"Where Mind Struggles with Mind": Chess and the Problem of Consciousness in Poe and Bierce

By

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Abstract

Edgar Allan Poe and Ambrose Bierce write about chess-playing automatons. Both writers utilize the game of chess due to its special connection to artificial intelligence. Chess has an inherent left-right dichotomy due to the asymmetrical structure of the chessboard and the placement of the king in relationship to a player's left or right hand. This dichotomy helps to introduce several other binaries seen in "Maelzel's Chess Player" and "The Murders in the Rue Morgue" by Poe as well as "Moxon's Master" by Bierce. Each work leads to the vital question of whether automatons, or machines, have the capability to think, and how and why chess is significant to answering this question. The binaries of the master-slave relationship and the idea of consciousness and non-consciousness shape these works. Although modern-day computers have the ability to beat humans at chess, the consciousness and the true ability of these machines is widely debated. These literary examples shed light as to why and how chess is critical to showing the adversarial dimensions of artificial intelligence and human consciousness.

Introduction

There is a phenomenon that I have observed: chess is consistently connected to artificial intelligence. In 1997, an IBM supercomputer known as Deep Blue played Garry Kasparov, the present chess world champion, in an unprecedented match. Their match appeared to take on a wider significance than any other known chess contest; it was a symbolic battle between man and machine. What is the significance of chess when individuals discuss artificial intelligence? I come to this question from a literary point of view. In literary tradition, chess has several large roles in stories of artificial intelligence. Over a hundred years before the Deep Blue-Kasparov match took place, a struggle over the chessboard between man and machine had already been imagined. In this paper, the literary examples of Edgar Allan Poe and Ambrose Bierce shed light on both why and how chess is critical to the debates in artificial intelligence.

To begin, I first look at how both Poe and Bierce portray chess in their fiction. Each man focuses at least one literary work on a chess-playing automaton. Looking at these automatons in asymmetrical and adversarial ways shows that these authors are thinking about chess as a game representative of a unique struggle. Through the idea of artificial intelligence that stems from a machine playing chess, I then establish why chess is an ideal representative of artificial intelligence. In each author's chess struggles, the issue of whether a machine has the capability to think arises. Through this, human consciousness becomes the motivating factor that separates man from machine, leading to the discovery of the inherent master-slave relationship found in both chess and consciousness. Humans are unique from everything else in the hierarchy of consciousness because of their ability to think. I am finally led to the modern-day consciousness debate,

where the notion of computer chess contributes to the still-relevant connection between chess and artificial intelligence.

Therefore, I first analyze the literary work of Poe and Bierce and the chess automatons they decipher and create. Next, I examine the binaries found in these automatons and in the game of chess. This analysis leads to the dichotomy of the conscious and the unconscious and how chess remains a surprising focus of artificial intelligence. I arrive at the following thesis: chess provides a hierarchical model that enables Poe and Bierce to map in an adversarial way the dimensions of artificial intelligence and consciousness.

"Moxon's Master": The Chess-Playing Automaton

Ambrose Bierce wrote the short story "Moxon's Master" in 1909. It centers around two characters: an unnamed narrator and Moxon, a secretive man who is "convinced that machines can be said to think." The story begins with a question posed by the narrator and directed at Moxon that pits the two men against one another ideologically: "Are you serious?—do you really believe a machine thinks?" (Bierce). This question about a machine's capacity to think is one, for reasons to be explored, that is often paired with the problem of whether a machine can play chess. In this essay, I explore the relationship between chess and automated thinking (artificial intelligence) in two writers who write about chess-playing automatons—Poe in 1836, Bierce in 1909. Bierce's story can be seen as influenced by Edgar Allan Poe's essay "Maelzel's Chess Player," an essay dedicated to undermining the plausibility of the chess-playing automaton "The Turk," whose popularity grew in the 18th and 19th centuries thanks to its

seemingly mechanistic operation. Though the chess-playing automaton that is seen in "Moxon's Master" mirrors the automaton Poe debunks, Bierce's story does not echo the same sentiments about the possibility of conscious machinery – instead, it uses chess to blur popular ideas about what can and cannot be considered conscious. Bierce's short story pits Poe's chess-playing automaton against the human creator, Moxon, to duel with across the chessboard, and rather than emphasizing the machine's falseness, Bierce's story takes from Poe's essay the question of just how small the difference between the human mind and machine really is.

The story thus intentionally blurs the boundaries between man and machine, and thus the differences between consciousnesses and non-consciousness. "Consciousness" is the self-awareness that the human mind possesses, as opposed to an inanimate object like a machine. Through the operation of chess, both humans and machines become alike; furthermore, humans and machines become part of a large power struggle that is portrayed through the game of chess between Moxon and the automaton. Bierce's story thus becomes an illustration of what the world would be like without a clear division between the conscious and the unconscious; interestingly, his story becomes one of categorical horror, but ends with the same uncertainty it seems to breed. After the narrator loses consciousness, the reality of the events that have taken place is uncertain; Bierce's narrator cannot answer "confidently" that what he believes happened actually happened. Bierce's "conscious" chess-playing machine, who acts as human, and his "unconscious" human narrator serve as the duo with whom the boundaries of the conscious and the unconscious become indistinguishable.

After the narrator sneaks back to Moxon's home in the midst of a heavy storm, he finds Moxon in the middle of a chess game with an opponent: "Opposite him, his back toward me, sat another person. On the table between the two was a chessboard; the men were playing" (Bierce). Bierce's story is deeply connected to Edgar Allan Poe's essay "Maelzel's Chess Player." Bierce was obviously influenced by Poe's essay, as he describes Moxon's opponent in a similar manner to Poe's description of the automaton. The narrator explains that Moxon's opponent used his arms in specific manners: "His left forearm appeared to rest in his lap; he moved his pieces with his right hand, which seemed disproportionately long" (Bierce). In Poe's essay, Poe argues that a human must operate the automaton because "The Turk plays with his *left* arm. A circumstance so remarkable cannot be accidental" (Poe). Thus, though the automatons are clearly connected, Bierce is careful to differentiate his automaton from Poe's, a decision that reflects that while Poe's automaton may clearly be human-operated, it is not necessarily so for the automaton seen in "Moxon's Master."

The nature of the game of chess itself in the story is portrayed as unimportant; in fact, the narrator claims to know very "little about chess" (Bierce). His confession reflects that the pieces and their roles are insignificant to the narrator's observations and to the events that occur in the story. Instead, the game becomes entirely about the battle between Moxon and his opponent, where chess becomes a metaphor for a power struggle. I will later discuss the more intricate details of chess as a game in relation to the story, but it is important to notice that many of the game's features are obscured in order to emphasize its abstract power struggle. At the game's end, though Moxon is victorious, as the narrator observes, "Moxon was intensely interested—not so much, it seemed to me, in

the game as in his antagonist, upon whom he had fixed so intent a look" (Bierce). In calling the two opponents "antagonists" of one another, an immediate struggle is established, where both a victor and a loser must emerge. In this particular struggle, the eventual victor is Moxon, who "pounced upon one of his pieces like a sparrowhawk and with an exclamation 'checkmate!' rose quickly to his feet and stepped behind his chair. The automaton sat motionless" (Bierce). After the automaton seems to absorb that it has lost, it immediately retaliates, and in a physical struggle seemingly takes the life of Moxon, further complicating the power struggle between man and machine and the concept of consciousness and unconsciousness. Originally, the initial complication was a struggle on the chessboard between man, in this case the master, and machine, in this case the slave. However, by the story's end, as seen in the story's title, Moxon has a master – the automaton who takes his life. This added complication reflects a reversal of the master-slave binary, as Moxon, a reflection of human consciousness, is demoted from master to slave.

Moxon's opponent is initially thought to be human, as observed by the narrator. He notes, "I observed a shrug of the thing's great shoulders, as if it were irritated: and so natural was this—so entirely human—that in my new view of the matter it startled me" (Bierce). After the narrator discovers that Moxon's opponent is in fact a chess-playing automaton, his comparisons of the machine to humans continue. The narrator explains the automaton's reaction to its loss in the chess game: "In body and head it shook like a man with palsy or an ague chill, and the motion augmented every moment until the entire figure was in violent agitation" (Bierce). Moxon's chess-playing automaton appears to show emotion – its "agitation" reflects distress and frustration, and after its loss to

Moxon, it even appears to show signs of sadness at defeat. These reactions present the interesting problem that surrounds the text; is the automaton actually thinking, as Moxon argues, and as a result feeling these emotions, or is the automaton simply mimicking human qualities and thus mimicking consciousness? In this case, the emotion would be a projection of the narrator onto routine machinery. The narrator understands the human emotion "agitation," as it is one visible in human beings the narrator has encountered. However, the machine is not showing programmed agitation, but rather movements that the narrator associates with the feelings of agitation a human being would display, such as "violent shaking." The automaton is described as having "the painted face of the assassin" and "an expression of tranquil and profound thought, as in the solution of a problem in chess!" (Bierce). Assigning the automaton a look of "thought" again blurs the automaton's true nature; does it seem as if it is thinking, or is it actually a thinking machine, as Moxon believes? The description of the automaton's final action in the tale supports that the machine appears to have human ability through the narrator's description. He iterates, "Suddenly it sprang to its feet and with a movement almost too quick for the eye to follow shot forward across table and chair, with both arms thrust forward to their full length—the posture and lunge of a diver" (Bierce).

The specific language that Bierce uses to describe the machine is critical to the machine's transition from slave to master. The comparisons of "springing to its feet" and the simile that the machine is "like a diver" attribute human qualities to the machine, personifying it in such a way that it actually appears human. The suggestion of a "dive" seems to point that the machine's transition from machine to human has a negative connotation: the automaton is taking a "dive" from its current state of machinery into the

less desirable state of being “human.” The story’s ambiguity leads back to the question that is the center of Bierce’s story: do machines have the capability to think? Bierce personifies the automaton in its physical behavior, and if the machine is like a human in regard to how it behaves, then Bierce is arguably giving the machine human qualities. Perhaps the largest quality associated with humans that separates them from everything else is the unique ability to think. The machine’s display of emotions gives it the semblance of being human; human emotion is interpreted based on both what humans themselves feel internally and what they see others display externally. Humans feel a certain way because they are thinking a certain way, often based on experiential memories. The machine’s feelings thus also seemingly reflect a thought process, meaning Moxon’s theory at the story’s beginning about machine’s being able to think eventually comes true, by story’s end: a self-fulfilling prophecy.

The automaton’s whereabouts at the end of the story remain unknown; whether or not it perished in the fire or was handled by Moxon’s assistant Haley is left untouched. However, the unnamed narrator provides an intriguing close to the story by creating the possibility that the narrator himself may be unreliable, and that all of what he details of the night he saw Moxon murdered may not have been real. Haley questions whether or not the narrator “knows” what he saw, and the narrator responds, "I saw it done" (Bierce). However, the concluding line of the story immediately following Haley and the narrator’s conversation reads, “That was many years ago. If asked today I should answer less confidently” (Bierce). Thus, the whole story seemingly questions the consciousness of itself – did the main event of the story really happen, as in was it “alive,” or was it never so to begin with? These consciousness problems found in “Moxon’s Master” take

everything as it appears to be – a narrator, Moxon, his opponent, and eventually the whole story itself – and blur the reality of whether all four of these things are conscious. The blur of the narrator and Moxon, two conscious beings, with the automaton, a non-conscious being, leads to a muddled conscious and unconscious binary. It is through the machine's constant resemblance to man and man's actions that the boundaries between man and machine become blurred. Though the chess-playing automaton present in "Moxon's Master" is comparable to the automaton Poe undermines, Bierce intentionally differentiates the two, and it thus becomes impossible to say with certainty that the automaton presented by Bierce is also in fact human-operated. This decision further muddles the division between the conscious and the unconscious.

The Left-Right Binary

Now that we have seen the importance of both Poe's and Bierce's chess automatons, we need to consider how the operation of these machines introduces a new binary. Though there is an unclear separation in the conscious and unconscious binary, both Bierce's and Poe's chess-playing automatons show an obvious connection to one another. This connection highlights the association between the literary works of both men and introduces another unique binary found in the automatons. Bierce describes Moxon's opponent in a manner that emphasizes similarities between the two chess-playing machines. The narrator explains that Moxon's opponent uses his arms in specific manners: "he moved his pieces with his right hand, which seemed disproportionately long." In Poe's essay, Poe argues that a human must operate the automaton because "The Turk plays with his *left* arm." He emphasizes that the automaton plays chess with his left

arm for a very specific reason: “Bringing his right arm across his breast he actuates the little machinery necessary to guide the left arm and the fingers of the figure” (Poe). Thus, though the automatons are clearly connected, Bierce is careful to differentiate his automaton from Poe’s, and the varying arm placements between the two automatons highlights a critical left-right pattern found in the game of chess and the idea of what it means to be human.

Irwin explains that the Turk’s left-handedness is a surprisingly important aspect of the machine’s false nature. Poe’s inclusion of seventeen points in the essay “Maelzel’s Chess Player” leads him to conclude the machine is in fact human-operated; his seventeenth point that the Turk plays with his “*left* arm” is one that Poe emphasizes last, and it can be easily overlooked among the sixteen other compelling points Poe makes. However, Poe’s last point is his most sufficient evidence for debunking the machine, as explained by Irwin:

> And since what is at issue in Poe’s essay is precisely the question of whether the chess-playing automaton is a *thinking* machine, a device of such ‘arrangement’ that it can, within the limited context of a chess game, mechanically duplicate the functions of mental analysis so as to reverse the master/slave relationship between mind and machine and defeat a human opponent, the fact that the automaton uses its left arm indicates to Poe that the machine has *not* achieved the human (i.e., independent, self-sufficient) organization whose mark of superiority over the nonhuman is precisely the mark of its control over itself – right-handedness (Irwin 106).

Thus, because the machine does not exhibit the "mark of its control over itself – right-handedness," the machine does not reach the height of being human. Irwin backs his idea up with scientific evidence, providing the following information: "Most studies of the question of the dominant hand put the number of right-handed people at somewhere between 85 and 90 percent of the population, so that there is a sense in which right-handedness can be said to characterize human behavior" (Irwin 106). Ironically, Poe uses the machine's quality of acting unlike a human and using its left hand in order to prove that the machine is actually operated by a human.

In order to establish this left-right idea, chess is the ideal game in order to represent the power differential that Poe reflects on. Poe thoroughly believes that machines do not have the prowess to think that man does, and are therefore inferior; in debunking the automaton, Poe is able to accentuate this belief. "Maelzel's Chess Player" makes a contribution to Poe's argument for the thinking man and the idle, one-step-at-a-time machine; chess is the complex game he uses to define the simplicity in the relationship between man and machine. Irwin illustrates the idea that the chessboard reflects an analytic method itself:

> In contrast to the physical confrontation between the two three-dimensional bodies (the face-to-face encounter of the players), the material structure of a chess game (the initial alignment of the pieces) physically represents the nonphysical battle of wits as the struggle of each player with his mirror image. The mirror asymmetry in the alignment of the opposing chess pieces at the start of the game is in effect an emblem of the analytic method employed by each player (112).

Thus, chess is an ideal "emblem" that reflects the analytic method used by the players in a particular chess game.

The opposing kings in chess make for an interesting "nonphysical battle of wits," as each player is struggling with their own mirror image. Irwin believes that this asymmetry is analytical because each player is forced to look not only at the direction that his or her own pieces take on the path to the enemy king, but also the asymmetric direction that his or her opponent's pieces take in their direction towards a player's own king. Because the king is the primary target in a game of chess, this opposition turns chess into a struggle in which both players must focus on both their own and their opponent's king: a complicated relationship requiring deep analysis that incorporates both an individual's own thoughts and the thoughts of an opponent. Interestingly, the player playing with the white pieces has his king closest to his or her right hand. Contrarily, the player playing with the black pieces has his or her king closest to his or her left hand; another left-right contrast that immediately creates a conflict. This asymmetry causes a unique problem: the player with the white pieces has the unspoken advantage of playing with his or her most important piece, the king, next to his or her dominant right hand. The player behind the black pieces, already at a temporal disadvantage, has the king next to his or her left hand, the inferior hand due to its lesser prominence in human behavior. This asymmetry illustrates that the conflict at the board goes deeper than the game itself; it becomes a conflict between human thought and a human being's physical anatomy, or the way in which he or she is built. Here, a struggle between mind and the machinery of human physicality emerges, one that exists because of the incorporation of the game of chess into the heart of the story.

Irwin analyzes the issue of simplicity and complexity further, when looking at Poe's point about the mirrors located within the automaton. The mirror-image quality is also reflected in the Turk's mirrors, and this leads to how the left/right distinction is also related to the simple/complex one. He explains, "Poe reads the imputed mirroring of the automaton's machinery in terms of an opposition between simplicity and complexity. He says that the automaton cannot be a 'pure machine,' because if it were, its inventor would *not* have wanted 'its mechanism to appear complex' but would have tried instead to convince the spectators 'of the *simplicity* of the means by which results so wonderful were brought about'" (121). Thus, Poe places emphasis and value on the importance of simplicity; in order for the machine to appear more like a machine, all of the smoke and mirrors would have been removed and replaced by a simplistic visual of nuts and bolts machinery.

When Bierce uses the phrase "windows of their bosoms" in "Moxon's Master," he is referring to the ability of one being able to see inside people. This metaphor is prevalent for both authors, and Bierce's description is similar to Poe's automaton being debunked with its mirrors. Windows and mirrors, in both cases, act as a way of showing something deeper than just a reflection; they provide insight in to what the bigger picture is really about. Interestingly, Poe's focus on simplicity contrasts heavily with the complexity of the game of chess; this is also the reason why the game of chess is so critical to Poe's analysis. Thus, a complex machine is simply impersonating a human – and a machine playing chess is not possible, as something so simple cannot possibly partake in something so complicated. The disguise of complexity is a sign of the machine's falsity. According to Poe, chess is also similarly disguised. In Poe's chess and

draughts comparison at the beginning of his short story "The Murders in the Rue Morgue," Poe seems to disregard chess as a worthwhile endeavor due to its complexity. But within chess's complexity, Poe sees something more – he sees calculation, a step-by-step method that will be at the center of many of his short stories.

This interesting chain of reasoning, though complex, is made to sound simple by Poe; a technique he would later use with his star detective, Dupin. Poe's largest discussion of chess is in "The Murders in the Rue Morgue," one of Dupin's great criminal masterpieces. The simple/complex idea is also used in this short story, and Poe uses chess again to illustrate his thoughts. Irwin explains:

> In his analysis of the chess-playing automaton, Poe uses the opposition between simplicity and complexity as a means of differentiating mental and mechanical activity, just as he will later, in the Dupin stories, introduce the same opposition (which he uses to structure his analysis of the analytic power) into his discussion of chess as a game whose relative complexity, compared to checkers, makes it less useful as a mental exercise for developing the 'higher powers of the reflective intellect', powers that Poe associates with a radical simplicity (120).

Thus, while Poe seemingly admires chess and the complex, he emphasizes the importance of simplicity in an analytic thought process; and because machines are simple, like the Turk, the analyses that they perform must remain simple. The Turk therefore cannot play chess without performing complex thought processes well above its means.

Poe's argument to discredit the automaton's "pure machine" image based on the machine's usage of its left arm is one of particular curiosity. Irwin explains,

> Poe's line of argument – in its elaboration of the antithetical qualities characterizing the opposition between a human mind and a 'pure machine' (qualities such as temporal variability versus temporal regularity) – involves an implicit analysis of the human analytic power, and as such, prefigures the way in which the analytic power in the Dupin stories will take itself as the most natural, not to say inevitable, object of its own analysis (105).

Irwin's belief that Poe's debunking of the Turk prefigured his development of the detective Dupin emphasizes the importance of Poe's essay. Poe's essay serves as not only a dissection of the automaton's true nature, but also an inspiration for the future detective stories Poe would go on to create. Poe's nonfiction piece was the precursor to the first fictional detective work that would be incorporated by Dupin – and chess serves as the gateway into this analytical work. Poe disguises chess as a game of calculation rather than of analysis. However, through the story and Dupin's unearthing of the mystery behind the murders, Poe's true feelings on chess are certainly much less black and white. What Poe values most in Dupin can be seen in chess, especially because it is a strategic struggle between two human beings.

Dupin's careful observances of the narrator while the two walk is an example of an attribute unique to Dupin that would make him an incredible chess player; a concentrative look into the eyes of his opponent. As Dupin explains to the narrator, "I was not particularly attentive to what you did; but observation has become with me, of

late, a species of necessity" (Poe). Dupin's reliance on observation into the mind of his friend allows Dupin the ability to piece together a chain of observations to understand what it is precisely the narrator is thinking about in that particular moment. The narrator is astonished that Dupin has "read" his thoughts. In a chess game, the power struggle between two opponents and two minds requires one to not only process his or her own thoughts at the board, but to also be carefully aware of what it is his or her opponent is thinking. Chess is not only a creation of one's own thoughts, but also a response to someone else's: and here, Dupin's excellence reigns. Dupin's observational skills, or his keen analysis of the narrator, reflect the key aspect of chess that Poe leaves out of the introduction of "The Murders in the Rue Morgue." Dupin's analysis of a human opponent, and certainly Poe's specification of the brilliance of that analysis, reflect the mystery of Poe's beliefs on the value of calculation over that of analysis.

Now that the difference between the left-right dichotomy found on the chessboard and the left-right movements of the automaton has been addressed, the idea of human consciousness remains the final important piece of the puzzle. Irwin explains how Poe's realization of the machine's left-handedness leads to an even more important discovery about the nature of humans:

> What is of special interest to us in Poe's analysis is the notion that the difference between mind and machine, between a human and nonhuman organization, is that a human organization possesses, or is capable of producing, 'a marked and radical difference' within itself, a difference that creates the possibility of 'parts' in the self, the possibility of physically representing the self's relatedness to itself. What Poe has done is to take

> the difference between the right and left sides of the body as the principal expression, within the physical organism, of that mental difference of the self from itself which constitutes self-consciousness, an internal difference whose projection onto the external world simultaneously constitutes the self's difference from others (as Poe argues…he describes personal identity as the consciousness that 'always accompanies thinking' and that allows us to recognize ourselves, 'thereby distinguishing' the individual self 'from other beings that think') (108-9).

Irwin emphasizes that the physical differences in the left-right dichotomy are the expression of the differentiation from the "self from itself." Irwin establishes that each individual's consciousness is also separate from the idea of human consciousness as a whole. Though these binaries of physical and mental differences are separate ideas, they are related to one another; physical differences are a marked extension of mental ones, in Irwin's argument. Therefore, the themes of the left-right pair and the simple-complex pair also relate to the idea of human consciousness and machines. Poe completes the pattern of machines being simple by using the proof that the Turk is left-handed.

Bierce, however, forms a different pattern using these same pairs. After establishing Poe's left-right balance, Bierce's intentional decision to make Moxon's automaton different is even more compelling. Instead of an automaton that looks exactly like the Turk, the automaton in "Moxon's Master" mirrors the arm placement and movement seen in Poe's essay and analysis. The automaton in Bierce's story becomes one of a different nature; Moxon is attacked and murdered by this automaton, based on the narrator's witness of the encounter. This right-handed automaton is one that thus fits

Irwin's idea of categorical human behavior; it is part of the 85 to 90 percent of the population that is right-handed, and unlike Poe's automaton, it can thus be associated with common human behavior. In "Moxon's Master," the machine demonstrates human capabilities, but is the machine really human, or is it simply a machine that is mirroring the behaviors of human beings and thus only imitating them? Perhaps even another possibility exists in this argument; are humans themselves only machines, capable of being duplicated in automata? These questions are answered through a closer look at Bierce's description of the machine's right-handedness. For Poe, there is a binary difference in handedness, and the importance of the hand that the automaton uses is critical to Poe's discovery that the automaton is a fake.

Bierce's description of the right hand that the automaton uses to move the pieces is compelling evidence that the automaton is not a pure reflection of human behavior, and thus cannot be completely associated with humans. Bierce describes the automaton's right hand as "disproportionately long," a description that immediately severs the exact match between a normal human right hand and the automaton's right hand. Thus, though Bierce's right-handed machine seems to reflect human behavior by making strong movements with its right hand, its "disproportionately long" features make it abnormal, and thus no longer entirely comparable to an average right human hand of proportionate looks. It is too long, and thus draws attention to itself as out of proportion to the left hand. Because it is "abnormal," the connotation is that there is something wrong with the hand: that the machine is not quite perfect mechanically.

The difference between Poe's "not-machine," one actually run by a human, and Bierce's "not quite human" machine, is one that can be seen in the left-right handedness

each machine is defined by. These machines illustrate the left/right difference through their movements, and these movements are reflected in the game of chess, whose left-right mirror imagery helps to define the game's most important piece: the king. Furthermore, the queens are also on opposing sides of the board; the white queen stands to the left of the white queen, whereas the black queen stands to the right of her black king. The relationship of king to queen is thus also an important piece of the left and right binary. These ideas of the left-right binary lead to the differentiation between machines and their behavior and what behaviors are critical to the idea of human consciousness. In each story, the left-right handedness of the automatons reflects the left-right logic of chess. Because left-right handedness is reflective of human beings, chess thus becomes a metaphor for human behavior: the ways in which our consciousness drives us to act.

Analysis and Calculation in the "Rue Morgue"

Two critical binaries are central to Poe's "The Murders in the Rue Morgue." Poe focuses on the first of these binaries, the difference between analysis and calculating, in the first two pages of the story. The second binary, the master/slave dynamic, is central to the story once Poe begins it. Poe's use of the master/slave dynamic helps to reiterate his belief that the power of analysis is dominant to that of calculating.

Poe's short story begins with a narrator-driven introduction that emphasizes the differences between calculating and analysis. In doing so, Poe discusses three games: chess, draughts (in America, checkers) and whist (a popular English card game in the 18th and 19th centuries, based on bridge). Poe immediately draws a line between calculating and analyzing, arguing that, "To calculate is not in itself to analyze. A chess-player, for

example, does the one, without effort at the other. It follows that the game of chess, in its effects upon mental character, is greatly misunderstood" (379). Poe immediately uses chess to separate the two ideas of calculating and analyzing, explaining that chess is "misunderstood." Poe argues that a chess player calculates, but fails to analyze; a chess player can and does think of the variations by which pieces can move for both themselves and for their opponent. When chess players calculate various moves and eventually choose one, their choice reflects a situational analysis; chess players intentionally choose the move that they believe will lead them to the most ideal situation, one in which they are met with a position in which they feel they have analyzed a particular advantage.

This analysis, which goes hand in hand with calculating, is actually a vital aspect of human chess behavior; the effort to analyze separates the inferior players from the superior ones. Poe argues that analysis of the board and all of the possible moves in any given position is calculation. Poe emphasizes that thinking through the possible moves and determining where they will lead is a step-by-step process. At the core, he's right; however, due to both the contextual and experiential thought processes that go along with this step-by-step process, the moves that are being calculated are actually being analyzed concurrently.

Poe further argues that draughts, rather than chess, represents the superior game with regard to furthering human mental capacity and intellect. He calls chess a game of "frivolity," one inferior to draughts:

> In this latter, where the pieces have different and bizarre motions, with various and variable values, what is only complex, is mistaken (a not unusual error) for what is profound…and in nine cases out of ten, it is the

> more concentrative rather than the more acute player who conquers. In draughts, on the contrary, where the moves are unique and have but little variation, the probabilities of inadvertence are diminished, and the mere attention being left comparatively unemployed, what advantages are obtained by either party are obtained by superior acumen (379).

Poe continues to argue chess's "frivolousness" by advocating that men of the "highest order of intellect" take part in whist and ignore the game of chess. He continues, "the best chess player in Christendom may be little more than the best player of chess; but proficiency in whist implies a capacity for success in all these more important undertakings where mind struggles with mind" (380). Poe's distinction that chess is not a battle of mind against mind is handled differently by Bierce, who sees the game of chess as a struggle for power itself.

Poe assigns a certain type of logic to Dupin, specifically one of an analytical nature compared to one of pure calculation: "I proceeded to think thus -- a posteriori" (397). Poe uses both "a posteriori" and "a priori" arguments in his essay. His "a priori" argument is that if an automaton could play chess, it would always win, and since the automaton does not always win, then it must not be real. His "a posteriori" thinking can be described as "relating to or denoting reasoning or knowledge which proceeds from observations or experiences to the deduction of probable causes" (OED). This thinking, the same logic used by Poe himself to debunk the Turk, is one that lends itself to scrutiny based on Poe's idea of a simple-complex differential. Poe reflects his own reliance on observation through Dupin, who also deeply values observation and its importance: "observation has become with me, of late, a species of necessity" (384). Dupin's overall

reliance on observation to not only detect what his friend is thinking, but also to solve crimes, is difficult to untangle.

Is Dupin's way of thinking representative of the simplicity Poe claims to value, or is it one of such a complex nature he is unique for his ability to think and discover information in the ways that he does? Dupin's simplistic appearance is a façade; his actual logic is necessarily complex. Poe is thus purposely misconstruing chess: if complexity is necessary for Dupin to make thorough and meaningful observations, then Poe understands the need for complexity in chess to do the same. Poe takes a mechanistic approach to chess, arguing that nine out of ten times, the more "concentrative" player is victorious – but it is this same concentration that drives Dupin to his unique success in problem solving. Though Poe seems to imply that the more "concentrative" player is somehow inferior through his language, it is through his story that the concentrative power of Dupin is experienced.

Poe's description of the Turk's left-handedness and its meaning of "non-humanness" is pertinent to more than just his essay "Maelzel's Chess Player." This same contrast can be seen in his short story "Murders in the Rue Morgue," through the master-slave relationship. Irwin suggests, "the alignment of the master/slave opposition between the right and left hands with that between mental (human) and mechanical (nonhuman) activity, an alignment that he makes by first invoking 'the radical difference' in the 'powers' of the two hands" (126-7). Thus, "power" is what separates the right hand from the left hand; the right hand is the dominant hand of "power," as it represents the hand of human behavior. Similarly, the automaton's left-handedness is inferior; it is not only a weakness of the automaton's identity and a main reason Poe can debunk the Turk, but it

is also a representation that does not reflect typical human attributes. This "power" differential is ideal for Poe through the use of the game of chess; the chess board itself is representative of the superior and inferior powers of the right and left hand: "It is not unusual that the introduction of privileging into a system of intersecting bipolar oppositions tends to align the master terms in these oppositions on one side and the slave terms on the other, as, for example, with the alignment of white, off, and right versus black, even, and left in chess" (117).

In a single game of chess, the person playing with the white pieces not only has a temporal advantage, as he or she is the player to move first, but he or she also obtains the status of the game's "master" – because of the board's asymmetry, where the kings and the queens are facing diagonally from one another rather than straight across from one another, the player with the white pieces has his king next to his or her right hand. On the contrary, the player who is representative of the "slave" has the king nearest to his or her left hand. The king, the piece that is at the center of the game's heart due to its immeasurable value, is also involved in a master-slave relationship on the board with its closest chess piece: the queen. The king, unlike the other chess pieces, is not assigned a numerical worth, as the king is the only piece that cannot be captured. Instead, the king must be checkmated for the game to be over, and it is thus strategically the game's most valuable piece. Because of the queen and king's asymmetry on the chessboard, each opponent is forced to use their queen in a particular "slave-like" manner. The queen must either protect her own king from imminent danger, or she must find herself involved in an attack towards the enemy king – both choices imply the queen's desire to seek proximity near the kings on the board.

However, like in Bierce's "Moxon's Master," the boundaries between these contrasts are rarely clear. Even Poe manages to disrupt his distinction between master and slave through his descriptions of his "master" Dupin: "But what is most striking about all of this is that the narrator's description of Dupin's altered physical appearance as he exercises his analytic skill makes Dupin himself sound like an automaton: 'His manner at these moments was frigid and abstract; his eyes were vacant in expression; while his voice, usually a rich tenor, rose into a treble which would have sounded petulantly but for the deliberateness and entire distinctness of the enunciation'" (113). Here, Dupin himself is no longer the clear master – he is made to sound like the slave or the automata, through his mechanistic language and action. It is this representation in particular that causes Poe's representation of the simplistic and the complex to become convoluted and unclear; does Poe really believe simplicity is genius? Poe's decision to make Dupin's job look so simple, and to turn him into such a brilliant step-by-step thinker, actually seems to backfire; Dupin's simplicity makes him mechanistic.

Dupin's simplistic-sounding thinking should not be confused with simple-minded thinking. The master-slave relationship is also seen through Poe's star detective Dupin, whose ingenuity is unparalleled. Irwin explains, "Dupin's analytic power is of such superiority that, compared to him, other men are like automata, slavish mechanisms playing against, and ultimately manipulated by, a mastermind who has the power to see into their inmost beings" (113). Dupin's ability to read his friend's thoughts during the first half of the story reflects this idea; Dupin knows exactly what his friend is thinking, because he has the "power" over him. Dupin's "superiority" is such that he is elevated to the ranks of the "master," while other men are actually demoted from human status and

considered “automata.” This representation in “The Murders in the Rue Morgue” further emphasizes Poe’s reliance upon and attraction to a separation between the analytical man, the true representation of humanity, and simply those who imitate this same humanity. Though Poe heavily favors analysis to calculation in the story’s introduction, the split between analysis and calculation is far from easily visible. Dupin’s analytic power stems from initial, careful calculation, such as the step-by-step observational process he uses to know what it is the narrator is thinking about. Though Poe is careful to show the distinction between calculation and analysis and to offer an opinion on which of the two has more value, the binary’s importance resonates throughout the entire story.

The split between calculation and analysis is one of two prominent binaries seen in “The Murders in the Rue Morgue.” How does Dupin’s unique skill set and his utilization of analysis introduce the second binary, the one of master-slave? By solving the mystery of the orangutan and the sailor, one that represents a master-slave dynamic, Poe is able to support his favorable view of analysis’s triumphs. After the orangutan escapes and winds up in the house of Madame L’Espanaye and commits his acts of violence, the sailor discovers what his ape has done: “Its wandering and wild glances fell at this moment upon the head of the bed, over which the face of its master, rigid with horror, was just discernible” (409). Here, the sailor, a human, is known as the master of the orangutan, a beast. But this relationship’s boundaries quickly become blurred through the actions that are taken by both the orangutan and the sailor. The orangutan commits the crime unknowingly; in fact, the beast was simply trying to mimic the actions of its master. Poe writes, “Razor in hand, and fully lathered, it was sitting before a looking-glass, attempting the operation of shaving, in which it had no doubt previously watched

its master through the keyhole of the closet" (407). Here, the orangutan and the sailor are established in a master-slave dynamic. Poe continues, "The Frenchman followed in despair; the ape, razor still in hand, occasionally stopping to look back and gesticulate at his pursuer, until the latter had nearly come up with it. It then again made off. In this manner the chase continued for a long time" (407). Here, the orangutan develops into the "master" – he is the one forcing the "slave," the sailor, to pursue him in despair. This blurring of the master-slave relationship blurs the lines of power found between man and what is not man: a differential that was of particular importance to Poe.

Poe has highlighted a matter of interest that Bierce would interpret later in "Moxon's Master" – that a "beast" or a "machine," given the powers of man or even the ability to imitate man, would be prone to violence –especially murder. Poe's description of Madame L'Espanaye's body follows, "The body, as well as the head, was fearfully mutilated -- the former so much so as scarcely to retain any semblance of humanity" (387). This description even further complicates the boundaries between "humanity" and what is not human – the orangutan was able to destroy a member who was a "semblance" of humanity. Madame L'Espanaye's lifeless body no longer has the appearance of being human, meaning she no longer imitates humanity. Thus, to be a member of humanity, one must have life – and thus self-consciousness. Simply appearing as a human is not enough to make one human; one must function as a human to be classified as a member of humanity.

Interestingly, Poe's description of the body no longer having "any semblance of humanity" reverts to the conscious and unconscious binary. Poe emphasizes the woman's physical features – because her body is brutally mutilated, she no longer "looks" like a

human. Not only is she dead and therefore no longer conscious, but she also does not even look human in her lifelessness. Poe's choice of the word "semblance" is unique, as semblance refers to "the outward appearance or apparent form of something, especially when the reality is different" (OED). Thus, though the woman appeared human, Poe takes a subtle opportunity to say that perhaps the reality really is different, and that this woman is not actually a piece of humanity at all.

Computer Chess: The Transformation of AI

The central question to both Bierce's and Poe's emphasis is pinpointing what the difference between mind and machine is. Poe seems to think a machine is a more perfect mind, as it would always win. He cites one of the reasons he can debunk the Turk is because it is fallible; it has lost more than once to a human opponent, and a machine would not ever lose to a human. Bierce seems to think similarly, in large part because of the question that is at the core of "Moxon's Master," whether or not a machine can think. The big differences for Poe are recursiveness and context. As Daniel Dennett writes, "If AI is possible, the cabinet *could* be filled with some collection or other of cranes and other bits of machinery. If AI is impossible, then there must be a skyhook in the cabinet, a Mind pretending to be a Machine" (434).

Both Bierce and Poe focused on a chess-playing automaton in each of their short stories "Moxon's Master" and "Maelzel's Chess Player," respectively. These 19th and early 20th century literary works were written at a time where America was in a much different technological era. Today, America's technological framework has changed drastically – but both of the machines that Bierce and Poe discuss are still relevant. Chess

computers not only play chess against our youth and serve as learning tools, but also actually play in tournaments – both in a mix with human competitors, and in competitions that involve only other computers!

Through today's environment, we are led to the important question among these changes of whether a machine can play chess – this question shaped both Bierce's and Poe's writing. Poe answers "no," while Bierce seems to answer "yes," but with tragic consequences. Both of these men chose to emphasize a machine that played chess, focusing on the idea of human consciousness and thought. Poe was adamant that a machine could not play chess; however, today, several chess engines have emerged that have the power to not only play chess at the basic level, but to actually be stronger than their human counterparts. Was Poe wrong to think that a machine would be unable to ever play chess? At stake is the entire value of the human mind; if a machine can calculate the colossal number of variations in a single chess game within seconds, then chess is reduced to the simplicity of the most basic games, like tic-tac-toe. If machines can handle a game so dependent on human decisions, like chess, as Poe argues, then the importance of the human mind to the universe also risks becoming obsolete. Human creativity, experience, and decision are at the heart of both the game of chess and at our everyday life processes; if machines can surpass our intellect, then our consciousness no longer makes us the "master."

In order to compare Poe and Bierce's chess-playing automatons to our modern-day chess-playing computers, let's first take a look at what is considered perhaps the most influential and successful chess-playing engine of the past two decades: Deep Blue. Two prominent men in the consciousness debate are John Searle and Douglas Hofstadter.

When discussing Deep Blue and other chess computers, John Searle argues that computers are not really playing chess: "But the computer knows nothing of chess, moves, pieces, or anything else" (58). To Searle, humans have no need to worry about the recent phenomenon of computers winning chess games against the most brilliant of human chess players. He asks, "Does this threaten human dignity?" and responds that it does not, not any more so than calculators threaten the dignity of mathematicians. He argues that computers are simply using brute force to defeat opponents. To emphasize his point, Searle applies the "Chinese Room"[1] theory to the playing of chess. He explains:

> Imagine that a man who does not know how to play chess is locked inside a room, and there he is given a set of, to him, meaningless symbols. Unknown to him, these represent positions on a chessboard. He looks up in a book what he is supposed to do, and he passes back more meaningless symbols. We can suppose that if the rule book, i.e., the program, is skillfully written, he will win chess games. People outside the room will say, 'This man understands chess, and in fact he is a good chess player because he wins.' They will be totally mistaken. The man understands nothing of chess, he is just a computer. The point of the parable is this: if the man does not understand chess on the basis of running the chess-playing program, neither does any other computer solely on that basis (Searle).

[1] The argument centers on a thought experiment in which someone who knows only English sits alone in a room following English instructions for manipulating strings of Chinese characters, such that to those outside the room it appears as if someone in the room understands Chinese. The argument is intended to show that while suitably programmed computers may appear to converse in natural language, they are not capable of understanding language, even in principle. Searle argues that the thought experiment underscores the fact that computers merely use syntactic rules to manipulate symbol strings, but have no understanding of meaning or semantics (Stanford Encyclopedia of Philosophy).

Searle's point is one of particular interest, because unlike Poe, he does not argue that machines are incapable of computing the necessary complications of chess. Poe emphasizes that machines can process finite data in a step-by-step process, but that chess is a game with no "determinate progression" (318), due to the fact that chess involves two different individuals making human decisions. Instead, Searle chooses to highlight that even though machines can and do process the millions of variations seen in a chess game, they are not "playing" chess – they are simply "passing back meaningless symbols." Thus, though a computer seems to play chess by computing millions of variations in seconds and playing the best moves, the computer is not really playing chess in Searle's argument. It cannot understand the moves, and therefore cannot be "playing" chess. Poe's point emphasized that if a computer could play chess, it would never lose, because chess is all calculation. When the Turk proved fallible and lost a handful of games to human opponents, Poe used those losses as proof of the Turk's falsity.

Searle highlights that though a computer may not lose a chess game, it is not playing chess; it is simply partaking in a computing battle that the computer has no possibility to lose or understand. Playing chess means that all of the psychological and environmental factors that come along with the game can and do matter. These factors are all relevant to what is considered the playing of a chess game or match. Poe and Bierce knew that these factors were important; Poe's automaton, the Turk, was a machine that was paraded around and played matches in front of a very public audience. Bierce's automaton, while much more secluded, still played chess for an audience; in the case of "Moxon's Master," the narrator witnesses the chess match played between Moxon and the machine. Chess entails not just an automatic processing of moves, but psychological

warfare against one's opponent, and even an element of showmanship. Thus, the environmental context of chess is critical to the playing of the game itself, and the contexts of both Poe and Bierce are constructed for a certain advantage.

When former World Chess Champion Gary Kasparov and Deep Blue, the brilliant chess engine, played a match in the 1990s, Deep Blue's victory came as a shock to many. If a machine could defeat perhaps the greatest chess player to ever live, then would that mean that the game of chess could become obsolete? Searle explains that the general public thinks of Deep Blue's victory incorrectly. Searle writes:

> "When it was first announced that Deep Blue had beaten Gary Kasparov, . . . I suspect that the attitude of the general public was that what was going on inside Deep Blue was much the same sort of thing as what was going on inside Kasparov... [But, unlike Deep Blue,] Kasparov was consciously looking at a chessboard, studying the position and trying to figure out his next move. He was also planning overall strategy and no doubt having peripheral thoughts about earlier matches, the significance of victory or defeat, etc. . . . [he] was, quite literally, playing chess. None of this whatever happened inside Deep Blue (Grimstad 115).

Searle's differentiation between the way in which humans like Kasparov play chess, versus the way a machine plays chess, brings us back to the idea of thought and consciousness; can a machine actually think? John Searle emphasizes that our brain processes cause consciousness, but that consciousness itself is a feature of the brain (8). The mind is not simply a computer program "because the formal symbols of the computer program by themselves are not sufficient to guarantee the presence of the

semantic content that occurs in actual minds" (10). Searle focuses on consciousness as a feature of the brain as a way to say that only humans can play chess, meaning that only things with consciousness are able to play. Searle makes the distinction that computers are certainly not conscious (14). He explains, "Computers play the same role in studying the brain that they play in any other discipline. They are immensely useful devices for simulating brain processes. But the simulation of mental states is no more a mental state than the simulation of an explosion is itself an explosion" (18).

Searle's point, that a machine can compute chess moves but is not actually consciously involved in playing a chess game – appears to be the issue that separates Bierce from Poe. In "Moxon's Master," Bierce's chess-playing automaton seems conscious during the game it partakes in with Moxon. The machine exhibits human qualities, seen in the observant narrator's description of the game, where he explains, "I observed a shrug of the thing's great shoulders" and that it was "so entirely human" (Bierce). The narrator also further explains the automaton's reaction to its loss in the chess game: "In body and head it shook like a man with palsy or an ague chill, and the motion augmented every moment until the entire figure was in violent agitation" (Bierce). These descriptions of Bierce's machine imply the automaton is in fact "playing" chess – these reactions, responses to the changes in the course of the game, are part of the psychological factors that Searle and others find necessary in the competition involved in a game of chess. However, Bierce's automaton's actions go further than simply playing chess – the machine seemingly murders Moxon in response to being checkmated, and the machine's level of thought seems unclear. Was the machine in control of its actions, or was it mimicking what it saw on the board – the destruction of the king? When Moxon

checkmates the automaton, he does so in an excited matter where he "pounces" on the automaton's king. When the machine retaliates against its master, it "springs" to its feet – a movement imitating the way in which Moxon wins the chess game. Bierce's machine leaves the interpretation of a machine's true power to our imaginations – and over a century later, this debate remains thought provoking. The machine's loss reflects the moment in which he becomes aware of the wider context - the way that the machine can kill his antagonist and master, Moxon. By the story's end, it is no longer Moxon who is master, as made apparent by the title of the story. The machine has reversed its slave role and become the master, taking both power and life from its creator.

Paul Grimstad writes on Searle's ideas more, connecting them to an even deeper level with Poe:

> Deep Blue, perpetually translating 'meaningless [to it] symbols' into moves in the game, creates the illusory effect of somebody (or something) that 'knows' how to play chess, just as Maelzel's exhibition—as the word exhibition literally indicates—'showed mechanism without itself being mechanical, and provoked evaluation of the secret workings of the machine, beyond the spectacle of its effect.' Whatever the relative abilities of Maelzel's chess player and Deep Blue, then, the link between Poe and Searle is their having in common the way theatrical artifice works to generate the effect of a machine that thinks (116).

Bierce gave his machine a certain "theatrical" nature, in that it ends up becoming a character with action – he even provides it with a scene full of theatrics, with the rain and lightening that surround the doomed night of the chess match. Winning at chess for

Moxon was exciting, but the excitement was temporary – he was murdered immediately after the game's conclusion, with no real value assigned to his victory. On the other hand, for Poe, winning at chess serves as a valid example of a certain kind of thinking – a characterization he adamantly believed that the Turk did not deserve. For Searle, winning a modern chess game is not an example of thinking; simply playing a game of chess is, with all of the errant, peripheral thoughts that accompany the actual playing of the game.

Douglas Hofstadter, who also focuses on the ideas of consciousness, explains that humans, unlike other beings, have episodic memories. We can associate fear with what we're afraid of, exactly, based on a prior memory. Playing a serious game of chess is all about episodic memories – knowing what positions you've seen before, and if they are evaluated in your favor or not, is a key to making important decisions throughout the course of a game. These episodic memories are something unique to human beings; a machine, incapable of similar experiences, would be unable to play chess at the same level as a human. A machine could compare a position to the positions of previous games stored in its memory, but would not experience the emotional and psychological connection that those remembered games would evoke in a human consciousness. Hofstadter explains:

> A classic example of a recursive procedure with parameters is one for choosing the 'best' move in chess. The best move would seem to be the one which leaves your opponent in the toughest situation. Therefore, a test for goodness of a move is simply this: pretend you've made the move, and now evaluate the board from the point of view of your opponent. But how does your opponent evaluate the position? Well, he looks for his best

> move. That is, he mentally runs through all possible moves and evaluates them from what he thinks is your point of view, hoping they will look bad to you. But notice that we have now defined 'best move' recursively, simply maxim that what is best for one side is worst for the other. The procedure which looks for the best move operates by trying a move and then calling on itself in the role of opponent! (151-152).

Hofstadter's emphasis on episodic memories in our consciousness and his idea of how opponents play chess against one another reflect that chess players must have experiential knowledge in order to be successful. Previous experiences in "king-hunting" and seeking the best moves are critical to success in battle. Poe stresses that chess is a game where "mind struggles with mind," and this struggle is thus not started and stopped in a single game of chess alone; it is an ongoing battle of wits, where the human mind must use what it has learned. Interestingly, Hofstadter establishes the mind as the "master," trying to exert dominance over the other minds it faces as opponents.

In the master-slave binary, there is the master who exhibits control over the slave. In the case of the mind and the machine in Bierce's and Poe's works, the mind as master is not static. In Bierce's case, Moxon is originally the master, and he shifts to the slave by the story's end. Machine, the automaton, changes roles from slave to master. The lower becomes the higher by adopting consciousness; as soon as the automaton begins to act like a human, it takes the role of master away from Moxon and murders Moxon in its fury. Hofstadter thinks that a machine could be programmed to mimic the mental process associated with chess, which is what Bierce's machine did. This raises the question of whether a machine that can mimic human thinking so well that an outside observer, like

Bierce's narrator, can't tell the difference can actually be said to be thinking, instead of merely imitating thinking – because what's the difference? Poe argues that a "real-life" machine would not make mistakes, and so knows there must be a human mind behind the Turk, while Bierce, writing fiction, is free to imagine a machine that does imitate human emotion/psychology, but with tragic results. When a machine takes "human" actions, specifically in the story with the machine murdering its master, it appears that the automaton has stopped being a machine. Its actions are no longer mechanistic, but because the automaton disappears by the story's end, it is uncertain what the machine has become and what is left of it.

Conclusion

What I've done in this thesis is analyze the ways in which both Edgar Allan Poe and Ambrose Bierce portray chess in their literary works. Through their portrayals of chess, I discovered the deeper significance behind the battle between man and machine found in chess matches. The inherent left-right dichotomy and the master-slave binary found in chess are also discovered in the works of these two authors. Using these discoveries and these texts, I was able to uncover the binary of the conscious and the non-conscious. I then looked at modern-day artificial intelligence and the impact that chess continues to have on debates surrounding artificial intelligence and consciousness. Through this literary analysis, we can better see the significance of chess to artificial intelligence. Poe and Bierce imagined a complex world of computer chess and its complications in their writing long before such technology even existed. Both of these authors are important in giving us the agonistic angle of chess. Poe and Bierce show us

the inherent adversarial context present at the chessboard, where Poe reminds us that "mind struggles with mind."

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