and still with a militaristic, macho focus, it might—so the argument runs—evolve as a tool that can help us address important educational and social issues. Be that as it may, Waitzkin (2010) believes digital gaming is inimical to deep learning.

Josh (Waitzkin, 2010) recalled that when he was playing chess tournaments as a youngster, even brilliant 10- or 15-year-old chess players who played video games between rounds invariably crashed out of the tournament early. Josh theorizes that something deleterious to learning and performance happens in the mind of digital gamers, whose minds are “buzzing” (Josh’s word), that prevents them from settling in and thinking deeply, as one needs to do in chess positions that are strategically complex. For similar reasons, Josh believes that the current trend of “multitasking” (and praising the practice) is inimical to deep learning, as one’s attention is split between different tasks, rather than focused intently on any particular task.

Josh is also critical of online and other forms of digital gaming because, although games are evolving and becoming increasingly interesting, most games are still macho and destructive. Further, he grieves that gamers risk becoming addicted to being entertained by cheap thrills, as opposed to looking deeply for meaning and quality (Waitzkin, 2010).

Waitzkin created the computer program *ChessMaster* (2007)¹⁰ in part as an antidote to the superficial buzz of computer gaming. At first, he was resistant

¹⁰ Waitzkin began developing *ChessMaster* in 1997 when he was 20. The video training program, now in its 10th edition, has sold over six million copies, which may make it the best-selling chess program in the world.

to linking computers with chess, because he feared it would kill the human aspect of chess, and the artistry. He then decided to embrace digital technology and, as he explained,

use computers to bring out the human side of chess even more beautifully. And so all my lessons on *ChessMaster* are based on human psychology. I created this dynamic where you can play against different personalities who are eccentric in ways that human beings are. So you can learn to be introspective about your own psychological tendencies and observe those in others. (Waitzkin, 2010, p. 6)

Josh's computer program is designed to develop the human side of chess.

Video games may develop fast reflexes and hand-eye coordination, but, according to Josh, their downside is that they teach players to think quickly rather than deeply (Waitzkin, 2010). Of course, speed is a characteristic of contemporary culture. Life gets faster and faster. Rushing and attention deficit seem to be hazards endemic to modern living.

At a national chess tournament several years ago, Josh asked two of the best young chess players in the country to do an experiment with him. As Josh was a hero to these youngsters, both boys were eager to participate. He asked them not to play video games for two weeks, and to send him their journal entries about what it felt like. One boy said there was no way he could quit gaming, even for just two weeks. The other agreed, but found it extremely difficult, at least at first. But then, something wonderful happened, as Josh describes:

Then he started to find pleasure in little things like cooking with his mom, and he talked about the wonder that it brought about....He was noticing all this richness in life....This was an eleven year-old boy describing his observation of beauty in little things that he was blinded to by video games. I was really moved by it....And then he felt like he was going to go back. I mean, it was beautiful, but he wanted to go back to video games, because they're seductive, cheap, cheap thrills. I worry about it with our youth, big time. (Waitzkin, 2010, p. 6)

Josh believes that passion for video gaming is not a healthy love to pursue. He is aware of the contradiction between his opinion on this matter and his view that, as he put it, the “medium doesn’t matter so much as the process” (Waitzkin, 2010, p. 7). Quality is as much about *how* something is done as about *what* is done. In the spirit of *Zen and the Art*, Waitzkin believes quality can be found anywhere, in the most mundane activity—painting a fence or maintaining a motorbike—whenever there is deep presence and care. However, and this is his caveat, “there's also quality which is based on something really addictive and shallow that I would not encourage” (Waitzkin, 2010, p. 7).

When asked how one distinguishes passion from obsession, Josh described how a lot of chess players get stuck at a certain level of play, rather than continue to improve. They get to a certain playing strength, typically with a chess rating of between 1300 and 1700.¹¹ Then they cycle, as if caught in a hamster wheel, unable either to improve their play or—a sure sign of obsession—get off the wheel. Instead of confronting their weaknesses, being introspective, and plunging deeper into the art, they plateau. Josh suggested introspection could be a critical missing component in an addictive or obsessive relationship with the game, any game. Some players are, he explained,

¹¹ A rating system is used in chess to indicate the strength of a player, based on his or her performance against other players. The most common system, the Elo system, is used by FIDE (the World Chess Federation) and other organizations. World championship contenders are top grandmasters with a rating of more than 2600. Most Grandmasters (GMs) and International Masters (IMs) have a rating between 2400 and 2600. Josh became an International Master in 1993 with a FIDE ranking of 2464. National Masters rate between 2200 and 2400. The United States Chess Federation has an Expert category, which includes players rated 2000 to 2200. Below 2000, players are grouped by Class—1500, for example, is a midrange Class C ranking (Elo rating system).

stuck at a certain level for their whole life. Twenty-five years playing chess and you never improve. Other people just take off. It's amazing to see. Someone can study chess for just six months and they're much better than someone who has studied for twenty-five years. The reason isn't talent. The reason is a relationship to the art which is healthy, which is based on exploring the patterns that are emerging, connecting the chess patterns with life patterns, observing their weaknesses and taking them on as opposed to just justifying them. Some people when they make a mistake, they can't look at it, their mind bounces off their mistake. They can never address their mistake. If you put a mistake in front of them, they're almost unable to see it, they've got such a conceptual scheme. So I take introspection to be one of the most important ingredients to that dynamic. (Waitzkin, 2010, p. 7)

Freedom.

For Waitzkin, then, an important key to masterly learning is finding something one is passionate about, and pursuing the activity in a way that is in keeping with one's own unique temperament and character. But how do we find our passion? What if a person isn't passionate about anything, if life for him or her is just a series of routines, occasional titillations, and passing interests?

Many young people are drawn into online gaming and social networking, but these pursuits seem often to be escapist entertainment and addictive, rather than pursuits emanating from genuine passion and zest for life. Parents and teachers use a combination of carrots and sticks to shape children in certain ways, ostensibly to prepare them for success in the world as adults see it. Yet, as increasing student alienation and mental health problems indicate, passion for anything—sometimes even for life itself—seems to have been sucked out of the bones of many young people (e.g., American Psychological Association, 2014; Wilshire, 1990).

If we as lifelong learners are to redress or avoid this fate, somehow we need to reclaim or retain the vitality, playfulness, adventurousness—the passion—

most (but not all) of us had for life and learning as children. Of course, we all have different predispositions and inclinations. We cannot be passionate about everything. We may not be at all passionate about the subjects and activities our parents and teachers want us to care about. But if we listen to our inner voice, if we have the freedom and opportunity to explore all sorts of environments and activities with childlike playfulness, we would, Waitzkin (2007a, 2010) claims, find pursuits that draw us or choose us. The attraction may turn out to be no more than a short infatuation, or it could evolve into a heartfelt relationship that lasts for many years.

Josh (Waitzkin, 2007a) maintains that one can be passionate about *something*, or one can be passionate about a way of doing *anything*. Passion is as much about the act or process as about the thing or product. In fact, *what* one does, especially as a child, is less important than *how* one does it. He believes that if a child touches quality in something, virtually anything, it can be a beacon for the rest of his or her life. He would never push something on a child (such as chess), or a way of playing chess (such as an attacking style). He would want to feel the initial passion or movement of the child, which emerges naturally when children are exposed to a rich array of experiences in a safe, nurturing, and stimulating environment. Josh believes that provided children are not constrained by a “very self-protective relationship to learning, where they’re afraid of giving it their all, or afraid of committing to something for fear of looking bad...they’ll find passion somewhere” (Waitzkin, 2010, p. 4).

Schools tend to destroy passion for learning (at least for what is taught in school) and zest for life, in many children. The causes are, of course, complex and contested, but an important factor seems to be the conformist, linear, and overly analytic thinking and practices within the prevailing culture of education, a culture that undervalues creativity, sensuality, emotion, and spirit (see, for example, Robinson, 2009, 2011). The persistence of obsolete beliefs about what motivates us (Pink, 2009) is a closely connected issue. The radical Scottish educator and champion of self-regulation, A. S. Neill (1995), said that mathematics is too important to be made compulsory. He had an excellent point, which draws attention to the radical idea that self-regulation (freedom, not license), and the profound sense of self-worth that can flow from freedom within a nurturing environment, underpins enthusiasm for learning and life.

Waitzkin is passionate about learning, about life, and about passion itself. Passion or love is the fire that draws a person to particular pursuits and behaviors. We can learn a lot about curiosity and playfulness from children, and how to nurture these qualities in a way that builds self-worth and cultivates passion. It is important for each person to pursue her passions in a way that fits her nature. The pursuit of excellence in any field of endeavor can then become vehicle for each individual's unique self-expression and creativity. For Josh, a key to masterly learning—and to an exhilarating and fulfilling life—is finding one's passion, and pursuing one's beloved callings in an unconstrained, mindful way.

Chapter 8: Resilience: Harnessing Adversity and Entering the Soft Zone

If passion is the spark that lights the fire of purposeful action, resilience is the quality of being that keeps the fire burning. Any person embarking on a significant journey is likely to encounter obstacles, setbacks, or other forms of adversity on the way. The higher the mountain to be climbed the more demanding are the challenges to be faced—and the more rewarding the path to the summit becomes. How one responds to challenging events and dire circumstances can be critical to learning, performance, and in some situations, as Laurence Gonzales (2004) illuminates, to survival itself. Waitzkin cultivated resilience as he ascended the chess hierarchy and found himself in battle with better and better opponents. Learning to withstand the pressure great players are able to apply across the board and learning to recover from errors, were the psychosomatic foundations for Josh's resilience years later on the mats.

Challenges.

Many have written about overcoming challenges and adverse circumstances, but Waitzkin (2007a) focuses on using and even welcoming these unattractive visitors. For those pursuing excellence, difficulties are likely to be frequent and formidable. Rather than fight to overcome the trials that beset him, which amounts to a struggle between adversity and self, Waitzkin chooses nonresistance. If challenges and discomfort are unavoidable, let them be embraced and harnessed rather than opposed: "When uncomfortable, my instinct is not to avoid the discomfort but to become at peace with it. My instinct is always to seek out challenges as opposed to avoiding them" (p. 60).

How did Josh acquire his counterintuitive stance toward discomfort and challenges? The short answer is that following an epiphany during a chess match in India he decided to cultivate the ability to perform under intense pressure. Josh describes his first round, as a 16-year-old, at the World Junior Chess Championship in Calicut, India in 1993. He was about three hours into the match against the Indian National Champion and he was inside the flow of the game, a state he describes eloquently:

Then the mind moves with the speed of an electric current, complex problems are breezed through with an intuitive clarity, you get deeper and deeper into the soul of the chess position, time falls away, the concept of the “I” is gone, all that exists is blissful engagement, pure presence, absolute flow. I was in the zone and then there was an earthquake.

Everything started to shake and the lights went out. The rafters exploded with noise, people ran out of the building. I sat still. I knew what was happening, but I experienced it from within the chess position. There was a surreal synergy of me and no me, pure thought and the awareness of a thinker—I wasn’t me looking at the chess position, but I was aware of myself and the shaking world from within the serenity of pure engagement—and then I solved the chess problem. Somehow the earthquake and the dying lights spurred me to revelation. I had a crystallization of thought, resurfaced, and vacated the trembling playing room. When I returned and play resumed, I immediately made my move and went on to win the game. (Waitzkin, 2007a, p. 53)

Reflecting later on this nondual experience in the presence of an earthquake, Josh (Waitzkin, 2007a) decided to cultivate his ability to enter into states of flow at will, as earthquakes are not always on hand. His first challenge as a young chess player was to avoid being distracted by all the “mini earthquakes” of everyday life, including (for him) being kicked under the chess table and other illegal tactics by win-at-all-costs opponents. Josh learned to flow with whatever comes and then to harness the difficulty to his advantage. He then learned to create his own earthquakes for “explosive inspirations without the need

for outside stimulus” (p. 54). He calls this process “building your trigger” to enter at will what athletes and sports psychologists call the zone or groove.

An earthquake in India was pivotal to Josh’s ability to use adversity to his advantage in chess. A broken right hand during a martial arts bout just seven weeks before he was due to defend his title in 2001 as Tai Chi Chuan Push Hands Middleweight U.S. Champion, was an even tougher test of his resilience. Josh used visualization, energetic techniques, and physical training to develop his uninjured left side. It is worth examining his account (Waitzkin, 2007a, pp. 128–132) of his process, because imagination, energy management, and movement are important mind–body processes for high-level learning and performance in *any* domain.

Josh’s doctor told him that the broken bone in his hand would heal in six weeks. However, as his arm would atrophy significantly, as a result of being completely immobilized in a cast from the elbow down, competing in seven weeks would be impossible. Despite this gloomy prognosis, Josh left the doctor’s office determined to compete in the nationals. The next day he was back in training (Waitzkin, 2007a).

For the first few days, Josh’s training consisted of sensitivity work with partners he trusted. Holding his injured right hand behind his back, so the injury would not get knocked accidentally, Josh and his partner would move slowly, without throws, trying to feel each other’s centers, neutralize attacks, and subtly unbalance the other player (Waitzkin, 2007a). This is martial meditation or

visualization that heightens an artist's sensitivity to incoming power and intention.

Waitzkin (2007a) contends that visualization is not only beneficial for athletes, but that practitioners in any discipline can benefit from internal work in a form appropriate to their domain. Musicians visualize their performances before taking to the stage; entrepreneurs start with a vision in mind of the business they intend to create; successful university students often envision writing excellent assignments before they touch the keyboard, and enjoying their graduation years before the event. Internal work tends to be neglected by mediocre learners. Best practice is to alternate action and introspection, concrete and abstract, technical and intuitive.

Because Josh's right hand was damaged, his left and weaker hand would now have to do everything. He writes, "Day by day my left hand learned new skills, from deflecting attacks...to eating with chopsticks" (Waitzkin, 2007a, p. 129). After a couple of weeks his injury felt stable enough for him to be able to fall and roll without touching the floor with his fractured hand. He began to spar with slightly more aggressive partners who were less skillful than he, but as he only had one hand the match up was more even (Waitzkin, 2007a).

Josh's experience shows how masterly learners are adept at harnessing challenges, which makes them stronger. Embracing adversity often means becoming more flexible (like a blade of grass) and adaptive. Mediocre learners, on the other hand, tend to be more rigid (like a twig) and to see challenges as justification for diminished effort or performance, and sometimes for giving up.

Losses.

Waitzkin's (2007a) response to breaking his hand so close to a major tournament is a poignant illustration of the principle he calls "investing in loss," and becoming wealthier for it. Having to do everything with one hand, Josh had to be open to being thrown around by his two-handed partners. Incredibly, his left arm instinctively became like two arms, with his elbow neutralizing his opponent's right hand and his hand controlling his opponent's left arm. The thought that he was playing at a disadvantage receded, and was replaced by new possibilities. As he was now able to control both limbs of his opponent with one of his, he could easily use his other arm for, as he says, "free-pickings" (Waitzkin, 2007a, p. 130). This principle applies to nearly all contact sports and, of course, to chess: whenever one piece can control or restrict two or more pieces, a potentially critical imbalance is created on the chessboard. At a deeper, psychological level—whether in corporate competition, legal battles, or war—"if the opponent is temporarily tied down qualitatively or energetically...you have a large advantage. The key is to master the technical skills appropriate for applying this idea to your area of focus" (Waitzkin, 2007a, p. 131).

Josh became so competent fending off both his opponent's hands with his left limb, that the idea of eventually getting his right hand back seemed like an unfair luxury! His adversity (injury) had become a tremendous source of inspiration (Waitzkin, 2007a).

Bizarre as it seems, Josh prevented his right limb from atrophying by using meditation and visualization techniques. He did a daily physical workout

on his left side, and after every set of exercises he visualized the energy from the workout flowing to the unused muscles on his right side. When the cast came off just before the nationals, his doctor was stunned. X-rays showed the bone had healed as expected, and the right arm had hardly atrophied at all. The doctor cleared him to compete. Four days later, slightly favoring his newly empowered left arm, Josh won the nationals (Waitzkin, 2007a).

Instead of being overcome by the pain of a broken hand, or mentally defeated by perceiving the injury (so close to a major tournament) as an overwhelming disadvantage, Josh did the opposite. Fortunately, we do not need earthquakes or broken bones to inspire creative learning and performance. As Waitzkin (2007a) puts it:

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. (p. 133)

Waitzkin's insight challenges the conventional wisdom that one has to directly experience something in order to learn (a lesson) from it. As a youth, Josh had to experience playing defensively in order to know the importance of being true to his natural attacking style. Now he believes it is possible to learn such lessons via imagination—that is, imaginative experiences, rather than actual experiences. We can, he contends, learn from other people's mistakes (Waitzkin, 2010).

Nevertheless, Waitzkin's (2007a, 2010) most important lessons in chess—and life—arose from his biggest losses. First, there was the excruciating loss

when he was just 8 to David Arnett in the final game of the Primary School National Chess Championship. The loss shattered Josh because, as the number one ranked player, both he and others expected him to win. After a short fishing (no chess whatsoever) holiday with his dad, Josh bounced back from this defeat more determined than ever.

But the biggest loss of Josh's chess life came when he was 17. In the final round of the Under 18 World Chess Championship in Hungary, Josh played inspired chess. So inspired, in fact, that his opponent, Russian champion (and now Grandmaster) Peter Svidler offered Josh a draw. (A top player only offers his opponent a draw when he believes he would otherwise be likely to lose if the game continues.) All Josh had to do to share the world title with Svidler was to shake hands. Instead, he declined the offer, pushed for a win, and lost (2007a, 2010).

Although he always studied his losses, Josh couldn't look at that game for several months. It was too painful. His description of what he saw when he did eventually examine the most heartbreaking game of his life is compelling. After examining a critical position for many hours, he discovered that the move he had to play was, as he put it, "completely outside my conceptual scheme in that moment of my chess understanding" (Waitzkin, 2010, p. 16). The move he had to make was to remove a defensive piece from in front of his King, which is counter-intuitive. Josh explained that his opponent's attack "needed my defense like fire needs fuel to burn" (Waitzkin, 2010, p. 16).

This gut-wrenching experience for him was a chessic manifestation of the martial arts principle of overcoming aggression with empty space. Josh drew on this chess lesson 10 years later when he won the Tai Chi World Championship against a much bigger, stronger, and more aggressive opponent. Injuring his shoulder in 2001 was, Josh says, the worst injury of his life (Waitzkin, 2007a, 2010). Yet the trauma ultimately informed the strategy that won him the world championship in 2004.

The strategy of giving an opponent a small advantage in order to gain a bigger advantage can work because expert martial artists are able to readily counter moves they foresee—in this case, moves that would take advantage of Josh’s weaker shoulder. In addition, Josh had to compensate for his damaged side in training by developing his other side, and by refining moves he could execute without hurting his shoulder. Waitzkin (2010) says that the principle of responding to aggression or adversity by not resisting and, as it were, letting it flow through him, manifests in many aspects of his life.

Emotions.

As a young chess player, Josh was often bothered by a popular tune playing over and over in his head. The more he tried to block the distraction, the louder it would get. So he stopped blocking. Instead, he allowed his chess calculations to synchronize with the rhythm of the music. Similarly with outside sounds, such as a ticking clock or whispering spectators, Josh learned to be at peace with the noise. His learning technique was to *exaggerate* the distraction in training, so that it would not bother him in competition. To immunize against

sounds, he would play chess in his bedroom with loud music booming; to make himself tolerant to cigarette smoke, he would play chess in smoke-filled rooms (Waitzkin, 2007a).

Interestingly, subliminal behaviors can also be distracting until they are brought into consciousness. Josh (Waitzkin, 2007a) recounts his difficulties with one young opponent who, at critical moments in a game, “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” (p. 58). Such dirty tricks, which draw on the power of hypnosis and mind control, are a form of cheating. Their power lies in the psychological damage they can inflict on unwary opponents. Once Josh caught on to the tapping trick he was free from its distracting power and able to defeat his rival.

Emotions such as fear and anger can sabotage learning and performance, or they can be harnessed (not denied or pushed away) to gain a more intense focus. Josh calls this process the “internal solution,” which makes us psychologically stronger. Rather than trying to change the external environment (the world), it is often better to change the internal environment (the mind). Waitzkin (2007a) invokes the Indian parable of “making sandals” to walk across a road covered with thorns (the internal solution), rather than paving or sweeping the road (the external solution). In other words, in the context of high-level learning it is usually better to look to change oneself than to change the world.

Waitzkin learned from observation how we can enter a downward spiral if we allow emotions to get the better of us. He once saw a young woman step onto

a busy New York street without looking. A bicycle hit her. The contact was solid but harmless. She could have walked away unscathed if she had stepped back onto the pavement, but instead, in self-righteous anger, she turned and cursed the fast-pedaling cyclist. A taxi sped around the corner and hit the woman from behind; she was thrown into the air and badly injured (Waitzkin, 2007a).

It is vital to regain presence and clarity of mind after making an error (in an exam, a musical recital, or a round of golf), rather than go into a downward spiral. Recovery from the first mistake is often possible, but if a chain reaction is set off through fear or rage, the result can be calamitous. We as spectators often see this in team sports when a side that is winning makes an error, panics, loses momentum, never recovers, and loses the game. Although “winning” is not the primary motive behind masterly learning and performance, winning is delicious for anyone, and perhaps even more so for masters. Winning in team or individual competition is an objective measure of expertise, a confirmation in the form of results and recognition that one has achieved success. Josh relished his victories. Receiving honors and awards in any domain is an external, public form of recognition of success, not the motivator for the work that led to that success.

Resilience insulates learners and performers from the downward spiral (Waitzkin, 2007a). Inevitably, mistakes are made in the course of any sustained activity—performers fumble the ball, miss an easy winner, forget their lines, misjudge time, and so on. The first mistake is rarely disastrous, but if one does not regain one’s emotional equilibrium quickly, a chain reaction of mistakes can quickly lead to disaster. Rhythm and momentum are important in any demanding

game or project. Once lost, momentum can be hard to recover. Elite performers are adept at avoiding the loss of momentum, or are able to regain it quickly before damage is done (Waitzkin, 2007a). Consummate actors improvise forgotten lines in a play, often without the audience noticing, and sometimes in a way that actually adds to the performance.

In many activities, especially competitive games and sports at the highest level, the difference between winning and losing is slight, subtle, and mental more than physical. Great performers perform better under pressure, even when that pressure is due to their own errors (Waitzkin, 2007a). This quality often enables them to snatch victory from the jaws of defeat, especially if their opponents are not so mentally tough. In contrast, performers prone to enter a downward spiral in any of its forms, such as “choking,” can slip to defeat when on the brink of victory.

What did young Josh do to regain his alertness when he lost his composure after making an error, or felt dull during a difficult game? He “would occasionally leave the playing hall and sprint for fifty yards outside” (Waitzkin, 2007a, p. 63). This would re-energize his system (body–mind) and he would return to the battle recharged, often with fresh insights into the chess problems confronting him. He would change his state of mind by changing his physiology (deeper breathing, faster blood flow, muscle contractions, and so on). I can relate to Josh’s experience. When flagging at the computer, I chop wood or go for a short bike ride, which usually returns me to the keyboard refreshed and flowing. How one responds to fatigue, distractions, and upsetting emotions is critical to

achievement and peace of mind. Masterly learning and performance entails learning to convert pressure to one's advantage.

Flow.

The “soft zone” for Waitzkin is akin to “the zone” of sports psychologists, and the “flow” concept of Csikszentmihalyi (1990). When one is “in the zone,” whether in sports or any activity, one is so totally engrossed in the activity that time seems to stand still, and outside distractions almost disappear. Being in a state of flow bestows resilience on the person in that state.

Waitzkin (2007a) makes a distinction between the “hard zone,” which is brittle and likely to snap under pressure, wherein one is prone to fight off or resist distractions (as when I complain if interrupted), and the “soft zone,” wherein one flows with whatever comes. In the soft zone one “is resilient, like a flexible blade of grass that can move with and survive hurricane-force winds” (p. 54).

A man can be deeply engaged in a task and then something distracting happens—his spouse asks him a question, the phone rings, or some other interruption invades his head. How does he respond? If he is tight and brittle like a twig, he might break under pressure—get angry, annoyed, frustrated, lose concentration and make an error, or abandon the activity. If he is loose and pliant like a willow, he might bend with whatever comes—“integrating every ripple of life into...[the] creative moment” (Waitzkin, 2007a, p. 54). This is the soft zone—intensely focused, relaxed, and alert.

In summary, as students we learn from Josh that within the hard zone we seek external solutions, trying to change the environment or that which is other.

We get annoyed when distracted, insist on quiet, or quit. Within the soft zone we find internal solutions, rather than trying to change the environment. We maintain our equanimity and focus despite the interruption, and sometimes more intently because of the disturbance.

Growth occurs when we respond effectively to challenges. As students we learn little, Josh claims, “from any challenge in which we don’t try our hardest. Growth comes at the point of resistance. We learn by pushing ourselves and finding what really lies at the outer reaches of our abilities” (Waitzkin, 2007a, p. 47). And then sometimes, what seems like magic happens, and reality changes, as it did for Josh playing chess:

It is a strange feeling. First you are a person looking at a chessboard. You calculate through the various alternatives, the mind gaining speed as it pores through the complexities, until consciousness of one’s separation from the position ebbs away and what remains is the sensation of being inside the energetic chess flow. (Waitzkin, 2007a, pp. 52–53)

In Waitzkin’s chess experience, flow is a delightful outcome of unselfconscious immersion, rather than a state of mind that is willed or sought. In this sense, chasing flow is as futile as chasing happiness. Yet, according to Waitzkin (2007a), we can do things with our body–minds that make it more likely the gift of flow will visit us when we want it to—say, when giving an important presentation or writing a report. Each person can build his or her unique triggers for becoming relaxed and focused.

Triggers.

In the chapter “Building Your Trigger” in *AOL*, Waitzkin (2007a) presents guidelines, rooted in his own experience in high-pressure competition, for cultivating the ability to enter the zone at will. As ordinary citizens we all enjoy

activities—such as walking, gardening, taking a bath, preparing a meal, or shooting hoops with the guys—when we feel serenely focused, and we should not dismiss them as “just taking a break.” In my case, I enjoy watching sport, documentaries, movies and TV miniseries. I like cycling, swimming, and sitting in the sun (or a cozy armchair) with a freshly brewed coffee, reading. Punctuating my life with such enjoyments helps to improve the quality of my work, and to avoid stress.

Waitzkin (2007a) explains how to develop a routine in preparation for a blissful activity of one’s choice, as a precursor to exporting and condensing the routine, so that it becomes a trigger for use in professional and competitive arenas, and in times of crisis. Following Waitzkin’s method, I have built my own personal trigger around the following routine:

Stage 1: Go for a ride (30 minutes), prepare and eat a fruit and yogurt breakfast (15 minutes), and have a fresh coffee in the company of reading *The Guardian* online (15 minutes). Watch sport. Each step in this routine is natural for me, and watching sport is always enjoyable, especially if I have participated in the particular sport and the quality is high.

Stage 2: Transplant the routine in Stage 1 from a prelude to watching sport to a prelude to working on my dissertation. The routine puts me into a relaxed and happy state of mind, thereby becoming a trigger for entering the zone, because “a physiological connection is formed between the routine and the activity it precedes” (Waitzkin, 2007a, p. 190).

Stage 3: Gradually change the routine so that it is similar enough to have the same physiological effect, but different enough for the trigger to become easier to maintain and more flexible. I often ride later in the day (or walk) when the weather is better, or if I have an early appointment. Sometimes I chop firewood (an activity I also enjoy), instead of walking or cycling. By gradually reducing the time I spend walking, breakfasting, and reading, I have been able to condense the routine from an hour or so down to a few minutes, without losing its potency. If I am not hungry, I can skip or delay breakfast. Instead of reading, I only have to think about an interesting reading (or TV documentary) and it helps me to relax and flow.

Waitzkin contends (and my experience confirms) that the advantages of condensing activities where we are serenely present into triggers extends beyond learning and performance to quality of life. Waitzkin is most poetic and profound in describing the nature and benefits of entering the zone, of being present:

Once a simple inhalation can trigger a state of tremendous alertness, our moment-to-moment awareness becomes blissful, like that of someone half-blind who puts on glasses for the first time. We see more as we walk down the street. The everyday becomes exquisitely beautiful. The notion of boredom becomes alien and absurd as we naturally soak in the lovely subtleties of the “banal.” All experiences become richly intertwined by our new vision, and then new connections begin to emerge. Rainwater streaming on a city pavement will teach a pianist how to flow. A leaf gliding easily with the wind will teach a controller how to let go. A housecat will teach me how to move. All moments become each moment. (Waitzkin, 2007a, p. 197)

I have not of course mastered the ability to enter the zone, and I sometimes struggle to re-enter a state of relaxed focus after I have become distracted or drifted away. Nevertheless, I have had many moments of heightened sensitivity to singing birds, rustling grasses, crashing waves, and roaring winds,

and felt uncomplicated delight in the simple act of setting a fire or mowing the lawn. Occasionally, I feel enriched by the thought that some of the sentences I write express something of my authentic self that is meaningful.

Development.

Resilience is a quality that can be cultivated or developed. Josh was less resilient as a youngster, and less aware of the nature and significance of resilience than he later became. He became more resilient over the years. As resilience is a major theme in Waitzkin's (2007a) approach to the pursuit of excellence, his response to the release of the feature film about him seems discordant. Based on his own account in *AOL*, he didn't seem resilient in the face of the celebrity status he suddenly acquired when *Searching for Bobby Fischer* hit theaters in 1993.

Josh maintains that his sudden celebrity status following the release of the film pulled him from having an internal relationship with chess—mostly for the love of the art—to one in which he became increasingly aware of people watching, judging, writing about, and filming his life in chess. Josh found himself watching groupies watching him. He describes this externalized relationship succinctly: “I started to watch myself think, as opposed to losing myself in thought” (Waitzkin, 2010, p. 2).

Josh concedes that as a young man, although he knew that his values were not aligned with fame or glory or money, he was not emotionally resilient enough to navigate the turbulence of celebrity status. He also acknowledges that he was not as present to the ideas around learning and resilience that he later developed. When the film came out, Josh was thinking about the opposite sex a lot—

unsurprising in a 16-year-old male whose libido was being fanned by beautiful girls handing him their telephone numbers and requesting he sign their abdomens. He was also reading Camus, Dostoyevsky, Kerouac, and wrestling with existential questions that not uncommonly preoccupy young men coming of age (Waitzkin, 2007a, 2010).

Notwithstanding his internal turbulence to stardom, Josh was playing outstanding chess. At 16, 17, and 18 he won national championships every year. He came very close to winning the world championship when he was 17. He was, as he put it, flying externally, but internally he was slipping, losing his center, falling into an existential crisis (Waitzkin, 2007a).

Josh lost his love of chess—first his love of competition, and eventually his love of the game itself. When he was living in Eastern Europe as a 17- and 18-year-old he plunged deeply into studying chess, enchanted by the psychological, artistic, and aesthetic connections between chess and life. He told me, “Chess was what I was best at, and I had touched quality at a certain level through chess; it was my way of exploring the universe” (Waitzkin, 2010, p. 3). Slowly and mysteriously (he did not and perhaps could not explain), Josh lost his love of chess and stopped playing altogether.

During these emotionally fraught years in Eastern Europe, and following his return to New York and “reincarnation” as a budding martial artist, Josh’s awareness of resilience and presence deepened. Climbing the mountain to Tai Chi Push Hands world champion made Josh super-resilient. He saw that resilience is an absolutely critical quality for anyone in pursuit of excellence in

any domain. The resilience principle continued to develop in Josh's mind and in his interpretation of his learning journey, as he revisited the hundreds of pages of notes he had made over the years, and shaped them into *AOL* (Waitzkin, 2010).

Chapter 9: Effort: Committing Fully and Transcending Technique

Effort refers to everything that goes into the pursuit of excellence, outside of inherited talents and predispositions, and the external circumstances of a person's life. Effort means purposeful practice, or the deliberate practice framework (Ericsson, et al., 1993) notion that pervades the literature on expertise and its acquisition. But for Waitzkin, effort goes beyond these rather abstract notions. For Josh, the effort a person puts into a pursuit is a function of first, his or her mindset, and second, his or her strategy. Mindset, as discussed in the "Literature Review" chapter, refers in this context to the implicit self-theory an individual holds about aptitudes, such as intelligence (Dweck, 2000). A growth mindset, as Waitzkin (2007a), after Dweck (2006), labels it, allows for an *incremental* approach to learning, because the person assumes that learning is a function of effort more than of native gifts. Strategy for Waitzkin (2007a) refers to the *process* of learning, how one approaches the tasks at hand, the quantity and quality of practice, the balance between action and reflection, and so on.

Trinity.

The expertise triune—talent, effort, and circumstances—all contribute to the art of learning. Josh’s understanding of talent was explored within the “Passion” section. Effort and circumstances are considered in this section.

Josh’s focus is on effort, because effort can be controlled or chosen by the learner, unlike talent, which is innate, and circumstances, most of which are given or external to the learner. The type of effort is more important than the amount. Josh is critical of the attention that has been given to the “ten-year rule” (or “ten thousand-hour rule”) as a key, and sometimes *the* key, to outstanding performance (Waitzkin, 2010). He said that Gladwell (2008) and many other writers, both journalists and scientists, make this mistake. What matters is the *quality* of the hours, not the quantity. Ten thousand hours is a cliché that falsely reduces the acquisition of expertise to external factors. For Josh, what matters is the way one approaches the learning process:

Looking at these things from an external perspective, without going into the nuances of how these things are done internally, is dangerous because it can give people an excuse to not really be introspective about how they are going about things....I think that it's easy to get into these catchphrases, which make bestsellers happen....But, there's a danger there...because it can teach people the wrong lessons. I was pushed by my publishers, by agents, by everyone to make things into a quick fix. Give people the answers; give them a workbook at the end of the book. Tell them these are the things they can do to become successful very easily, quickly. I don't believe in it. I think it's crap. Of course, it's very seductive to go that way. When my book was coming out, my editor phoned and said "What do you think about renaming the book 'Win!'" I thought it was a joke. (Waitzkin, 2010, p. 13)

Gladwell (2008) draws attention to the vital role a person's circumstances (time and place of birth, parents, chance meetings, and so on) play in the development of expertise. How important had favorable (and challenging) circumstances been to Josh's performance?

In respect of favorable circumstances, Josh spoke endearingly of his family and acknowledged the key role his mother and father have played in his life. He described his mother as his "hero," the wisest person and most important teacher in his life. This evaluation is more than interesting, considering the major role Josh's father played in Waitzkin's chess life. Josh said his father is his "best friend" (Waitzkin, 2010, p. 12), passionate and hugely supportive. The family—including his younger "hilarious" (p. 13) sister, Katya—is, in Josh's words, "a good team" (p. 13).

Process.

Masterly learners focus on the *process* of learning rather than on the *results* of learning. Of course, results are important, and some would argue that outcomes are all that count in the end, but this misses the point. Savvy learners know that if they follow a sound learning strategy, results will likely take care of themselves.

Waitzkin places great value on cultivating a process-oriented mindset, and he describes the studies and findings of developmental psychologist Carol Dweck (2006), which I described in the section "Self-theories and motivation." To recapitulate, individuals who see learning as primarily dependent on some fixed, innate ability dread failure, because they believe failure shows they lack that

ability. One defeat and they may well give up. On the other hand, individuals who see learning primarily as an outcome of hard work and a sound learning strategy (that is, have an incremental, process orientation to learning), do not mind failure as much, because they realize their performance can be improved. One might say that individuals operating from a process perspective frame what others might label as errors and failure as valuable feedback. Their first goal is learning; then, eventually, getting things right and winning may follow. However, even if performance goals are not achieved, one will know that one has done one's best.

According to Waitzkin (2007a), the closer we are to an incremental or growth orientation to learning, the more successful and fulfilled we are likely to be. This is vital knowledge for parents and teachers. When, for example, we praise a child by saying "Well done, you're very smart" we reinforce a *fixed* mindset toward learning. When, by contrast, we praise a child's effort by saying "Well done, you worked very hard" we reinforce a *growth* mindset. This message encourages the child (and the adult learner) to persist, even when she "fails." So, strange as it may seem, mistakes (bad results) can be good. Trying to become a "no-mistakes machine" is a fallacy that cripples learning and performance.

Of course, as Waitzkin (2007a) emphasizes, "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" (p. 34). To jump this hurdle, we need to cultivate resilience.

In the previous chapter I consider Waitzkin's claim that to perform at the highest level, learners must "invest in loss," because losing teaches us our greatest lessons (Waitzkin, 2007a). Although winning is sweet, and it hurts to lose, fail, or make mistakes, once we see that these are necessary gifts on the road to improvement and success, we will embrace such experiences rather than try to avoid them. Fear of making mistakes, a reality we are conditioned to internalize as children, is a major inhibitor of learning. For Josh, by contrast, "each loss was a lesson, each win a thrill" (Waitzkin, 2007a, p. 6). When he did lose and it hurt, he "responded to heartbreak with hard work" (Waitzkin, 2007a, p. 23), as when he lost in the playoff to David Arnett as an 8-year-old in his first national championship.

Waitzkin (2007a) cautions that taking an incremental or process approach to learning does not mean a happy-go-lucky attitude or not caring about results. It is not an excuse for avoiding putting oneself on the line. When people claim they have no interest in results and only care about learning or playing, it is often a pretense of being egoless, and really just another way of avoiding confronting ourselves. According to Josh, "this issue of process vs. goal is very delicate" (p. 44), and needs to be carefully navigated by introspection and honest reflection. For Waitzkin, there are no simple black or white answers to this tension between process and outcomes. Each person is different and has his or her own unique amalgam of motivational factors. Like most significant areas in life, Waitzkin (2010) told me, the appropriate blend of process and results will vary for each

individual, and it is a matter of finding a level of grayness that makes sense to the person and is useful in some way they value.

Depth.

In the pursuit of excellence, depth is more important than breadth.

Waitzkin quotes *Er Cheng Yishu*, (writings of two important Neo-Confucian philosophers from China in the 11th century):

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. (as cited in Waitzkin, 2007a, p. ix)

Waitzkin (2007a) found that the deeper he went into Tai Chi, after excelling at chess, the more connections he found between the two disciplines, until in his mind there really were no barriers. This ambiguous and puzzling experience first struck him while he was giving a simultaneous, 40-board chess exhibition in Memphis. Josh writes that he was so into the flow state that he was not playing chess and calculating moves, he was doing Tai Chi and filling spaces. For Waitzkin, “depth beats breadth any day of the week, because it opens a channel for the intangible, unconscious, creative components of our hidden potential” (p. 123).

Learning one thing very well teaches us as students *how* to learn, which makes it easier for us to learn other things well, no matter how different they may be. Waitzkin (2007a) stresses that going deeply into one thing allows one to touch quality, joy, and beauty, the body–mind memory of which can transfer into other things. The process has no end: no one ever masters playing chess or cricket, archery or architecture, much less the art of learning. As we have seen, as

a young child Josh loved chess and he loved competing. In fact, love of the game and love of competition were the two sides of his chess coin. When the feature film came about his early life, he became divided from himself and began to lose his love of competing. Instead of losing himself in the game, he was just lost. Josh continued to study chess, and became even more deeply enthralled by its artistry and beauty. Chess for him was much more than a game. Because it was something he was very good at, it was his gateway to knowing himself and the world.

The relevant learning principle here is that by plunging deeply into the finer details and nuances of a subject or art (the “micro”), we gain a better understanding of the overall subject and the bigger picture (the “macro”). This is a metaphysical truism in both Eastern and Western esoteric traditions. It is a principle that is consistent with what Waitzkin would have studied at Columbia under Robert Thurman and others, and with his martial arts practice.

Waitzkin (2007a, 2010) believes his competitive edge in Tai Chi did not come from his athletic ability or strength, as many of his opponents were more athletic and stronger than him. It came from learning (in his body–mind, not his conscious mind) the body mechanics of, say, a particular throw so deeply that it became condensed to a feeling—an internal sense of harmony.

Unless one has learned or performed something very well, it may be impossible to grasp what profound mastery feels like. As spectators we know what it looks like from the outside when watching basketball superstar LeBron James, or sounds like when listening to opera diva Sumi Jo. Yet, ordinary folk

too can taste the sweetness of effortless performance, even when performing mundane tasks such as cooking, writing, or running. “How did you do that?” people ask, or we ask ourselves. Seldom do we know “how,” because it all feels so natural.

Performance at the elite level can feel even more beyond the conscious, willful control of the performer, as Csikszentmihalyi (1990, 1996), Yuasa (1987), Herrigel (1954/1999), Dreyfus (2004, 2011) and others (e.g., Collins & Evans, 2007; Kasparov, 2007) have contended. Josh writes of throwing a punch in martial arts competition without punching and, even more incredible, without even the *intention* of punching (Waitzkin, 2007a). Muhammad Ali knocked out opponents with apparent ease, the fatal punch often too fast for the eye to see and only visible in slow motion replay (Waitzkin, 2007a). Elite endurance athletes sometimes say that because their effort feels so effortless, they could run, cycle, or swim forever (e.g., Armstrong, 2009; Rose, 2013). Of course “forever” is an illusion, as time and distance will eventually show, but the *feeling* of effortlessness is real.

Waitzkin (2007a) writes of the process of learning how to perform masterfully and gracefully as “making smaller circles” (p. 120). His metaphor comes from his experience acquiring expertise in Tai Chi. Josh reflects on his teacher:

When I watched William Chen spar, he was incredibly understated and exuded shocking power. While some are content to call such abilities chi and stand in awe, I wanted to understand what was going on. The next phase of my martial growth would involve turning the large into the small. My understanding of this process...is to touch the essence...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. (pp. 119–120)

Waitzkin (2007a) gives the example of learning a straight punch, a classic martial arts technique. First, he practices the motion many times in slow motion, making sure his foot positions, weight transference and other aspects of technique are correct. He reasons that practitioners have to be able to do something slowly before they can do it correctly with speed. He repeats the move slowly until the correct body mechanics are automatic and felt. Second, he starts to quicken the movement and again repeats the motion many times. Third, he starts using a heavy bag, practicing the movement with increasing power and building resistance in his body so that he does not hurt himself. He is mindful to maintain the integrity of his structure: rather than throw his shoulder into the punch, a common error that could result in losing balance and shoulder damage, he maintains the smooth flow of the entire movement. After weeks of practice honing his technique, he no longer has to think about it. His body just knows what to do and does it.

Josh describes his experience as going ever deeper and making ever more thematic interconnections:

I am learning new ideas and refining my methods every day. Early in my martial arts life, I had this exciting experience of transferring my chess ideas over into a physical discipline. The two arts became one in my mind and it felt like I was taking my level of Quality from one discipline and just transferring it over to another.

To be honest, I don't think the link is between any two or three pursuits. It is not something specific to chess, Tai Chi, and Jiu Jitsu. *There is a thematic interconnectedness of all disciplines, and if we get good at sensing and working with those connections, the learning process can become incredibly exciting* [emphasis added]. Of course that is very abstract and much of what I tried to do in *The Art of Learning* is to break down my experience into a systematic methodology—but not a cookie

cutter mold. A key first step is to develop a working relationship with your intuition, so your learning process is led by your uniquely nuanced creative leaps. Our minds are all different and I believe cultivating a keen introspective sensitivity is absolutely essential in discovering our potential. (Waitzkin, 2008, paras 7–9)

Chess and martial arts carry quintessentially metaphorical and aesthetic meaning for Waitzkin. What he learned over the board or on the mats, about learning and about himself, can be transferred anywhere.

Technique.

For Waitzkin, achieving excellence in any endeavor begins with laying a firm grounding in the fundamentals. This may be traditional practice in some areas, such as learning to read or write, but often we bite off more than we can chew, which overwhelms and confuses us as learners. Young Josh loved playing speed chess with the guys in Washington Square Park, but he soon realized, under the loving guidance of his chess coach, that if he were to become a strong player, he would need to learn and internalize the fundamental techniques of the game. So he and his coach began with two kings and a couple of pawns, and gradually worked their way through intricate endgame patterns, where only a few pieces are left on the board (Waitzkin, 2007a).

For Waitzkin, mastering technique provides a foundation for creative, high-level performance in any subject, art, or discipline. The term “technique” carries a very broad meaning for Waitzkin (2007a). In the context of chess, Waitzkin conceives technique in terms of numbers. Beginning players learn that a chessboard is made up of 64 squares, in a pattern of 8-by-8, alternating dark and light in color. They learn that the vertical columns are “files” and that each file is called by a letter—*a* to *h*. Horizontal rows are called “ranks” and numbered 1 to

8. Each square is named by the intersection of its file and rank: for example, the “8h” square is at the top right-hand corner of the board. Players learn that different pieces move in different ways, and have particular strengths and weaknesses. The Pawn is used as the basic unit against which all the other pieces are measured. In relation to the Pawn the Knight is worth 3 points, the Bishop 3 points, the Rook 5 points, and the Queen 9 points. This is vital information for beginning players as it enables them to assess the merit of exchanges to win material, and to guard against the loss of material. Players then learn that these point values are only guidelines, and that the value of pieces is variable depending on the position on the board, the combination of pieces, and other factors. They also learn that although material superiority is valuable and often decisive, it is not always so. In fact, games are often won by sacrificing pieces to gain overwhelming positional advantage and checkmate (Waitzkin, 1995).

The calculations involved in solving chess problems, finding and orchestrating lines of attack or defense, and seeing the “best move” can be extremely intricate in the black and white jungle. That is why it took massive computational power, culminating in IBM’s Deep Blue, to be competitive with world champion Grandmaster Garry Kasparov (Kasparov, 2007; F. Waitzkin, 1994). However, there is more to chess brilliance than calculating power or numbers. One must learn and master the numbers to leave the numbers, which is what expert performers do. As intuition and procedural memory develops, experts are able to transcend the numbers. Pattern recognition is just as important as calculation for elite chess players, especially top grandmasters. The ability to

see or feel patterns is not a mystical or magical gift. It is based on internalizing thousands of hours of deliberate and mindful practice. As I have discussed, Waitzkin emphasizes the *mindfulness* of practice. In his experience, the ten thousand-hour rule misleadingly reduces practice to an external activity, because it ignores quality (Waitzkin, 2010).

In the context of Tai Chi, Waitzkin (2007a) conceives technique in terms of “form” and structure. The shape of one’s structure, balance, “rootedness” (a martial arts term for how solidly one is rooted to the ground), and so on, precede and underpin speed, grace, and strength. There is more to martial arts expertise than athleticism, physical strength, and explosive power. The “more” comprises technique or form, *and* intuition or psychological strength. The mental or inner game is as important as the outer or physical game to success in fighting, martial arts or, indeed, any endeavor.

As a child learning chess, Josh spent many hours studying endgames (when few pieces are left on the board). As a result, he knew that even if he lost some material in the explosive, trap-laden openings that his opponents had memorized, he would be able to survive and usually win. As a Tai Chi beginner, Josh would spend many hours practicing each movement and, with the aid of his teacher, make subtle adjustments to his form. Over time, good structure and movement became internalized in his body–mind, so that his sparring and competitive bouts became increasingly instinctive and spontaneous (Waitzkin, 2007a). One might call this phenomenon “acting without acting,” which is reminiscent of Gladwell’s (2005) “thinking without thinking.”

Thinking and acting in less than a blink emerged for Waitzkin as he became masterly in Tai Chi Chuan. After he had contemplated the puzzle for a long time, Josh eventually resolved the paradoxical instruction of China's 19th century sage, Wu Yu-hsiang: "If the opponent does not move then I do not move. At the opponent's slightest move, I move first" (as cited in Waitzkin, 2007a, p. 149). How can one move first if one's opponent moves first? Waitzkin (2007a) interpreted "slightest move" to mean *intention*, so he cultivated his ability to read an opponent's intention, and ultimately to control an opponent's intention. Champion poker players become expert at reading their opponents' "tells"—that is, unconscious behaviors such as a sigh or tapping a finger that unwittingly reveal key information to a canny player. Ability to conceal and manipulate tells is vital psychological ammunition in competitive chess and martial arts.

Waitzkin (2010) reflected on how he has changed with time and circumstance. His approach to chess as a youngster was all aggression. He responded badly to defensive, Karpovian-style coaches in chess, yet defense became a major part of his evolving style in the martial arts, culminating in a world championship. When he looks back on his first book, *Attacking Chess*, written when he was still in high school, he sees a mix of good ideas and naivety. The best chess players and martial artists cannot always be blitzed with aggression. Sometimes they have to be shut down. Josh's ability to read the intentions of his martial arts opponents helps him to nullify their strengths, or to take advantage of those strengths.

“Slowing down time” is a Waitzkin construct with strong connections to mastering technique in order to transcend technique, especially in the guise of form to leave form. Josh explains what he means in a *Chess Life* interview with his first chess coach, Bruce Pandolfini, at the moment he broke a bone in his right hand:

Like most good things my training in “slowing down time” began with a lot of pain. I was competing in the super-heavyweight finals of a big Push Hands tournament. I only weighed about 170 pounds at the time, but I often went up in weight classes for the extra challenge. My opponent was a 230-pound bruiser with a bit of a mean streak....I had been controlling the match and with about 50 seconds to go, he countered an attack of mine with an explosive shoulder pulse that broke my right hand. I felt it shatter and then time slowed down. It was wild. On the video his hands were coming at me like bullets but in my mind they were floating at me like clouds. I was able to easily win the match with one hand ... and then I had some thinking to do. If the human mind can slow down time in an emergency, how can we train ourselves to do this at will? This event became a beacon in my training, and I began to develop a method of changing my perception of martial flow by drilling techniques and combinations of movements until I saw them in more frames than my opponents. (Waitzkin, NPR interview, 2007b)

Roger Bannister’s account of his experience breaking the “impossible” four-minute-mile barrier is rich in description that resonates with Waitzkin’s experiences. Bannister alludes to what we might now call being in a state of flow; effortless effort and the blurring of boundaries between the runner and the running; a sense of the mind being separated from the body; the slowing down of time; the intoxicating mixture of joy and pain. In Bannister’s words:

As the gun fired, Chris Brayshaw went into the lead and I slipped in effortlessly behind him, feeling tremendously full of running. My legs seemed to meet no resistance at all, almost as if impelled by an unknown force. In the excitement, my knowledge of pace had deserted me. Brayshaw could have run the first quarter in fifty-five seconds without my realizing it because I felt so full of running, but I should have to pay for it

later. Instead, he had made success possible.¹² I barely noticed the half-mile pass in one minute, fifty-eight seconds. I was relaxing so much that my mind seemed almost detached from my body. It was incredible that we could run at this speed without strain.

At three-quarters of a mile the effort was still barely perceptible. The time was three minutes, nought point seven seconds, and by now the crowd was roaring. The four-minute mile was possible. Somehow, to do it, I had to run the last lap in fifty-nine seconds. Chattaway led around the next bend and then I pounced past him at the beginning of the back straight, three hundred yards from the finish. I had a moment of mixed joy and anguish when my mind took over. It raced well ahead of my body and drew me compelling me forward. I felt that the moment of a lifetime had come. Those last few seconds seemed never ending. The faint line of the finishing tape stood ahead as a haven of peace after the struggle. I leaped at the tape, like a man taking his last spring in the hope of saving himself from the chasm that threatens to engulf him. My effort was over, and I collapsed almost unconscious with an arm on either side of me. It was only then that the real pain overtook me. I knew I had done it before I even heard the time. I felt as if I was too close to have failed. (Archbuild, 2007)

Optimal learning arises primarily from doing or acting, not from figuring things out or absorbing information. The idea of learning first and then acting, which underpins much schooling practice, is nonsense (Holt, 1976). One learns more by doing than one learns by hearing or seeing, although learning entails the seamless interaction of many senses and actions. John Dewey made the compelling case for learning by doing in the 1930s (1938/1997), but as teachers we still overemphasize listening and reading, more than speaking and writing, in formal education. If a message has been sent, we falsely assume it has been received and learned.

For Waitzkin, there is no dichotomy between doing and thinking; optimal learning is an endless interplay between the two—action and reflection,

¹² Brayshaw set the ideal pace for Bannister, running the first lap in 57 seconds—fast enough to give Bannister a shot at breaking four minutes for the mile, but not so fast that Bannister would likely tire in the final lap (Archbuild, 2007).

adjustments to action followed again by review or reflection, and so on. This is mindful *and* mind-full practice. Action without subsequent reflection or introspection would be mind-less practice, which is likely to limit learning by, for example, reinforcing ineffective learning attitudes, strategies, and techniques.

Patterns.

Josh thinks of himself as a good natural athlete, but not nearly as athletically gifted as many of the martial artists he has competed against and beaten. Josh's strengths, he contends, are in his mind: an ability to "read" opponents, use adversity, and see patterns that connect. He is not sure if this proclivity is a natural talent or something he has cultivated over time, or a combination of both. In his words:

Connections are at the core of what I do, and so when I was playing chess my strength was in finding hidden harmonies. I would create complete chaos on the board. And my opponents—especially when I was growing up as a kid—were looking for ways to control the position. But I was at peace with chaos because I loved the battle and I was very good at finding harmonies that were kind of hidden beneath what was chaos. And that's what I do in the martial arts. That's what I do in my work with people psychologically finding patterns in mind. That's really at the core of what I do. And the core of course is a methodology of learning—finding patterns, thematic patterns, acting with principles that cross boundaries. (Waitzin, 2010, p. 15)

Waitzkin's reflections on his experience echo Gregory Bateson's insights about pattern recognition. The thesis of Bateson's (1979) *Mind and Nature* is that it is patterns that connect all living things. To recognize and empathize with the pattern that connects the reader to me, and both of us to the amoeba, lobster, and orchid—to discern the necessary unity of mind and nature—requires an aesthetic sensibility. Waitzkin's responsiveness to the patterns that connect outstanding learning and meta-learning is an aesthetic, as much as a scientific, attribute. Or I

might better put it this way: quality is artistry *and* science, aesthetics *and* reason, seamlessly unified. Hence, Josh refers often to beauty and quality.

One can contrast Waitzkin's fertile lifeworld with the sterility of much practice in higher education. As Bateson (1979) bemoans:

I was griping recently about the shortcomings of occidental education. It was in a letter to my fellow regents of the University of California, and the following phrase crept into my letter: "Break the pattern which connects the items of learning and you necessarily destroy all quality."...

Why do schools teach almost nothing of the pattern which connects? Is it that teachers know that they carry the kiss of death which will turn to tastelessness whatever they touch and therefore they are wisely unwilling to touch or teach anything of real-life importance? (pp. 7–8)

Chess and Tai Chi are disparate domains, but both are solo pursuits, and require extraordinary technical skills. Are Waitzkin's learning ideas applicable to non-solo pursuits or working in teams? Josh emphasizes the commonalities between individuals and groups. He sees individuals as "micro" organisms, and groups as "macro" organisms. When an individual is excelling, Josh believes, the relationship between the conscious and unconscious mind is open (Waitzkin, 2010). Technical skill, reasoning, and explicit knowledge are integrated into the unconscious, which gives rise to hunches, insights, and creativity. When a team is excelling, there is open communication between the members of the team. Members value each other or, more specifically, value the strengths of each teammate's creative body–mind. Valuing builds trust, and trust enables teams to build on their strengths, address their weaknesses, and achieve extraordinary results.

Individuals have walls within their psyches; teams have walls between members. For Josh, high-level learning and performance is about breaking down

the walls between the conscious and the unconscious *within* individuals, and the walls *between* individuals in teams (Waitzkin, 2010). Awakening to the patterns that connect within us as team members and between us releases us from the chains that hold us, and unleashes both individual and team self-expression.

Bruce Pandolfini, Josh's first chess coach, began teaching Josh with the endgame. They started with just a King, a Pawn, and a King, on the board. But, as Josh explains, positions of minimal complexity can give one an immediate window into quality, which can extend into increasingly complex analysis, and crystallize into insights and creativity (Waitzkin, 2007a).

This chapter explicates how mindful and sustained effort is all-important in the pursuit of excellence. That statement is of course a truism. Waitzkin (2007a, 2010) emphasizes the *quality* of effort, more so than quantity, although the number of hours and years spent in purposeful practice is of course important. Josh places as much value on inner work (introspection, reflection, contemplation) as he does on outer work (practice, training, competition). He also emphasizes the importance of alternating periods of rest and recovery with work and stress in order to learn optimally. His most important claim is that focusing on the learning process, more than on results, leads to better learning, and may enable a person to perform at a higher level and achieve more than he or she ever thought possible. In truth, Josh claims, none of us knows our limits, and only by stretching ourselves, putting ourselves on the line, as he puts it, can we give genuine expression to who we really are and achieve our potential.

Chapter 10: Presence: Opening to What Is and Aspiring to What Can Be

Presence for Waitzkin (2007a) is a quality of being that is critical to masterly learning, and for a rich and joyous life. Presence is being open to receive and see what *is*, as distinct from being enmeshed in thinking, preconceptions, beliefs, and even implicit assumptions. “Receiving what is” refers to information that comes from the external environment, such as the “tells” of a chess or martial arts opponent. Equally, if not more, important than environmental information, high-level learners only receive intuitive insights to the extent they are present—that is, *not* thinking—rather than absorbed in conscious calculation. Phases of thinking deliberately alternate with phases of unfocused attention, as masterly learners build their intuitive and behavioral repertoires through mindful practice.

Waitzkin (2007a) maintains that supernormal functioning is mysterious but not mystical. Superlative performances may look like magic, but this is an illusion. For Waitzkin, invoking mysticism misses the point that mastery is more a matter of presence and mindful cultivation than of native genius or magic.

Crystallization.

“Crystallization” is one of Josh’s metaphors for the process whereby conscious experiences are integrated into the structure of the unconscious. Crystallization is a natural process that operates below conscious awareness. Crystallization represents the complex and still little understood neurological processes by which masterly learners develop their intuitive expertise (Waitzkin, 2007a). To take full advantage of the process, Waitzkin (2007a) believes that we

need to “chunk” information appropriately (in bite-size pieces), begin with decreased levels of complexity, do our best even in practice, and reflect on each of our performances and what we can learn from them. Crystallization is not a function of effort or will; it is a function of presence of mind.

Waitzkin reveled in the joy and beauty of the process:

At that moment when you're transcending the technical, or where it's all being integrated into the unconscious and you have this *crystallization* [emphasis added] experience about harmony—it's exquisite....It feels...like a leaf in the wind, you know, very tactile—that experience of Quality, with a capital Q, say, in Pirsig's work. That moment where everything is crystallizing in the mind. (Waitzkin, 2010, p. 9)

Crystallization—in the sense of giving a definite shape to information or skill—captures the notion of going beyond conscious technique (such as calculation in chess), which is necessary but superficial and limited. According to Waitzkin (2007a) and past world champion Kasparov (2007), top grandmasters think less and feel more. The process is mysterious, but not magical. The “feel” is harmonious and ecstatic. Years of mindful practice produce elite chess players, a phenomenon that is correlated with what neuroscientists call brain plasticity—the ability of the brain to change itself (Doidge, 2007; Taylor, 2009). More complex patterns are embedded in the nervous system of the expert than of the merely competent, in different areas of the brain, and experts can access these patterns faster and intuitively (H. L. & S. E. Dreyfus, 2008; S. E. Dreyfus, 2011). While anyone can taste harmony and beauty when in a flow state, experts enter that state more often and more deeply. Furthermore, Josh contends that he could, and anyone can, enter the zone at will. He calls the process “building your trigger,” described in the “Resilience” chapter (Waitzkin, 2007a).

Josh also finds that touching quality deeply in one discipline or pursuit empowers a person to be able to touch quality elsewhere, in whatever a person's heart and mind turn to. Waitzkin's expertise in Tai Chi grew from his expertise in chess (Waitzkin, 2007a).

Pink (2009) notes that mastery is an *asymptote*. The path or journey toward excellence can be conceived, mathematically, as a curve that continually approaches but never reaches an asymptotic straight line. That mastery is in a sense unattainable seems only to add to the beauty and ecstasy of pursuing it. Josh speaks of going deeper and deeper into quality, toward mastery or truth, but never reaching it, saying, "But every little lunge closer is exquisite" (Waitzkin, 2010, p. 9). He then addressed the aesthetics of connecting flow experiences:

All the walls break down in the mind between different areas of your life, and you're experiencing interconnectedness. And it's so beautiful. I experience this within an art: for example, within chess where you can be studying one chess position and you gain an insight, and it translates across into your level in all chess positions. And you can learn this between arts: for example, how I transferred my chess ideas over into the martial arts. Or you can observe a pattern in your personal life that wouldn't manifest in your professional life. (Waitzkin, 2010, p. 9)

Josh contends that many people mask their weaknesses with their strengths. He cites the case of a brilliant investor and financial expert who has a troubled personal life. At home he is impatient and snaps at his wife. His business success prevents him from seeing that he is driven and cut-off emotionally. If he awakens to the obsessive and stressful themes underlying his professional life, and makes a thematic connection to his unhappy marriage, a transformation to better relationships, better health, and perhaps even greater

business success is possible. For Josh, “thematic interconnectedness” lies at the heart of the art of high-level learning and behavior (Waitzkin, 2010).

“Numbers to leave numbers,” “form to leave form,” and “technique to leave technique,” are expressions that punctuate the narrative of Waitzkin’s learning journey. These phrases capture the idea that when we study discrete chunks of information thoroughly, and apply or use this information repeatedly, the learning shifts into the unconscious mind where it connects with other chunks of information or patterns that have been internalized. As Waitzkin (2007a) explains:

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. (p. 74)

This then becomes a type of tacit knowing, in line with Polanyi’s (1966/2009) ideas. The numbers or forms are no longer in consciousness. They have entered the unconscious through conscious experience. The process of knowledge integration can lead to fresh insights (knowledge creation) and improvisational flair (creative performance). When learning to drive a car, for example, a lot of information has to be processed and motor skills developed, either simultaneously or in quick succession. Good driving instructors know that the most effective way to help learners become competent drivers is to break the art of driving down into digestible chunks—accelerating, breaking, steering, signaling, and so on—to begin slowly, to practice over and over, and to make adjustments. What seems impossibly complex at first, sooner or later becomes second nature and semi-automatic. Knowledge and know-how becomes

internalized and the body–mind knows how to access it on call. Once a person becomes proficient, she can even find herself driving to work with half her mind on what she is going to say at the ten o’clock meeting. She may not even be aware of the route she took to get to work. Highly skilled drivers, such as racing car drivers, have internalized more pieces of information (about cornering at speed, for example), and can access more patterns more quickly or intuitively than the rest of us.

According to Josh, a big mistake many learners make is to try to do too much too soon, or to do things quickly before they have been done slowly and correctly (Waitzkin, 2007a). In the case of driving, such an approach can lead to accidents or bad driving. In learning algebra, it can lead to confusion and frustration.

Introspection.

From his chess life and his martial arts life, Josh learned that introspection is a keyhole for seeing the patterns that underlie and connect one’s thinking and action. Pattern recognition allows us to know ourselves better, and to “read” others better. Reading others is a useful everyday life skill, as well as a source of competitive advantage in sport and business.

Waitzkin (2010) believes individuals can become more introspective. His voluntary work in the martial arts and in education,¹³ together with his professional work with businesses, has taught him that many individuals—including affluent businessmen and businesswomen—are not very introspective. With business people, Josh uses questionnaires and other techniques to uncover the patterns that underlie people’s areas of high performance and low performance. In his words, “where their natural strengths lie, where their great creative ideas come from, where they’re locked up, where their chains are” (p. 8). He and his clients then search for themes or patterns that may be active in both their private lives and professional lives. Introspection can bring these patterns

¹³ After the publication of *AOL*, Waitzkin established a non-profit organization, the JW Foundation. The mission of the Foundations “is to reinvigorate the world’s belief in the power of education by supporting parents, educators, and coaches in igniting a life-long love of learning in children and young adults” (Waitzkin, n.d.). Josh continues:

While our current educational model has long provided attention to basic academic areas such as reading, writing, and arithmetic, it often neglects a core foundational element: the art of learning itself. Schools offer tools for mastering individual subjects but often fail to help students develop introspection and awareness of themselves in a broader sense.

The result of embracing values such as creativity, passion and presence is not only a successful academic life, but a successful life, period.

These skills are needed now more than ever as teaching to the test has created an educational model that skews increasingly towards a numbers-only gauge of success. This environment is proving highly stressful for both educators and students alike, making the need for skills like resilience and presence more apparent than ever. In this rapidly changing world, tools like flexibility and creativity will determine more and more who succeeds and who does not. (Waitzkin, n.d., paras. 2–4)

into consciousness, thereby enabling an individual to connect the internal (psychological) with the external (behavioral).

Introspection, in Josh's words, is "a window into a mind" (Waitzkin, 2010, p. 8). But, he adds, if one has not developed the "muscle" of introspection, if one's life has been to bounce away from things that touch something sensitive, one remains blind to the patterns that connect our thinking and doing (Waitzkin, 2010).

To illustrate his point that introspection entails confronting one's internal "reality," and that this can be uncomfortable, Josh drew on his chess life:

When you're studying chess you can't learn anything unless you suffer. If I'm studying a game of Fischer or Kasparov, if I just look at a game I won't learn anything. But if I try to think about each move for four or five minutes as if I was playing the game, and then compare my decision to his decision, then I'll learn something, because I've bled through the position like I was playing the game. People have to be willing to walk in an uncomfortable zone. I think that can be learned. (Waitzkin, 2010, p. 8)

In our conversation around introspection, Josh alluded to several of his key ideas about learning and meta-learning, ideas emanating from reflecting on his experience, including his experience of watching others. Here he suggested deep introspection is

- rare, even among bright and highly educated individuals;
- an art many people do not understand, value, or practice;
- avoided, especially among the young, in our fast-paced, stimulus-rich, escapist culture;
- self-confronting and often painful;
- essential to deep learning and improved performance; and

- able to be learned and cultivated by anyone who sees its value and seeks excellence (Waitzkin, 2010).

Although Waitzkin does not formally define “introspection”—nor, to my knowledge, any other words or phrases he uses regularly—we as readers and listeners can understand what introspection means to him from the way he describes and uses the term. Josh uses the metaphor “breaking down walls” to capture the process and benefits of introspection:

Themes that arise in one area of our personal lives will also surface in other areas—all aspects of life are interconnected. The ability to learn and perform in consistently effectual ways is therefore impacted by our general state of mind. It is vital that we unearth the psychological patterns and emotional responses that get in the way of our successes and take our weaknesses on. By bringing awareness to the threads connecting mind and action, we can break down the walls between the disparate parts of our lives that we have mentally built up and take corrective steps to transform all our weaknesses into strengths. (Appendix D: The Art of Introspection, “Breaking Down Walls”)

If we are not introspective, we tend to be trapped in our habits and mediocrity. If we are introspective, we examine our assumptions and stay open to change. Introspection, Waitzkin (2010) says, allows us “to fuel our strengths and take on our weaknesses through the prism of our strengths” (p. 8). This insight of approaching weaknesses through the lens of strengths is consistent with Cooperrider’s (2002) acclaimed but countercultural and counter-intuitive approach to organizational development. Appreciative Inquiry focuses on what is working well, with a view to making it even better—see, for example, Cooperrider and Whitney (2005). In the process, and paradoxically, weaknesses and “problems” tend to dissolve. By contrast, culturally conventional “needs analysis” strategies, which focus almost exclusively on weaknesses, tend to be

ineffective, or, again paradoxically, worsen problems or generate new ones. This is what happened to Josh when he chose to work on his “weaknesses” (defensive and positional play) by switching to a conservative coach. The strategy was a mistake because it violated his natural strength, attacking chess, and he lost his natural chess voice. Better, he later realized, to hone his defensive skills with a coach of the same style, naturally aggressive. (All grandmasters and elite coaches are consummate exponents of both attacking and defensive play.) When Josh made the switch to a coach whose natural style was in alignment with his own, his game improved and his enjoyment of the game returned (Waitzkin, 2007a).

To illustrate the importance of introspection, Josh spoke about the limitations of mechanical thinking in chess. Although a rook is valued more highly than a knight or bishop, sacrificing a knight to gain a rook is not necessarily a good move, and would in some positions be disastrous. If a person plays chess mechanically, or lives his life according to fixed laws and regulations, he is, according to Waitzkin, likely to be out of touch with his sense of danger (or opportunity), with his ability to intuitively adapt to new situations (Waitzkin, 2010).

According to Josh, when people are not introspective, they tend to get into “habitual, addicted, externalized relationships to whatever they are doing, whether it’s eating, learning, or work—what they do, and how they do what they do—as opposed to tapping into what they feel deeply in their soul” (Waitzkin, 2010, p. 18).

Self-expression.

Creativity for Waitzkin (2007a) is the expression of who we are.

Creativity is the potential each of us has for unique self-expression, which paradoxically takes us beyond ourselves. Creative expression is unselfconscious and mostly unconscious, arising from mysterious but not mystical sources.

Creativity entails imagination, vulnerability, and courage. Creativity flourishes when the heart is uncovered, as the heart, symbolically, is the organ of feeling and intuition. Creativity is “a quest for meaning...an attempt to penetrate the mystery of the self” (Barron et al., 1997, p. 2). A finding of this study is that the ability to express oneself authentically, fully—in a word, creatively—is one of the blessings of moving beyond proficiency and toward mastery.

Creative self-expression is an outcome of being present. Writing is a creative process, one that lies at the heart of knowledge creation and communication. Reflecting on his writing process, Waitzkin (2010) said that, as his mother and father are both writers, he was born into a world of literature. *AOL* is the outcome of hundreds of pages of Josh’s notes about his learning process in chess and Tai Chi over many years—how he felt, fresh insights, new challenges, and so forth. He recorded how his learning and pleasure in chess transferred experientially into his Tai Chi practice. After he won in Taiwan, he sat down and wrote the book in about nine months. Josh explained that in the process of writing his book, the excitement he had felt when first recording his experiences in his journal was rekindled. He said that sometimes the writing would just pour out of him, which he would later sculpt into shape.

In *AOL* Waitzkin (2007a) expresses reservations about academics, especially those who focus on linguistic analysis, those who are dismissive of intuition and creative self-expression, and those who believe evidence from personal experience is unscientific and therefore invalid as a basis of knowledge claims. Josh thinks that some academics, like anyone else, can become territorial and self-protective. As he put it: “They can start to protect their little fiefdom as opposed to living with an excitement about new ideas and about learning” (Waitzkin, 2010, p. 12).

Josh is particularly impatient with professional philosophy as practiced in Anglo-American universities. He draws on Robert Pirsig’s (1974/1999) distinction between genuine philosophers, who are searching for truth, and “philosophologists,” who merely talk and write about philosophy and philosophers, and who critique more than they create. The distinction, Waitzkin (2007a) says, is like that between writers and literary critics or, as Pirsig claims, between painters and art historians.

Pirsig’s testimonial in *AOL* reads: “The title is accurate—at a profound level, it’s about real learning from hard contact rather than from disinterested textbooks.” Of course, both the “cultural icon” and the “artist of learning” agree that scholarly analysis and interpretation has its place. But the main educational game in the 21st century is, or should be—as British educator Sir Ken Robinson (2011) claims—creativity rather than literacy.

Whereas Pirsig can be thought of as a maverick philosopher rebelling against academia, Waitzkin is, among other things, an educator rebelling against

the privileging of critique over creation in higher education. Pirsig's (1974/1999) *Zen and the Art of Motorcycle Maintenance* resonated with Waitzkin, and gave him insights into high-level learning. The creative self-expression lesson for Josh is captured in Pirsig's anecdote about Phaedrus's advice to a student with a writing block. She overcame her inability to write an essay about her town by starting with a single building, and indeed a single brick of that building. Phaedrus' approach is comparable to Waitzkin's (2007a) notion of "making smaller circles" (p. 120). The phrase arose from his martial training, where he would practice a particular technique hundreds of times in slow motion to perfect the movement. Over time, following his teacher's example, Josh's expansiveness decreased, and potency increased. Eventually, superb martial artists punch without punching—that is, without intention. After much practice and training, the body mechanics of the punch have been condensed to a *feeling*. Moves become a creative expression of intuitive knowing or seeing what to do, often in an instant.

Josh refers to professional boxing, where some knockouts look unrealistic. Sometimes one has to watch the action in slow motion over and over to see any punch at all. That is because, in Josh's language, the best fighters "have condensed large circles into very small ones, and made their skills virtually invisible to the untrained eye" (Waitzkin, 2007a, p. 122). Muhammad Ali's knockdown of Sony Liston in their second fight in 1965 with what is known as "the phantom punch" is controversial and iconic. Even Ali did not know if he had hit Liston! To illustrate the phenomenon of feeling in masterly self-expression,

Waitzkin (2007a) gives the example of an opera singer who delivers a virtuoso performance even when acoustical problems prevent her from hearing the sounds properly, because she knows what the notes should *feel* like as she sings.

Pirsig's brick (in writing), Waitzkin's numbers to leave numbers (in chess) and making smaller circles (in martial arts), are all connected in Josh's mind with going deep and savoring "the nuance of small morsels" (Waitzkin, 2007a, p. 118). To touch the essence of quality in a beautiful solution to a chess problem, or in the feel of a martial movement executed harmoniously, is delightful. To an outsider, superlative performance may seem like genius or even magic. But for Josh, to think of mastery as mystical is an illusion; mastery can be learned.

Waitzkin (2007a) finds Pirsig's prose inspiring. Both men accord supreme value to quality, which can be touched through mindful, real-life experience. Pirsig endorses Waitzkin's journey toward excellence and Josh's insights into quality (J. Waitzkin, personal communication, January 20 2010). It would take me too far afield to explore Pirsig's (1991) controversial and satirical notion of philosophology, which he presents in *Lila*. The key point is that Waitzkin—like Pirsig and undoubtedly *some* professional philosophers—is dedicated to the search for wisdom or truth.

Waitzkin's knowledge is rooted in his personal experience and his studies. The qualitative and transdisciplinary nature of this inquiry resonates with Waitzkin's "barrierlessness" in learning, and integration of the internal and external. In part, this study deals with the relationship between (personal)

experience and (scholarly) theory, a search for theoretical underpinnings to Waitzkin's method.

Unlearning.

Unlearning, beginner's mind, and nonresistance are interrelated concepts in Waitzkin's learning framework. In the ancient Chinese classic, *Tao Te Ching*, Lao Tzu espoused the importance of humility in cultivating the mind: the more one knows, the more one knows there is to know (Mitchell, 1990).

Unlearning is a key aspect of learning. When asked about his most important learning, Waitzkin replied:

I guess if I had to say one thing, it would be that I have been seeing the learning process more and more through the lens of *unlearning* [emphasis added]—akin to Lao Tzu's uncarved block. I am working on becoming more and more unfettered in the growth process, and that tends to be a movement through complexity to simplicity. (Waitzkin, 2008, para. 21)

Unlearning to learn is paradoxical, because we are conditioned to think of learning as acquiring knowledge by depositing information in the brain—the banking model of education. It is more accurate to think of knowledge being created, rather than acquired, in the sense that, as Carson (2010) notes, as we learn, our brains create new dendrites (branches of a nerve cell), and make new neuronal connections. Our brains are always seeking to integrate new information with old knowledge. We might think of this as a deconstructing and reconstructing of patterns that connect. Of course, most of this reconciliation of the old and the new happens out of conscious awareness. However, the learning process can be consciously facilitated to the extent we as learners are aware of our assumptions, appreciate that what we know is provisional and contingent, and

remain open to letting go of or modifying old knowledge to make way for new knowledge. Learning is ongoing destruction and construction.

I used the paradoxical mantra “slow is smooth and smooth is fast” to help me complete an Ironman. To become a masterly chess player, Waitzkin (2007a) studied numbers to leave numbers. To excel in Tai Chi he studied form to forget form. High-level learning entails calculating less and feeling more. This seems to violate accepted thinking and practice. Waitzkin elucidates how much of what we learn is internalized and forgotten (that is, removed from the conscious mind). Those who have mastered a particular skill or body of knowledge have seamlessly integrated a lot of critical information within their minds, which becomes so deeply internalized that it is no longer consciously considered, but is lived. Chess grandmasters consciously look at *less* on the board than very good players, because the information patterns they have stored in their minds allow them “to see much more with much less conscious thought” (Waitzkin, 2007a, p. 143).

As considered in the “Challenges” section, Waitzkin tells how an earthquake triggered a shift in his consciousness during the World Junior Chess Championship in Calicut, India. He generalizes the experience to performing in any field:

In performance training [playing badminton or writing an assignment], first we learn to flow with whatever comes [nonresistance]. Then we learn to use whatever comes to our advantage [harnessing distraction or adversity]. Finally, we learn to be completely self-sufficient and create our own earthquakes, so our mental process feeds itself explosive inspirations without the need for outside stimulus [building a trigger]. (Waitzkin, 2007a, p. 54)

When we immerse ourselves in learning a game, a subject, a skill, we can tap into layers of mystery, artistry, and self-discovery that can only be hinted at poetically:

[Chess] had become endlessly fascinating to me, and its implications stretched far beyond winning and losing—I was no longer primarily refining the skill of playing chess, but was discovering myself through chess....*The more I knew about the game, the more I realized how much there was to know* [emphasis added]. I emerged from each good work session in slightly deeper awe of the mystery of chess, and with a building sense of humility....Art was truly becoming for art's sake. (Waitzkin, 2007a, p. 77)

In the notion of “art for art’s sake,” I surmise Josh is alluding to the pre-eminence of intrinsic motivation in the acquisition of expertise, at least in *his* experience. When he was 17 years old, and preparing for the World Under 18 Chess Championship in Szeged, Hungary, Waitzkin read *On the Road*. Kerouac’s ability to find joy in the most mundane experiences was, Josh writes, “like electricity in my veins...that opened up the world to me” (Waitzkin, 2007a, p. 93). Following his agonizing defeat by Peter Svidler, Josh himself was “on the road”—exploring Eastern Europe, navigating a tempestuous romantic relationship, and delving ever more deeply into the aesthetics of chess. The disconnection between the external, competitive side of his chess life, from which he was becoming increasingly alienated, and the inner beauty of the game cut deeply into his soul. Kerouac’s *The Dharma Bums* introduced Waitzkin to Buddhist thought, albeit to a rather eccentric version of that tradition. He also warmed to the writings of poet, Gary Snyder. And years later, Josh studied philosophy at Columbia University with Buddhist scholar, Robert Thurman. Waitzkin integrated his chess, and then martial arts, experience with his studies of

Eastern traditions and forays into the Beat Generation (Waitzkin, 2007a). In the process, his understanding of nonresistance, beginner's mind, and what I am framing as unlearning, deepened.

Soon after his excruciating loss in Hungary (described in the "Losses" section), Josh broke up with his girlfriend, Kiti, who was the women's chess champion of Slovenia. He was brokenhearted on both counts. But, consistent with the Zen notion of a "beginner's mind," Josh was fully alive and open for new learning and discovery. "Beginner's mind"—a phrase coined by Suzuki Roshi, who did much to popularize Zen and Buddhism in the West—refers to a mind that is open to direct experience (what is here, phenomenologically), rather than encumbered by beliefs, presuppositions, and other thoughts. As Suzuki Roshi puts it: "In the beginner's mind there are many possibilities, but in the expert's mind there are few" (as cited in Kabat-Zinn, 2005, p. 85).

Aspirants at any point on their journey toward excellence, including experts and masterly performers, do well to maintain an openness that is characteristic of a beginner's mind—an openness to what *is* and to possibilities as to what *can be*—or return to that innocent inquisitiveness if ever their performance falters. The notions of openness to what is, to letting go of what was, and to letting in what can be, encapsulates "presence," as conceived by Senge, Scharmer, Jaworksi and Flowers (2004) and as I am considering here.

Here one faces a subtle paradox: to become very good at something it is wise, even necessary, to adopt a beginner's mind—to be completely awake to the moment, not caught up in what one knows, or think one knows. The esotericist, J.

Krishnamurti (1969), makes a comparable distinction between being awake and being aware. We mistakenly value awareness (which implies intellectual understanding) over awakeness, which is innocent and childlike. If we as humans are awake, in this more profound sense of the term, we can enter a state of *choiceless awareness*, a phrase coined by Krishnamurti. Genuine awareness is choiceless, because it does not issue from calculating or figuring out, but from non-self-centered perception, observation without the observer. Awareness, in this profound sense, means being present, without thought, in the moment. In phenomenological terms, it means being open to what is, devoid of preconceptions and effort. It is the temporary suspension of learning. It is openness to unlearning. The ceasing of choice is not the result of decision, for that would be another choice. Herein lies a puzzle, a paradoxical challenge that has engaged human minds for eons.

Those who think in black and white terms, or are looking for step-by-step rules for learning, will be disappointed with Waitzkin's approach to learning. For Waitzkin, learning is a finely nuanced, inherently paradoxical, and delicately balanced art:

There is the careful balance of pushing yourself relentlessly, but not so hard that you melt down. Muscles and minds need to stretch to grow, but if stretched too thin, they will snap. A competitor needs to be process-oriented, always looking for stronger opponents to spur growth, but it is also important to keep on winning enough to maintain confidence. We have to release our current ideas to soak up new material, but not so much that we lose touch with our unique natural talents. Vibrant, creative idealism needs to be tempered by a practical, technical awareness. (Waitzkin, 2007a, p. 88)

Reconciling the internal and the external is a recurrent theme in Waitzkin's lifeworld. In his *Chess Life* interview with Bruce Pandolfini, Josh

reflects on the barrierlessness or “unobstructedness” he discovered between chess and Tai Chi:

I think most movements in life are a gradual progression, even if we aren't aware of the steps. For me the revolution came when I was 21, 22 years old. I was studying Asian philosophy at Columbia University. My relationship to chess at this point was much more about personal growth than about competition. The movie had had a very complicated effect on my chess life, and I had been drawn to Buddhist and Taoist philosophy by a desire to reconcile the internal and the external, ambition and personal growth. I had a lot of questions. I had felt blocked in the learning process for a few years at that point, and when I started studying Tai Chi all my ideas came back to life. Once I gained a technical foundation in the martial arts, I began to feel as though I was manifesting my chess understanding through Tai Chi. And my chess game became fueled by the sense of fluidity and “unobstructedness” that I felt meditating and doing Push Hands... (Waitzkin, NPR interview, 2007b)

The ecology of learning and performance, especially at higher levels, is rhythmic and organic. One must push and stress oneself, but one must also hang loose and relax. Recovery is a critical phase of the learning and performing cycle.

Waitzkin's (2007a, 2010) notions of greyness and barrierlessness are likely to resonate with enthusiasts for creative inquiry and transformative studies, the integration of body, mind, and spirit, and of object and subject. Likewise, proponents of transdisciplinary inquiry, qualitative and interpretative approaches to the human sciences (such as phenomenology), and extrascientific ways of knowing and doing (such as Csikszentmihalyi's [1990] *flow*, or Carson's [2010] *stream brainset*), can find resonances in Waitzkin's work. For Josh:

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 us tick. If we...dismiss intuition as non-existent because we don't understand it, or if we blithely consider the unconscious to be a piece of machinery that operates mystically in a realm that we have no connection to, then we lose the rich opportunity to have open communication with the wellspring of our creativity. (Waitzkin, 2007a, p. 137)

AOL teaches that “the road to winning [learning and performing anything well] isn’t about innate talent or perfection; it’s about overcoming adversity, and rebounding from defeat” (Waitzkin, NPR interview, 2007b). “The real art in learning takes place as we move beyond proficiency, when our work becomes an expression of our essence” (Waitzkin, 2007a, p. 218). Waitzkin encapsulates his learning, and what we can learn from him, in the Afterword to *AOL*:

If I have learned anything over my first twenty-nine years, it is that we cannot calculate our important contests, adventures, and great loves to the end. The only thing we can count on is getting surprised. No matter how much preparation we do, in the real tests of our lives, we’ll be in unfamiliar terrain. Conditions might not be calm or reasonable. It may feel as though the whole world is stacked against us. This is when we have to perform better than we ever conceived of performing. I believe the key is to have prepared in a manner that allows for inspiration, to have laid the foundation for us to create under the wildest pressures we ever imagine. (Waitzkin, 2007a, p. 262)

PART 3: TOWARD A THEORY OF MASTERY

The final part of this inquiry features two central themes in a synthesis that emerges from the explication of mastery in Part 2. The conjoining of themes is followed by a distillation and summary of key findings on learning and meta-learning drawn from Waitzkin's perspective. The study culminates with a meta-analysis—a discussion of key learnings about the farther reaches of human learning, their meaning and significance. The inquiry ends with a note on the application of Waitzkin's ideas, suggestions for future research, and a conclusion.

Chapter 11: Resilient Presence: A Thematic Synthesis

This inquiry into mastery, masterly learning, and meta-learning indicates that resilience and presence are superordinate themes, deeply interconnected and mutually reinforcing. *Resilient presence* is my construct that integrates resilience and presence, a fusion that emerges from the inquiry and is at the apex of the findings.

If Passion—the first of the four major themes—unlocks and unleashes motivation, resilience is the key to overcoming the potentially *demotivating* events and experiences that inevitably confront anyone embarking on a demanding journey. Obstacles, setbacks, stress, defeats, and other challenges and adversities can douse the flame of passion unless a person is resilient enough to deal with them.

Waitzkin learned to be resilient in the context of battle. As a young chess player he would create highly complex situations on the chessboard, create chaos in the black and white jungle, until his opponents wilted under the pressure of

confusion and fear. Years later, in his early encounters with grandmasters, the tables would be turned, and Josh would succumb to the intense pressure applied to him by world-class players. Josh would feel forced to make a small concession to relieve the unbearable pressure on his mind, and that would signal the beginning of his defeat. Josh spent years—as a chess player and later as a martial artist—“learning how to maintain the tension—becoming at peace with mounting pressure” (Waitzkin, 2007a, pp. 171–72). In other words, he became resilient enough to stay present in the heat of battle. He writes, “This, maybe our biggest challenge, is at the core of the art of learning” (Waitzkin, 2007a, p. 34).

If Effort—the third theme in the PREP-eration quartet—can convert passion or desire into outstanding achievement, it can only be successful if the effort is mindful and the learner is present. Presence is a state of being fully conscious and aware in the moment. Spiritual traditions have for thousands of years linked presence with shifts in awareness, described differently in different traditions, but in all traditions shifts in awareness or consciousness are central to personal transformation. Presence entails deep listening and openness to letting go of preconceptions, old identities, and the need to control. Being present can lead to “a state of ‘letting come,’ of consciously participating in a larger field of change. When this happens, the field shifts, and the forces shaping a situation can move from re-creating the past to manifesting or realizing an emerging future” (Senge et al., 2004, pp. 13–14).

Presence is vital, but the ability to stay present and clearheaded when the going gets tough distinguishes good performers from the mediocre, and the great

from the good. In competition, Josh explains,

the dynamic is often painfully transparent. If one player is serenely present while the other is being ripped apart by internal issues, the outcome is already clear. The prey is no longer objective, makes compounding mistakes, and the predator moves in for the kill. *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* [emphasis added]. We cannot expect to touch excellence if “going through the motions” is the norm of our lives. On the other hand, if deep, fluid presence becomes second nature, then life, art, and learning take on a richness that will continually surprise and delight. 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. (Waitzkin, 2007a, p. 172)

Staying present in any learning or performance activity is easier when external consequences are positive (winning, high grades, awards, praise, money, fame, and so on). But when external rewards are scant or non-existent, or external conditions are negative (losing, low grades, tight deadlines, failure, disapproval, punishment, and so on)—learners must create their own internal reinforcements if they are to have the resilience to remain present.

For Waitzkin, the key to building resilience is to act *as if* everything is always on the line. Only then can one, as he puts it, “maximize each moment’s creative potential,...[stay present] to the day to day learning process,...[and enjoy] that purity of focus” (Waitzkin, 2007a, p. 172) people sometimes experience in critical situations when everything *is* on the line.

Living *as if* everything is important—rather than merely going through the motions—is a way of reframing the common perception that how people live is unrelated to how they compete or perform under pressure or in momentous

situations. The more present a person is in practice, the more present she will be during competition, in the exam, on the job. When being present becomes habitual, like breathing, resilience is reinforced, and learners/performers become mentally tough and resilient.

I am arguing that presence and resilience are inextricably connected and dynamically related. The dynamic is recursive: resilience helps individuals stay present, and staying present builds resilience—a positive feedback loop. Presence can become automatic, a habit, a way of living, rather than a state of being people talk about but rarely live, and only touch on those rare occasions—such as at a job interview or on a first date—when they think everything is on the line.

Aron Ralston, who was trapped between a rock and a hard place, had the resilient presence to survive his terrible ordeal. Ralston, a young, fit, experienced adventurer on a solo hike, was trapped for a week in a remote part of Utah in April 2003, when his right arm was wedged by a falling boulder between two canyon walls. With no likelihood of rescue, exhausted, and in a seemingly hopeless situation, he had the clarity of mind and courage—the resilient presence—to use the rock's vice-like grip to break the bones in his arm, and to use his blunted penknife to sever his body from his trapped limb (Ralston, 2004).

Sometimes even experts find themselves in situations that are overwhelming. One can learn from failures just as one can learn from triumphs. Waitzkin tells the story of José, an expert hunter in the Amazon jungle, who came face-to-face with a huge black jaguar. José signaled for help by striking the root of a big tree with his machete. He managed to keep the giant cat at bay for 15

minutes, just long enough to be rescued. The jaguar would have killed the man, had the man not had the resilient presence to do what he did. Legend has it that although Jose's life was saved, his spirit was broken (Waitzkin, 2007a).

In pursuing this inquiry into mastery, I have reflected long and often on my own life journey, learning, and performance. As I studied the literature on expertise, read narratives on mastery by experts in various domains, and became immersed in the lifeworld of Josh Waitzkin, a deeper understanding emerged for me about my own failures and successes, and about the nature of the phenomenon being investigated.

Professionally, one of my proudest achievements was founding and developing retail bookstores. The business was created with passion and effort, and required resilient presence to grow and sustain it. Although there were times of crisis and periods of struggle, for 20 years I was alive and on fire with the venture. Exploring Waitzkin's learning journey arouses memories of my own.

The collapse of my book business was excruciatingly painful. Having spent many years passionately committed to mastering the art of retail bookselling, and having built a steadily growing and occasionally profitable not-so-small business, I was devastated by the demise of the enterprise I had envisioned and nurtured. Trying to make sense of this experience, I alternated between self-blame, and attributing the passing of my business to the faults of others and to external circumstances. However, playing the blame game did not bring me relief, release, or resolution. For many years I was wounded and perplexed. I was not resilient enough to withstand the pressures in the

commercial jungle that led to organizational decline and eventual failure. Like José, who had spent a life becoming finely attuned to the rhythms of the forest, I had been a dedicated student of leadership, including best-practice entrepreneurial management theory and its implementation. Like José, who was present enough to strike his machete against the root of the tree to signal help, and resilient enough to hold off the animal for over a quarter of an hour, I was both present enough to see opportunities and to develop an innovative business in a declining industry, and resilient enough to withstand threats and hazards for many years. In the end, my business was broken, but I survived.

In the course of this study I have come to see that resilient presence does not ensure victory. Defeat is always possible. Resilient presence is undoubtedly necessary, but not sufficient, for success in any demanding endeavor. Likewise, success does not always bring happiness and fulfillment. And failure may be painful, but it can also bring relief, strengthen resolve, and open doors to opportunity. I now see that the journey matters more than the destination. As long as one has done one's best, given one's all, then one can be at peace, even if one falls short. Although I have long known Theodore Roosevelt's oft-quoted lines from his 1910 address at the Sorbonne, they now resonate in my soul:

It is not the critic who counts [including the internal critic]; not the man who points out how the strong man stumbles, or where the doer of deeds could have done better. The credit belongs to the man who is actually in the arena, whose face is marred by dust and sweat and blood; who strives valiantly; who errs, and comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows the great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly, so that his place will never be with those cold and

timid souls who know neither victory or defeat. (as cited in Shapiro, 2006, pp. 648–649)

Yes, I could have done better, I could have been more present to the reality of any given moment, made better and more timely decisions, implemented change more effectively, been more resilient in the face of crises. But now that I have contemplated the search for excellence more deeply, I see that what matters is the quality of effort, not results.

In his poem, *If*, Rudyard Kipling wrote: “If you can meet Triumph and Disaster/And treat these two imposters just the same... Yours is the Earth and everything that’s in it...” (Poetry Foundation). I have come to see that success and failure are both imposters and should be treated accordingly, because they disguise what is genuinely meaningful. Only when a person knows that victory and defeat are both frauds, can he, as Kipling suggests in the final lines of his poem, fully connect with the Earth and become fully human.

From Waitzkin’s internal frame of reference, committing fully to *quality* in learning and performance opens the door to creative self-expression, and to a sublime sense of fulfillment. Pursuing excellence is a pathway to self-transformation, to being all one can be. As this realization has crystallized within me, I have become increasingly at peace with all those endeavors in my life—almost irrespective of success or failure—to which I have given my utmost, left no stone unturned, in pursuit of some worthwhile goal. Furthermore, I am sure I have performed better and achieved more than I would have done, had I not give 100% to a particular task or project.

Alternating currents of pain and pleasure have pulsated within me during all my meaningful and most challenging endeavors. In these pursuits I have been most fully alive. Captaining the school cricket team, immersing myself in study, contributing to government policy and its implementation, founding and building a book business, running marathons and competing in triathlons, teaching in many contexts, and pursuing a doctorate, are experiences that have given my life meaning and purpose. So too has being a husband, parent, and grandparent. In some of these endeavors I have achieved moderately well, in others I have experienced a mix of victory and defeat. Yet, if success is framed in terms of effort, the quality of resilient presence that is required to sustain that effort, and the enhanced sense of self-worth and pleasure entailed in expending that effort, I feel blessed.

Chapter 12: Learnings About Mastery

Although Part 1 pointed to some differences in meaning between concepts such as supernormal functioning, extraordinariness, expertise, mastery (or enhanced expertise), this study has focused on the *drive to excel*, more than on fine distinctions between levels of excellence. Based on the Dreyfuses' rigorous standards of mastery (2008), only very few individuals in any domain or subdomain would qualify as masters, not even Waitzkin. How could a researcher, himself far from being an expert, much less a master, in any domain, undertake a heuristic investigation of mastery? Moustakas (1961) experienced deep loneliness in his own life, which enabled him to investigate loneliness heuristically. Yet, the *pursuit of excellence*, or mastery, is an experience I can

personally relate to in various aspects of my life. I feel energetically connected with Waitzkin's learning journey, despite vast differences in our respective achievements.

As I have indicated, learnings or findings from this study are both implicit (embedded in the narrative) and explicitly stated at various points in the analysis and interpretation. What I have learned about the pursuit of excellence and mastery is based on my examination of the scholarly literature on expertise (e.g., Arnove, 2009; Collins & Evans, 2007; S. E. Dreyfus, 2004, 2011; Elliot & Dweck, 2007; Ericsson et al., 2006; Gardner, 1997), reading experiential narratives by masters in various domains (e.g., Agassi, 2009; Fitzgerald, 2012; Herrigel, 1954/1999; Petit, 2008; Polgar, 2005; Rose, 2013), and interpreting Waitzkin's lifeworld through the lens of my own learning journey.

Waitzkin became masterly in two disparate domains, which is a supernormal level of functioning and achievement. The findings of this study do not concern chess expertise, or martial arts expertise; they concern learning in any domain, and team pursuits as well as solo pursuits. Furthermore, although the focus here is high-level learning, the ideas and principles are equally relevant to optimal learning—learning in a manner and at a level that is good enough for the purposes of the learner—and to learning in general.

Waitzkin's perspective on learning and meta-learning.

To recapitulate, Waitzkin's (2007a) learning framework has two aspects—the mindset or state of mind of the learner, and his or her learning strategy or methodology. Mindset and strategy together determine the amount and quality of

a person's effort. Effort is the only manageable aspect within the expertise trinity—talent, effort, and circumstances.

Although a person's natural abilities and predispositions are central factors in learning and achievement, Waitzkin does not focus on these factors, because they are innate, and therefore beyond control. Moreover, talent can be a mixed blessing, just as a person's strength can also be a weakness if he or she becomes overly reliant on that strength. Waitzkin's experience reveals that many types of talent can be harnessed for success, in addition to talents thought to be most important in specific domains, such as calculation speed and memory in chess, or athleticism and agility in martial arts. Compared with merely proficient exponents of the two arts, Josh had good memory and calculation speed on the board, and he was quick and agile on the mats. But by his own account, his primary strengths—natural or acquired or both—were psychological. He had a fighting spirit; he enjoyed creating complex and chaotic positions on the chessboard that bewildered most of his young opponents; he was very good at reading opponents' "tells" (body language, usually unconscious, that reveals the intention or state of mind of an opponent; Waitzkin, 2007a, 2010).

As with talent, Waitzkin gives little attention to the circumstances of a person's life, because where and when one is born, and so on, are not one's choice. Waitzkin (2010) concedes that the circumstances of his life, especially his family, were conducive to his learning and achievements. On the other hand,

Josh's ideas around embracing adversity to grow stronger are congruent with the paradoxical idea that advantages can be disadvantageous, and vice versa.¹⁴

Largely ignoring talent and circumstances, Waitzkin chooses to focus on effort. Effort, which is underpinned by mindset and manifest in strategy, is within a person's choice. One chooses how much effort and what kind of effort to put into learning algebra, or training for and achieving a personal best time on a five-mile run.

Superordinate themes.

Many themes circle the mindset and strategy poles of masterly learning. Four major themes emerged from my analysis of Waitzkin's experience—passion, resilience, effort, and presence. The themes capture the truism that in most domains PREP-eration underpins masterly performance. In summary:

PASSION, which drives the pursuit of excellence, means doing what one loves in a way that is authentic and congruent with one's being. Passion can be for a particular activity, or for a way of acting. The freedom to explore in a safe and stimulating environment, where mistakes are not feared, helps people to find their passion.

RESILIENCE protects people from setbacks on the learning journey. When adversity, loss, and emotions are embraced for their learning value, when triggers are built to enter the soft zone at will, learners become stronger and can perform better even under intense pressure.

¹⁴ For some people, a traumatic childhood or a disability can lead to extraordinary results that might otherwise not have been achieved. Many examples of this phenomenon are explored in Malcolm Gladwell's *David and Goliath* (2013).

EFFORT entails a learning strategy that is sustained and mindful. A sound learning strategy means not doing too much too soon, starting with reduced levels of complexity, mastering fundamentals, giving 100% in training as well as competition, valuing process before results, alternating rest and recovery, and much more besides.

PRESENCE is the quality of being awake in the moment to what is, and open to what might be. Presence entails calm concentration, willingness to suspend thinking and judgments, simply being with what is. Presence means eat when eating, swim when swimming. Presence leads to the crystallization of conscious learning in the unconscious mind, and to barrierlessness. Adopting a beginner's mind, and appreciating not knowing and unlearning, paves the way for the artless art of learning.

These dominant themes interlace with minor themes and principles, concepts and metaphors to form a rich learning tapestry. Examination of this tapestry yields insights into the essence of mastery, masterly learning, and meta-learning. It also allows for extension of meanings and meta-analysis, from which fresh learnings and implications can emerge.

In essence, Waitzkin is optimistic and enthusiastic about people's capacity to learn and perform better and with more enjoyment than most of us ever think possible. My study suggests that his optimism is well supported by what he has lived and achieved, and the meta-learning framework he expounds.

Meta-learning.

This research yields valuable insights into the art of learning and learning how to learn. Waitzkin showed that the experience of performing outstandingly well in one field can enable a person to repeat the experience in other fields, even fields that are seemingly very different, such as chess and martial arts. Waitzkin (2007a) theorizes that the habits of body–mind that are formed in pursuing excellence in one domain can be applied to other domains. Once a person has experienced the sublime feelings that accompany each lunge forward toward excellence in one area, those feelings become motivational for undertaking challenging endeavors in other areas. Such was Waitzkin’s experience in moving from chess to Tai Chi. It has also been my experience in moving from long-distance triathlon to long-lasting study.

As strong habits and powerful feelings are intergrated into the unconscious, it is as if an ever-growing internal reservoir of experience is created, experience that the mind–body can draw upon in other contexts. Although from the outside, Tai Chi and chess could not be more different, the more deeply Waitzkin became immersed in Tai Chi, after excelling in chess, the more they began to converge in his mind “as if the two arts were linked by an essential connecting ground” (Waitzkin, 2007a, p. xiv). Waitzkin (2007a) started to translate his chess ideas into Tai Chi language, and to notice more and more similarities, until he began to feel as if he were studying chess when he was studying Tai Chi. Similarly, in Push Hands competition, there were moments

when time would slow down enough for Josh to be able to assess his opponent's structure and vulnerabilities, just as he had done in chess games.

What is alike to chess and Tai Chi, and indeed all human experience, is the common mode of consciousness by which they are perceived. Waitzkin was so fascinated and delighted by the many connections he was making between chess and Tai Chi, it occurred to him that the way to tap into the mind's potential was to become completely immersed "into one and all activities" (Waitzkin, 2007a, p. xv). In other words, he saw the wisdom of extending what he had learned about learning in chess, not only to learning in other domains, but to life in general. Waitzkin began to see clear connections between different life experiences because, as he puts it, "pure concentration didn't allow thoughts or false constructions to impede my awareness" (Waitzkin, 2007a, p. xv).

"Pure concentration" is not forced or effortful; it is a relaxed focus, simply being present to what is, uncontaminated by thinking. It is comparable to the loss of self-consciousness that occurs in the flow experience, and to Krishnamurti's (1969) choiceless awareness. If the ability to meet challenges and master them is a fundamental meta-skill for living, as Csikszentmihaly (1990) maintains, being able to relax into pure concentration may be at the apex of meta-skilling. For Waitzkin (2007a), pure concentration engenders a state that removes barriers between the conscious and unconscious, and opens the way for intuitive processes. The importance of the unconscious and intuition is discussed in the following section.

Learnings about the farther reaches of human learning.

In the course of this study I have sought to find the essence of mastery. Adopting a heuristic approach, I have personally identified with the quest for excellence, been open to my experience of the phenomenon, allowed tacit knowing and intuitive insights to inform my observations and thinking, followed a process of indwelling and focusing in explicating the phenomenon, and developed an empathic understanding of the internal frame of reference of the expert I have studied. The methodology has culminated in a thematic synthesis—resilient presence—and an extension of meanings. Some key insights about meta-learning that have emerged for me from the inquiry are:

1. An appreciation of resilient presence.

Resilient presence is a phrase that best captures the essence of what it takes to become masterly. Passion and effort, or hard work, do not invariably lead to excellence. But if the learner is resiliently present, and cultivates resilient presence as he or she faces increasingly demanding challenges on the journey, there is more likelihood of success.

Resilient presence is like a current in the river of learning, infiltrating all parts of the stream of consciousness of anyone fully committed to the pursuit of excellence. The current keeps the water—a mixture not of hydrogen and oxygen, but of action and introspection—flowing, despite any obstacles that may be in its path.

2. An appreciation of embodiment and embodied consciousness.

Being human we are necessarily of the flesh, and our consciousness is necessarily embodied consciousness. We are body–minds, not minds with bodies or bodies with minds. Human consciousness is experienced throughout the body. We have a central nervous system and an enteric nervous system. The unity of mind–body as an experiential reality is an outcome of cultivation or mindfulness. Pursuing excellence and the art of learning is a vehicle for mind–body integration, for accessing the wisdom of the body, connecting heart and gut and brain, balancing rigor and imagination. Waitzkin’s theory and my findings confirm the ideas of philosophers, such as Merleau-Ponty (1962)—the body is our medium for having a world—and Lakoff and Johnson (1999), whose philosophy of the flesh links the neural circuitry, phenomenological conscious experience, and the cognitive unconscious.

3. An appreciation of the unconscious, tacit knowing, and intuition.

Human knowledge—both knowing *that* and knowing *how*—is like an iceberg. Just as nine-tenths of an iceberg lies underwater and never sees the light of day, most of what we know lies in the unconscious and never rises into consciousness. People breathe, digest food, move, grow, reproduce, heal, and age, whether or not we have any knowledge of these processes in our conscious minds. Similarly, thinking, feeling, learning, falling in love—in fact, all sentient or subjective experience—is mysterious, because the unconscious is unfathomable. Most of what people know is implicit and independent of consciousness. In Polanyi’s (1966/2009) language, we know more that we can

tell. Moreover, all that we can tell, the entire content of our rational minds, everything of which we are conscious, is dependent upon the unconscious. If there were no massive bodies of ice below the waves there would be no icebergs; if there were no unconscious mind there would be no conscious mind.

Although as learners we do not know anything about the unconscious or its source, the mastery phenomenon suggests that there is a door into the unconscious from consciousness. When there is deep conscious learning, when skills are consciously honed, we get better at doing the right thing effortlessly, gracefully, naturally. In the language of psychology, we become *unconsciously competent*. In Waitzkinian language, it is as if conscious learning—being the flow of the ocean around and over the iceberg and becoming part of its form, *crystallizes* (a verb that captures the iceberg metaphor beautifully)—into the unconscious. Recent research in neuroscience suggests that during play, amateur and masterly chess players use different parts of the brain, which points to different mechanisms of brain processing and functional brain organization between experts and non-experts (Amidzic, Riehle, Fehr, Weinbraugh, & Elbert as cited in S. E. Dreyfus, 2004). However, the relationship between neural events and consciousness is still not well understood.

Experts, and those studying expertise, see the vital and mysterious role of intuition in masterly performance. If crystallization is the process whereby conscious learning gets stored in the brain, intuition is the process by which knowledge and know-how gets retrieved from the brain. Intuitive expertise, such as the amazing skills of elite chess players or martial artists, may have more to do

with procedural memory—System 0 (S. E. Dreyfus, 2011) and *bypassing* thought, than with stored knowledge and pattern recognition. Masters can seldom tell others *how* they know, or *how* they do what they do, they just do it—spontaneously. That is because experts have a much bigger intuitive repertoire to draw upon than non-experts. That is because, in Eastern language, as Yuasa (1987) explains, masters have cultivated the flowering spirit—they carry the seeds of flowers, which enable them to perform their artless arts creatively, beautifully, and beyond thinking, even under the most dire circumstances.

4. An appreciation of moving beyond dualistic thought and the rational mind.

Deep thinking and many hours of conscious, purposeful practice enable learners to advance from novices to advanced beginners to competent exponents to proficient practitioners. But if a learner is to move beyond mere proficiency toward excellence, she must move beyond calculating, thinking, and figuring things out. The paradox is that in order to leave the numbers or principles of an art, one must first master those fundamentals, which requires deliberate and sustained training, alternating currents of action and introspection.

There are no shortcuts on the road to mastery. Just as Siddhartha, the protagonist in Herman Hesse's (1981) famous novel of the same name, had to immerse himself in the pleasures and pains of the world before he could transcend the world, so masterly learners have to consciously immerse themselves in their subject or art before they can transcend thought and technique. Even then, both secular experts and the spiritually aware still have to think and solve problems in

the course of living, just as non-experts and the spiritually unaware do. In an important sense, worldly journeys are no different than spiritual journeys. Indeed, as a person approaches mastery in a particular domain, he is likely to see more and more connections between elements that to non-experts appear separate and distinct. As a consequence, the spiritual–worldly, subject–object dichotomies, and other products of dualistic thinking, dissolve. Mastery becomes a creative manifestation of a nondual perspective on life.

The feats of masters are astonishing and mysterious, precisely because masters think less and feel or sense more. Experts draw from their intuitive reservoirs more appropriately and quickly—in a blink. They have mastered the artless art of “thinking without thinking,” in Gladwell’s (2005) language, of acting without acting, or even without intention, as in the Chinese instructional paradox that intrigued Waitzkin: “If the opponent does not move, then I do not move. At the opponent’s slightest move, I move first” (as cited in Waitzkin, 2007a, p. 149).

5. An appreciation of the paradox of unlearning and not knowing.

It is self-evident that to advance from novice through to expert requires learning, indeed deep and sustained learning. However, the idea that the learning process includes unlearning seems absurd. According to the old but still common view, memory is a storage bin for information that is acquired through formal and (mostly) informal learning (Bain, 2004). One puts knowledge in the bin and then later one picks out what is needed. The new view, held by neuroscientists and

educators (see, for example, Fink, 2013) is that knowledge is constructed, not received.

Knowledge construction is the dynamic process whereby one builds mental models or schemas of the world and everything tangible and intangible in it. For example, I have a mental model of something called mastery. As I came across new material on the mastery phenomenon in the course of this inquiry I had to make sense of it in terms of what I already knew or thought I knew. I saw and interpreted new information through the lens of my mental model. Some of that information challenged what I thought I already knew about mastery. I either rejected the new information to keep my existing mental model intact (no learning), or accepted the new material and changed my mental model accordingly (learning). The process of changing my schema of mastery required *deconstructing* a part of my mental model and *reconstructing* the model in light of new knowledge. The deconstruction phase of this process can be thought of as unlearning. The key point here is that the process of constructing knowledge means that new knowledge has to be integrated with existing knowledge, and that cannot happen unless old knowledge is superseded or unlearned.

Experts are so intent upon excelling and continuous improvement that they deconstruct and reconstruct their mental models faster and more frequently than non-experts. They are expert unlearners! Masters know or sense that what they already know, their existing schemas, as sophisticated and advanced as they might be, can be a barrier to deeper understanding, insight, and creativity. Knowledge, for all its liberating blessings, can also be entrapping. As Krishnamurti (1969)

emphasized, freedom means being free from what one knows or think one knows. Being uncertain and comfortable with uncertainty is healthy and conducive to learning. There is value in *not* knowing, because not knowing clears the mind for direct experience (with minimal contamination from mental models) both from the outside, through the senses, and from the inside, through intuition.

6. An appreciation of flow as artless art, self-expression, and self-transformation.

The pursuit of mastery can be a vehicle for self-expression and self-discovery. The pursuit can take a person farther than she ever thought possible, and to destinations more beautiful than she imagined. Only after the fundamentals of knowledge and technique in a domain have been learned deeply, can one discover and express one's natural and unique creativity in that domain.

At higher levels of learning approaching mastery, performance becomes increasingly effortless as intuitive expertise induces flow states. Being in flow or in the zone seems to remove effort or struggle, thought or calculation, and agency or subjectivity from the performance—which makes the term “flow” so apt. Flow implies movement without effort, which evokes the enigmatic Taoist *wu-wei* notion of not doing, or action within non-action. The subject–object dichotomy dissolves. Flow also entails movement or action without thought or calculation, without artfulness—the conscious use of skills and knowledge. The art becomes artless. In flow there is a loss of self-consciousness, yet a feeling of control, or lack of anxiety about losing control. The fading of self-consciousness is often followed by an expanded sense of self, which seems to arise from satisfaction in

having met difficult challenges, or a sense that one has temporarily moved beyond the boundaries of ego (Csikszentmihalyi, 1996).

During much of my Ironman¹⁵ journey I was in a state of flow. The experience deepened my learning about triathlon, learning about myself, and learning about learning, per se. I had prepared well for the event, and on race-day morning I was calmly confident, an ideal performance state. For most of the 16-and-a-half hours it took me to complete the Ironman I felt effortless and smooth. The paradoxical mantra “slow is smooth and smooth is fast,” which I had written on the back of my hand, guided me throughout the journey. Swimming, cycling and running were happening, but I had little sense that *I* was making these movements happen. I felt energetically alive and lost all sense of time, as if in a blissful trance. Even the pain of vomiting, cramps, and exhaustion met no resistance and was simply accepted as part of the experience. Not once did I consider dropping out.

The Ironman was a vehicle for self-discovery and transformation. In the process of giving 100% to preparing for and completing the event, I learned much about myself and my capabilities, my strengths and vulnerabilities. For example, like Waitzkin winning the Push Hands world championship in Taiwan, when I was exhausted and completely spent in the last hour or so of the marathon, I

¹⁵ I trained 16 hours a week on average over the 6 months leading up to the event, following a program designed by my coach. My coach would tell me: follow the program, do the work, and the results will come. He was right. I learned that race-day strategy is all-important—pacing appropriately for my age and condition, following a sound hydration and nutrition strategy, staying calm and recovering from inevitable setbacks, digging deep when the going gets tough.

learned I could dig deeper than I ever thought possible and had ever been before. I found reserves of energy and determination I did not know I had.

The Ironman deepened my understanding of learning to learn. I achieved all my goals, which were to finish in one piece within the time limit and to enjoy the day. Meaningful achievement and fulfillment in endurance sport opened my mind to possibilities for meaningful achievement and fulfillment in other areas of life. In undertaking this inquiry into mastery, I have come to appreciate how through triathlon I discovered a richer range of opportunities in life than I had previously seen. For example, seeking to excel and achieving goals in this multisport domain empowered me to undertake a very different endurance project—doctoral study.

Chapter 13: Applications and Research

In this chapter I briefly discuss some implications of findings from this study for education. I then propose some directions for future research, such as the interface between conscious and sub-conscious processes in masterly learning and performance, mind–body integration, intrinsic motivation, love and mastery, and the pursuit of excellence as a vehicle for creative self-expression and transformation.

Applications in education.

Waitzkin (n.d.) is extending and applying his learning principles through the JW Foundation.¹⁶ The Foundation aims to bring a more individualized approach to education, based on each student's unique predispositions and interests. From Waitzkin's perspective, the teacher's primary role, especially in the early years, is to bring out the love for learning in students.

Josh stresses that educating parents is as important as educating teachers. He laments that even in very progressive schools parent education is often neglected. If, at school, students hear that ability to learn can be grown like a muscle, and if at home they hear that learning ability is fixed like eye color—or vice versa—they are likely to become confused and conflicted (Waitzkin, 2010).

Unlike Rudolf Steiner, Maria Montessori and other educational pioneers, who had much to say about curriculum and its structure, Waitzkin has resisted pressure to provide a curriculum based on his theory, because he thinks that *what* children should learn, *when* and *how* they should learn, is unique for each individual. Instead of a prescribed curriculum, teachers working with Waitzkin's principles help students design their own curriculum. This requires teachers to listen to students first. Of course, students will only talk and disclose honestly to teachers they trust, which means that a precondition to good teaching is building a climate of trust within a classroom, between teacher and students, and, for rich

¹⁶ The Foundation works with particular teachers and schools, especially the International Baccalaureate (IB), which offers high-quality programs of international education to a worldwide community of schools. The Foundation also works with gifted children through the National Association for Gifted Children in the United States and with children from poor families and inner city schools (Waitzkin, n.d.).

collaborative learning to take place, between students. According to Waitzkin, the challenge for teachers confronted with large classes, often year after year, is to remain open to students in the moment. One wants students to love learning and teachers to love teaching. The essence of Josh's mission is to help *everyone* love what he or she is doing (Waitzkin, 2010).

Teachers and learners aspiring to excellence have gained inspiration, understanding, and practical guidance from *AOL* and Josh's websites (Waitzkin, n.d). There is much scope for creative iterations of the themes and principles in forms tailored for different audiences—teachers at all levels of education, coaches and consultants, psychologists, and individuals aspiring to excel in the arts, sports, business, or public service.

Research directions.

In undertaking this study I have come to a more nuanced understanding of masterly learning. Perhaps the most important discovery I have made is that the investigation raises more questions than it answers. Findings generated by the study are provisional, incomplete, and invite further study. There is much to learn—and to unlearn—about learning. Precisely because Waitzkin is a living exemplar of masterly learning and provides many insights into the phenomenon, doors are opened that invite deeper inquiry into learning and mastery.

Here are a few of the many potentially fruitful directions for future research:

1. Despite outstanding advances in neuroscience, researchers still know very little about the interface between conscious processes, such as

thinking and skilling, and unconscious processes, such as intuitive insights and intuitive actions. The interface between the conscious and unconscious mind, between explicit and implicit knowledge, between thinking and intuition, are areas of investigation that can continue to deepen our understanding of expertise or mastery. The discoveries of contemporary neuroscience should be interpreted within a transdisciplinary framework, if we are to better understand mastery.

2. The phenomenon of mind–body integration invites much further study. Holistic and integral approaches to education, which are still marginal, imply a mind–body–spirit orientation. If we as learners and educators are to begin to value creativity as much as literacy, performance as much as analysis, and multiple forms of intelligence, we need to know more about cultivating the unity of body and mind.
3. Qualitative studies of other masterly learners—their experiences, processes, and insights—would add to and confirm (or possibly fail to confirm) findings explicated and distilled in this study.
4. A better understanding of intrinsic motivation and the conditions conducive to its cultivation would be invaluable, and better equip learners to find their own passion.
5. Also indicated and needed are inquiries into the joy of learning, and into the idea of high-level performance being a unique and beautiful vehicle for creative self-expression, and for personal and social transformation.

6. This study has found that passion or love is supremely important in masterly learning. Research into the role of love in mastery acquisition, of passion in learning and learning to learn, would likely yield new insights and more nuanced understandings of human learning.

Chapter 14: Conclusion

The purpose of this study has been to understand and illuminate the experience of mastery. In particular, the study explores the experience of *pursuing* mastery, more so than *being* masterly. A focus on the quest for excellence, rather than its achievement, is consistent with the idea that mastery is a phenomenon that can be approached, but never reached. Mastery is a journey rather than a destination. Masterly practitioners in any domain are the first to proclaim that the journey never ends, that perfection is elusive and improvement is always possible.

The study has addressed four interconnected research questions: (a) how did Waitzkin experience and interpret his learning and performance journey in the pursuit of excellence? (b) what principles and meanings has Waitzkin derived from this journey? (c) how can these principles and meanings be extended and developed? and (d) how can masterly learning be cultivated? In Parts 1 and 2 of the study I analyzed the nature of masterly learning, based on a review of the scholarly literature, and an interpretation of Waitzkin's journey toward excellence. In Part 3, I posited the resilient presence synthesis, developed and

distilled key meanings and learnings, and suggested some directions for future research.

Waitzkin has a learning system, or at least an approach to high-level learning and meta-learning, that can be theorized or modeled. The inquiry reveals an incipient theory of masterly learning and meta-learning. One of the consequences of pursuing mastery in a particular domain is that the experience can empower individuals to pursue excellence in other domains, even if those domains are seemingly very different.

The study's findings also have implications for what I have called optimal learning—learning that is at a level that is consistent with the learner's authentic aspirations and needs. If a person wanted to learn basket-weaving, for example, she or he would be unlikely to read Waitzkin's book, and even less likely to read a dissertation on mastery. And the person would not need to. Provided the basket-weaving author or teacher understood and honored the principles in the instruction, the learner would benefit. A shift in perspective in just one area—from the view that intelligence (including craft dexterity) can be grown like a muscle, and is not fixed like eye color—can be transformative.

Waitzkin's principles of learning have value for anyone wishing to learn anything well. Few learners want to pursue mastery. The cautionary note here is that many people settle for mediocre or superficial learning, because they have not tasted the joy of seeking to excel, underestimate their abilities (or think they are fixed), or are too fearful to risk failure.

In keeping with the heuristic mode of research, my initial engagement with the topic arose from my own passion for learning and performing at a high level, and my discovery of Waitzkin's (2007a) book about his journey toward excellence. I then immersed myself in Waitzkin's lifeworld and the scholarly literature on expertise. Periods of intense study of the research questions alternated with equally important periods of retreat. Incubation provided time for my own tacit knowing and intuition to illuminate the phenomenon under investigation. I was then able to explicate early insights and meanings in the writing process. Eventually, the explication of meanings led to a distillation of the essence of masterly learning, a synthesis of meanings, extensions, and applications.

Distilling meaning following the heuristic process has been a long journey. In particular, periods of immersion within the mastery phenomenon (indwelling) have alternated with periods of creating an inner space, clear of clutter, so that the essence of the phenomenon as it shows up in Waitzkin, others, and myself could emerge (focusing). Intuition became increasingly important as promising ideas and insights emerged in the course of the writing and rewriting. I see the articulation of meanings as an outcome of a merging of my conscious or explicit knowledge with my tacit or implicit knowledge during the arc of the inquiry.

Resilient presence, a potent integration of two of Waitzkin's major themes, emerged for me as a meaningful phrase that captures an essential element of the phenomenon under investigation. The construct draws attention to both the

fundamental importance of resilience and presence to learning, especially to learning at the highest levels, as well as the interrelationship between resilience and presence. An individual's ability to stay present and clearheaded when in the cauldron of demanding learning and performance tasks depends very much on his or her level of resilience. Likewise, being able to remain present, even when pressure is intense and stakes are high, reinforces or builds even higher levels of resilience, and thereby the ability to withstand even more tension and still greater challenges. Resilient presence is often what separates very good performers from the truly great.

In Waitzkin's lifeworld, the key motivator is passion, and the key sustainer of effort is resilient presence. Passion ignites a person's fire and gets him moving on a journey; resilient presence enables him to stay the course and meet demanding challenges along the way until he reaches his destination. Of course, he may fall short, but he will not know how far he can travel, how close he can get, unless he is fully committed and gives his very best effort. When people do commit 100%, they often travel farther than they think they can, or higher than they imagine.

But the joy is in the journey, not in the destination. So even when one falls short, or misses the mark, or perishes physically or psychically (as when José was damaged psychologically by the jaguar in the Amazonian jungle, or when my cherished book business collapsed) one has at least lived fully and given one's all.

"Joy in the pursuit of excellence" is a motif of Josh Waitzkin's lifeworld. The experience of learning and performing for him—with all its trials,

tribulations, and setbacks—is sublime. He uses the words “ecstatic” and “beautiful” many times in his conversation (Waitzkin, 2010). These are not hollow or forced words; they are, to my mind, entirely congruent with the sparkle in his eyes, the openness of his face, and the energetic vitality of his body–mind.

That Waitzkin’s dominant learning style is kinesthetic or tactile—he learns best by doing (and of course reflecting)—in no way detracts from the relevance or applicability of his approach to different types of learners. Different learning styles and preferences only means that material needs to be approached or presented in different ways, as Josh discovered when he was teaching chess classes in a New York school (Waitzkin, 2007a, 2010). Waitzkin’s popular computerized chess program, ChessMaster (2007), also honors individual differences in personality and learning styles.

Sports coaches promote the life of the body, but Waitzkin and other elite performers demonstrate that mental training and psychological toughness are as important as physical skills. Similarly, educators promote the life of the mind, but lessons about learning and living from Waitzkin and other masters apply equally to the body. As S. E. Dreyfus (2011) argues, having a sense of something prefigures conceptualization; sensuous knowledge should be cultivated along with intellectual understanding.

Loving the game and resilient presence underpin the movement from the conscious mind into the unconscious, and back again. For Waitzkin, and many other experts (e.g., Gallwey, 1975; Herrigel, 1954/1999; Kasparov, 2007; Rose, 2013), this interface between the conscious and the unconscious is all-important.

An alternating current of action and introspection crystallizes patterns in the body–mind. Intuition is the “software” that accesses these patterns for insight and exceptional performance.

Yet, this process of body–mind integration hardly explains why Josh felt uncannily familiar with chess, and was immediately riveted by the game, when he first saw it played as a 6-year-old. Nor does it explain his epiphany following an earthquake in India. For, as Polanyi (1966/2009) argues, tacit or implicit knowing precedes and is logically prior to conscious or explicit knowing. We know more than we can tell, and most of that knowledge is not sourced from consciousness. Merleau-Ponty’s (1962) embodiment, Csikszentmihalyi’s (1990) flow, and Lakoff and Johnson’s (1999) cognitive unconscious, all suggest a philosophy of the flesh that is deeply mysterious. But mystery is not mysticism, much less magic. Waitzkin’s (2007a) notions of making smaller circles, barrierlessness, the soft zone, acting without intention, artless art, and unlearning, resonate with the philosophy of non-dualism, with Buddhist notions of cultivation and beginner’s mind, with *wu-wei* (the action of non-action paradox in Taoism; Varela, 1999), with Sri Aurobindo’s integral yoga (Chaudhuri, 1977), and with Krishnamurti’s (1969) choiceless awareness.

I intend for this study to contribute to the scholarly discourse on expertise or mastery in the form of experiential findings about masterly learning. As I indicated in Part 1, most of the research in the fields of expertise and expert performance, and achievement motivation, has been in the form of quantitative studies undertaken within a post-positivist paradigm. As a qualitative and

interpretative inquiry, using a heuristic approach, this study aims to add experientially grounded findings and meanings to the scholarly discourse on the phenomenon.

I believe scholars must take a systemic and integral approach to inquiry in human affairs if they are to contribute consciously to transformation. As I see it, complexity theory teaches us that genuine change—what Gregory Bateson dubbed “second order change”—requires us to embrace paradox and to be *meta-paradigmatic* (Montuori 2005)—that is, to question the assumptions (ontological and epistemological) behind our assumptions. Just as the fish, as far as we can tell, is unaware of the water in which it swims, we are more or less blind to the paradigmatic assumptions that underlie our thinking about learning and teaching.

Waitzkin is an enigma. Why spend so much time and energy as a child and teenager playing chess? Why would a young man spend hours in daily training year after year in martial arts? What is the use of such extreme behavior? Well-known travel writer Paul Theroux put this last question to Gerard d’Aboville, the first man to row across the Pacific and Atlantic oceans. The intrepid oarsman answered:

Only an animal does useful things. An animal gets food, finds a place to sleep, tries to keep comfortable. But I wanted to do something that was not useful, not like an animal at all. Something only a human would do. (as cited in Sheridan, 2010, p. 271)

The greatest journeys are not only physical and athletic, or mental and scholarly; they are also aesthetic and spiritual. The “why” of pursuing excellence—particularly in extreme endeavors entailing significant personal risk, but also in any field of endeavor—is a mystery in the theater of mastery. When

Philippe Petit (2008) walked a tightrope between the twin towers of the World Trade Center and was arrested, reporters asked him why did he do it? Philippe responded that there is no why. He found the question amusing, sad, and meaningless. As Sheridan (2010) notes, sometimes we humans choose to do things that are enormously risky and against our own best interests, because “the freedom to make that choice is more important than those interests” (p. 279).

Learning to learn is potentially transformative—both for the individual and the other, or some group within society. Pursuing excellence, with all its risks and sacrifices, helps one to awaken dormant qualities and to grow as a person. A person can learn more about who he is by going toward and beyond the limits of what he thinks he can do. As Waitzkin exemplifies, performing beyond oneself enables one to know oneself and, in the process, change. The student or scholar in training finds her own voice, and deep fulfillment in the creative expression of her essence. Even pursuits of questionable merit, such as physical fighting, can be a way for damaged and angry men (and women) to find wisdom (Sheridan, 2010). The sword can be life-giving. Fighting as a “peaceful warrior” (Millman, 2006) is an apt metaphor for personal cultivation and transformative change in any field of endeavor.

Just as love and work are not dichotomous, and certainly not mutually exclusive, neither are beauty and utility. Good design is the successful integration of form and function. The aesthetic is useful because it is pleasing. The functional is pleasing because it is useful. Similarly, good living and learning, including research and scholarship, require both intellect and emotion. To

paraphrase Plato, intellect without emotion is like a jockey without a horse. That is why the eleventh-century theologian St. Simeon described the deepest form of human knowing as the result of thinking with “the mind descended into the heart” (as cited in Palmer & Zajonc, 2010, p. 29).

We should remember that Waitzkin’s expertise lies in the art of learning, more so than in chess or martial arts. My intention in interpreting Waitzkin’s lifeworld is to bring forth meanings for both formal students and autodidacts in *any* subject or domain. And for teachers and others whose job it is to facilitate quality learning and performance.

In the afterword to *AOL*, Waitzkin (2007a) writes:

The ideas I’ve shared in these pages have worked for me and it’s my hope that they suggest a structure and direction. But there is no such thing as a fixed recipe for victory or happiness. If my approach feels right, take it, hone it, give it your own flavor. Leave my numbers behind. 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. (p. 262)

Waitzkin’s concluding sentences evoke my hope for this dissertation. The purpose of studying Maslow’s (1971) growing tip of humanity, of exploring the farther reaches of human learning, is, as Eastern wisdom traditions teach, the cultivation of the flowering spirit (Yuasa, 1987). Self-actualization is the point, not self-aggrandizement.

The heuristic research–writing process has been messy and hard. The completed work for me, as for van Manen (1990), is a “blushing response to a call to say something worth saying, to actually say something...[that does not amount to] academic chatter” (p. 8). My stance is contrarian rather than conformist. If this study contributes a different way of thinking to the discourse on the value of

expertise or mastery, its acquisition, and to an emerging theory of masterly learning, it will have met my intent and dream.

I end with a caution. If we as researchers inquire mindfully, and hold in question our most cherished (expert?) assumptions, we have some chance of avoiding “edubabble,” staying present, and being open to transformative change. For, as Ellen Langer (1998) states in her consideration of mindless learning versus mindful learning: “Not only do we as individuals get locked into single-minded views, but we also reinforce these views for each other until the culture itself suffers the same mindlessness” (p. 3). This pitfall applies to cultures we belong to, support, and approve of, including the school from which one’s dissertation is spawned.

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Appendix A:

A Chronology of Josh Waitzkin's Achievements

I have compiled this chronology primarily from Josh Waitzkin's two books, *The Art of Learning* and *Attacking Chess*. I have also found and confirmed dates from Fred Waitzkin's *Searching for Bobby Fischer*, and from information on Josh Waitzkin's websites.

- 1976: Born December 4 in New York City.
- 1983 (age 6): Began playing chess in Washington Square Park. He played aggressively and intuitively, his natural style.
- 1984 (age 7): Began classical training with his first coach, Bruce Pandolfini.
- 1985 (age 8): Placed runner-up to David Arnett in Primary School National Chess Championship. As Josh was the number-one seeded player for this tournament and believed no child his age could beat him, he was devastated by the loss and took some time out from chess. However, he soon recovered and returned to chess with renewed determination and became a stronger player.
- 1986 (age 9): Won first Primary National Championship.
- 1987 (age 10): Won second Primary National Championship.
- 1988 (age 11):
 - Won first Junior High National Championship (while in the fifth grade).
 - Drew a game with World Champion Garry Kasparov in a simultaneous exhibition.
 - *Searching for Bobby Fischer*, Fred Waitzkin's (1988) book about Josh's early chess life and their father-son relationship, was published.
- 1989 (age 12): Won Elementary National Championship.
- 1990 (age 13) —

- Achieved the chess rank of National Master a few weeks after turning 13.
 - Won second Junior High School National Championship.
- 1991 (age 14) —
 - Won Senior High National Championship.
 - Won U.S. Cadet (under 16) Championship.
 - Captained a team that won the National Amateur Team Championship.
- 1993 (age 16):
 - Became the United States' youngest International Master.
 - Won first U.S. Under 21 Chess Championship.
 - Represented the U.S. in the World Junior (under 20) Chess Championship in Calicut, India.
 - Josh's first book, *Attacking Chess*, was published by Simon & Schuster.
 - An instructional chess video, *Chess Starts Here*, by Josh and Bruce Pandolfini, was produced by Katina Productions.
 - The Paramount movie *Searching for Bobby Fischer* was released.
- 1994 (age 17) —
 - Won second U.S. Under 21 Chess Championship.
 - Placed fourth in World Under 18 Chess Championship in Szeged, Hungary. Josh would have shared winning the championship with (now) Grandmaster Peter Svidler had he accepted the draw Svidler offered him in the last round. This loss was both heartbreaking *and* a deep source of learning for Josh.
- 1997 (age 20): Josh began to develop *ChessMaster*, the best-selling computer chess program in the world, which has sold over six million copies.
- 1998 (age 21): Began studying Tai Chi Chuan in NYC with Grandmaster William C. C. Chen.

- 1999–2004: Won Tai Chi Chuan Middleweight Push Hands National Championship five years in a row, in both the Restricted Step and Moving Step divisions.
- 2002 (age 25): Won Bronze Medal in the Push Hands World Championship in Taiwan.
- 2003 (age 26): Won Gold Medal in the Push Hands division of the World Kuoshu Championships in San Paolo, Brazil.
- 2004 (age 27):
 - Won an unprecedented five National Tai Chi Chuan Championships in three weight divisions—middleweight, light heavyweight, and heavyweight.
 - December 3: won the Middleweight Push Hands Fixed Step title at the Seventh Chung Hwa Cup International Tai Chi Chuan Championships, in Taipei, Taiwan.
 - December 5: (Josh turned 28 on December 4) won the Middleweight Push Hands Moving Step title at the Seventh Chung Hwa Cup International Tai Chi Chuan Championships, in Taipei, Taiwan.
- 2007 (age 30): Josh’s second book, *The Art of Learning*, was published by Simon & Schuster.
- 2008 (age 31): Launched the JW Foundation—a nonprofit that supports teachers, students, and parents to implement Josh’s principles of learning.
- 2009 (age 32): Opened Brazilian Jiu Jitsu studio with multiple world champion Marcello Garcia.

Appendix B: Research Participant Consent and Release

I am a doctoral student at California Institute of Integral Studies in San Francisco, and I'm conducting a study on you, Josh Waitzkin. This study is a key part of my research and dissertation. My research area is artistry in learning, learning to learn, and an exploration of the factors—such as talent, effort, and circumstances—that can lead to learning and performance excellence. I have chosen you as my 'ideal' research participant, because you exemplify the extraordinary or super-normal learning and performance I'm exploring.

Your participation in this research project is entirely voluntary and greatly appreciated. The research will take the form of an initial face-to-face interview cum conversation, to be held in New York City on January 20 2010. I will make an audio-visual recording of the interview, and the interview is expected to last for 90 minutes. When the dissertation is complete, I will send you a copy to review.

I also appreciate that you have agreed to a follow-up interview, should subsequent conversation be desirable. Any follow-up interview would likely be mediated via Skype, and recorded, as I will be returning to my home in Australia later this month (January, 2010). This consent and release form covers any and all interviews between us that are connected with this study.

In addition to our interview(s), my study may include information from:

1. Participant observation (for example, of you in the context of your recently opened Brazilian Ju Jitsu studio, with Marcelo Garcia);
2. Your written works and any other material by or about you on the public record; and
3. Your email and any other written correspondence with me.

If you have concerns or questions regarding your rights as a participant in this research, you may report them—anonously, if you wish—to the Chair, Human Research Review Committee, California Institute of Integral Studies, 1453 Mission Street, San Francisco, CA, 94103.

I, Josh Waitzkin, consent to participate in the artistry in learning and related research project, conducted by me, Peter le Breton, of California Institute of Integral Studies.

I certify that I have been given satisfactory answers to my inquiries concerning the study procedures and other matters, and that I have been advised that I am free to withdraw my consent and to discontinue participation in the project or activity at any time without prejudice.

I give my written consent to participate in this study with the understanding that such consent does not waive any of my legal rights; nor does it release the researcher or any employee or agent thereof from liability for negligence.

I, Josh Waitzkin, also give the researcher/producer, Peter le Breton, and/or his representatives the right to create an audio recording, video recording, photo,

and/or audio/video recording of me and my performance and comments, and do hereby also give the right to use my name in association with said recordings. I agree that the producer may use these recordings or photos in any production, print medium, video production, audio production, or by production in any future medium that he sees fit. These recordings may be used for the purpose of advertising, trade, display, or editorial use.

I have read, understand, and agree to the terms of this consent and release.

Signature

Date

Appendix C: Interview Questions

Passion

1. As you loved the game of chess so much, and the “fear and thrill of battle,” it seems strange that you lost your love for the game when the movie came out. What made you change direction rather than insulate yourself from public scrutiny?
2. In your case it seems that passion for the game gave you the motivation to master the fundamentals. Where did your passion come from? What can parents and teachers do to help children find activities they are passionate about?
3. Many kids these days, including my own, love playing electronic games. Would we be wise as parents to let them, even encourage them, to explore gaming to their heart’s content?
4. How do you distinguish between passion or love of an activity and obsession or addiction?
5. You suggest that what you are best at is not chess or Tai Chi, but learning and its arts—in particular the nuanced interface between unconscious processes and technical skills. If exploring this interface is the seat of your passion, how are you pursuing this passion now in your learning journey, your life?

Art, Love, and Beauty

6. In your books you write of chess ‘teaching’ you about art and love. What do you mean by this and how do you explain it?
7. How did chess give you insights into art and love? What are those insights?
8. How do you experience learning as beautiful?

Courage and Confidence

9. You write about the importance of courage and confidence to learning and performance? How can courage and confidence be learned? What can teachers and other do to foster courage and confidence in children?

Depth Versus Breadth

10. Going deep rather than wide is one of the learning principles you advocate. How do you reconcile this principle with the one-dimensional excesses of, say, Russian chess schools or the young Jeff

Sarwers of the world, on the one hand, and the benefits of a broad liberal arts education, on the other?

11. The prevailing cultural myth is that “safe mediocrity” is more highly valued than living on the edge. How can this myth be replaced by a better myth?

Barrierlessness

12. Your journey in mastering chess and Tai Chi seems to suggest either that knowing how to learn isn't domain specific, or that chess and Tai Chi are really far more similar than they appear. In the AOL you suggest, “the two arts may be linked by an essential connecting ground” (p. xiv). What do you mean by this?
13. You speak of false constructs, barrierlessness, and how deep learning in one area and developing a thematic eye will automatically inform learning in other areas. You speak of the connections in process, not in common ground, between disparate pursuits. It is three years or more since you wrote AOL, can you now go more deeply into this?

Experience and Theory

14. Your knowledge and know-how is clearly a combination of your experience (life journey playing competitive chess and Tai Chi), your study of Eastern philosophy and some developmental psychology, and your self-reflective nature. What role do you think science and/or scholarship (in other words, theory) can play in transforming learning within individuals and groups? Do you think there might be a theory underlying your method of learning?

Excellence and Mastery versus Optimization and Proficiency

15. The subtitle of your book was changed when the paperback edition came out from “A journey in the pursuit of excellence” to “An inner journey to optimal performance”? Why? And what do these subtitles mean for you?
16. What do you think of the idea that if something is worth doing, it is worth doing badly?
17. Educators seem to value participation rather than excellence, proficiency rather than mastery. What's wrong with this?

Source of Knowledge

18. In AOL you say that when you started playing chess in Washington Square Park you felt like you had done this before, that you were discovering a lost memory. What do you make of that?
19. I know you are a nurture over nature man, and that you don't like the term “child prodigy,” yet how do you explain that after watching a few

kids play chess at school you were able to learn to play so well so quickly?

The Trinity: Talent, Effort, and Circumstances

20. You downplay your gifts and talk up the gifts of your opponents. How can you tell how gifted a person is mentally?
21. You claim that talent exists, but effort is more important than talent to performance? What does your experience tell you about the interactions between talent and effort in high performance?
22. In his book *Outliers* Malcolm Gladwell shows, quite convincingly I think, how the circumstances of a person's life (when and where they were born, their parents, who they happen to meet, etc.) can be critical to their success. How were your mother and father important to your development as a person and a chess player?

Technique and Creativity

23. How do you balance discipline with natural voice?

Effort and Recovery

24. Can you explain how fishing helped your chess?

Resilience

25. When you lost to David Arnett as an 8 year old at the Nationals, you were devastated. However, you responded to heartbreak with hard work. Is that because even then you had a learning mindset, rather than a fixed or entity mindset, or because you loved chess and felt it to be your calling or destiny?
26. How can we learn to stay focused on the long-term benefits of learning, rather than immediate results, especially in the heat of battle?

Incremental Learning

27. You loved chess AND you loved winning. Were you born with these loves? Were you also born with a love of learning, or did you learn to be strongly towards the incremental end of the incremental/entity continuum?
28. Can you explain your "anorexic hermit crab" metaphor?

Towards a Better Understanding

29. I know you don't like the way words such as mystical and magical are often used to "explain" exceptional performance. And yet your method of learning as a play between knowledge, intuition, and creativity is often couched in poetic and metaphoric language. How is this better than or different from mystical language?

General or Universal Principles

30. Chess, Tai Chi, and Brazilian Jiu Jitsu are all competitive solo pursuits. Yet you claim that the principles of learning and performance psychology are universal, and apply equally to team learning and performance? Can you explain how your learning principles apply to, say, team sports or entrepreneurship, where managerial rather than technical skills are critical?

Change and Resistance to Change (Transformation)

31. Have you given any thought to resistance to change? What are the key points of leverage that can facilitate change? What are the implications of your journey, your method of learning for teaching and teachers?
32. As nutrition science develops we are even more confused about food, and we are getting fatter, and degenerative diseases are worsening. This is a paradox and a dilemma. Do you think the same thing is happening with learning science? And, if so, what can we do about it?
33. How well is your educational nonprofit, the JW Foundation, working? What intentions or plans do you have for it?

Appendix D: Waitzkin's 20 Principles of Learning

This appendix presents Waitzkin's classified list of 20 learning principles reprinted with permission from his website.¹⁷

Resilience

Value process before results.

True learning occurs through a process of hard and sustained effort and a nuanced understanding of each challenge, gain, and loss along the way. Therefore, it is more important to draw insights from every step we take rather than focus on any end reward or goal. Labels like "winner," "loser," "smart" or "dumb" ignore this fact and should be avoided. They lock our sense of ourselves in place, strip us of motivation, and make it difficult, if not impossible, to keep going and evolving.

Investment in loss.

We expand our minds and develop our capacities by allowing ourselves to confront hurdles, experience losses, and take a good hard look at them. Although stepping away from what is known and familiar and taking risks can be uncomfortable, doing so affords rich opportunities for learning. A willingness to lose and analyse the loss, as well as the unsettled feelings that accompany it, cultivates flexibility. This, in turn, allows us to move forward and gain additional wisdom, no matter what we may encounter along our path.

Beginner's mind.

Children learning to crawl approach the surroundings with unstoppable curiosity and an eager, joyful sense of adventure. They have no concern for how they look or the judgments of others. What propels them forward is a general delight in all that is unfamiliar; an ability to be intrigued by the mundane; and a desire to probe the minutest details along their path, over and over again. The best learning results from this kind of openness—from being fully awake to the experience at hand, receptive to gaining even tiny insights from it and to refining one's method in response. An inner willingness to adopt the nonresistant approach of a beginner and gradually perfect one's knowledge manifests outwardly as forward movement and, over time, as graceful expertise.

Using adversity.

¹⁷ From the Resources section of Waitzkin's website, *The Art of Learning Project*, www.theartoflearningproject.org (Waitzkin, n.d.). Reprinted with express permission of the author: "You have my permission to proceed as requested" (J. Waitzkin, personal communication, 31 January 2014).

Being able to handle life's dirty tricks without losing one's equanimity, interest, and joy is vital to learning and achievement. The ability to call on one's knowledge and apply it well and completely is disrupted when we fall prey to emotional disturbances. Rather than deny or stifle emotions, we must work to gain an understanding of them, learn to make peace with them, and ultimately, channel them into higher levels of performance. By keeping our cool under trying conditions, we can arrive at precise conclusions and take positive and effective action at all times, especially during the most complicated and critical moments.

The internal solution.

If we can prevent ourselves from being thrown by heightened emotions and instead learn to flow with them, the physiological responses they produce in us can help us defeat obstacles. To harness feelings for a defined purpose, we must first develop an understanding of and tolerance for inner turmoil. We should learn to observe our passions, understand their sources and their unique character. Then we will be able to transform them into creative inspiration for successful action. Once we have an in-depth awareness of our personality and the ways we react to external stimuli, we can use our minds to evoke a powerful internal physiological state at will and channel it to great advantage.

Peak Performance

The power of presence.

We enrich our experience of life by attuning ourselves to its subtlest aspects and delving deeply into its details. One cannot excel at a pursuit or experience its delights by bringing a skimming approach to it or handling related responsibilities in a shallow manner. To excel, our perspective must be that everything is on the line at all times and we must maximize each and every moment's potential. To do so demands that we be fully present and engaged at every stage of our relationships, studies, and work—not just in the moments we think are critical but also in the moments leading up to them. And when there is no one to look in; no one to give feedback or cheer us on, a keen but relaxed focus will enable us to motivate and monitor ourselves.

The soft zone.

Life is full of random, unexpected events and demands. It is vital that we gain awareness and understanding of our reactions to these intrusions in order to cultivate an ability to remain calm and collected when they arise. To maximize our ability to develop and draw on our knowledge base, we should not brace against disruptions and the emotions they stir, but rather adopt a nonresistant attitude. This allows us to absorb information, process it smoothly and quickly, take appropriate action, and grow from the experience; we become resilient in the way a flexible blade of grass can bend and sustain most any kind of assault. With a stiffened and strained approach to upheaval, however large or small, we cannot sustain focus and call on our full wisdom; we become brittle and lose our ability to clear the hurdles, like a dry stick snapping under pressure.

The downward spiral.

When we cling to the troubling emotions that result from an obstacle or loss, we abandon the present for the past. In short order, we find ourselves using our personal resources to wage an internal war instead of using them to handle what is going on now and move forward. By focusing on a past problem it becomes easy to believe that things have taken a turn for the worse. In not being awake to the present, we magnify the original loss, allowing it to produce a ripple effect of additional problems. These, in turn, take us even further off a course of growth. We must stay cool under fire and fully in the present to glean the most we can from every experience and achieve success.

Stress and recovery.

The natural world embodies a rhythm of action and inaction that enables plants and animals to muster the energies they require for sustenance and growth. Bears enter caves and hibernate in the winter. Plants, too, enter a dormant phase during which biological processes occur that make it possible for them to re-emerge in the spring. By alternating cycles of rest with activities that push us to the outer limits of our abilities, we strengthen the bond between mind and body in a way that fuels peak ability and high-level learning and performance. Because all aspects of our lives are interconnected, the practice of stress and recovery should be incorporated into everything we take on—all experiences will be enriched as a result. Effective methods include: meditation, stretching, deep breathing, play, even washing one's face. By conditioning ourselves to move fluidly between intervals of tension and serenity, it becomes possible to condense the duration of recovery time needed for learning and exertion; we become more able to rally our powers of intuition and creativity and call on our knowledge and skills at a moment's notice.

Building your trigger.

Every one of us has one or more activities or experiences that can lead us toward serenity. To create your own catalyst for peak performance, first identify the one key activity that is most relaxing for you. Then shape a simple routine comprising this and four to five additional personal relaxation methods you know work for you. Practice this routine daily for one month during down time to entrench a calm state of mind.

If you can only identify a single activity that leads you to serenity, shape a routine of simple activities to practice before or after your known relaxation producer. After a month of practice, the soothing psychological benefits of your key activity will have suffused the routine; you will be able to use the routine to produce a state of calmness even when the key activity is not a part of it.

In both cases, the routine should be of your choosing but could, for instance, include a few minutes each of jogging, bathing, showering, walking, eating a snack, snuggling with a loved one, listening to a song, smelling something pleasing, or meditating. By the end of the month, you will have internalized a deeper sense of peace and reaped many physiological benefits. You can then use your routine as a prelude to a high-stress activity in order to enhance

your psychological state and build a solid foundation for excelling—before critical moments at work, school and on the playing field. Gradually and incrementally condense the routine. In short order, you will be able to produce all its benefits by merely thinking about it or practicing a few seconds of it.

The Art of Introspection

Listening first.

The first step to artful teaching is tuning in to the essence of the student. It is critical that we appreciate each individual's unique learning style and natural voice, and take these into account when instructing them. By allowing students to express themselves through their learning process and what they learn, we not only expand their capabilities but also their interest in forging ahead. Teachers have a very fine line to walk in preserving in their students a balance between passion and discipline, analysis and internalization of fact and technique. This balancing act demands that they neither offer false compliments nor dismiss seemingly wayward ideas—but rather prompt probing discussions of students' ideas and methods and coach them in a manner that is in keeping with who they are. A sensitive, tailored teaching strategy accompanied by a clearly expressed expectation of achievement can make the difference between helping students' minds carve themselves into maturity and stripping them of this ability as well as their joy. Teachers who position themselves more as guides to development than as omniscient authorities end up promoting in pupils a lifelong hunger for absorbing, processing, and applying knowledge effectively.

Loving the game.

As children, we have a natural love for discovery and new challenges. Learning and ambition are playful adventures rather than dizzying experiences fraught with a sense of danger; whenever we fall, we get right back up again. But, as we mature, we begin to attach a sense of risk and fear to learning and performance and seek the comfort of old knowledge and methods. To learn and perform at increasingly higher levels, especially under stressful circumstances, we must reconnect to the experiences of our youth—to those times when our natural approach to discovery was light-hearted and being a beginner and a learner was joyful. At the core of success lies the journey from childhood back to childhood again. It is by taking this journey that we can discover how to maintain a harmonious balance between our pursuits and our own unique disposition.

Breaking down walls.

Themes that arise in one area of our personal lives will also surface in other areas—all aspects of life are interconnected. The ability to learn and perform in consistently effectual ways is therefore impacted by our general state of mind. It is vital that we unearth the psychological patterns and emotional responses that get in the way of our successes and take our weaknesses on. By bringing awareness to the threads connecting mind and action, we can break down the walls between the disparate parts of our lives that we have mentally built up and take corrective steps to transform all our weaknesses into strengths.

Intuition: Developing the internal compass.

To truly excel, we must cultivate access to intuition—the bridge between the conscious and unconscious mind that is the wellspring of our creativity. We can achieve this access by alternating deep and repetitive study at the highest possible level with periods of rest and relaxation. When we connect with our intuition, we are calling into service a part of our brain that can perceive the interconnections between vast amounts of technical knowledge and instantaneously harmonize them into a single creative solution.

The middle way: Navigating grayness.

To maximize learning and use the knowledge we gain to perform at a high level, we must be willing to engage in a process that pushes us to the outer edges of our abilities, yet does not stretch us so thinly that we run the risk of breaking down. Ideally, we will allow the bar to move a bit higher with each step we take along this balanced middle road—just enough to engage our capacities fully and let us experience some success. This approach can spur us on to additional growth and wins. In order to strike a balance between pushing ourselves forward and preserving a sense of wholeness, we must be willing to let go of our prior notions of adequacy and pursue a strategy of growth that upholds our unique learning styles as well as the passions that give expression to who we are.

Advanced Learning

Master the fundamentals.

It is most effective to launch into the learning process by studying a discipline's most fundamental principles. A devotion to mastering the nuances of these basics builds the foundation required for more complex understanding; creative bursts of inspiration; and higher levels of achievement, which result from an interplay between knowledge, intuition, and creativity. By studying and deeply internalizing core concepts we develop our brain in ways that allow us to achieve a more penetrating understanding of not just one subject or practice but also all others we choose to undertake. As we immerse ourselves in doing what it takes to absorb and build on fundamentals, we experience first-hand the joy of learning and reinforce for ourselves its value. Allowing ourselves to grasp the intrinsic benefit of personal development through what we do to achieve it enhances our motivation and equips us to take learning further.

Learning the macro from the micro.

We cannot hope to grasp the inherent joy and beauty of learning nor lead a life of serious accomplishment if we only skim the surfaces of subjects and acquaint ourselves with thin layers of knowledge. In order to excel, our approach to learning must emphasize depth over breadth. We have to resist the attraction to superficial stimulation that our media-driven society cultivates. The alternative is to dive deeply into small pools of information in order to explore and experience the operating principles of whatever we are learning. Once we grasp the essence of our subject through focused study of core principles, we can build on nuanced

insights and, eventually, see a much bigger picture. The essence of this approach is to study the micro in order to learn what makes the macro tick.

Making smaller circles.

We have to be able to do something slowly before we can do it quickly. By delving with laserlike focus into a basic set of concepts or practices over a period of time, we can gradually internalize the knowledge. The process of reviewing and creatively exploring these basics over and over again leads to a very refined, nuanced understanding of them. We eventually integrate the principles into our subconscious mind where we can draw on them instinctively and rapidly without conscious thoughts getting in the way. This deeply ingrained knowledge base can serve as a meaningful springboard for more advanced learning and action.

Numbers to leave numbers.

By studying discrete pieces of information thoroughly and practicing their application repetitively, they eventually shed their technical, nitty-gritty character. This happens because the process of digesting small chunks of knowledge over and over again shifts it from the conscious mind to the unconscious mind where it can connect with other chunks of internalized knowledge and manifest as the sudden burst of insight we experience as free-flowing intuition. This high level of knowledge integration is what we should aim for—it allows us to access what we have committed to learning in a fluid, precise, and improvisational manner.

Bringing it all together.

These are the steps to high-level learning and performance: Delve into the essential aspects of a small pool of basic information that is foundational to your chosen topic or field and do so in a manner that is in keeping with your unique learning style. Building on this base, devote yourself to exploring new, ever more advanced sets of information and technique that lie at the outer edges of your ability or understanding. Alternate such periods of pushing yourself to your limit with periods of rest and relaxation that foster recovery and creativity.

By approaching learning in this way, your internalized knowledge will lead to bursts of insight and discovery, which you can expand further by breaking down the mechanics that led to your achievements. Eventually, you will come to recognize the feeling that a refined and integrated body of knowledge produces in you and you will be able to target the re-creation of this feeling as you pursue new subject areas.