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James Rachels
University of Alabama in Birmingham

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The College at
BROCKPORT
STATE UNIVERSITY OF NEW YORK



*James Rachels
University of Alabama
in Birmingham*

Chess As Art: Reflections on Richard Reti

James Rachels

I

Richard Reti, a mathematician from Czecho**s**lovakia, was a chess player of the first rank; but more importantly, he was the author of what many consider to be the best book on chess ever written. At the time of his death, in 1929, when he was only forty years old, *Masters of the Chessboard* was not quite finished. A talented editor completed the job. The book contains seventy master games, each one carefully annotated and a joy to replay. But they are not the reason for the book's distinction. They are old games now, and no longer represent the best of chess. What makes Reti's book special is his larger vision of the game, which he communicates with a grace and skill few others have matched.

Two ideas shaped Reti's view of chess. The first, to which I will return shortly, was that it is not merely a game but an art. The second was that in order to understand chess one must understand its development. Just as many people once believed that the development of the human embryo parallels the evolution of the species, Reti believed that the development of chess understanding must parallel the evolution of the game. The belief about embryos has of course now been discarded, but Reti's idea about chess still has great heuristic value: although it is not explicitly an instructional book, working through *Masters of the Chessboard* is a splendid way to learn the game.

The story of the development of chess could not have been written any earlier, for until Reti's time it had not really developed. The origins of chess are cloudy, but most scholars agree that it began in India in about the sixth century. From there it spread to Persia and was then taken to Spain by the same Arabs who were responsible for preserving so much of classical culture through the middle ages. But despite its popularity — we know of one medieval bishop who scolded priests for neglecting their devotional duties for the game — no one really understood much about chess until the nineteenth century.

The development, as contrasted with the history, of chess began with the French master Philidor (1726-1795), a musician whose compositions are still occasionally heard. Reti, perhaps too generously, suggested that Philidor might have been "the greatest chess thinker of all time." Earlier players had viewed chess only as the search for sparkling combinations — short, tactical bursts aimed at a quick checkmate. Philidor sought deeper principles, and was to some

degree successful. He taught, for example, the importance of pawns. The noted Francophile and chess-player Benjamin Franklin knew of Philidor's exploits, and published his own book on chess in the year of Philidor's death.

But Philidor was ahead of his time. The most brilliant European player of the mid-nineteenth century, Adolf Anderssen (1818-1879), a mathematics teacher from Breslau, still dominated his peers simply by being better at devising combinations. Anderssen's combinations were possible only because his opponents did not grasp the elementary principles that every beginner learns today, such as that in the opening stage of the game one must bring out one's minor pieces, and try to establish control of the center of the board. A successful attack cannot be launched until this is done.

It was the American Paul Morphy (1837-1884) who first grasped the fundamental principles of correct play, including the importance of opening development. Armed with these insights he was able, before his tragic mental collapse, to defeat every important player of his day, including Anderssen. (When asked why he did not play any of his great combinations against Morphy, Anderssen replied: "He wouldn't let me.") To the Europeans who did not understand Morphy's ideas, he seemed an incomprehensible wizard. They concluded, wrongly, that he was merely a superior tactician. But with Morphy systematic understanding of the game really began. Although he wrote nothing, the lessons of his games were not lost, and with the copious writings of the next great champion Wilhelm Steinitz (1836-1900), the basic elements of chess theory were established. (It is Steinitz, not Philidor, who is commonly regarded as "the greatest chess thinker of all time.") The way was now ready for Lasker, Capablanca, Alekhine, Botvinnik, and Fischer.

II

In Reti's view these are not merely gamesmen but artists. The word "art" has so often been used so pretentiously, in promotion of so much that is not worth promoting, that one might well be skeptical. Worse still, the word often carries no special meaning apart from its general laudatory connotation. Yet for Reti the claim of chess as art was deadly serious: it meant that chess was to be taken seriously, as a creative activity whose products are worthy of attention for their own sakes.

If chess is an art, it is hardly treated as such in the United States. Imagine what it would be like if music were as little known or appreciated. Suppose no self-respecting university would offer credit

courses in music, and the National Endowment for the Arts refused to pay for any of it. A few enthusiasts might compose sonatas, and study and admire one another's efforts, but they would largely be ignored. Once in a while a Mozart might capture the public imagination, and like Bobby Fischer get written about in *Newsweek*. But the general attitude would be that, while this playing with sound might be clever, and a great passion for those who care about it, still in the end it signifies nothing very important.

To the Russians, and to the educated citizens of a good many other countries, our collective attitude toward chess must seem as strange as this. The American champion tours the country, playing simultaneous exhibitions against amateurs, not merely to promote the game but to make a living. It is as though to support himself Aaron Copland had to hire out for public duets with children. And Bobby Fischer, perhaps the greatest master of all time, wastes away in pathetic self-exile.

Meanwhile, in the Soviet Union, the chess champions are heroes, and public support guarantees that no talented youngster goes without help. There is no doubt a political explanation for Russian support of chess which is not very flattering to them. Yet our attitude toward chess is probably more political than the Russians'. Much of Fischer's public appeal, when he was playing, was that here at last was an American who could beat the Russians at their own game. Fischer's own attitude encouraged this way of thinking. When the world championship match with Spassky was in danger of breaking off, Henry Kissinger telephoned Bobby to urge him, in behalf of the country, to continue. With his naive contempt for "the commies," this must have been to Fischer a powerful appeal.

But political interpretations aside, there is another explanation for Russian support of chess. In order to appreciate the artistic side of any activity, knowledge is required. How could anyone who did not know a lot about music hope to appreciate Beethoven? In the Soviet Union, unlike the United States, chess is known and played by almost everyone. If it is an art, as Reti contended, public support of chess there is no more puzzling than support of the Bolshoi Ballet.

III

How did Reti argue for his view of chess as art? He reasoned mainly by analogy, considering characteristics he thought typical of the "established" arts, and arguing that those characteristics are shared by chess. In his only other book, *Modern Ideas in Chess*, Reti wrote:

Is it possible we ask ourselves, that a game can at the same time be an art? Well, we can partly answer

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by saying that games and art do not differ from each other as much as we think. They have both much in common.

Then again, in a materialistic sense, both are absolutely objectless and further, the player of games, equally with the artist, builds up his own world and flies from the sameness of the everyday one to the kingdom he has set up for himself. And lastly every art was once a game and a pastime. The wall pictures of the prehistoric man, the songs of the ancient Greek shepherds or their masked comedies were not very far remote from art. As soon, however, as the luckless lover began to pour out his woes upon his lute then came the dawn of art. The essence of art consists of the ability of the art to sink his soul in his work.

A hundred years ago chess was no doubt only a game, but he who has felt, for example, the deep sense of devotion that pervades Rubinstein's games knows that we find there a new and ever progressing art. [Translated by John Hart, Dover Books, 1960 edition, pp. 104-105]

It can be argued, however, that the analogy is not so close as Reti believed. Before Reti's time, most masters preferred not to describe their game as an art. They chose instead to characterize it as a struggle, a contest of will and intellect with each player attempting to dominate the other. The analogy with war seemed more apt than the analogy with art. The great Emanuel Lasker (1868-1941), who was world champion for 27 years, expounded this view at length. He wrote a treatise, *der Kampf*, in which he held that the essence of chess is the struggle to overcome difficulties in reaching a goal. (This view clearly influenced Lasker's style of play. He was notorious for trying always to play, not the objectively best moves, but the moves that would be most upsetting to a particular opponent. A player who regarded the game as an art might be expected to take a very different approach.)

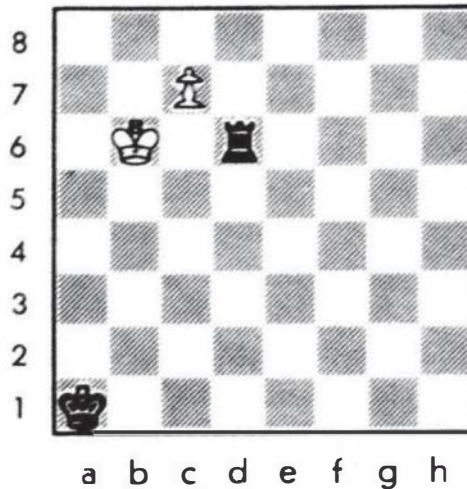
Certainly there is a powerful element of struggle in chess. There is

no other game which evokes, in the most mild-mannered people, such an intense desire to win. It is a mystery, to me at least, why while in the grip of a game one becomes so fierce about winning. But it happens to nearly everyone who plays, including people who are utterly noncompetitive in other matters. (Perhaps this is part of what Reti had in mind when he said we “sink our souls” in such work.) Fischer once replied, when asked what he liked best about chess, “Crushing the other guy’s ego.” Even those of us who tell ourselves that we have a relaxed attitude know that it is like, mysteriously, to discover in the midst of a game that our egos are on the line.

Yet it is a confusion to think that the description of chess as a struggle competes with Reti’s claim that it is an art. One may as well describe music as a struggle because Beethoven struggled to compose, and then declare that it isn’t an art. We have to distinguish *the manner in which games are produced* from *the games themselves*. To think of chess as a struggle is to focus on the time and manner in which games are produced. Fischer’s famous game with Donald Byrne was played in 1956; not only the struggle, but the fact that Bobby was only 13 years old, adds interest. But in considering this splendid creation as a work of art, we are not so much concerned with how it was produced: we enjoy, study, admire and savor it for its own sake, as we do the *Eroica*. Of course we are interested in the human side of the contest, and it would be a great disappointment if it turned out that “Fischer-Byrne” had actually been produced by a computer—but the same is true of Beethoven’s work.

The idea that chess is a struggle may be thought to have a different point. It may be argued that something is a work of art only if its creator intends it as such. Thus a sunset, no matter what the possibilities of aesthetic appreciation, is not properly speaking an artwork unless there is a creator who meant it to be. If chess masters are concerned only with victory—and chess is, after all, a competitive game—the implication is obvious. To this it need only be replied, with Reti, that the great masters (even Lasker!) do pursue beauty as well as points; and there are at least some, including Reti himself, who intend their creations as aesthetic objects. Moreover, it should be noted, the assumption underlying the objection is at least questionable. There are many works now on display in museums that were created by craftsmen who gave no thought to “art.”

There is, in addition, a tradition of composition using the materials of chess *simply* for the creation of aesthetic objects. Here, for example, is an end-game study created simply to delight:



This is the famous Saavedra Problem, named for the monk who found its key in 1895. White is to move and win, but this cannot be done if Black captures the pawn. The white king is in check and must move. If White plays Kb7, then Black plays Rd7 and takes the pawn next move. If the white King goes to any square on the a-file, then Black's Rc6 holds. If White plays Kc5, Black answers Rd1! and will play Rc1 next. Therefore, White's first move must be Kb5, and this sequence is forced:

1 Kb5 Rd5+
 2 Kb4 Rd4+
 3 Kb3 Rd3+
 4 Kc2!

Now Black cannot play Rd1, and apparently it is all over. The pawn cannot be prevented from queening. But Black has a surprising resource:

4 ... Rd5!

Now if 5 c8=Q Rc5+ 6 Qxc5, and it is a stalemate. Instead White must play

5 c8=R!

Material is now equal, but White threatens an immediate checkmate by Ra8, and to stop this Black's only move is

5 ... Ra4

White's crushing reply is

6 Kb3!

which threatens both Kxa4 and Rc1 mate. Black cannot meet both threats, and so he loses.

What is so appealing about this composition? George Santayana contributed to *Chess Review* in 1938 an essay in which he suggested that interest in chess is “interest in *formal relations*, as in mathematics or stained glass or arabesques.” In this composition we find a set of formal relations that is simple, economical, and elegant. Viewed from the outside, these relations serve no purpose whatever — they are, as Reti put it, “absolutely objectless.” But from a point of view internal to the game there is an order and purpose which unfolds with a pure logic. Kant characterized art as “purposeless purposiveness,” and the Saavedra Problem seems as good an instance of that as anything. The idea that the essence of art lies in formal relations is, of course, a familiar one: it was used early in this century by defenders of non-representational painting such as Roger Fry and Clive Bell, who argued that the aesthetic merit even of representational art had to do not with accurate depiction, but with the abstract forms created. Santayana, who knew enough about chess to perceive the same kind of significant form, merely applied that idea to the game.

Beauty of form is a property of all decently-played chess. The striking thing about the Saavedra Problem, in addition to beauty of form, is what we might call the element of *delightful surprise*. The march of the pieces through the first three moves is wholly unexpected, and yet on analysis turns out to be absolutely required. Then White’s problems seem to be over; thus, Black’s fourth move, with its threat of stalemate, comes as an utter shock. White’s next two moves, when shown to an audience of chess-players, provoke laughter and applause, response not to the cold logic, which is certainly there, but to the beauty of the conception. Like the conclusion of Ross MacDonald’s *The Chill*, or the C-sharp in the opening theme of the *Eroica*, the ending here is at once surprising and exactly right.

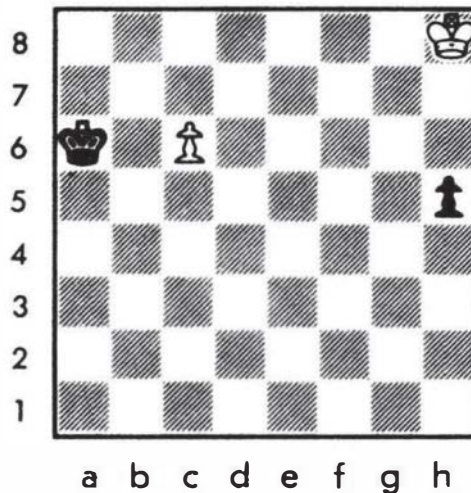
The delightful surprise is a possibility hidden within the “formal relations” of which Santayana speaks. The element of delightful surprise also plays a part in mathematics, a subject governed to a great extent by aesthetic considerations. One mathematical proof will be thought “better” than another, even though the supposedly inferior proof establishes the conclusion just as decisively as the other. Why, then, is one proof “better”? Because it is more elegant, or because the underlying strategy is more aesthetically appealing. The similar situation in chess is when checkmate may be given in two ways, one awkward and ugly, the other simple and elegant. At the famous AVRO tournament of 1938, in which the best eight players of the world competed, a chess-playing psychologist named De Groot conducted an experiment asking the masters to demonstrate mate in some rigged positions. Almost without exception they followed the aesthetically

superior plan.

The classic proof that there is no largest prime number illustrates the delightful surprise in mathematics. Before learning this result, it seems certain that there *must* be a largest prime: surely, we think, for any million-digit number there must be *some* small number by which it can be evenly divided. But there is an easy-to-understand proof, known since ancient times, which shows that this isn't so:

Let M be the product of every number up to and including any arbitrarily chosen (whole positive integer) number n . Now consider the number $M+1$. $M+1$ cannot be divided evenly by any number up to and including n , since there would be a remainder of 1. So either $M+1$ is itself prime, or it is divisible by one prime larger than n . Either way, there is a prime number larger than n . Since n can be any number whatever, it follows that there is no largest prime number.

I cannot resist mentioning one other end-game study, this one composed by Reti himself, which also illustrates the element of delightful surprise in chess:



White is to move, but he seems hopelessly lost. The black king can easily move over to take the white pawn before it queens, whereas the white king cannot possibly catch the black pawn—or so it seems. But

Black's win is an illusion; the position is actually a draw! White plays 1 Kg7 and heads toward the middle of the board on the long diagonal. If Black goes after White's pawn, then White has time to swing back and cut down Black's pawn. And if Black pushes his own pawn out of the white king's reach, then White has time to come over and protect his own pawn as it goes in to queen.

Reti's composition trades on a surprising fact about the geometry of the chessboard: the king can move from h8 to h1 just as quickly by swinging out through the middle of the board as by moving straight down the edge.

IV

There is, however, an important difference between the mathematical proof and Reti's end-game study. A computer, by doing nothing more than calculating all the possible moves, could solve the Reti problem, just as it could in principle solve all the problems of chess. The only reason why computers cannot play perfect chess is that there are too many moves to calculate. Thus although a simple algorithmic program could *in principle* answer all questions about chess, in fact this cannot be done. In order for computers to play chess at all decently, some sort of heuristic instructions — which tell the machine which among the many possible lines to analyze — must be added to the program. Good heuristics are hard to devise, and that is why progress in this area has been slow.

An algorithmic program could not even in principle produce the proof that there is no greatest prime number. Because the number series is infinite, they could never all be checked for primeness. Thus human insight, which the heuristic program seeks to duplicate in chess, seems necessary to mathematics in a way that is not strictly necessary to chess.

In this, chess is more analogous to music than to mathematics. A computer could, using a simple algorithm, produce every possible piano sonata. Does this fact threaten the status of music as a human art? Obviously not, for two reasons. In the first place, so long as this is not *in fact* done, human creativity still has room to operate. And secondly, human aesthetic appreciation would still be needed to distinguish the randomly-produced masterpieces from the incredible amount of junk that would be produced simultaneously — if there were time for this, which there isn't.

The same holds for chess. Because computers cannot in fact tell us, by simple calculation, what is the best move in any position, there is room for the creativity of a Fischer. Moreover, while a computer using a simple algorithm could solve the problem set by Reti's study, could it create that problem in the first place? Yes, but along with

countless other utterly insignificant “problems.” Again human insight (or its equivalent) would be required to identify this beautiful study among all the junk.

V

Perhaps the most dramatic connection between chess, mathematics, and music is that in these fields we find the most remarkable child prodigies. I have already remarked on Fischer’s brilliant game with Byrne, played when he was only 13. Fischer, however, had only become a really strong player a year earlier, and on some accounts this was much too late to qualify him as a “true” prodigy. After all Sammy Reshevsky was playing very well at age 6! In this respect, Reshevsky, not Fischer, was the Mozart of chess.

What explains the appearance of prodigies in these particular fields, rather than others? The most obvious hypothesis connects the phenomenon with the underlying aesthetics of the game. It is because of the abstract purely formal nature of chess, mathematics, and music. A child with little experience of the world can immerse himself in those “formal relations,” figure them out, and do the same sorts of things with them as an adult. All that is required is native genius. Clearly this is not true, for example, of the writing of novels: no one lacking in the broad experience of human affairs, no matter how gifted, could have written *War and Peace*.

Reti argued that chess is an art, not on the basis of some controvertible definition of art, but by suggesting analogies between it and the other arts. I believe this strategy succeeds, at least in part. At the very least, it manages to shift the burden of proof to the other side: What can be said about music, relevant to its recognition as an art worthy of our attention, that cannot also be said about chess?

The main difference, I think is that because chess is a goal-directed activity, there are internal constraints on what a chess-player can do that have no parallels in music. A musician is free to play with sounds and combine them in hitherto untried ways, without being concerned with where it all comes out. “New” music may be justified in its own terms, and even if it conforms to rigid patterns, they may be new patterns imposed by the artist himself. Thus radical innovations, such as 12-tone music, may be incomprehensible until we learn to hear in new ways. There is, in fact, something moderately analogous to this in chess. Reti was himself one of the pioneers of “hypermodern” chess, a style of play in which one seeks to control the center, not so much by occupying it as by attacking it from the flanks (for example, by fianchettoing one’s bishops). Older players found this strategy

difficult to comprehend much as listeners found the “new music” hard to fathom. Nonetheless, there is more freedom in music, because in chess the rules are always the same, and the goal, checkmate, is always the same, an infallible benchmark by which every “innovation” may be tested. This explains why there is a richness in music not found in chess; it is why Fischer-Byrne, no matter how marvelous, cannot match the *Eroica*. But it does not mean that Fischer-Byrne is not a work of art in its own, more limited way.

Another difference, which has a different kind of significance, has to do with time. Chess may well turn out to have been an art-form with a relatively short history. It has been an art, if Reti is right, only since about the middle of the nineteenth century, when it became sufficiently well understood to support significant creative activity. And there are now reasons, having to do with the use of computers, for pessimism about how long it will last.

There is no doubt that within the next few decades computers will become better than humans at chess. What will happen then? They may of course be forbidden to compete with humans in tournaments; but what will be our attitude toward a “world champion” whose play is inferior to that of a machine? Some think that this would make little difference — after all, machines and other animals can run faster than humans, yet we do not lose interest in foot-racing, or think that “the world’s fastest human” is any less remarkable.

But it will not be enough simply to bar computers from chess competition, as we bar automobiles from the marathon. When a great master plays an important match, he goes in with a great deal of preparation; he may have analyzed new lines for months beforehand. If the day comes when competitors for the world championships are merely making moves according to “home analysis” prepared by computers — and there seems no way to avoid this, once the machines become good enough to be useful consultants — then, chess as a human art-form may well be finished. Kasparov cannot be merely a surrogate for his computer, and still be Kasparov.

But doom-saying is old stuff in chess. Capablanca thought chess had been exhausted by the 1920’s, and proposed a new arrangement of the pieces to put life back into it. Reti agreed, and wanted a return to medieval rules of play. When he became world champion in 1948, Botvinnik proclaimed himself merely “first among equals,” and said that never again could a single player dominate the game. In the year of this pronouncement a 6-year-old boy who would do exactly that was learning chess in Brooklyn. All these gloomy forecasts have proven wrong; so, there is reason to hope that my own pessimism will also turn out to have been mistaken.