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# Literary Studies and Literary Pragmatics: The Case of “The Purloined Letter”

*Peter Swirski*

## The New Interdisciplinarity

Many conceptual and methodological changes have swept the social sciences in the last decades. As a result of this paradigm shift, it is hardly possible now to proceed in the social sciences without some form of mathematical analysis and/or empirical research. The emergence of new research disciplines like neuro-linguistics, artificial intelligence, or psycho-physics also points to a growing interdisciplinary confidence in the study of human affairs.

Although most progress has been confined to domains where the stochastic nature of processes involved offers a known way of quantifying their results, important steps have also been made elsewhere. In this brave new age, even such elusive concepts as using your ace serve in a game of tennis are tackled by mathematics—specifically, by game theory. On a more serious note, game theoretic analysis has also led John Banzhaf’s successful court challenge of the weighted voting system used by Nassau County, New York, and a wholesale revision of the seat allocation process in the US House of Representatives.<sup>1</sup>

In contrast, literary scholarship, left on the sidelines of these new developments, seems largely quaint and anachronistic, despite libraries of professional publications on theory and methodology. Literary critics have, of course, staged several ground-breaking forays into such domains as linguistics, structuralism, semiotics, statistics, and even information theory, in search of more rigorous analytic tools. Sadly, these superficial alliances with more established and rigorous disciplines have failed to produce much of substance.

As Richard Levin points out in “The New Interdisciplinarity in Literary Criticism” (1993), the interdisciplinary exchange is, as a rule, restricted to the appropriation of a few central metaphors that flourish indiscriminately in the critical discourse. Little effort goes into the adaptation of the *methods* that made these metaphors so successful in their

original context.<sup>2</sup> One must not belittle the recent interdisciplinary upsurge in literary studies. On the other hand, many such efforts are often flawed and incoherent. There are, of course, skeptics who insist that a genuinely interdisciplinary critical theory belongs squarely with the *perpetuum mobile*. Although demonstrably fallacious, these voices are nonetheless welcome in pointing out the difficulties involved.

Effective application of formal methods in literary scholarship must not, after all, be equated with mere statistical research, performed even today with considerable success. Computer-assisted scholars routinely employ frequencies of linguistic events to plot thematic tension scores, compose generic networks, or map spatial and conceptual configurations of sundry textual elements.<sup>3</sup> Such statistic aspects, valuable as they are, are not, however, the end-all and be-all of our interactions with works of literature. These interactions will always depend on the particular and personal contacts between individual works and individual readers, and on the complex emotional, cognitive, and aesthetic experiences generated by these encounters.

### Game Theory and Literary Studies

In their contemporary emphasis on theory and interdisciplinary formalism, literary scholars seek analytically rigorous frameworks that can guide their inquiry. In this paper I discuss one such framework that offers a promising methodological “anchor” for the literary critical discipline. It is based on game theory (GT), a post-bellum branch of mathematics and economic theory, the analytic potential of which is actively prospected in many of the social sciences.<sup>4</sup>

Even though GT is not new any more, and has even gained some notoriety in literary circles, the interesting question is why literary studies should lag behind the social disciplines in their application of it. Steven Brams names two likely reasons:

My own belief is that linkages between mathematics and literature are not viewed as worth exploring by young scholars in either field if they are interested in advancing their careers. Aggravating this problem is that there is no interdisciplinary training for people who might be interested in the combination [of GT and literature]. (50).

It is indeed strange that GT, which has proven its potential in countless situations, has not yet taken root in the humanities. The “opposition” to GT extends beyond literary studies; there is an apparent retrenching

against it in some branches of philosophy as well as in religious studies. In departments of literature, the most ardent criticism of GT seems to come from three sources. One is a misguided form of feminist scholarship that brands anything that purports to study rationality as patriarchal and oppressive. The second is the "anti-humanist" rejection of concepts of individual agency. The third strain, partly overlapping the second, is the rising tide of epistemological relativism which, although sweeping the humanities in general, is particularly strong in literary studies. Here, as far as one can make it out, the argument seems to be that a study of strategic and rational choices is irrelevant, since *any* human choice is as valid as any other.

In contrast, I would argue that GT can be effectively used in literary studies both to model the pragmatics of the author-reader engagement, as well as in the semantic interpretation of fiction. In fact, the alliance between literature and GT could even prove of some benefit to the latter. In Nigel Howard's words, by working within literary semantics, GT could "benefit from the great store of intuitive wisdom about human behavior contained in the world's fiction. They [game theorists] should continually be testing their theories against this." Mindful of fiction's contribution to theory formation and refinement, Howard argues that if some postulate of GT "doesn't make sense to Shakespeare, perhaps it doesn't make sense!" (both in Brams, "Game" 51).

### What Is Game Theory?

I have investigated the opportunities for game theoretic analysis in the interpretation of fiction elsewhere.<sup>5</sup> Here I will focus on the pragmatics of the author-reader interaction. Of particular interest to us will be Edgar Allan Poe's celebrated "The Purloined Letter" (1844). Poe provides a brilliant example of a two-person game characterized by reciprocal awareness—essentially the situation of the reading process.

The story is even more germane in that, in the midst of a digression into strategy and mathematics, Poe offers an explicit analysis of gaming behavior and strategy for precisely the kind of game that interests us, i.e. involving two players, at the mercy of each other's strategies. The two games are not, however, isomorphic. The marble-guessing game from "The Purloined Letter" is strictly zero-sum: the players are in a situation of total conflict. On the other hand, the relation between author and reader is largely (as I will argue) cooperative. Nonetheless, it is instructive to com-

pare Poe's intuitions with the normative solutions of GT, both in the context of the marble guessing game, and in the context of the confrontation between Dupin and Minister D—, both mathematicians and poets.

In order to appreciate Poe's remarkable skill and accuracy in modeling this situation, we need to compare it to game theory, a field of research developed precisely to study human interactions. What, in a nutshell, is game theory? It is a theory of decision-making in circumstances involving more than a single agent. To better understand what is distinctive about it, we can begin with its close relative, decision theory. Decision theory, true to its name, is a mathematical theory for making the best (optimal) choices. What is characteristic about it is that the outcome of the agent's decisions does not depend in any way on anybody else. The complete range of the decision-maker's possible options, executed actions, and eventual results is determined entirely by his preferences and by states of nature.

In a sample situation you may be asked to divide a piece of cake between yourself and another agent. Given your actual preference—you love cake and dislike the other person, who may happen to be your younger brother—decision theory helps you map out the best course of rational action to secure the desired result.<sup>6</sup> So far this may seem simple, even trivial. Yet all this becomes much more intractable when dealing with real life situations. People's preferences are often more complex and interdependent than in our hypothetical example, their range of options is significantly greater, and their knowledge of the variables involved much less complete.

However, there is another, categorically different source of complexity that overshadows all the others. It is also the most important difference between decision theory and game theory. Let us again consider our piece of cake. Given that your preferences are still the same, how would you divide it, knowing that your younger brother will choose the first piece? There seems to be only one rational course of action: cut the cake into equal parts. Your preference for cake has not changed, but now you must also consider the preferences of another agent (who loves cake as much as you do). Trying to get the best for yourself and at the same time to limit your brother's share, you will divide the cake evenly. In this way you will ensure the maximum gain for yourself and the minimum for him, given that your interests are diametrically opposed.

## Games and Literary Pragmatics

To recapitulate, GT is a mathematical theory of strategy that aims to optimize the decision-making process in situations where the respective results of each agent's actions are, at least to some degree, *interdependent*. One may even say that GT is a theory of making interdependent decisions.

The players involved in a strategic encounter need not always be individuals, as long as the similarity of their goals and preferences makes it possible to treat them as such. To facilitate analysis, GT uses the fiction of rational players, who seek better outcomes according to their preferences, in view of the anticipated rational choices of other players in the game. A strategy describes a complete plan of action for a player for all possible contingencies that may arise during the course of the game. The actions executed by players, called moves, are taken independently, in the sense that the players are assumed not to be able to coordinate their decisions beforehand. However, as we saw above, in another sense the player's decisions are *interdependent*, since each arrives at his decision on the basis of the anticipation of what the other(s) will do.

The spectrum of games in which we engage constantly throughout our lives stretches from total cooperation on the one extreme, to total conflict on the other, with the vast majority somewhere between the two.<sup>7</sup> The title of Anatol Rapoport's 1960 book, *Fights, Games and Debates*, uses properly evocative terms to describe the essence of these situations. Fights are zerosum situations where the players' interests are diametrically opposite. In debates, their interests are identical, leaving only the task of finding the proper course of coordinating the players' respective moves. Games cover everything in-between, from parlor games, political lobbying, atomic warfare planning, and creating a fair voting system, to choosing a mate, advertising movies, or even—as we will see—reading works of literature.

The more one realizes game theory's interdisciplinary potential, the more one appreciates it as more than just a mathematical theory. One of its most attractive attributes is the ease with which it lends itself to applications across a staggering range of disciplines and contexts. Game theoretic models have been successfully used in psychology, criminology, agriculture, political science, economics, sociology, military, advertising, jurisdiction, legislature, sports, biology, behavioral science, international relations, accounting, and management, to name a few. This is why, in *Nuts and Bolts for the Social Sciences* (1989), Jon Elster describes it as not "a theory in the ordinary sense, but the natural, indispensable framework for understanding human interaction" (28).

Seeing that GT has proven its usefulness in so many disciplines, can it be applied in literary studies? On balance, the answer must be positive. Although uncommon, there have been several fruitful applications of GT to the semantic interpretation of literary fictions. Taking a cue from Steven Brams's *Biblical Games* (1980), the theory has been used to identify purposeful connections between agents' actions and their intentional attitudes (beliefs, desires).<sup>8</sup> It can account for the strategic choices open to agents, by exploring links between their motives and actions, and the plot. It can also address interpretive questions, such as whether the ordinary calculations of characters in fiction can explain at least some of their behavior. As such, it may even prove of help in determining the optimum reception strategy for a given work.

On the other hand, attempts to apply GT in literary pragmatics have been quite scarce.<sup>9</sup> Yet, as a theory of strategic interdependence, GT should be of value in the analysis of the reading process, defined as a game between the author and the reader. It is important to note that in this context, "game" need not denote any form of playful or deceptive behavior. Clearly, not just Poe and the elaborate games (hoaxes) he played with his contemporary audiences, but the interaction between all authors and all readers is open to this type of analysis.

One reason to seek a precise game theory model of the reading process is the hope that it will lead to a deeper understanding of the complex variables that come into play. Before we can formulate such a model we must, however, elaborate the nature of the process, especially the interdependence of the principle players.

One of Poe's most popular and intriguing fictions, "The Purloined Letter," provides an accurate model of a two-person reciprocal game. Another reason Poe's story is so useful is that it foregrounds the analytical structure of the underlying conflict at the expense of the specific social and psychological background ("the framing environment" in GT). Far from being a realistic narrative, with the incumbent characterological depth and veracity of its psycho-social "framing," Poe's story, when stripped down to its narrative essentials, is a structural model of an intriguing interactive situation.

### "The Purloined Letter"

"The Purloined Letter" opens in the Paris apartment of C. Auguste Dupin, a detective and eccentric, in whose library the narrator and Dupin

meet Monsieur G., the Prefect of the municipal *gendarmérie*. The Paris police are working on a singular case, and G. hopes to elicit Dupin's powers of ratiocination. The matter concerns the theft of an incriminating letter from the boudoir of the Queen. The thief is known; in fact, his spectacular move was executed in the presence, and with the implicit consent, of the lady. The evil genius is Minister D— who, ruthlessly anticipating that the Queen would not dare cry "thief," for fear of betraying the contents of the letter to outsiders, brazenly exploits the situation.

Informed of the police's repeated failure to find the letter despite an exhaustive search of the thief's quarters, Dupin forms a hypothesis about its location. He reasons correctly that D—, anticipating the search of his premises, will try to "hide" the letter in the most conspicuous place. Under a minor pretext, he pays a visit to the Minister's apartment, and indeed spots the stolen note in the letter rack. The detective arranges for another visit and, using a cleverly orchestrated ruse, purloins the letter himself. In its place he leaves a facsimile which, in its cryptic way, reveals to D— the identity of the person who has foiled his sinister plans.

"The Purloined Letter" is a source of some penetrating observations about a battle of intellects between a brilliant criminal and a brilliant detective. Poe captures the nature of this interaction in a way that naturally extends to a large class of contexts that have nothing to do with crime, or even conflict. Acclaimed for his portrayals of the darker reaches of the human psyche, here Poe sets out to analyze the essence of a reciprocal guessing game. This emphasis on the deep structure of the conflict gives the story its sparse analytic appearance. One would look in vain in "The Purloined Letter" for the psychological (or pathological) complexity of a Roderick Usher, or even for an action-driven plot of Arthur Gordon Pym. Instead the reader is presented with a parsimonious, logical structure of a game of cops and robbers.

The *dramatis personae* are limited to four generic types: the arch-villain, the assiduous but inept officer of the law, the master detective, and the faithful sidekick.<sup>10</sup> Equally unrealistically, the incident in which the crime is perpetrated is the result of a chain of credulity-defying coincidences. Not only is the Queen reading an incriminating letter precisely at the moment when the King pays her an unannounced visit; not only is she unable to conceal the letter; not only does the King fail to catch anything amiss; not only does the malefactor D— elect to visit the royal boudoir at this opportune instance; not only does he immediately perceive the letter and recognize its handwriting; not only does he just happen to be in possession of



another look-alike letter; but, conceiving his Machiavellian plan on the spot, he executes it without a hitch, by switching the letters.

This brief scene offers a strong indication of how the interests and strategies of the players are interrelated and mutually anticipatory. In order to steal the letter from under the Queen's very nose, D— must be relatively sure he will not be apprehended in the act. This knowledge can be only a result of his clever reasoning *about the Queen's point of view*. It involves a careful analysis of her choices and their possible outcomes: 1) stop the thief, but reveal the contents of the fateful letter, or 2) consent to the theft, but preserve the anonymity of the letter's contents. The Minister, having weighed the preferences of these outcomes, makes the first move, revealing his strategy and committing himself to the course of action.

However, perhaps he is not risking that much, since the similarity of the letters effectively limits the Queen's options. Were she to cry foul, seeking to punish the Minister at the cost of compromising herself, the diabolical D— could always ascribe his behavior to a guileless error. The Queen's range of replies to D—'s opening move in this game of perfect and complete information is thus severely restricted. In games of "perfect information," the players know the moves of the other players at each stage in the game. In games of "complete information," the players know each other's preferences, as well as the rules of play. In Poe's artful scenario, both players know exactly what is going on in the royal boudoir, and can effectively reason what course of action (or in the Queen's case, inaction) is open to the other player.

What makes the story so illuminating, both in light of GT and literary pragmatics, is the interdependence of both players' gaming behavior. By interdependence (reciprocity) I mean not only the need to consider the other player's possible moves, but also the necessity of trying to anticipate the opponent's anticipation of one's own moves as well. In other words, reciprocal dependence turns the tables not just on the other player, but on oneself as well. In "The Purloined Letter" this is expressed in terms of "the robber's knowledge of the loser's knowledge of the robber" (977).<sup>11</sup> Poe's awareness of the importance of the concept is evident; it is stated first by his narrator, and restated by Dupin two paragraphs later.

There are other examples as well. When the Prefect G. describes the ease with which he gains access to the malefactor's house and person, one begins to suspect that D— must have anticipated G.'s moves, and was in fact playing into his hands. Dupin understands this at once. He describes D— as "not altogether a fool" who "must have anticipated these waylayings, as a matter of course" (979).

This statement confirms the reciprocal relation between D— and Dupin. In order to outwit his opponent, Dupin must preempt his moves, by staying ahead of the anticipated anticipation of his own moves (although, as far as the Minister is concerned, his opponent is the Parisian *gendarmérie*). Thus Dupin properly interprets the Prefect's apparent success: D— "could not have failed to anticipate—and events have proved that he did not fail to anticipate—the waylayings to which he was subjected," just as he "must have foreseen. . . the secret investigations of his premises" (988).

### The Strategy of Cooperation

Modelling a strategically original game (in effect, creating a fictional game), Poe focuses on the key elements of the underlying gaming structure. In fact, "The Purloined Letter" introduces three different games: 1) the zerosum "letter" game of complete information between the Queen and Minister D—; 2) the interpolated zerosum game of guessing marbles (see below); and 3) the generic "detective" game involving D— and his august opponent, Dupin. The last game is not a game of perfect or complete information. The rules of the interaction, involving the available strategies, moves, and outcomes, are not known to the same degree by both participants. In fact, Dupin's concluding remarks reveal that D— is not even aware of the detective being his nemesis.

Games of imperfect information are important to us since the interpretive process, in which the author and the reader are relatively free to adopt and adapt rules, is an example of such a game. Of even greater importance, however, is the final paragraph of the story, in which Poe reveals his intuitive grasp of the strategic nuance of such a game. Describing the contents of the note the detective leaves for the villain, Poe subtly shifts the interaction between Dupin and D— towards partial cooperation. Although in the text the change is almost imperceptible, there is nothing subtle about the dramatic difference of this new game from the strictly competitive "letter" game. Poe's astuteness as a writer shows in grasping and accentuating the fundamental difference between zerosum "fights," and non-zerosum games with an element of cooperation.

It is, of course, possible for the author and the reader of a literary work to end up in a strictly uncooperative game. The players' motives may be mixed, or even, in extreme cases, competitive (e.g. due to envy, ignorance, deception, ludic considerations, or, in the case of kitsch, to a "superior"

aesthetic and artistic perspective). When that happens, the reader/critic will ignore all the textual and extra-textual clues intended by the author (who makes the opening move in the game) to induce cooperation.<sup>12</sup> But by and large this kind of situation must be considered atypical. Literary authors and readers are much more likely to interact in a manner which, while not always purely cooperative, is nevertheless cooperative to a significant degree.<sup>13</sup>

What kind of process does Dupin go through while deciding on the contents of the note for D—? The detective clearly desires D— to “get the message,” as it were. The process of choosing the precise text—analogue to a similar kind of process in a writer of fiction—is again likely to be the result of a reciprocal anticipation. Note that Dupin’s intentions are quite complex at this point. For one, he seems to wish not to disclose his identity outright, but to convey enough information for the Minister to guess it. At the same time, although it does not seem “altogether right to leave the interior blank—that would have been insulting” (993), Dupin does in fact want to signal his superiority to his enemy. Last but not least, he wishes to accomplish all of the above while making an oblique reference to “an evil turn” that D— had done him in Vienna.

Intending his message to express all he wants, Dupin must take into account the anticipated reading of the message by the Minister. Describing the detective’s intentions in writing his specific message, Poe depicts intentions that are intended to be recognized as being intended to be recognized. This gives “The Purloined Letter” its remarkable strategic and pragmatic acuity.

### Guessing Poe’s Marbles

Before employing these insights in our analysis of the reading process—first as a communicative act, then in game theoretic terms—let us examine the third game discussed by Poe, this one attended by his explicit theoretic commentary. This is the already mentioned marble-guessing game—a variant on penny-matching. “This game is simple” relates Poe, “and is played with marbles. One player holds in his hand a number of these toys, and demands of another whether that number is even or odd. If the guess is right, the guesser wins one; if wrong, he loses one” (984).

Poe’s narrator deems himself an expert on the “theory of games,” and proceeds to analyze the game, revealing his analytical naivete. Poe’s ignorance, and his ignorance of this ignorance, should not be surprising.

Although he prided himself on his analytic skills and knowledge of mathematics (mostly from incomplete studies at the University of Virginia and West Point, augmented by desultory readings during his journalistic career), he was never more than a shrewd dilettante. True to form, "The Purloined Letter" contains outrageous mathematical blunders, like the proposition that  $x^2 + px$  is unequal to  $q$  (988). Clarence Wylie, a mathematician himself, carefully documents how Poe sets up his mathematical straw man in order to "project upon mathematicians his own uncertainty regarding the elementary distinction between an identity and an equation" (230).

But what of "The Purloined Letter" and the marble-guessing game? In psychological terms, Poe's analysis of the guessing process is anything but convincing, and in terms of GT his solution to the game is simply and unequivocally wrong. Here is the essence of Poe's psychological "algorithm" for successful play against a simpleton: in the first round pick either value (odd or even), in the next pick the same value as in the first, then alternate values. Here is that same algorithm adjusted for a clever opponent: in the first round pick either value, in the next pick the other value, then alternate values.

The arrant primitiveness and inefficacy of this scheme is self-evident. As an exercise, the reader can play a few imaginary rounds against Poe's genius. No matter how the game goes at first, after a few rounds his strategy becomes so obvious that it can be exploited against him. Poe's crass misrepresentation of the most fundamental aspects of human psychology is even more visible in his "method" of judging the astuteness of his opponent, on which his entire strategy depends:

When I wish to find out how wise, or how stupid, or how good, or how wicked is anyone, or what are his thoughts at the moment, I fashion the expression of my face, as accurately as possible, in accordance with the expression of his, and then wait to see what sentiments arise in my mind or heart, as if to match or correspond with the expression. (984).

This model is open to empirical testing; I would urge the reader to conduct an experiment along Poe's lines, and reach his own conclusions. Of course, knowing exactly the thoughts of one's opponent would guarantee success, but here we enter the realm of godlike omniscience. It is hard to avoid speculating that Poe must have been a terrible gambler if this quote in any way reflects his true convictions. What makes it more than idle speculation is the fact that he had to leave West Point after accumulating too many gambling debts.

In terms of game theory, Poe fares no better. Clearly the first player must try to guess not just what the second thinks, but what the second thinks the first thinks, or even what the second thinks the first thinks the second thinks the first thinks, etc., *ad infinitum et nauseam*. Game theorists would say that the marble-guessing game has no equilibrium (or saddle) point. In other words, it has no convenient outcome for players to settle on, which would prevent this infinite reciprocal anticipation. As such, the theory dictates that players resort to the use of “mixed” strategies, i.e. ones arrived at by means of some randomizing device (e.g. the flip of a coin). After all, if the game requires your opponent to predict whether the number of marbles you have chosen is odd or even, surely you can always at least force a draw.

At this stage of the game there is no more reason to conceal one’s strategy—another point that Poe, obsessed with secrecy, gets completely wrong. In a simple zero-sum game without equilibrium points, of the type exemplified by marble guessing, once the use of a mixed strategy has been elected, *it is completely irrelevant* whether the strategy is revealed to the opponent. Poe maintains that the wonder child has won all the school’s marbles. However, as Morton D. Davis reminds us, if you pick a mixed strategy “the outcome will be the same no matter what your opponent does; that is, each of you will win, on average, half the time” (30)—a result dramatically different from the marble sweep imagined by Poe.<sup>14</sup>

### The Gricean Connection

So far we have formulated a number of not very systematic insights into the interactions between players in a reciprocal game, where the moves of one side are at least partly inflected by the (anticipated) moves of the other. I will now situate these intuitions in a broader context of communicative exchange. In my discussion of illocutionary acts and intentions, I rely on the account given by Bach and Harnish which, in general, incorporates the views espoused by other philosophers, notably Strawson and Searle (although their versions differ radically in specifics).

There is broad agreement on the type of intention involved in a distinctly illocutionary communicative act. It has been described by Paul Grice in “Meaning,” an influential paper from 1957.<sup>15</sup> Grice characterizes it as a reflexive intention—essentially of the type encountered in our discussion of reciprocity in “The Purloined Letter.” A reflexive intention is one intended to be recognized as having been intended to be recognized.

Generally, an act of linguistic communication is considered to be successful if the "attitude the speaker expresses is identified by the hearer by means of recognizing the reflexive intention to express it" (Bach and Harnish xv).

This formulation is easily adaptable to the reading process. The author's intention to communicate with the reader through the act of fiction-making is identified by the reader as reflexive—intended to be recognized as intended to be recognized. When identifying the specific attitudes conveyed by means of the work, both participants use mutual contextual beliefs (MCBs). In literary works, one of the most central of these is genre, but there are other, less apparent ones (among the most general may be truth disclosure within the story, language use, or modelling uniformity, which requires that the work exhibit the same type of modelling throughout).

MCBs are thus a crucial constituent of the reflexive inferences made by both the author and the reader. Bach and Harnish explain,

We call such items of information "beliefs" rather than "knowledge" because they need not be true in order to figure in the speaker's intention and the hearer's inference. We call them "contextual" because they are both relevant to and activated by the context of the utterance (or by the utterance itself). And we call them "mutual" because *S* and *H* not only both have them, they believe they both have them and believe the other to believe they both have them. (5).<sup>16</sup>

Of course the reflexive intention itself is not sufficient to accept a proposition—to instill a belief commensurate with the meaning and force of the utterance. Beliefs, intentions, or actions are not generated merely by recognizing the intention to generate them. Thus even if the author of a work intends the reader to approach it in a specific way, and the latter recognizes this intention as one he is supposed to recognize, he can still refuse to follow the author's meaning. The reader computes the author's intention—the intended meaning or effect—on the basis of the text and their MCBs.

The interaction between the author and the reader is just one among a variety of communicative acts, all governed by mutual beliefs. For our purposes, the most important aspects of the reading process as a communicative act are:

- 1) the interdependence and its (reflexive) recognition by the participants;
- 2) the presence and activation of mutually shared beliefs (e.g. genre);
- 3) the reader's assumption of intentionality on the part of the author in approaching the exchange.

Again this intentionality, which underlies the process of fiction-making, is to be recognized by the reader as being intended to be recognized. This is not to say that every tactical move on the writer's part (punctuation, word or phrase choice, symbolism, etc.) must be regarded as explicitly intentional. However, considering the structure of the interactive process, the knowledge of its explicit and implicit conventions, and the reciprocal awareness of this knowledge, the assumption of intentionality is the only one that makes sense in the situation. As Bach and Harnish put it, "Awareness of the situation invokes the rules; recognition of the rules activates the expectations" (95).

Naturally, in fiction, much as in the rest of our lives, we do not always speak literally. In literary works this problem is often compounded by the underlying symbolism, across the entire private/public spectrum. Here again, we can invoke the intentional principle (see point 3 above) to understand the type of relation between author and reader. As I argue elsewhere in my account of truth in fiction, in general the work's meaning is regulated by the text as well as by the reader's reflexive recognition that a given work is the product of an intentional strategy adopted by the author for a specific literary game.

The literary interpretative game is readily expressed as a variant on the Gricean communicative model. The reader needs to infer from the work that the author reflexively intended it to have its meaning as part of his creative strategy in this cooperative "game." A strong confirmation that this model depicts the situation correctly comes from GT.<sup>17</sup> In fact, the correspondence between Speech-Act theory and the kind of strategic analyses favored by game theory is nothing short of remarkable. Compare how Thomas Schelling describes the strategy involved in a tacit coordinative process, in this case involving two people who lost each other in a busy store.

One does not simply predict where the other will go, since the other will go where he predicts the first to go, which is wherever the first predicts the second to predict the first to go, and so ad infinitum. What is necessary is to coordinate prediction, to read the same message in the common situation, to identify the one course of action that the expectations of each can converge on. They must "mutually recognize" some unique signal that coordinates their expectations of each other. (54)

We can thus expect reflexively intentional signals to play an important part in the reading process (albeit often not fully consciously), as part of the overall strategy of communication.

## The Bargaining Model

So far, using Poe's intuitions and their game theory analogues, I have analyzed the literary game as a type of cooperative exchange, governed by rules and conventions tacitly embraced by both players. (The process is tacit, for the players cannot negotiate their terms directly.) I will now systematize these insights by outlining a precise strategic model of a literary game. I propose that the interaction between author and reader can be usefully interpreted as a variant of a nonfinite, two-person, non-zerosum, one-sided, tacit bargaining process of imperfect information.<sup>18</sup>

Although originally used in economics, this model illustrates surprisingly well the distinctive aspects of our encounters with works of literature. Among them there are:

- 1) mutual reflexive interdependence of players;
- 2) fixed order of play;
- 3) one-sidedness of the communicative process;
- 4) possibility of limited pre-play communication owing to the publishing record or advertising;
- 5) inability to make side-payments or binding agreements; (on the other hand, it may be interesting to investigate situations involving sequels, or books intended to form a series—Dickens or Conan Doyle are obvious examples—where, it could be argued, the author does enter into a tacit form of agreement with the reader, who is subsequently "rewarded" with a continuation of a desired series. The desired commodity for the author would, in this case, be reader loyalty);
- 6) typical absence of cyclical iteration of a particular game;
- 7) possibility of constructing metagames reflecting a feedback link with the past history of the game (e.g. the reception of the work);
- 8) some means of inducing cooperative behavior in the second (by the order of play) player;
- 9) possibility of applying various models of arbitration schemes to the work of literary critics, especially in cases where the cooperative game degenerates into a partially competitive one.

As argued above, the reading process in its paradigmatic form is not a zerosum game (a game of total conflict). No one would challenge the assumption that the preferred outcome for either player necessarily entails a corresponding loss for the other.<sup>19</sup> Take Poe and his preferred outcome in the literary game called "The Purloined Letter." Although my interdiscipli-



nary reading departs in some ways from the author's reflexive intentions, it surely adds to, rather than detracts from, its overall value.

The two-person interaction can be modelled in terms of: 1) the author engaging a single reader in a game; 2) the author playing a game with a community of readers, however broadly or narrowly defined. The limiting case is the variant where the author is engaged in a game against the entire cultural environment.<sup>20</sup> The first model is open to analysis and empirical testing as a direct interaction between two individuals in particular and individualized instances of the game. The second model, obviously statistical, could profit from analysis of data applied stochastically across a variety of contexts (sales, library borrowings, scholarly acknowledgements, or selective response polling). Brams suggests another framework that may be used for such analysis: "the theory of *psychological games* (Geanakoplos, Pearce, and Stacchetti, 1989) and *information dependent games* (Gilboa and Schmeidler, 1988), in which players' payoffs depend on whether certain postulated beliefs are fulfilled" ("Game" 52).

The reading process in its paradigmatic form is not a zero-sum game. The preferred outcome on one side—understood here as an optimal reading and evaluation—does not entail a corresponding loss on the other. This is far from saying that the players' motives may not be mixed, or even, in extreme cases, competitive (due to envy, ignorance, deception, or even, in the case of kitsch, to a "superior" artistic and aesthetic perspective). All the same, interpretation is typically not a matter of sheer conflict. The postulates of GT and relevant empirical research clearly indicate that, generally, the more cooperative the game, the more significant the ability to communicate.

Thomas Schelling's influential *The Strategy of Conflict* examines the question of cooperative behavior. The author argues that salient points in a game may be used reflexively by players to coordinate their strategies. The diverse literary conventions—from the general assumption of ontological unity, through modal or generic patterns, repetitive play (iteration of a certain pattern), down to specific rhetorical or symbolic devices, demarcate the flexible rules of the literary game in progress. Of course, the process is not algorithmic, and can fail when the author's aspirations to modality, genre, or particular interpretation are not reciprocated by the reader.

The game theory framework could help us see how the cooperative game changes in each case. It could also provide analytic models for some, if not all, variations of the possible degrees of cooperation in the author-reader interaction. Not all significant variables are, of course, included in this model. The two most prominent ones may be the lack of public dis-

closure of results after the game, and the personalities of the players. This reflection should not, however, give rise to methodological panic. It is simply a mirror of subtle and complex reality which, despite our best efforts, is rarely reducible to a series of simple propositions.

### The Free-Form Literary Game

Only semantically impoverished games such as chess or poker, whose rules can generate all conceivable configurations of play, are considered finite. It is this feature which, despite an astronomic number of possible permutations, makes them mathematically normalizable. In contrast, literary works are non-finite and non-normalizable. As such they have to be played out in their entirety. GT helps us appreciate why it should be so.

The interpretive process is a free-form game, meaning that some, and in some cases even most, rules of the game are made up as the game progresses. There is plenty of room for vagueness, imprecision, ambiguity, or even radical misinterpretation. As Martin Shubik remarks in *The Uses and Methods of Gaming* (8-10), social and literary games tend to be environment rich, necessitating an extensive discussion of their social settings. It is natural that the sensitivity to framing should be reflected in the interpretive openness of the (rules of the) given literary game. As a result, in comparison with any standard matrix-type game analysis, literary interpretations must pay a greater amount of attention to the context, to grasp the full character of the play.

After all, the "rules" of the interpretive game are of probabilistic nature: as stabilized as they may become during the course of the story, they are always subject to modification, or even revocation. Only structurally and/or semantically depleted fictions might be open to full normalization without significant loss. By definition, though, such texts would be generic fossils, bereft of ingenuity and individuality. On the other hand, works characterized by genre and structural openness will resist complete analysis in this reductive (normalizable) fashion. In any case, we should be wary not to let the mathematical structure of the payoff matrix dominate the analysis entirely. The character of partly and fully cooperative games may change profoundly following changes in contextual detail, since it is often contextual detail that leads to the stabilization of a nonantagonistic outcome.

As Schelling warns us, “the propositions of a *normative* theory [of mixed-motive or cooperative games] could never be derived by purely analytical means from a priori considerations” (163). Where communication is short of perfect, where there is uncertainty about players’ value systems or choices of strategies, or when an outcome is reached by a sequence of moves or maneuvers, an essential part of the study of cooperative games must necessarily be empirical. There is thus no danger of literary studies being wholly taken over by matrix analyses.

Not even the most comprehensive payoff function can capture a contextual message communicated by someone who gambles on sharing a certain point of view with unknown recipients. Since the interpretive process is a species of cooperative game, it will heavily depend on the players’ shared sense of pattern, regularity, convention, or even clichés. It should, however, be clear that even a comparison between the insights of the normative approach of GT and the inductive approach of traditional scholarship can be a source of valuable knowledge.

Another intriguing avenue for literary research could be a study of “what effect different scenarios have if they are written about a simple game, which, in each case, has the same basic analytic structure” (Shubik 23). We could examine, for instance, the role and quality of various framing scenarios responsible for generating dramatic aesthetic differences between works based on the same game model. Although the range of analytic structures underlying most fictions is likely quite limited, the influence of narrative variables on modelled situations could be examined in view of their strategic development. In this way we can approach the questions of generic and structural openness from another angle. We could thus be well poised to render justice to the narrative richness and complexity of literary works, while acknowledging the fundamental nature of the conflicts upon which they are modelled.<sup>21</sup>

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NOTES

1. See Bartoszynski and Puri, Balinski and Young, and Banzhaf.
2. For a thorough examination the "higher superstition" among literary scholars, see Gross and Levitt.
3. See, for example, Allen, and Corns and Smith.
4. Although the most significant contribution to GT, Von Neumann's minimax solution for all two-person zero-sum games dates back to 1928, the field was not established until 1944, with the publication of *Theory of Games and Economic Behavior*. The single source on game theory accessible to literary scholars is Davis's *Game Theory: A Nontechnical Introduction*. Further material can be found in Shubik, Shelling, Rapoport, and the classic and still invaluable study by Luce and Raiffa.
5. In "Game Theory in the Third Pentagon: A Study in Strategy and Rationality," *Criticism* 38(1996): 303-330.
6. Note that the theory does not cover the moral or ethical dimensions of preferences or actions. It merely accepts them as given, and streamlines the decision-making process by investigating possible courses of action with a view to their effectiveness from an agent's subjective point of view.
7. Some game theorists prefer to reserve the term "cooperative" for games where binding agreements can be formed, while speaking of "coordination" in games without binding agreements (I thank Curtis Eberweiner for this insight). While recognizing this important difference between these two types of games, here I will follow the common use of "cooperation," more familiar to literary scholars.
8. One example of such analysis is Herbert De Ley's "The Name of the Game: Applying Game Theory in Literature," published in *SubStance* 55 (1988). For a recent review of the field, see Brams's "Game Theory and Literature."
9. Two notable examples are Lewis's *Convention* (1969), and Livingston's "Convention and Literary Explanations" (1992).
10. The classic detective genre is indebted to Poe, who is considered its modern founder. For background, see Irwin, Rollason, or Van Leer.
11. All subsequent references are to Poe, unless indicated otherwise.
12. The inclusion of the author's intentions in determining the meaning of his work reflects my belief in the presence of a determinate mental reality at the act of creation.
13. This is not to suggest that all literature aims at eventual decryption. Clearly there are writers (e.g. Robert Anton Wilson) who aim at ever-deepening levels of obfuscation, to perpetuate some nonexistent mystery. L. Ron Hubbard's Scientology "literature" is probably the best known of this hermetic sect. I owe this comment to Craig Burley.
14. Morton D. Davis actually discusses "The Purloined Letter" briefly in his *Game Theory* (27-31); see also Brams's "Game Theory and Literature."
15. Sperber and Wilson propose a new theory of communication that replaces some of the unlikely features of Grice's original model.
16. In addition to MTBs, there are two other, more general mutual beliefs that participate in the exchange. For a definition of these Linguistic and Communicative Presumptions shared by the linguistic community, see Bach and Harnish (7).
17. A similar overlap between game and communication theories also points to the correctness of my parallel analysis of the communicative process using speech-act and game theory. For a brief but apt introduction, see Schelling (85).

18. The only example of this model that I have so far come across is Morton D. Davis's ever-so-brief example of business partnerships (*Game Theory* 88-89).

19. In my study I concentrate on cooperation, since it dominates the readerly and literary critical practice. For a recent exploration of the competitive dimension in literature and literary studies, see Hjort.

20. That such an approach can be far from inconsequential has been shown by Sidney Moglower in his game theory analysis of agricultural crop selection (see Works Cited).

21. Many of the ideas in the second half of this paper were developed in "The Role of Game Theory in Literary Studies," a presentation at the Fourth Biannual Conference of the International Society for the Empirical Study of Literature.

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