



Automated Metaphor Identification: Applying Artificial Intelligence to MIP for detecting Emotion-Related Conceptual Metaphors in Philip Caputo's *A Rumor of War*

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Abstract: Tracing metaphor-related expressions back to their underlying conceptual metaphors could advance natural language processing (NLP) systems. While systematic metaphor identification algorithms basically rely on large corpora, this paper combines cognitive stylistics and artificial intelligence to examine Philip Caputo's *A Rumor of War*, mapping linguistic metaphors to their conceptual roots. Employing a hybrid of MIP and MIPVU methodologies, the study leverages computational tools and is cognitive sensitized to linguistic patterns, particularly in distressing episodes, with a focus on emotion-related lexical units. The analysis reveals that Caputo's adherence to conventional metaphors does not preclude novel constructions: novel and deliberate metaphors cluster around the conceptualization of fear as illness. Further, emotional amalgamations yield unique mappings, such as fear as a jet of liquefied gas. For anger, the prevalent heat metaphor generates entailments like insanity, hot fluid, and pressurized containers, while sadness aligns with the down axis and shame with burden metaphors along verticality schemas. The findings suggest that even in limited texts, an AI-driven system—trained to target key verbs, phrases, and adjectives within specific lexical fields—could optimize metaphor identification. This approach bridges qualitative cognitive analysis with scalable computational techniques, offering a framework for future metaphor research in literary and NLP applications.

Keywords: Artificial Intelligence, Cognitive Stylistics, Conceptual Metaphor, MIP, Text Processing

1. Introduction

Metaphor is ubiquitous in natural language and, as a result, metaphor processing is very crucial in automatic text comprehension. As Shutova et al. [1] state, an NLP application which is uninformed that a “leaked report” is a “disclosed report” and not, for example, a “wet report,” would fail further semantic processing of the piece of discourse in which this phrase appears. Tracing potential



metaphor-related expressions to original “conceptual metaphors” could be a useful tool in facilitating natural text processing.

While computational approaches to metaphor identification—such as Gandy et al.'s predefined semantic knowledge [2], WordNet-based systems [3-4], word-sense disambiguation [5], and abstractness algorithms [6]—show promise for large corpora analysis, their efficacy for literary texts remains uncertain. The creative, genre-specific nature of literary metaphor necessitates alternative methods. This study therefore employs the combined MIP [7] and MIPVU [8] methodologies, which are better suited for tracing linguistic metaphors to their conceptual underpinnings in literary works. This approach bridges the gap between computational efficiency and the nuanced demands of literary analysis, particularly in identifying emotion metaphors while accounting for authorial creativity.

2. Discussion

A. Implications of Conceptual Metaphor Theory

Conceptual Metaphor Theory, henceforth CMT, posits that conceptual metaphors, grounded in embodied experience [9], structure human cognition and language across all domains [10], from science to everyday discourse [11-16]. This framework reveals how metaphorical thinking permeates both ordinary communication [12-13] and abstract reasoning [14-16], demonstrating the pervasiveness of figurative thought in human understanding.

The traditional comparison view, tracing to Aristotle, interprets metaphors like "Achilles is a lion" as highlighting preexisting similarities between target and source domains [10,17]. Johnson critiques this perspective for reducing metaphor to mere feature-matching (X,Y,Z) and diminishing its cognitive significance [10]. This debate engages with Ortony's "attribute salience imbalance" [18] and Bowdle & Gentner's feature-matching model [19], which argues only base-concept-salient features map metaphorically. Johnson's objection centers on how such approaches constrain metaphor's creative potential by privileging preexisting similarities over emergent meaning. The tension reflects fundamental disagreements about whether metaphor reveals or creates meaning.

While Barcelona & Valenzuela's "blueprint" view [20] correctly identifies linguistic forms as activators of conceptual structures (demonstrated in Rumor's emotion metaphors [21]), it underestimates language's active role in shaping meaning. The "attribute salience imbalance" concept remains valuable for metaphor identification, revealing how local linguistic patterns (e.g., lexical clusters) guide specific conceptual mappings. Linguistic forms are not merely passive triggers - their deliberate selection and arrangement in context critically influence which conceptual metaphors are activated. Thus, a balanced approach must recognize both cognitive blueprints and linguistic agency in metaphor interpretation.

B. Developing an Appropriate Methodology

This study employs an integrated MIP/MIPVU methodology [7,8,23] to systematically identify both conventional and deliberate emotion metaphors in traumatic discourse. Following Hansson and Norberg's approach [22], it combines close textual analysis with systematic examination of emotion terms, focusing on how linguistic expressions instantiate conceptual metaphors [23]. This dual



method allows for comprehensive metaphor identification while maintaining theoretical rigor within CMT frameworks. The original MIP embraces the following steps:

1. Read the entire text-discourse to establish an overall understanding.
2. Specify the lexical units in the text.
3. (a) For each lexical unit, establish its contextual meaning, i.e., how it applies to an entity, relation, or attribute in the situation evoked by the text. Consider what comes before and after the lexical unit.
(b) For each lexical unit, determine if it has a more basic contemporary meaning in other contexts than the one in the context under study.
(c) If the lexical unit has a more basic current– contemporary meaning in other contexts, decide whether the contextual meaning contrasts with the basic meaning, but can be understood in comparison with it.
4. If yes, mark the lexical unit as metaphorical. [8, 24]

So, in this paper, the analyses begin by extracting stretches of discourse in traumatic episodes to determine which linguistic expressions pertaining to emotion are used metaphorically and are related to which conceptual metaphors [25].

Steen et al. [26] propose a systematic metaphor identification approach through word-by-word textual analysis, categorizing metaphor-related words (MRWs) as either direct or indirect metaphors based on cross-domain mappings. This method enables precise detection of linguistic instantiations of conceptual metaphors in discourse.

C. Some Modifications of MIP

This study examines emotion metaphors in traumatic episodes by first identifying generic and specific emotion terms (anger, fear, shame, sadness) and their lexical fields. Using the MIP method [7,8], it analyzes metaphoricity through contextual meaning rather than Steen et al.'s lexical-unit approach [26], then maps findings to conceptual frameworks [9,27-30]. The adapted MIPVU method [26] incorporates similes as deliberate metaphors, following Cameron's perspective [31] on cross-domain comparisons.

3. Analysis

The use of metaphoric language in speaking of emotions does not imply that an emotion metaphor should be distinct from other metaphors. In the following extract, there are at least three conceptual metaphors that are jointly employed: “Moving around the perimeter, I caught snatches of conversation as the men talked about the experience; some were trying to master their emotions by talking them out; others masked their feelings under a surface toughness” [21]. This passage employs three intertwined metaphors: (1) EMOTION IS AN OPPONENT (“master their emotions” [27]); (2) EMOTION IS AN INANIMATE OBJECT (“masked their feelings” [34]), reflecting CONTAINER schemas; and (3) EMOTION IS A SOCIAL ROLE (“surface toughness” [34]), aligning with COMMUNICATION IS SHOWING/DECEPTION IS PREVENTING SIGHT [30]. These highlight emotion’s dual nature as both internal struggle and performative facade.



A. Metaphoric Conceptualization of Fear

When emotions aren't explicitly named, contextual clues reveal them. Assuming characters reflect real psychology (except in genres like cyberpunk), we can detect implicit emotions—e.g., Caputo's ILLNESS metaphor or 'hollow-cold' (previously tied to fear) signaling Phil's unstated fear after Ingram's injury.

And then I saw an image of Ingram, big, barrel-chested, striding powerfully and singing in his rich baritone, and that emotional wire inside me tightened again and broke. I felt it break as surely as you can feel a bone or a tendon break; and afterward, there was only a cold, empty, sick feeling in the pit of my stomach. Ingram crippled and Sullivan dead. Dead. Death. Death." (emphasis original). [21]

The adjectives cold, empty, and sick—along with prepositions like inside me—reflect CONTAINER metaphors (emotions as bodily substances) [27]. Cold signals FEAR IS COLD [Lakoff et al.], while sick embodies FEAR IS AN ILLNESS [27,29]. Caputo extends this creatively in Sergeant Horne's traumatic episode:

One marine broke down, and it was not a pleasant thing to see. He let out a cry, collapsed, and rolled in the mud, sobbing that he could stand no more. And none of us did a thing to stop Horne, because we felt the same terror. And we knew that that kind of fear was a contagion and the marine a carrier. So, shake the hell out of him, Sergeant Horne. Beat him, kick him, beat that virus out of him before it spreads.

The medicine worked. The marine recovered, his fear of battle overcome by a greater fear of the big, bull-chested Horne [21].

Caputo's conceptual shifts reflect Kövecses' flexibility [35] and Grady's primary metaphors [36,37]. Fear activates FORCE/UP/DOWN/CONTAINER frames (e.g., "collapsed," "virus"), forming FEAR IS A VIRUS. Parallel predicates like "hollow-cold" in Sullivan's death scene confirm unstated fear in Ingram's injury episode.

I saw him as Lemmon had described him, lying on his back with the big, bloody hole in his side. It was painful to picture Sullivan like that; I had grown so used to seeing his living face. That is when I felt for the first time, sitting in the mess over a greasy tray of greasy food, the slimy, hollow-cold fear that is the fear of death. [21]

MIP identifies "slimy" and "hollow-cold" as metaphor-related, reflecting FEAR IS COLD and its entailment FEAR IS A HIDDEN ENEMY. "Hollow" reinforces THE BODY IS A CONTAINER metaphor. The "stabs of fear" [21] exemplifies Kövecses' force-dynamic pattern [35], mirroring the ILLNESS metaphor's experiential basis. This conceptualization recurs during the evacuation scene:

The corpses were in green rubber body-bags. We knew what they were by the humps the boots made in the bags- and why was that always a painful sight, the sight of a dead man's boots?

The mood changed. No one spoke. Silently we watched the crewmen carry the dead down the ramp and into an ambulance parked near the aircraft. And I felt it come back again, that old, familiar, cold, cramping fear [21].



Caputo combines COLD and OPPONENT metaphors with spatial schemas (CONTROL IS UP, etc.), grounding fear experientially. His novel metaphoric constructions (e.g., "shot through me like liquefied gas" [21]) reveal fear as externally induced (vs. anger's internal formation), emphasizing its sudden, forceful nature (Kövecses [27]) while innovatively blending FEAR IS COLD and CONTAINER metaphors.

B. Metaphoric Conceptualization of Anger

The Horne episode depicts anger through heat metaphors ("bulled up," "scarlet," "flaring") and physiological metonymies (REDNESS IN FACE), reflecting Lakoff & Kövecses' ANGER IS HEAT [39,29]. Horne's violent behavior further merges this with ANGER IS INSANITY [39], demonstrating how metaphorical and metonymic patterns culturally codify extreme fury.

The following passage also unfolds the same metaphoric conceptualization of anger: "I burned with a hatred for the Viet Cong and with an emotion that dwells in most of us, one closer to the surface than we care to admit: a desire for retribution" [21]. "Burned" and "hatred" reflect ANGER IS HEAT, while "dwells in" and "closer to the surface" activate THE BODY IS A CONTAINER metaphor. Though modifying "desire," the inclusion of "retribution" ties to anger's cultural model of retributive justice [39], revealing conceptual overlap between anger and vengeful desire.

The indefinite articles in "a hatred" and "a desire" quantify emotions as substances (EMOTION IS A SUBSTANCE IN A CONTAINER [9,28]), extending the CONTAINER metaphor. The HEAT metaphor further conceptualizes anger as explosive energy—exceeding a threshold risks container rupture, reflecting anger's volatile physicality in traumatic contexts:

At other times, I felt urges to kill someone else. When in those moods, the slightest irritation was likely to set me off. . . . The outburst relieved some sort of inner tension, and I calmed down as quickly as I had flared up. [21]

The anger-related term "irritation" anchors metaphors like ANGER IS A HOT FLUID IN A CONTAINER and EMOTIONAL TENSION IS PRESSURE [28], evident in predicates ("set me off," "flared up"). The cooling implication of "calmed down" [27,40,14] reinforces heat dynamics, while other passages replace FLUID with CONTAINER/BURDEN metaphors for anger:

The calm of the outer world was matched by the calm we felt inside ourselves, a calm as deep as our rage had been. There was a sweetness in that inner quietude, but the feeling would not have been possible if the village had not been destroyed. [The burning of Ha Na] had been a catharsis, a purging of months of frustration, and tension. We had relieved our own pain by inflicting it on others. [21]

"Frustration" anchors anger metaphors: "calm"/"inside"/"deep" evoke HOT FLUID IN A CONTAINER [28], while "purging"/"relieved" signal BURDEN metaphors. The duration modifier ("months") extends the metaphor. COLD ANGER [39] appears non-prototypical, combining "icy"/"cold" with CONTAINER ("deep") and BURDEN ("abiding"), suggesting suppressed rage with potential retributive action [39].

C. Metaphoric Conceptualization of Sadness

A different emotion that is metaphorically conceptualized in *Rumor* is sadness. In the case of an emotion like fear, its metaphoric conceptualization sometimes involves LACK OF CONTROL IS



DOWN [29]. The analyses also provide positive evidence that the same occurs with regard to sadness. What is more, LACK OF CONTROL is combined with a view of sadness as DOWN. Consider, for instance, the following passage: "Many of us began to suffer anxiety and depressive reactions. I noticed, in myself and in other men, a tendency to fall into black, gloomy moods . . ." [21]. The literal part of metaphorical idea in the passage is identified as "gloomy" and the metaphor-related terms are "suffer," "fall into" and "black." It should be noticed that each of the metaphor-related predicates set up a distinct metaphor. First, the phrasal verb "fall into" pre-modifies being in the state of sad as downward-oriented. Stefanowitsch argues that perhaps the DOWN metaphor may partly explain the notion that SADNESS is the only emotion concept which is so suggestively attracted to the metaphor of INTENSITY IS DEPTH. Considering the correlation that exists between being down and being deep in a spatial sense, the INTENSITY IS DEPTH metaphor turns out to be "maximally compatible" with the DOWN metaphor [41]. Tsur notes that emotions are normally associated with "some deviation from normal energy level." Moreover, he adds, the lowering of energy is typically associated with sadness and depression [42, 34]. Likewise, Barcelona notes that expressions of sadness are often conveyed via linguistic vehicles which literally indicate a vertical downward orientation [43]. Besides, the phrasal verb "fall into" reverberates with the behavioral reaction to sadness, drooping posture, which has been assumed as a causal consequence of being depressed [9, 44, 45, 28].

Second, the verb "suffer" is related to the DOWN metaphor. The psychodynamic tradition views emotion as a kind of disease [34]. This provides the backbone for many ILLNESS metaphors of negative-valence emotions such as sadness, to say nothing of the deliberate metaphor of FEAR IS A VIRUS I coined previously. Kövecses, on the other hand, avers that the notion of emotion as disease is closely related to that of emotion as agitation [27]. Accordingly, "suffer" clearly signifies the things that happen to the narrator and his comrades. As such, it prompts the conceptual metaphor SADNESS IS AN ILLNESS [28].

Third, the adjective "black" signifies that the depressive mood is conceptualized as dark [29]. As dark is valued negatively, the DARK metaphor - SAD IS DARK - that underlies the predicate "black" also highlights the negative evaluation of sadness.

D. Metaphoric Conceptualization of Shame

In *A Rumor of War*, shame is conceptualized as a BURDEN, exemplified by the phrasal verb "washed over" in guilt episodes [21]. This aligns with Talmy's force dynamics (guilt as Agonist overpowering the narrator [46]) and extends the UP/DOWN schema—typically tied to sadness/happiness [28,45]—to shame. While Kövecses restricts this schema to sadness/happiness [28], Caputo's text challenges this claim: guilt's verticality ("washed over") mirrors the spatial logic of other emotions. The BURDEN metaphor thus integrates shame into trauma's physicalized emotion-system, paralleling earlier anger/fear/sadness metaphors:

Captain Neal . . . warned that I would be summarily relieved of command if anything like it happened again. I did not need the warning. I felt sick enough about it all, sick of war, sick of what the war was doing to us, sick of myself. Looking at the embers below, at the skeletons of the houses, a guilt weighed down on me as heavily as the heaviest pack I had ever carried. . . . All the analysis in the world could not make a new village rise from the ashes. It could not . . . lighten the burden of my guilt. [21]



Caputo conceptualizes shame/guilt as a BURDEN ("weighed down," "lighten"), exploiting UP-DOWN schemas and Ortony's salience imbalance [18, 19]. While metaphors remain largely conventional, verb clusters ("pack," "heavily") reveal underlying conceptual mappings. This suggests algorithmic analysis of predicate patterns could efficiently trace metaphors in limited texts, despite few novel constructions.

4. Conclusion

Philip Caputo's *A Rumor of War* employs conventional conceptual metaphors (e.g., EMOTION IS OPPONENT, TRUTH IS DEEP) to structure emotions like fear, anger, sadness, and shame. While largely adhering to established mappings (e.g., FEAR IS COLD, ANGER IS HEAT), Caputo creatively combines them, yielding novel hybrids like fear as a jet of liquefied gas (merging CONTAINER, COLD, and FLUID metaphors). AI-assisted analysis could optimize metaphor detection by targeting verb-adjective clusters around emotion keywords (e.g., "weighed down" for shame's BURDEN metaphor), as these reliably signal underlying conceptual mappings. Though the novel's metaphors are rarely deliberately foregrounded, an AI system trained on predicate patterns could efficiently trace both conventional and novel metaphors—even in limited texts—by prioritizing lexical co-occurrences (e.g., heat-related verbs for anger). This approach bridges cognitive stylistics with computational scalability, offering a model for automated literary metaphor analysis.

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