

# The Logic of Fiction as a Potential Bridge Between Language and Mathematics

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## Abstract

This article expands on the concept of the “logic of fiction,” first outlined in the author’s work, “The Relationship of Language to Mathematics and Mathematics to Language” (Skuza, 2025; <https://doi.org/10.5281/zenodo.15974213>). The logic of fiction is presented here as a formal system for verifying the internal consistency of a narrative by abandoning the criterion of objective truth in favor of coherence with the axioms and rules of a given fictional world.

The paper undertakes a critical analysis of this approach, arguing that its deterministic and binary nature (consistent/inconsistent) constitutes a fundamental limitation. It is shown that the logic of fiction, by focusing exclusively on the descriptive function of language, ignores its key dimensions: the performative (language as action, according to Austin’s theory), the persuasive (influence on the recipient), the expressive (expression of emotions), and the phatic (building social bonds).

In conclusion, it is stated that the logic of fiction, although a valuable attempt to formalize one aspect of language, cannot serve as a universal bridge between language and mathematics. Its “logical flattening” of narrative, which treats ambiguity and contradiction as errors, prevents the modeling of the phenomenon of emergence, i.e., the formation of new meanings. The development of Searle’s theory of speech acts and the pursuit of a new, probabilistic, and contextual branch of mathematics capable of describing language in all its complexity and multifunctionality are indicated as more appropriate directions for further research.

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# 1 Introduction to the Logic of Fiction

The logic of fiction is a theoretical idea that I developed, in a way, during my work on the article *The Relationship of Language to Mathematics and Mathematics to Language*. In section 5.4, I suggested that:

We need a scientific “logic of fiction”—a formal system capable of analyzing the internal consistency and rules of narratives, literature, mythology, and even conspiracy theories.

In this view, the logic of fiction focuses on the internal consistency of a narrative. Classical logic, based on truth and falsehood in relation to a single, objective world, is completely helpless in the face of fiction. The question, “Is it true that Frodo Baggins destroyed the Ring?” is meaningless within its framework because Frodo does not exist in our reality.

Therefore, the logic of fiction must definitively abandon the criterion of correspondence with reality in favor of another criterion fundamental to every narrative: **internal consistency**.

Here are the key reasons for this state of affairs:

- **Changing the definition of “truth”:** The logic of fiction does not ask about absolute truth, but about truth within a given narrative universe. A statement is “true” in the world of *The Lord of the Rings* if it is consistent with the rules and facts established in that world. The goal thus becomes to assess whether a given statement  $p$  is true in world  $W$  ( $T_W(p)$ ).
- **Creating a formal system for narrative:** To be able to assess “truth in fiction,” it is necessary to treat each narrative as a quasi-formal system. Such a system, as the author proposes, would have to be defined by:
  - A set of narrative axioms ( $A_W$ ): these are the fundamental, indisputable truths of a given world, e.g., “The Ring is evil” or “Elves are immortal.”
  - A set of inference rules ( $R_W$ ): these are the principles by which subsequent events follow from axioms and existing events. They may or may not coincide with the logic of our world.
- **Detecting inconsistency as the primary goal:** Since consistency is the foundation, the main task of the logic of fiction becomes its verification. The document provides an example: it can be formally demonstrated that the sentence “Harry Potter used the Avada Kedavra curse” is false in the world presented in the novels ( $\neg T_{W_{HP}}(p)$ ), because it conflicts with the moral axioms and actions of the hero. In turn, Voldemort’s use of this curse is true in this world because it is consistent with the axioms describing his character.
- **Practical applications:** Such a logic could be used to analyze the internal logic of conspiracy theories to expose their contradictions and unjustified inferential leaps. In the case of AI, it would allow for the generation of more coherent narratives and the identification of “plot holes.” This again reduces its function to ensuring coherence.

The logic of fiction must focus on internal consistency, as this is the only way to create a formal, analytical tool capable of measuring and evaluating a narrative defined within its framework, once the impossible-to-apply criterion of objective truth is rejected. It is an attempt to mathematically capture what readers or viewers do, one might say, intuitively: they simply assess whether the story “holds together.”

## 2 The Multifunctionality of Language

The narrative (or more broadly, descriptive) function is just one of the many functions of language. The others include:

### 2.1 Language as Action: The Performative Function

This is one of the most important functions, which the document analyzes in depth. Language does not just describe reality—it creates it. The use of certain words in the right context is equivalent to performing an action.

**Definition:** The performative function is where the utterance itself constitutes an act that changes a social or legal state. As the document indicates, citing J.L. Austin, the key here is the “illocutionary act”—the action we perform by speaking.

**Examples:**

- **A promise:** Saying “I promise I will help you” is not a description of a fact, but the creation of an obligation.
- **Giving an order:** The sentence “Close the door!” is neither true nor false. It is an attempt to influence someone’s behavior.
- **Naming:** The utterance “I name this ship ‘Titanic’” during the vessel’s christening brings a new name into existence.
- **Marriage:** The words “I take you to be my wife/husband” in a registry office or church change the civil status of the individuals.

Positivist philosophers originally believed that every sentence we utter in daily life describes or states something, and therefore can always be judged as true or false. J.L. Austin, in his work *How to Do Things with Words*, opposed this concept. Austin divided the use of language into two types:

- the first type is a “constative utterance,” which can be understood in the same way as the traditional notion of a statement.
- the second type is a “performative utterance,” where sentences do not take a typical logical value, i.e., true/false. Instead, they themselves become performative acts.

For example, the sentence: “I bet you 10 dollars” can be considered the act of “betting,” and it is impossible to determine whether the sentence itself is true or false. In other words, through performative utterances, we do not describe the actions we are performing, but we perform the action itself. We can understand this concept of language use as “speech acts.”

**Why does logic fail here?:** The utterances studied by Austin, and later by others, are not evaluated in terms of truth/falsehood, but of effectiveness (was the order carried out?), sincerity (was the promise sincere?), or validity (did the person taking the oath have the authority to do so?). The document emphasizes that mathematics is almost entirely the domain of locutionary acts (statements) and has no built-in apparatus for handling illocutionary acts.

### 2.2 Language as Influence: The Persuasive Function

Language is the primary tool for shaping the beliefs, attitudes, and behaviors of other people. This function is particularly evident in the age of disinformation.

**Definition:** The goal of the persuasive function is to convince the recipient to adopt a certain viewpoint or take a specific action, often by appealing to emotions rather than logic.

**Examples:**

- **Advertising:** The slogan “Feel the joy of life with our new product!” does not describe a fact but creates positive associations to encourage a purchase.
- **Political propaganda:** As the example of  $2 + 2 = 5$  shows, the goal may be to destroy the idea of objective truth and enforce loyalty.
- **Disinformation:** Effective disinformation is not based on overt lies, but on pragmatic manipulation: the use of emotionally charged language and the creation of deceptive narratives.

**Why does logic fail here?:** The effectiveness of persuasion does not depend on the logical correctness of the message, but on its psychological impact on the recipient. As the document states, a purely mathematical approach to content analysis proves helpless in the face of these phenomena.

## 2.3 Language as Expression: The Poetic and Emotive Function

Language is used not only to communicate facts but also to express feelings, create beauty, and play with form.

**Definition:** The poetic function focuses on the form of the message itself, its aesthetics, and originality. The emotive (expressive) function focuses on expressing the internal states and emotions of the speaker.

**Examples:**

- **Poetry:** A poem is judged for its metaphors, rhythm, and sound, not for its correspondence with reality.
- **Exclamation:** “Oh!”, “Wow!” or “Brr!” are pure expressions of emotion that carry no descriptive information.
- **A joke:** Its purpose is to evoke laughter through wordplay or surprising associations, often breaking logic.

**Why does logic fail here?:** The artistic value or emotional power of an utterance are categories completely alien to formal logic, which has no tools to evaluate aesthetics or feelings.

## 2.4 Language as a Social Bond: The Interactional (Phatic) Function

We often use language not to convey specific information, but to establish, maintain, or terminate social contact.

**Definition:** This function serves to build and maintain social relationships.

**Examples:**

- **Greetings:** The question “How are you?” is rarely a request for a detailed medical report; it is a signal to initiate contact.
- **Small talk:** Conversations about the weather are not for exchanging meteorological data, but for maintaining interaction and avoiding awkward silence.
- **Acknowledgments:** Utterances like “uh-huh,” “mhm” signal that we are listening and sustaining the conversation.

**Why does logic fail here?:** These utterances have a purely pragmatic value—what matters is their role in the interaction, not their semantic content.

## 2.5 The Swiss Army Knife Metaphor

Language is like a Swiss Army knife. The narrative-descriptive function is just one of its blades. The others can be metaphorically described as the rest of the available language tools—performative (a screwdriver for changing reality), persuasive (a corkscrew for opening minds), expressive (scissors for artistic cutting), and social (a can opener to start an interaction)—that constitute its true versatility. Focusing solely on the descriptive function and attempting to formalize it with a “logic of fiction” is like judging the entire knife solely on the sharpness of its main blade, ignoring all the other, equally important functions.

## 3 The Determinism of the Logic of Fiction and Its Limitations

The logic of fiction is the ability to select 0 in a  $\{0; 1\}$  system with 100% certainty, both before and after its observation. In this system, “1” is the set of all sentences consistent with the axioms and rules of a given fictional world. “0” is any sentence that contradicts these axioms.

The “logic of fiction” is a deterministic procedure designed to flawlessly identify and label any non-fitting element as “0.” Formal logic, moreover, does not operate on probability or ambiguity. Its strength (and weakness in this context) lies in its determinism. If a sentence P contradicts an axiom A, its logical value in this system is “false” (“0”)—with absolute, mathematical certainty. There is no room for “maybe a little false” or “false with a certain exception.”

In the logic of fiction, the system is static and closed, both before and after its observation. The assessment of whether something is a “zero” (an error) is independent of the act of interpretation by the reader (“observation”). The truth or falsehood of a sentence in a fictional world is established a priori by predefined rules, not by a dynamic process of reading.

### 3.1 Conclusions from the Analysis of the Logic of Fiction

The conclusions from the analysis of the logic of fiction are as follows:

- **It ignores the role of the “observer” (the reader):** In reality, it is the “observation” (the act of reading and interpretation) that gives meaning. What is a “zero” (an inconsistency) for a machine may be irony, a metaphor, a signal of an unreliable narrator, or a foreshadowing of a future plot twist for the reader. Meaning is not given in advance but is co-created.
- **It excludes emergence:** As we have previously established, emergence consists of a “one” (a new, deeper layer of meaning) emerging from a “zero” (an apparent contradiction). A system that labels something as “0” in advance and with 100% certainty, by definition, closes the door to any emergence. In such a system, a contradiction is the end of the analysis, not its beginning.
- **It eliminates creative ambiguity:** Great literature and art deliberately operate on ambiguity. They leave “areas close to zero” to stimulate the imagination and force thought. A system striving for 100% certainty in binary classification treats this key feature of language as a flaw to be eliminated.

The logic of fiction is a tool fundamentally unsuited to the dynamic, contextual, and creative nature of language. This ultimately confirms that a completely different mathematical paradigm is needed—one that, instead of deterministically “selecting zero,” can model probability, context, and the emergence of new meanings.

## 4 Why the Logic of Fiction Is Not a Comprehensive Solution

The logic of fiction fails as a candidate for the “missing link” for two fundamental reasons: the problem of scope and the problem of depth.

### 4.1 The Problem of Scope: A Specialist, Not a Polymath

The logic of fiction was designed to solve one, very specific problem: verifying the internal consistency of a narrative in isolation from objective truth. This is its strength and, at the same time, its key limitation. As we have established, the narrative function is just one of many “tools” in the linguistic Swiss Army knife. This logic provides no methods for analyzing:

- **“Why” language works:** It does not explain motivation. It is helpless against the persuasive function, where the goal is influence, not consistency.
- **“How” language works:** It does not model action. It ignores the performative function, where language creates social reality through speech acts like promises or commands.
- **“Where” language works:** It does not consider context. It omits the interactional (phatic) function, which builds social bonds, and the entire complexity of pragmatics, where meaning depends on the situation.

The logic of fiction attempts to describe only a small fragment of the answer to the question “what is language,” completely ignoring the key questions of how, where, and why it functions.

### 4.2 The Problem of Depth: Flattening Instead of Modeling Emergence

Even within its narrow field—narrative—the logic of fiction in its basic form fails. As you have rightly pointed out, its pursuit of consistency leads to “logical flattening.” It treats ambiguity, subtlety, and contradiction as “errors” or “plot holes” to be eliminated. Meanwhile, the power of language and creative narratives lies in emergence—in how a completely new, deeper layer of meaning emerges from an apparent error, absurdity, or understatement. The logic of fiction, by reducing these phenomena to a binary “consistent/inconsistent” assessment, ignores the very mechanism of creating artistic and intellectual depth.

### 4.3 What the Logic of Fiction Is and Is Not

It should be emphasized that the logic of fiction, in itself, is not a worthless concept. It is an extremely important step, but not the final step.

- **It is:** A pioneering attempt to create a formal laboratory for studying language in isolation from truth. It is a tool for mathematizing one aspect of human intuition—assessing whether a story “holds together.”
- **It is not:** A universal model of language. It is not a “Rosetta Stone” that would allow the entire complexity of language to be translated into the language of mathematics.

## 5 Conclusion: In Search of the Missing “Link”

The logic of fiction is not the missing link—the bridge between language and mathematics—because the problem of the relationship of language to mathematics and mathematics to language is much more complex. The true goal of long-term research on this issue should not be to find a single, “missing link,” but rather:

- perhaps to create an entirely new branch of mathematics that would be inherently dynamic, probabilistic, and contextual;
- probably to build an integrated theory of language that would combine various formal tools (logic of fiction, epistemic logic, computational pragmatics) into a coherent framework capable of describing language in all its multifunctionality and scope.

The logic of fiction fails, therefore, not because it is a bad theory, but because the task it was set—building a bridge connecting language with mathematics and mathematics with language—is much larger than what it was created for.

### 5.1 Further Research Directions: Searle’s Theory of Speech Acts

The proper direction for research in the context of the analyses undertaken here is the development of Austin’s theory by John Searle, who divided speech acts into five classes:

- representatives,
- directives,
- commissives,
- expressives,
- declarations.

Table 1: Searle’s Classification of Speech Acts

Class	Purpose	Examples	Characteristic
<b>Representatives</b>	Describing reality	to state, inform, deny	Truth/falsehood
<b>Directives</b>	Getting someone to act	to ask, order, question	The recipient is to do something
<b>Commissives</b>	Committing the speaker	to promise, swear, guarantee	The speaker commits to an action
<b>Expressives</b>	Expressing emotion/attitude	to thank, apologize, congratulate	Expression of an emotional state
<b>Declarations</b>	Changing reality	to appoint, declare, sentence	The utterance changes the state of affairs (performative power)

What is particularly important:

- for Searle, these classes are not rigidly separated—in practice, an utterance can perform several functions at once, which excludes the use of classical Boolean logic as a comprehensive tool for studying the function and meaning of language;



- Searle emphasized the social and conventional nature of some acts, especially declarations, which must be uttered by the right person in the right context (e.g., only a judge can pronounce a verdict), otherwise they cannot be correctly defined and their message becomes completely distorted.

It is worth distinguishing here between **language**, which is a system of signs (symbols), rules, and meanings used to communicate content and achieve communicative goals, and **speech**, which is just one of the channels for transmitting language, alongside writing, Morse code, graphic signs, gestures (e.g., sign language), light, smoke, and acoustic signals.

## 5.2 Final Reflection

If we accept Searle's assumption that an utterance can perform several functions at once, and at the same time claim that it is possible to define the full catalog of these functions in a given time frame with 100% certainty, it seems we begin to undermine Socrates' authority somewhat.

*I know that I know nothing* is a far more credible declaration than *I understand everything 100%*, as here one can begin to look not so much for truth - 1, but for an attempt to mask - 0, i.e., falsehood, in the form of one's own ignorance. And ignorance is not so much a state of lack of knowledge, as a state of lack of sufficient knowledge to describe observations in logical space and in the individual dimension, for example, a dream.

It is commonly said that there are things that simply cannot be described in words. Description is needed to understand. Sometimes to understand that nothing new has happened—emergence has not occurred, and entropy is as bothersome as ever, as is the logic of fiction. Sometimes, however, to notice that the emergence is different. Something completely new has been defined. From non-definitiveness. From the non-definitiveness without which there is no definition.

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