

CHESS & MUSIC PROFICIENCY:

Growing the Imagination with Pleasure and Effort



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Abstract

This article focuses on the acquisition of proficiency in chess and music as skilled art forms, drawing on personal experience, historical and scholarly sources. It emphasizes the need to develop a code for understanding both art forms, and provides a visual method for connecting the efforts of the imagination in music and chess. It provides a critique of the modernist myths of innate talent and specialization as factors that prevent the development of both skills simultaneously, and focuses on the correlation between effort and pleasure. Finally, it proposes the notions of epistemological growth and creative-critical reflexive analyses as means for continuously expanding perception and learning in skilled art forms.

Keywords: chess; music; learning; epistemological growth; creativity; critical reflexivity; polymathy; skill

Introduction

Music and Chess – Novelty and Epistemological Growth

In this article, I investigate the roles of effort, pleasure, and appreciation as links between music and chess, and provide a critical analysis of pathologizing views of chess playing (e.g., Desjarlais 2011). I argue that acquiring appropriate codes that stimulate a growing perception and appreciation of music and chess is essential for understanding the relationships between these arts. I also provide critiques of past discussions that contribute towards the goal of understanding the relationships between music and chess. I contend that lack of flexibility and diversity in analytical vocabularies restricts what we can perceive. We only perceive dynamics that we can appreciate,

discuss and describe. Therefore, the acquisition of vast and related conceptual resources is vital for finding routes into what I call an epistemological growth, that leads to the expansion of perception. This expansion strengthens our capacity for creative synthesis whenever it produces novel formulations of related concepts and develops original ideas. The movement towards novelty should be continuous so that we can avoid epistemological stagnation and the pitfalls of orthodox thinking. Both chess and music lovers value the search for novelty as a high level pleasure.

Method and Theory

Epistemological Growth and Creative-Critical Thinking

This article presents a creative and critical approach to the scholarship of music and chess. It draws on over 25 years of experience as a chess and music practitioner, and 20 years of anthropology and recent fieldwork among musicians in an island community in Northern Scotland and in a chess tournament in the Netherlands. I have created illustrations for helping readers visualize relations between chess and music. I argue that considering the related details that emerge the exercise of chess and music may lead to what I call epistemological growth, a concept with theoretical and practical implications. Epistemological growth follows from the constant creative-critical effort to look beyond the boundaries of one's choice tautology for novel concepts and abductions. This insight emerges from personal experience with music and chess, their specialized scholarship, and related phenomena that connect both practices but that are rarely mentioned. I critique the modernist myths of specialization and innate talents that helps keeping these practices separated.

According to Gregory Bateson, when we “flesh



out” an explanation, we apply the process that Charles Sanders Pierce termed abduction (1979, 84). We perform an abduction when we find “other relevant phenomena” and argue that those are “cases under our rule” that “can mapped onto the same tautology” (Bateson 1979, 84). Explanations, for Bateson, are contingent on tautological structures. A tautology, or collection of related concepts, enables explanations that allow one to ensure “the validity of the links in the tautology so that it seems to you to be self-evident, which is in the end never totally satisfactory because nobody knows what will be discovered later” (Bateson 1979, 85). For Bateson, “human beings are very careless in their construction of the tautologies on which to base their explanations” (1979, 85). He argued that the “popularity of explanations which are so informal as to be misleading” means that humans profit from their own tautological carelessness (Bateson 1979, 85). As DiCicco-Bloom and Gibson noted, humans draw metaphorical and analogical “comparisons to the known, familiar, and concrete” while “seeking to understand the unknown, mysterious or abstract” (2010, 247).

Pierre Bourdieu argued that “cultural needs are the product of upbringing and education,” so “preferences in literature, painting or music, are closely linked to educational level (measured by qualifications or length of schooling) and secondarily to social origin” (1984, 1). Moreover, the consumption of an artwork is a “stage in a process of communication,” an “act of deciphering” and “decoding” that “presupposes practical mastery of a cipher or code” (Bourdieu 1984, 2). Thus the “capacity to see” is a “function of the knowledge” comprising concepts and words “that are available to name visible things” and work as “programmes for perception” (Bourdieu 1984, 2). Someone who does not understand a particular conceptual scheme for perception and appreciation “feels lost in a chaos of sounds and rhythms, colours and lines, without rhyme or reason” (Bourdieu 1984, 2). As this article

shows, Bourdieu’s argument helps explaining some aspects of music making and chess playing proficiency. One problem with Bourdieu’s conception is that educational level does not lead to mastery in music, chess or artistic skill. As sociologist Gary Alan Fine noticed in his study of everyday artistic genius, he found accomplished self-taught artists among “some very poor individuals with barely a grade school education or considerable cognitive confusion” as well as among “highly educated and articulate Ph.D.s” (2004, 12).

Understanding, Improvisation and Growth

Developing a resilient code for understanding chess and music and for improvising with proficiency with these art forms requires an unwavering dedication to practice. One peculiarity of this set of skilled practices is that both can help one transcend the need for physical instruments. Advanced chess players can play blindfold chess, without a chessboard. Musicians can compose with the voice, memory, and imagine orchestral arrangements. My engaged ethnographic work with Brazilian multi-instrumentalist musician Sandro Haick since 2016 led to the development of the [Secret of Music Playing Cards](#). These cards codify harmonic knowledge in a bundle of 126 cards with wide and tested applications in teaching, composing, improvising, and learning music by playing didactic card games based on a musical system. For Sandro Haick, musical practice transcends the instrument, and can take place in one’s imagination, anywhere. It is more common to develop an understanding of music or chess without connecting them. The separation of these art forms has a basis in modern and capitalist cultures that value experts and specialists more than people with multiple interests and skills. There are two myths that prevent the simultaneous development of combined skills, the idea that talent is innate, and that it is only possible to



become highly proficient in one technique or skill. In my view, it is both possible and more fruitful to become involved with and connect different skills and draw relations between them, than taking these limiting myths for granted.

In fact, the trajectories of multi-instrumentalist musicians teach us that unwavering dedication and a supportive social environment, not innate talent, lead to the development of proficiency in multiple related skills. The existence of polymaths and multi-instrumentalist musicians disprove these myths. One example from the medieval period is the Persian polymath physician Qutb al-Din Shirazi (1236-1311). Shirazi “became well known in almost all domains of science, including medicine, music, mathematics, astronomy and optics,” and he also knew “poetry, chess, and juggling” (Nadim and Farjam 2016, 361).

Evidence suggests that high proficiency in music, the arts, and chess, is best achieved outside standard, government-controlled school systems, through home schooling of children who wish to pursue those activities. “Only in homeschooling or individual tutoring,” argued Howard Gardner, “can the student readily benefit from our growing understanding of learning” (2004, 11). For Gardner, “schools are bureaucratic organizations that respond principally to political pressures and institutional imperatives” (2004, 11). The controversial and iconic chess grandmaster Robert James Fischer (1943-2008) started “reading chess books at age 8” (Potenrotto and Reynolds 2013, 19). He “dropped out of Erasmus High School in Brooklyn, New York in 1960 at the age of 16” and eventually “authored three respected books” (Potenrotto and Reynolds 2013, 19). Wolfgang Amadeus Mozart’s (1756-1791) childhood was “totally submerged in music” (1998, 116). His father, one of the foremost music teachers of his time, exposed him “to the greatest possible variety of acoustic stimuli,”

including ticking clocks, “the clinking of glass, a metronome, musical instruments and all the pitches of the human voice” (Wagner 1998, 116). Mozart received a “child-oriented education” at “home, combined with an intensity which would be difficult anywhere else” (Wagner 1996, 117).

Music and Chess Taste

Brian Harley (1931) wrote one of the earliest short essays seeking to consider relationships between chess and music. For him, it was a “plausible guess” that “music and chess have always been concurrent” (Harley 1931, 276). One example is French composer François-André Danican Philidor (1726-1795), who was born in a musical family and became a chess world champion. When Philidor was six years old, he “became a page at Louis XV’s chapel,” and worked under André Campra (1660-1744), an important opera composer (Harley 1931, 277). Young Philidor “used to watch the King’s musicians playing chess in their quarters, while they awaited early Mass” (Harley 1931, 278). When Philidor was ten, he encountered an “elderly and testy” musician who had arrived early and was complaining that he had no chess opponent (Harley 1931, 278). Philidor offered to play him a chess game. He underestimated Philidor, thinking that he would teach the child a lesson. Before delivering check mate on the older musician, Philidor slowly got up, ready to run away “with the typical choirboy’s anticipation of physical punishment for any precocity” (Harley 1931, 277-78).

Philidor was also precocious in music. His first work, *Blaise le Savetier*, was a “motet with grand chorus” that “was performed before the French King when he was eleven years old” in March 1759 which led him to become “a music teacher and copyist, like his father” (Harley 1931, 279). His opera *Le Bucheron, ou les Trois Souhairs* was “produced three times in Paris, and, afterwards, in Copenhagen and Frankfurt”



(Harley 1931, 280). He composed nine operas in London during his “middle and later years” (Harley 1931, 279). Yet, Philidor’s “chess fame” ended up overshadowing “his musical attainments” (Harley 1931, 280).

For Harley, Rudolf and Richard Réti, from the extinct Czecho-Slovakia were “good examples” of the relationship between music and chess (1931, 282). While Rudolf was an “advanced musician of the new school,” Richard was seminal in the founding hypermodern chess (Harley 1931, 282). Both were “known to have great sympathy with each other’s professions” (Harley 1931, 282). Such examples inspired Harley to seek for an “innate bond between music and chess” that he termed chess temperament (1931, 280). He saw chess and music as refined and intellectual art forms, and thought that there was “a natural inclination in intellectual people to interest themselves in distinct forms of art” (Harley 1931, 280). Believing he had found “evidence that connects the chess temperament with light music, in addition to the career of Philidor,” Harley produced a list of conductors and musicians skilled at chess (1931, 280). Yet, such a list could not prove an inherent biological or innate tendency for liking chess and music. Most importantly, it did not account for the key factor in the formation of the chess-music taste, that is, a description of one’s trajectory of growth, a record of changes and the experiences that lead to them. Temperament alone will not draw people naturally to chess. The framework of a temperament, at best, is a folk term for something poorly understood, like talent. For Bourdieu, the “act of empathy” or “lover’s pleasure, presupposes an act of cognition, a decoding operation, which implies the implementation of a cognitive acquirement, a cultural code” (1990, 3). Yet, the “enchanted experience of culture” implies “forgetting the acquisition” (Bourdieu 1990, 3). Chess players discover the game, learn to enjoy it more by playing and studying it. When they acquire

proficiency, they experience the fruits of that knowledge in an effort-derived pleasure. The same could be said of music, foreign languages, and any skill that demands study over long extended periods.

We find a great variety of musical tastes among strong chess players. For instance, Canadian chess grandmaster Eric Hansen plays online chess while listening to repetitive electronic music. Russian grandmaster Peter Svidler is an eclectic music lover interested in the history of guitar music and blues. Armenian grandmaster Levon Aronian draws analogies between jazz and chess, which I consider is more detail later, since, as a musician, I am familiar with jazz.

Harley speculated that if “Philidor was no sport of nature,” then “perhaps light music and chess are developed from sympathetic hormones; but whether the combination makes for eugenics or cacogenics, only biologists can decide” (1931, 280). The expression sport of nature is just a euphemism for freak of nature, from the Latin, *lusus naturae*. It refers to unusual phenomena that challenge dominant assumptions. Harley accepted eugenic or cacogenic effects as self-evident. Eugenics has now been discredited as a racist pseudoscience that stemmed from cultural predispositions and scientific blindspots (see Gould 1994). Harley did not necessarily conform to the racist hereditarian eugenics of Darwinian evolutionism, since he thought that artistic practices affected the constitution of human bodies, for better or worse.

Harley’s epistemology was subservient to scientific authority, which imposed critical limits to his creative thinking. As Bateson argued, “all science can claim to be” is a “method of perception” that is “limited in its ability to collect the outward and visible signs of whatever may be truth” (1979, 30). For him, science “probes; it does not prove” (Bateson 1979, 30). Pierre Bourdieu argued that academics maintain a relationship with an



“intellectual past” that shapes their choices (1969, 115). By pledging allegiance to a school of thought, academics conform to a similar “cast of mind,” a “mould” of “common language and style” and therefore “common problems and common methods of tackling them” (Bourdieu 1969, 115). Harley’s theory for an essential chess temperament ignored the many complex, idiosyncratic, and personal ways in which people bring together concepts, knowledge and emotions to explain past experiences, tastes and skills. Harley’s epistemology is typical of his historical moment. He believed that innate biological differences made some people superior to others in skill and taste. Such a position lacked critical reflexivity, combining a faith on reductionism, scientific authority, and assumptions about taste and biology. Contemporary popular narratives are also subservient to the authority of mainstream science and the mass media, whose critique is, ironically, fundamental to scientific development. The creative imagination is a method for unblocking “ways being inscribed by scientific/enlightenment-era discourses and dominant narratives” (Hayes et al. 2014, 45).

Pleasure and Effort, Balance and Addiction

Most people tend to like some form of music; and despite how refined they think the music they love is, there will always be others who disagree. Likewise, most people find chess boring but the people who love it find it fascinating. If there is a biological basis to these tastes, it is that everyone has the potential to develop them. For Reuben Fine, chess and music are like love, for they have the “power” to make people “happy” (Fine 1944, 42). The discovery of pleasure in chess and music through continuous effort is the key pattern that connects these complicated art forms. Some musicians may discover this pleasure through relationships and analogies between their musical knowledge and the game of chess. And

the same can happen among chess players, who might find ways of connecting musical systems with their chess understandings. One crucial difference is that whereas it is possible to be a passive an inactive consumer of music, it is very unlikely that this can happen with chess. Yet, the common denominator, even in the passive consumption of music, is a sense of pleasure that grows from continuous effort.

Anthropologist Robert Desjarlais provides a pathologizing depiction of chess as a drug for “cognitive junkies” (2011, 2-3). He argued that chess “gets a hold on some people, like a virus or a drug” (Desjarlais 2011, 2). Desjarlais noted that chess addicted cognitive junkies “need their daily fix of tactics and strategy” (Desjarlais 2011, 3). For Desjarlais chess is just a “play form” for a Homo ludens (2011, 210). A dystopian anxiety, that people might become cyborgs through an addiction to technology, permeates Desjarlais’ analysis.

For Desjarlais, “[c]omputer technologies are radically altering the dynamics of the game,” shaping “how chess players configure the human” and even making “cybercheating and cheating paranoia scary realities” (2011, 210). However, cheating in chess did not arise in the computer era. Players can collude and create a system of signs to communicate moves that would be undetectable to others in the playing hall. For instance, Gulko et al. (2010) documented the cheating tactics and pressures that the KGB used against chess players during the Cold War.

Whether machines and computers affect positive or negative changes in our lives depends on how we use them. In the worlds of chess and music we can find a wide variety of opinions on the matter. For Merleau-Ponty, “technologies or technological processes” like cybernetics were “threats to traditional culture” and deserved to be analyzed with a “dystopian tone” (Ihde and Selinger 2004, 370). Computer programs have established a new standard in the chess world, and most strong players rely on



them for study. Despite their calculation power, computer programs do not provide all the answers to complicated positions. Levon Aronian points out that making correct evaluations of “positions with a material or positional imbalance is very difficult even for experienced grandmasters” (2011b, 7). The “main danger” that a chess student faces while “working with a computer might be the incorrect interpretation of its evaluations” (Aronian 2011b). It is more productive to study chess with the help of an experienced partner student–discussant than alone on the computer without access to the linguistic logic of chess principles. For him, “game analysis” should be “checked by an experienced coach” (Aronian 2011b).

Desjarlais does not reflect critically on the pathological metaphor of addiction as framework for explaining why people play chess. For Desjarlais, reading a chess book is like taking a “three-hundred page narcotic,” some “dangerous, addictive stuff” (Desjarlais 2011, 4). Perhaps Desjarlais is trying to make his book more appealing by claiming he was a chess addict. But the same could be said of any book, depending on the analyst’s perspective. For instance, skeptics may consider reading the Bible an addictive waste of time while Christians find it productive. In my view, pleasure for playing chess and making music is a driving force, and it does not necessarily lead to addiction, a framework which brings unrealistic and unnecessary negative connotations into play.

How much is too much pleasure, when does it become pathological, how much would be enough, and who decides it? Judging social human activities and games as addictions does not seem wise. Heroin addicts face serious health and social risks that do not exist for people who follow a passion for chess or music. Neoliberal capitalist society may reward money making workaholics as successful as easily as it may frame people who spend their time playing

music and chess games as sufferers from dangerous addictions. If we consider the evidence suggesting that playing chess and other board games stimulates brain development, health and functionality, helping in the prevention of brain diseases and mental illnesses without medication, the pleasures of chess are hardly addictive or dangerous. Perhaps Desjarlais’ dangerous addiction to chess is just a metaphor pointing to an inability to balance time in daily life in a healthy way. Throughout his book, we sense that concentration on chess for hours on end led Desjarlais to long for going outside and experience the world for a change. Chess grandmaster and psychology professor Reuben Fine noted that chess players “must be able to retire from the world of obtrusive realities into a realm of strange shapes and forms” and combine them “to create novel situations” which is very similar to what the “musical composer” does (1944, 42).

Lipking found that “no evidence supports the fantasy that chess, any more than fiction, damages one’s sense of what is real” (2003, 164). For him, playing chess can be “therapeutic in many ways, not only as a point of contact with other minds, but as a constant, gentle reminder that every move we make has consequences” (Lipking 2003, 164). People can become obsessed with chess, music or anything else. Mass commodification of cultural products, including music and chess, may instigate excess. The same songs repeated over and over may influence fans acquire mass mediated entertainment compulsively. This commonplace effect of propaganda and marketing makes people consume more products by design.

Serious chess players who depend on computer technologies to study may lead a recluse life. They crave for books and chess related information, which we can expect from a serious student of any discipline, including music. Similarly, music producers and



musicians in my experience have claimed, as a joke, to suffer from G.A.S. – gear acquisition syndrome. Academics may consider a book or article good not simply because it gives them pleasure, but because it is useful in what they are working on. The frameworks of addiction slants pleasure into a universal pathology. Even what people consider love can become an addiction or dangerous pleasure. But who is judging the judges? If reading books we enjoy is worth our time for the pleasure they give us, this love cannot be an addiction unless it causes serious social or personal harm. This is possible not only with chess, music, and drugs, but with any activity that is pursued relentlessly and without pause. We use very personal criteria to decide if a book is good.

The deep introspection that dedication to chess growth and development requires can feel like a constraint. However, for people who experience panic attacks on account of personal traumas, chess provides a distraction that is more beneficial than medication (Barzegar and Barzegar 2017). Elderly people who play chess engage in a “mentally stimulating” activity that leads to “better cognitive function” and lesser risk of developing Alzheimer’s Dementia (de la Torre 2016, 619). They experience “an increase in metabolic demand” also found in the exercise of “critical thinking,” which “requires an increase in brain blood flow” (de la Torre 2016, 619).

Creative Reflexive Analysis in Chess and Music

Music and chess are reflexive tools for learning about oneself. They work like creative bridges into one’s consciousness. We use them to direct, shape, and express decision making and creative processes. For composer Arnold Schoenberg, “the ability to listen to oneself, to look deep into oneself” is difficult to acquire and “cannot be taught” (1978, 413). He found it was imperative to exercise “profound

introspection and absorption” into your “own nature” to experience personal growth (Schoenberg 1978, 412).

Levon Aronian remarked that people play chess for “pleasure, peace of mind and the moral torture of their neighbor” (2011a). Aronian’s humorous statement connects the pleasure of playing chess with peace of mind and moral torture. Harley thought that music and chess were linked to “the humorous faculty, in its particular phase of fooling about with kindred spirits and laughing at most things, including oneself” (Harley 1931, 282). He noted that Phillip Williams, who “achieved success only in the chess-problem world, a small but select cosmos,” represented an “extraordinary combination of music (always in improvised form), chess and buffoonery” (Harley 1931, 282).

Aronian finds the “most pleasure” in chess “after a slight pause between tournaments” when he is “in the mood for playing,” considering how to avoid committing “the same mistakes as before” and trying to “surprise” future opponents (2011a). Musicians may also experience tension during performances and tours. Since they can be very competitive, playing to other musicians of similar level can be a tense ordeal. During studies, and playing for the sake of playing, musicians may more easily experience pleasure. However, this is very personal, and other musicians feel nourished with the presence of an appreciating audience. Recording and listening back to performances is a reflexive method that musicians use to grow in proficiency. This method is analogous to what chess players do when looking back at their own games and finding out where they made mistakes to learn how to avoid them in future games. For musicians, recording provides a means to step back and listen critically to oneself perform. They can then focus on particular passages that need improvement and works towards that goal.



Music is an emotional language that can add melody and harmony to poetry, conveying feelings and sentiments. Film music composers are masters of feeling manipulation techniques which are rooted in the opera tradition. They paint musical landscapes with a palette of emotions, like tension, suspense, tenderness, wonder, and triumph according to the story. The emotional dynamics of chess are not as clear, since the pieces are not musical. However, as a chess game progresses, strong emotions may affect appreciative audiences and the players, who must control and manage those emotions. Nervousness has adverse effects on chess match performances and musical improvisations.

Transmuting negative emotions into confidence and developing sensitivity to inspiration are essential for developing chess and music proficiency. The fear of higher-rated opponents is a common negative emotion among chess players. It is a byproduct of the fictional hierarchy that one's uncritical acceptance of chess rating systems generates. Such rating systems are unique to chess and do not exist in most musical interactions. The exception is that conservatory programs may assign grades to music students, generating artificial hierarchies that can erode one's love for making music. Chess grandmaster Alexander Khalifman found that analyzing games in which a higher-rated opponent "lost in stupid fashion" (2010) may help to dispel such fears. However, this exercise can cause the player to not take the "opponent seriously enough, which is significantly worse" (Khalifman 2010). The lesson here is that we should not underestimate anyone but also recognize humans make mistakes. Musicians often fear making mistakes, which can prevent them from developing proficiency. For pianist Kenny Werner, the "fear of sounding bad robs the music of all its strength" (1996, 54). Reuben Fine noticed that "extraneous considerations" affect the performer's "artistic pleasure" (1944, 42). They spend "endless hours" practicing, worry about what "critics will say," and are

"strongly influenced" by audience reactions (Fine 1944, 42).

Imagination and Visualization, Harmony and Calculation

Mathematics is another related art form that renders chess and music comparable. For Huntley, for an "aesthetically minded mathematician much mathematics reads like poetry" and stimulates "creative activities" (1970, vii-viii). For Hardy, "chess problems are the hymn-tunes of mathematics" (2005[1940], 15). Chess problems feature the 8x8 matrix of the chess board and several possibilities with only one line that solves it, which appeals to mathematicians. While I was an undergraduate student at the University of Utah, I played chess regularly with two mathematicians. For Harley, calculation is a necessary faculty in "all constructive works" (1931, 280). Reuben Fine argued that a chess master should have a "fertile imagination" (1944, 42). For him, the "mathematical aspects of chess" have "no bearing on the game, which is what really counts," and "mathematical attitude" could be a "handicap" (Fine 1944, 41). In music, "cacophonous tomes" written "on the Physics of Music, which have nothing to do with the art of the performer" represent a mathematical handicap (Fine 1944, 41).

The theory of harmony and intervals in Western music is expressed in numbers, such as thirds, fifths, sevenths, ninths, elevenths and thirteenthths. However, this musical math has nothing to do with making advanced mathematics and physics calculations. Harmonic math may be simpler, but its melodic and rhythmic potential is unlimited. Yet, it is often inaccessible even to musicians. Like a language, it becomes easier to use and understand with practice. However, since most people do not speak it, becoming immersed in harmonic language requires effort. In a world teeming with distractions, resilience and



dedication are becoming rarer.

The opportunity to play against strong chess players helps to strengthen the quality of the attentive student's game. The same is true for the study of music. Playing with experienced musicians helps to improve one's own playing. In music and chess, beginners benefit from the advice of experienced players. Theoretical and analytical knowledge plays a role in creating a matrix for composition and decision making in both music and chess. Yet, just knowing what different chords and their codes signify is not enough for becoming a proficient composer and improviser. That is, acquiring the physical techniques for applying musical knowledge on at least one instrument is necessary. People who know how to play one instrument and understand harmonic language may also transfer that knowledge to other instruments.

Similarly, just knowing the rules of chess and how the pieces move is not enough for playing it well. Predicting the opponent's potential best choices and finding good moves requires an effort of projecting or calculating potential future positions. Here, calculation is a metaphor for an exercise in mental projection in which players imagine potential changes in piece positions. They assess how each piece's powers and potential movements affect a power system that includes all active pieces from both sides. Most playing pleasure and effort emerge from this exercise. This power system is like an electromagnetic force field that all pieces on the board affect simultaneously. I have selected a complicated chess position from a historical game to help to illustrate how these powers shape the board in the players' imaginations. The first illustration shows how the pieces in the Smyslov and Bronstein (1949) position were transposed into geometrical designs that represent their power projection on the board (see figure 1).

Every chess move alters considerably the dynamics on the board and future possibilities which is similar to how chord changes and

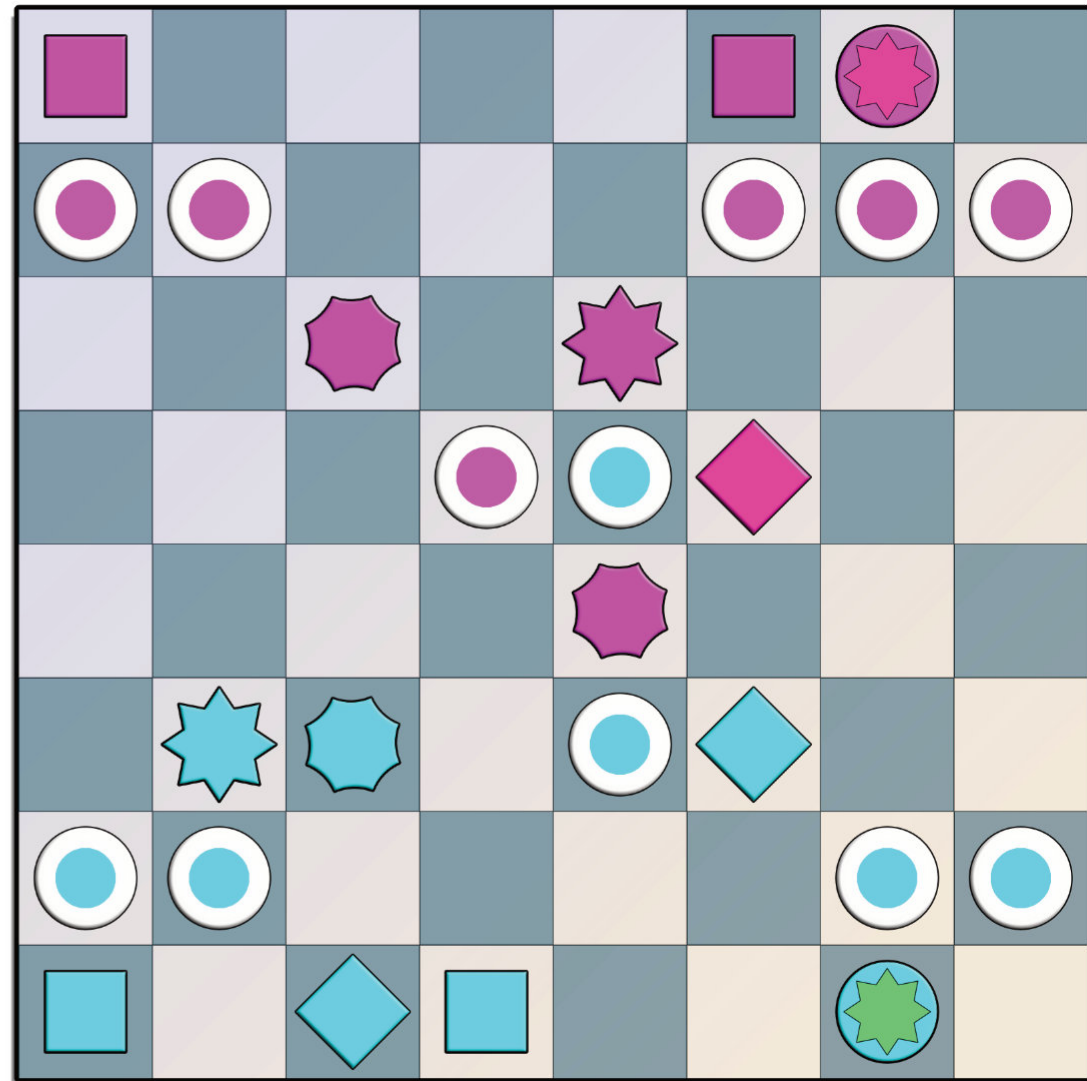
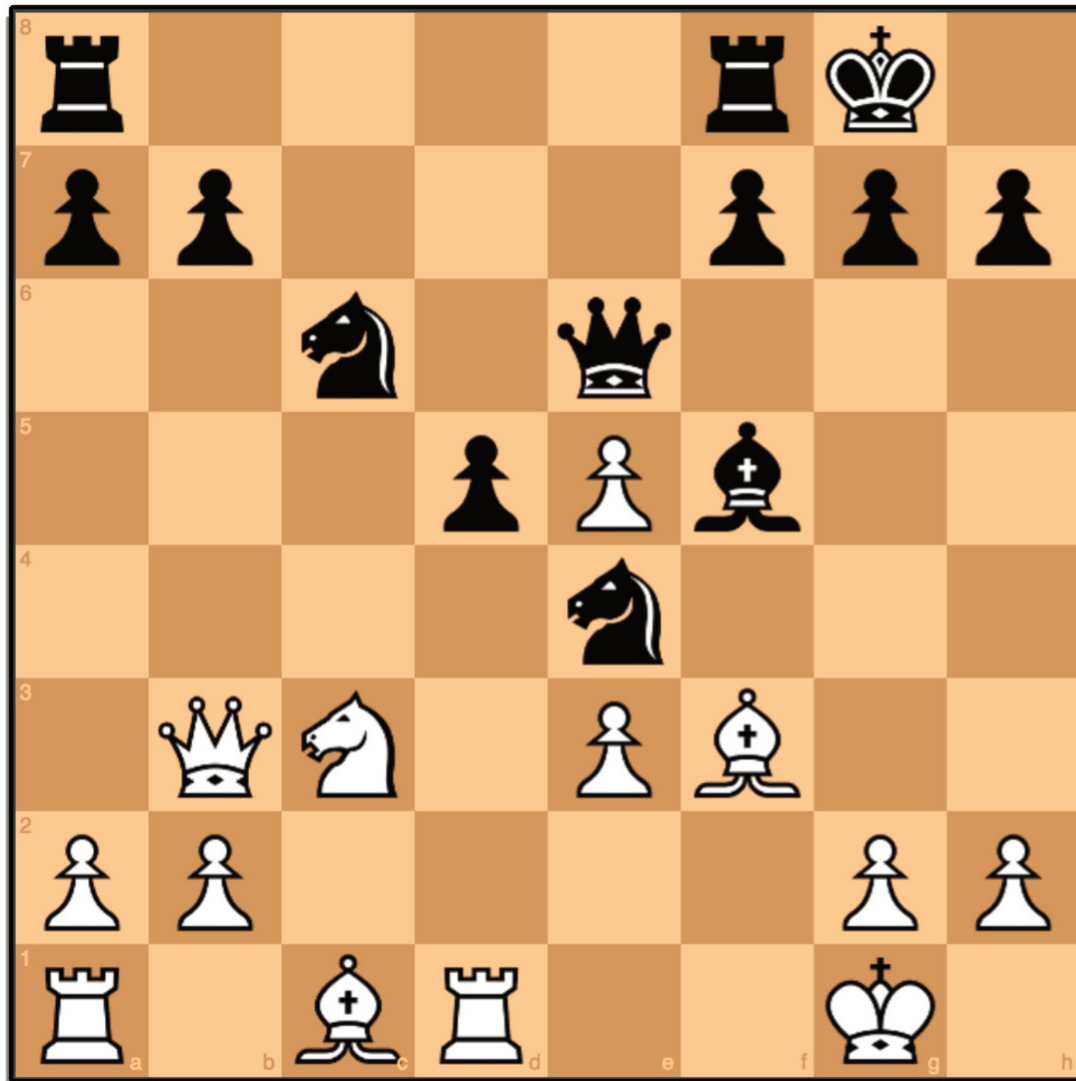
melodies affect the dynamics that musicians visualize on their instruments. However, in the chess context, the objective is winning according to the rules, that is, delivering a checkmate or forcing resignation. In music, some of the barriers we face include the judgment of others who see music as a competition of prowess or economic success, and the slow pace of resilient technical growth. Figure 2 shows how each chess piece affects its surrounding environment with its inner power. This immanent power, for all pieces except pawns, reflects the movement potential of the piece, and can support or protect one's own pieces, and attack or eliminate the opponent's pieces. For pawns, the movements are coded in pink, facing the top of the board, and do not coincide with their support and elimination powers, coded in green. I also show the square each piece occupies as infused with its power. Figure 3 applies the power dynamics from Figure 2 to the Smyslov and Bronstein (1949) position. In this case, I coded Smyslov's pieces and their powers in green and Bronstein's in pink, which allow for the mixing of colors and their shades. If a piece occupies the square, it receives 30% opacity in green or pink, and if powers from any pieces affect that square, it receives an extra 20% in opacity per power that converges on it.

Figure 4 uses the combined power map and adds color coded number values to each square, according to the following system, power convergences onto a square and the square's occupation count one point. So, if a piece occupies a square, that square has one point from the occupation. If powers from other pieces are converging onto the same square, each of those power sources count one point. This means that only two squares (c7 and h4) in the whole board will have a zero count, that is, they receive no convergence from any side and are not occupied.

These illustrations represent what I term the creative power system of chess, which

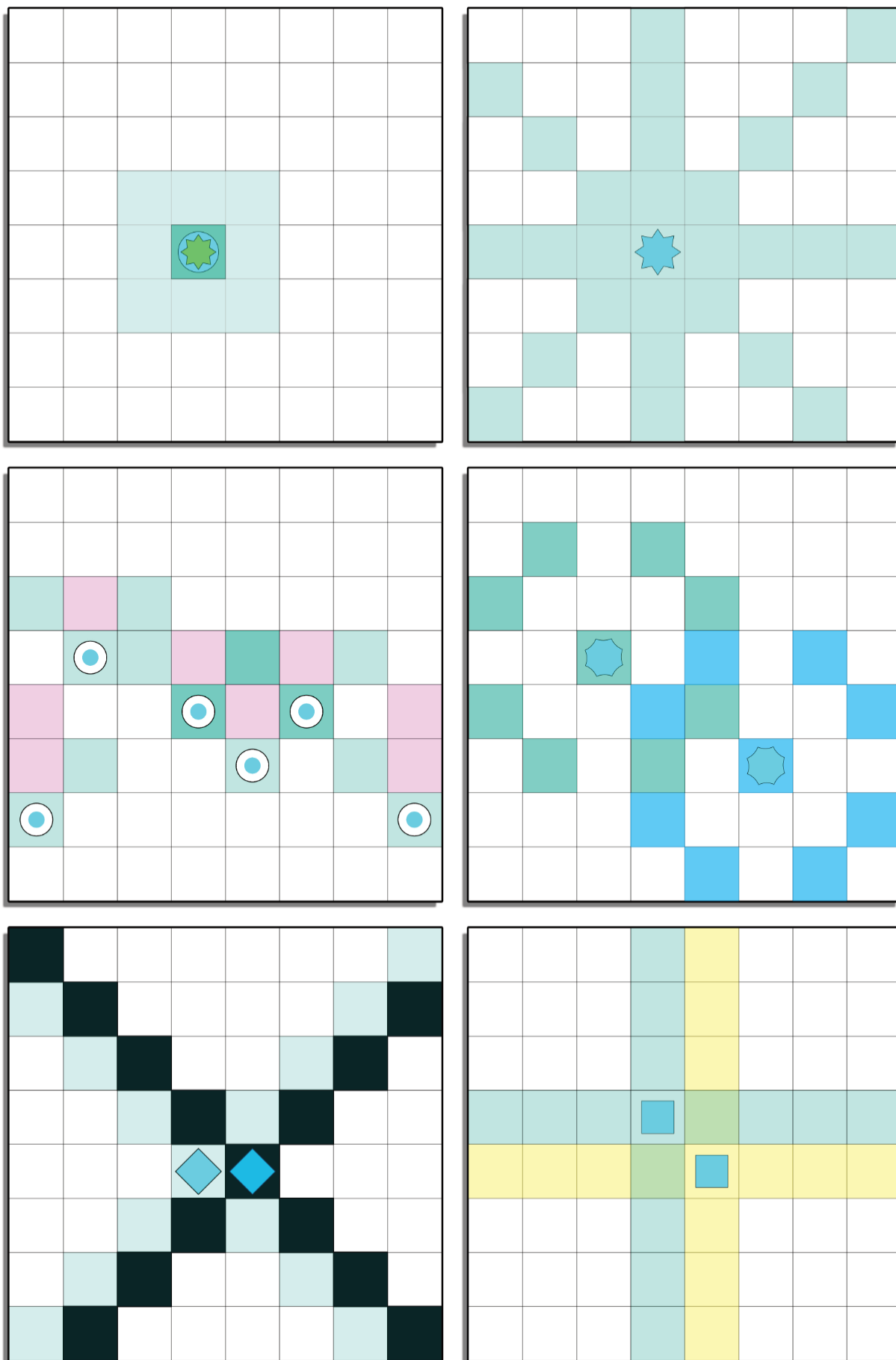


Figure 1. Smyslov vs Bronstein (1949)

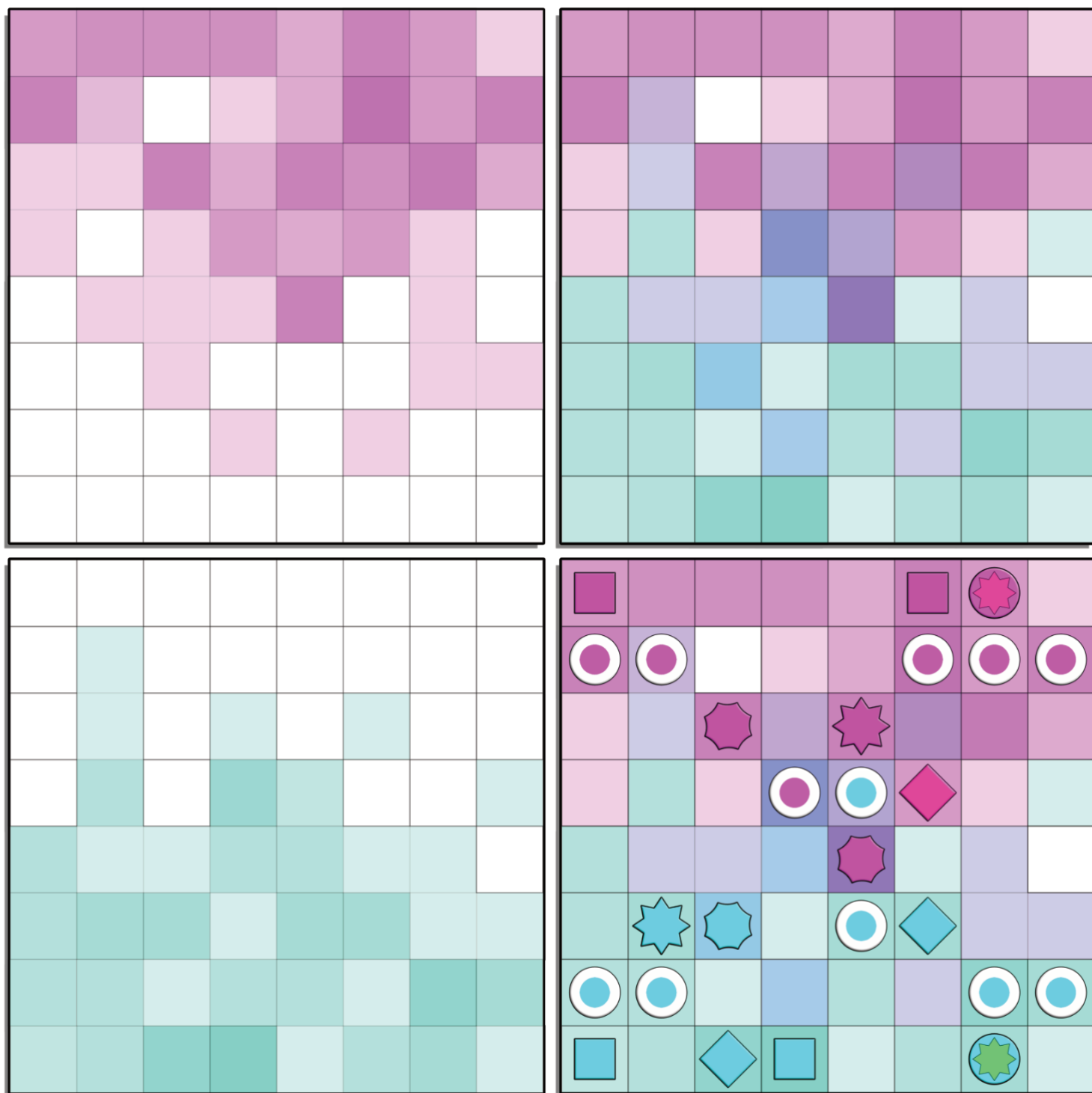


These images show a position from the game between Vasily Smyslov and David Bronstein, played in Moscow on October 23rd 1949, in the 5th round of the USSR Championship. White to move after 16... Qe6 (Black Queen to e6) The typical computer piece representations appear on the left and the geometrical model I created for illustrating chess power dynamics appears on the right.

Figure 2. Chess Piece Powers



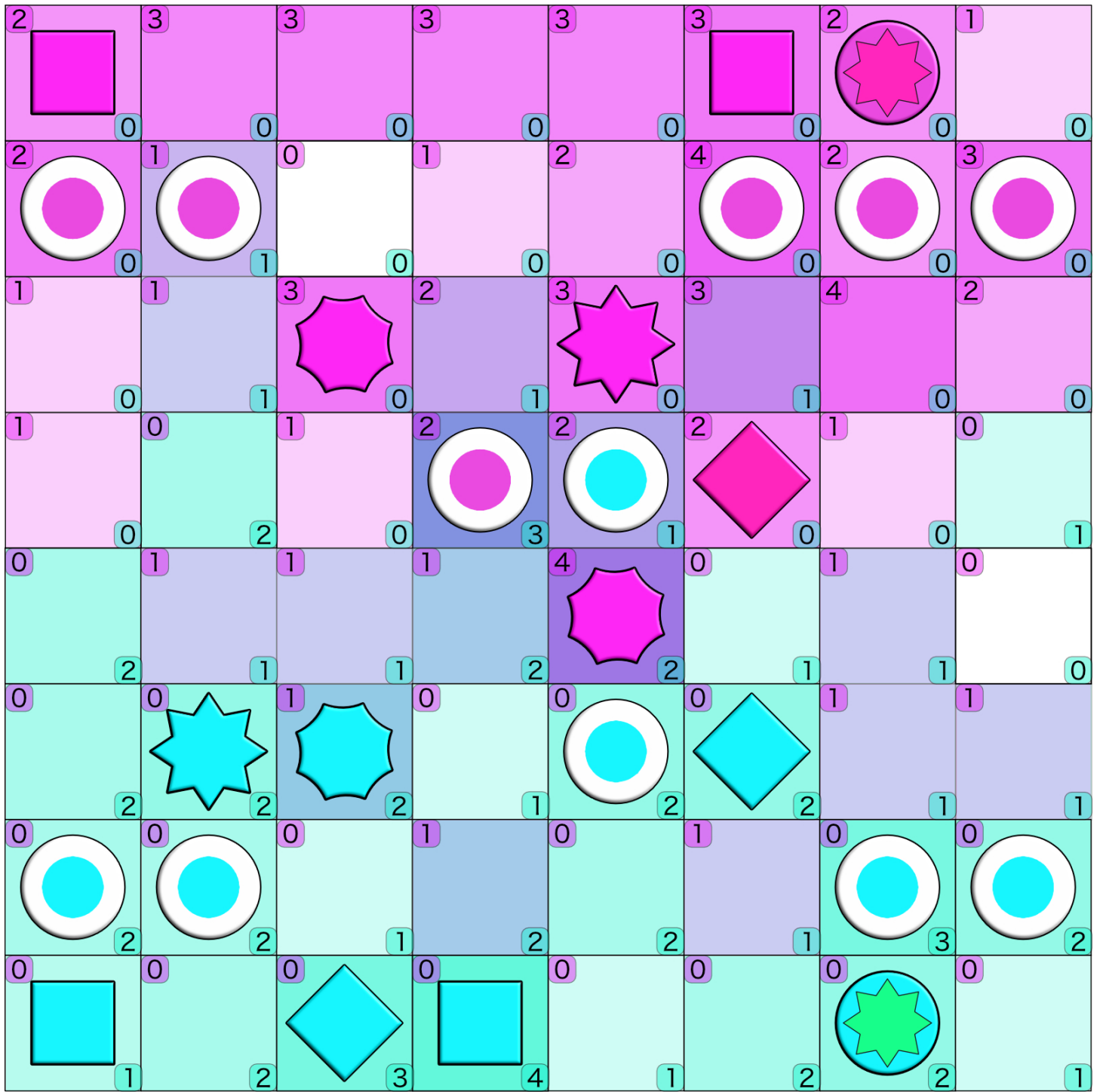
Powers of the chess pieces, from top left to bottom right: king, queen, pawns (movements in pink), knights, bishops, and rooks.



Convergences of power. The two boards on the left shows the powers of the pieces in isolation. The board on the top right shows the convergence of positions, and the bottom right shows the pieces on their squares.



Figure 4. Position Power Convergence



Power count per square combined. The numbers on each square provide a count of the convergence of powers and occupation for each side. From Smyslov and Bronstein (1949).



resembles how musicians visualize chord changes in instrument maps to improvise and compose. Figure 5 illustrates the relationships that multi-instrumentalist musicians visualize on piano keys and guitar fretboard for three chords, C7 #11, Cm7 9 13, and C7#5 (whole tone). The playing cards above combine notes and worlds to form a chord and its respective scale. Sandro Haick's musical pedagogy, designed for improvisation students, posits the notion of musical worlds, which students explore and master by listening, singing and playing along with them in a free way. The world or chord cards show a code with a representation of the harmonic relationships between those notes. The code for each card appears in every guitar string, on the piano keys, and the cards. The list of notes that are on each chord and scale on top of the guitar fretboard also corresponds to the piano and the world card codes. Each guitar string mirrors the piano keyboard and the code that appears on each of the chord cards. This comparative visualization and illustration exercise yields some interesting relationships and implications. For instance, if the squares of the chess board contained notes, as they do in the frets of a guitar or piano keys, the chess pieces and their moves could generate musical notes, forming harmonies and progressions. In this sense, the distribution of power in a chess board is analogous to how harmonic changes affect fretboard instruments and piano keys. Just as, in music, as the chord changes happen, the improvising musician's mind shifts accordingly, in chess, when a position changes, the player must access the harmony that forms on the board among all active pieces before making a decision.

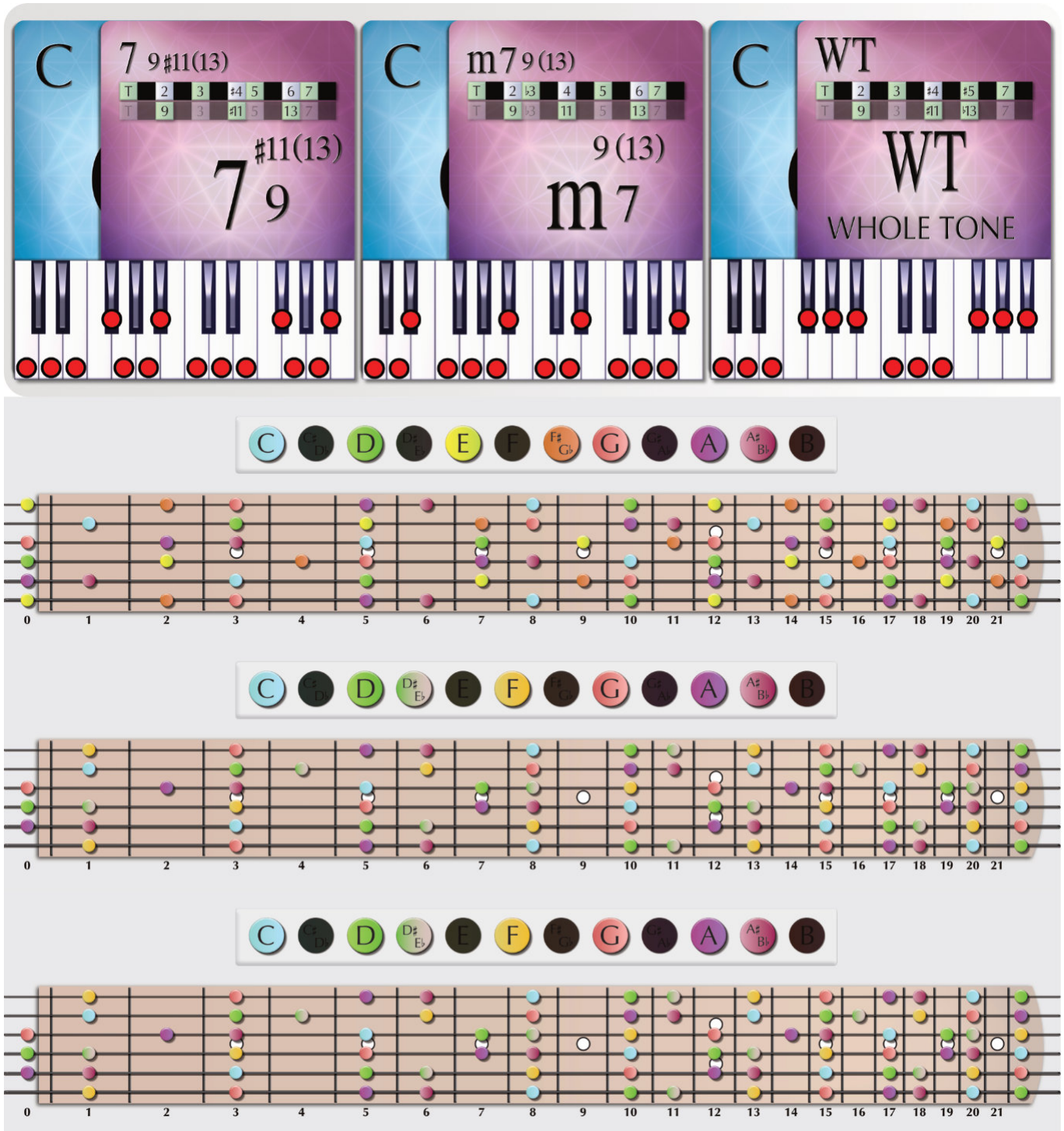
Roger Moseley noted some general similarities between music making and game playing. For him, music and games are linked to "role-play, simulation, and deception, to calculation and strategy, to risk and uncertainty, to sociality and flirtation" and to the "pursuit of euphoria and self-abandonment" (2016, 15). In chess and in

music, creative imagination processes are personal. They form dynamic mental images of possibilities that seek to predict how potential actions may affect particular situations. The orchestra conductor Ernest Irving used visual relationships between music and chess playing process. While conducting, Irving would announce chess moves to a "particular member of his orchestra" who happened to be resting (Harley 1931, 281). Musicians passed a "pocket chessboard" around the orchestra to play Irving, and the "band room" seemed like "a chess café" during breaks (Harley 1931, 281). Irving theorized relationships between music and chess "with particular reference to blindfold play" (Harley 1931, 282). For Irving, "Philidor's facility in blindfold play" flowed from his ability to "read a full score" (Irving In Harley 1931, 281). Irving saw "combinations resembling instrumental complexities" while playing blindfold chess and felt no need to "visualize the squares of the board" (Irving In Harley 1931, 281). For Irving, "thinking orchestrally" and "blindfold play" imagination explained Philidor's musical use of "ingenious subtleties and new lines of thought" (Irving In Harley 1931, 281).

Memory, Improvisation and Repetitive Patterning

Memorization and improvisation play important roles in chess and music proficiency. Strong chess players memorize positions from opening theory and musicians memorize melodies, harmonies, and harmonic relationships. Accumulation of such knowledge is also important. Reuben Fine argued that the "chess player must learn a certain number of standard positions" to see "progress," the positions one should understand are not "as numerous as the scales" (1944, 41). Knowing more chess opening positions, melodies and harmonic progressions makes improvisation easier in both cases. Chess players improvise

Figure 5. Music Theory and Maps



Relationships between the standard jazz and improvisation harmonic theory of *intervals* and three actual chords and scales on piano and guitar.



with the rules of the game and principles, reading the power dynamics among pieces on the board like musicians improvise using a combination of technical skill and harmonic knowledge. Without a practical understanding of harmonic theory, it is not possible to become a proficient improvising musician. Similarly, grandmasters must understand the harmony of positions, that is, how all pieces on the board are interacting. They must study how to achieve sound positions in myriad situations, and have a thorough grasp of chess theory and principles. Such principles include development, controlling the center of the board, king safety, pawn structure dynamics, and more. Invited to comment on the similarities between his style and that of Russian grandmaster Alexander Morozevich, Levon Aronian replied that both enjoy “positions where there’s dynamic tension” (2011a). An unexperienced chess player cannot appreciate this dynamic tension, since it is not apparent on the board, but only through the visualization of the powers and potentials that every piece on the board generates.

Creative improvising musicians develop personal voices and styles that listeners can recognize. For jazz lovers, a few notes from a John Coltrane or Eric Dolphy recording is enough to identify their playing. Experienced chess players also discuss and admire the styles of other chess players. For instance, Levon Aronian, who has a “maniacal affection for jazz,” compares Vassily Ivanchuk’s chess style with Grant Green’s “harmonious manner of play and wonderful technique” (Aronian 2011a). This analogy is very personal to Aronian. Just listening to Grant Green, whose music I admire, would not conjure in my mind Ivanchuk’s games. As Bourdieu argued, “schemes of perception and appreciation” are ingrained in people’s epistemologies as a “hidden condition” for the recognition of style (1984, 2). Aronian listens to jazz while playing and studying chess regularly, and this practice should inspire interpretations that connect both

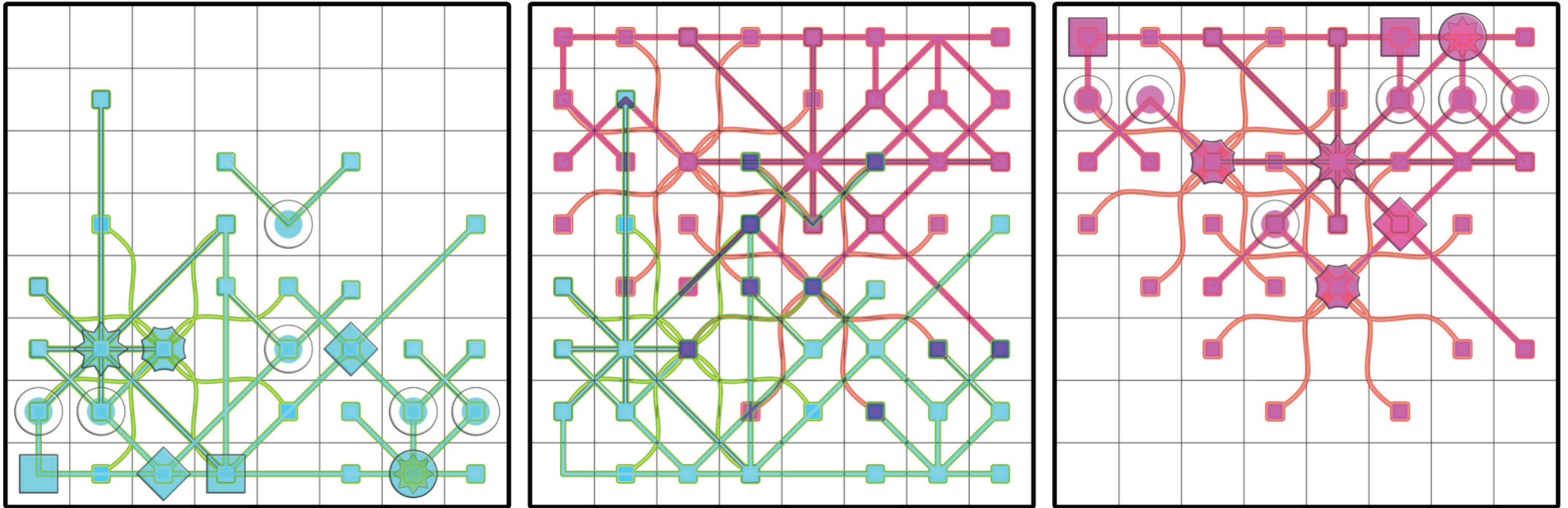
arts.

Expert chess players visualize energies distributed over a matrix, bringing to life the chess pieces that seem so uneventful for people who do not know how the game works. These visualized energies form vectors and interact with the pieces on both sides of the board (see Figure 6). Artists working with chess and music can find inspiration to invent an infinite number of variations. Yet, many musicians work with repetition and imitation to make a living. Unchecked capitalist exploitation turned musicians into products, and popular mass musics often require more repetition than improvisation. Musicians are expected to perform in the exact same manner, so that the audience can predict what is coming and follow along. Repetitive commercial music is often present as a background to memorable personal experiences in particular locations and life situations with friends and family. As a result, audiences are not seeking the pleasures of surprise, contradicting the inventive creativity that many experienced chess players and musicians value.

For composer Arnold Schoenberg, imitating the “techniques of models” does not teach the pupil the art of self-expression, since the “artist is unteachable” (Schoenberg 1978, 411). For him, the “work of the truly gifted” has “very little external relationship with the literature that was once its model” (Schoenberg 1978, 411). Schoenberg thought that “self-esteem” drives original genius and helps the artist transcend models that served as earlier “props” and “crutches” (1978, 411). Repetitive music works like spells that can induce “special states” that have moral, psychological and physical implications (Mauss 1950, 61). Some people develop a resistance to the patterning that repetitive and formulaic popular musics elicit. Yet, as Mauss argued, when “everyone is carried away” following the “convictions of the group,” in this case, the audience of fans, “there is no possibility of resistance” (1950, 164). The



Figure 6. Electromagnetic Dynamics



These figures illustrate the vectors that chess players may visualize while analyzing a position. In a power system they are analogous to electromagnetic dynamics. The left image shows the amplitude of power that emanates from Smyslov's pieces; the right image shows the same from Bronstein's position; the center image combines all of these harmonic dynamics. This position is from Smyslov and Bronstein (1949).



“feverish agitation” of the “overexcited crowd” merges people into “one body, one soul” and a “feeling of universal consensus” that “may create a reality” (Mauss 1950, 164).

Voice, Speech, History and Community

As art forms, chess and instrumental music can both transcend speech and also inspire meanings and thoughts that people share as speech. Writing vocal music is like coating poetic words with harmony, melody and rhythm. In social situations, listening to music may evoke memories and emotions that can spark discussions and analyses of musical content. Listening for the first time to striking music can become seminal transformative experiences that linger as a lifetime memory. In high level chess tournaments, players are not allowed to speak during games. However, in café games, taunting and joking is common. Many strong chess players have set up popular YouTube channels where they teach their audience by playing live games online and commenting simultaneously. Most such channels focus on fast chess games, from 5 minutes blitz to 1 minute bullet chess. For instance, the international chess master [John Bartolomew's YouTube channel](#) is quite popular, with about 57 thousand subscribers. Speaking about chess and speaking while playing chess have become popular ways of promoting the game, teaching and learning.

For Gary Alan Fine, the fact chess has “a history” that people access and share means that chess also has a “community” (2013, 411). Fine argued that history is “embedded in a sticky world of tiny publics” (2013, 411). The fact that there is a history of music does not mean that there is a cohesive community of musicians who draw on that history. In fact, local communities have music related histories that include a roster of related characters (Ferrari-Nunes, 2016). For Fine, chess is a “bounded community with a knowledge base to which participants can gain access should

they make the effort and in which exit has costs in light of the investment that led to participation” (Fine 2013, 411). For Levon Aronian, becoming a chess master requires a disciplined training and playing regime for “7-8 years of intensive work” (2011b). Since it takes dedication and a sustained long term effort to become a proficient chess player, it is difficult to quit. The same is true of music. In both cases, the lack of exercise makes one’s play rusty, but warming up can quickly bring it back.

Community in chess is not just global, historical, and international, but also limited by locality, nationality, social status, and whether sustained face-to-face interactions happen. Community membership requires active co-participation and direct interaction beyond mere spectatorship or interest. We can speak of a chess world that is international and larger than any actual community. The chess world is a collection of multiple smaller communities. Levon Aronian argued that immersion in the social scenes that tournaments generate is essential for achieving high level chess proficiency, so that it is “important where you live and whether there are people in that country or city who are ready to spend money in chess” (2011b). He moved from Armenia to Berlin for “a chance to take part in tournaments all around Europe” (Aronian 2011b).

When I attended the 2012 Tata Steel chess tournament in Wijk aan Zee, the Netherlands, I managed to access the restricted press area and watch Magnus Carlsen and Teimour Radjabov analyze informally their round 8 game. Crossing several times the boundaries between the audience area and the press backstage made it clear to me that different and simultaneous levels of community were present. The grandmasters had some form of professional community among themselves but not necessarily jovial interactions and collaboration. Their professional community did not include the audience or the press. The backstage division signified an upgrade in status, but not



direct informal access to the grandmasters. Later that evening, I dined in a village restaurant where many grandmasters also dined. Some of them exchanged greetings, and others stayed with their family members. The players that competitors interacted with jovially were usually from the same country.

For Erving Goffman, the “backstage” is “a place relative to a given performance, where the impression fostered by the performance is knowingly contradicted as a matter of course,” where “the capacity of a performance to express something beyond itself may be painstakingly fabricated” and where “illusions and impressions are openly constructed” (1956, 69). In the chess backstage that I entered during the 2012 Tata Steel chess tournament, a passion for chess was shared, and the rivalry apparent on stage dissolved with a shared passion and interest in the art of chess and analysis. There was no fabrication happening in this backstage, where the emotional tension of onstage competition was lifted for the sake of analysis. Chess post-game analysis, also known as postmortem, is a fascinating social and learning activity, an open ended research into decisions and their logics. Players explore tangents that were not tried in their actual game by following the game moves to key moments. They share their thoughts and in-game expectations to justify their decisions. They may find that they missed a winning move or chance to draw. The reflexive practice of analyzing games was already established by the mid twentieth century, when chess “masterpieces [were] recorded and preserved” and “often carefully analyzed” (Fine 1944, 42). The rise of computers engendered fast changes in the chess world throughout the early 1990s, and after 1995, “it was unheard of for strong players to be without a laptop and the latest version of Chessbase, a giant database of games that could be analyzed by the super-fast computer Fritz” (Hurst 2002, 16). There is no analogue for the chess postmortem analysis in music, since a note choice cannot not lead to an immediate loss in a

match. Yet, musicians may analyze scores, the relationships between melodies, harmonies and rhythms, and listen to their own recordings to reflect on and improve their playing.

Chess players and musicians develop a contextual sensitivity to history. Recordings and compositions are always tied to particular contexts such as periods, places, composers or performers. Chess aficionados contextualize chess games in the same way. They engage chess games and particular positions to discuss their dynamics, the strength and weaknesses of particular moves, potential paths, and how they fit in a history of chess. Millions of chess games from a detailed historical legacy are available through online and computer databases where students search according to player, place, time, opening, and other filters. For instance, [Chess DB](#) keeps track of over 800 thousand chess players and provides more than 9 million games to its users.

Dynamics of Mutuality and Appreciation

Chess and music practitioners appreciate and support their respective audiences, a collaboration that keeps their shared interest alive. This dynamic of appreciation is essential to the spread of chess and improvised music and their associated kinds of technical knowledge. One does not have to be a musician in order to derive deep pleasure from complicated musical passages. The same is not true of complex chess. Chess audiences must already possess background knowledge to grasp and enjoy some of the game’s deep ideas. As Reuben Fine argued, an “amount of technical knowledge is needed to appreciate great chess” (1944, 42).

Chess and music lovers find a sense of wonder and beauty in these art forms. To former chess world champion Garry Kasparov, chess composition is one of the “most beautiful and mysterious aspects of the art of chess” (1984,



116). For many musicians, the compositions of Bach, Chopin and Debussy are also beautiful, mysterious, and inspiring. For Levon Aronian, chess games are like “songs, while albums are tournaments” (2011a). Every game is a composition written in collaboration with an opponent, and the tournament, as a collection of games, is like an album full of songs. For Reuben Fine, playing chess is “like composing” because “chess and music are games” (1944, 41). He noted that “thousands of games” were preserved and “are re-enacted by devotees with as much enthusiasm as the music-lover who turns to his records” (Fine 1944, 42).

The requirements for enjoying complex musics are difficult to define. Analytical training in harmonic theory and exposure to varieties of music can help to establish and deepen a sense of appreciation, but such education is not necessary for enjoying music. Too much emphasis on the analysis of musical forms and techniques can demystify its wonder. For others, analysis is pleasurable, inspiring, reflexive and meditative. Playing well an instrument is not a requirement for enjoying complex musics. My research among Brazilian multi-instrumentalist musicians and fieldwork among Shetland musicians (Ferrari-Nunes, 2016) suggests that singing along with instrumental music and dancing can strengthen the sense of pleasure and wonder.

Conclusion

This paper explored a number of relations between chess and music play and provided a basic visual method for combining both practices proficiently. Innate talent and specialization are limiting myths of modernity that prevent the development of various artistic skills, such as multi-instrumentalism and polymathy. Effort and pleasure are inextricably linked to the achievement of proficiency in these art forms. The conversion of chess positions and musical harmonies into chessboard, fretboard and keyboard visual

power maps are useful for learning each art and for sketching out how the imagination works.

Growth in chess and music includes creative, critical and reflexive activities, like postmortem analysis, listening back to recordings, talking, and composing. Music and chess learning promote attention to the history of particular events. Both arts require foresight, and a high level of introspection. They provide a limited set of ground rules that lead to infinite creative possibilities, such as the rules of the game, and harmonic theory. Immersion in these forms has potential implications in daily life, such as the control of negative emotions, projecting future possibilities and planning.

Finding a golden mean, of emotional balance, practice and relaxation is essential for growing with and beyond these arts. Constant practice is essential for achieving proficiency and lasting enjoyment for active chess players and musicians. The beginning stages are more difficult so patience and attention are imperative. Combined chess and music skills can improve learning of other arts but are not dependent in educational level or innate talent.

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Film Making and Photography – capture, editing, color correction, post production.

Video Creation – transforming academic research into compelling videos that engage wider audiences.

Music Making – musical harmony theory and anti-theory, arranging, improvisation, composition.

Music Production – recording, editing, mixing and mastering music and film soundtracks.

Graphic Design – create complex and rich compositions for presentations, animations, logos, websites, OSX applications.

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