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Vladimir N. Figar*
University of Niš
Faculty of Philosophy**
English Department***
Language Cognition Laboratory
University of Niš
Center for Cognitive Sciences

METAPHORICAL FRAMINGS IN *THE NEW YORK TIMES* ONLINE PRESS REPORTS ABOUT CHATGPT

Through a combined quantitative-qualitative approach the paper aims to explore the densities and possible rhetorical effects of the most common metaphorical framings used in the New York Times online press reports about ChatGPT. The theoretical framework is based on the main tenets of conceptual metaphor theory (LAKOFF AND JOHNSON 2003[1980]), frame semantics (FILLMORE 1982), and image schema theory (JOHNSON 1987). The initial stage involved the construction of a small specialized corpus which was tagged manually for the analysis in WordSmith Tools 6.0. Metaphor identification was conducted in line with MIPVU (STEEN et al. 2010). Quantitative analysis showed the highest density for CONTAINMENT, MOTION, and FORCE metaphors. LIVING BEING, TOOL, CONFLICT, and MACHINE metaphors were also present, but not as frequent. The linear regression model (MOTION, FORCE, LIVING BEING) explained 61% of variance in the density of CONTAINMENT metaphors, and it was significant (p=.002). Additional linear regression models have also been tested. The results suggest the potential for interaction of these metaphor groups when they cooccur in discourse (i.e., they may work in concert to construct a specific viewpoint). Qualitative analysis showed a range of possible rhetorical effects that the identified metaphorical framings may play (e.g., making AI more appealing by framing it as a living being or tool, raising doubts about the use of AI by constructing borders and containers, or framing AI as a threat). Results of qualitative analysis should be understood as testable hypotheses that remain to be further explored and validated in experimental settings.

Key words: framing, conceptual metaphor, MIPVU, viewpoint, image schemas, small specialized corpus, WordSmith, chatbot

1. Introduction

The rapid development of new technologies and artificial intelligence (AI) has found its application in various fields and industries. One of the more important creations

* vladimir.figar@filfak.ni.ac.rs.
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that is actively used in the online environment is the chatbot. The Oxford Dictionary defines the chatbot as software that can have online conversations with people. ChatGPT represents a new AI chatbot released in November 2022 by the company OpenAI. As described on their website, ChatGPT is an AI model designed to interact in a dialogue format. Among other features, it can answer specific questions on virtually any topic, it can write essays and computer code based on a specified list of parameters, it can proofread texts or translate them, it can paraphrase texts, etc. As the new AI 'power tool', it has not only sparked a lot of interest of the media and general public, but also raised some concerns.

Relying on a small specialized corpus, the present paper aims to explore the range of metaphorical framings used in the New York Times (NYT) online reports dealing with the new chatbot, ChatGPT, as well as their mean densities in the corpus. Additionally, we will also explore some of the potential rhetorical functions of such framings. While the use of authentic newspaper language will ensure the adequate level of the ecological validity of the study (in the sense of STEEN 2007), we recognize an important caveat pertaining to the rhetorical functions of metaphorical framings. Namely, qualitative corpus analysis can offer but a set of testable hypotheses in line with the predictions based on the theoretical framework. To ascertain that the identified framings can indeed function as the hypothesized rhetorical tools, further validation through appropriate experimental setups should be conducted[4] (in the sense of BOYENAEMS et al. 2017).

2. Theoretical framework

The main elements of the theoretical framework of the paper include *conceptual metaphor theory (CMT)* (LAKOFF and JOHNSON 2003[1980]; LAKOFF 2006[1993]), *image schema theory* (JOHNSON 1987), and *frame semantics* (FILLMORE 1982).

Conceptual metaphor theory essentially marked the onset of the new wave of cognitive linguistic research in the 1980's, embodied in the seminal work *Metaphors We Live By* (LAKOFF and JOHNSON 2003[1980]). Most importantly, this book marked the 'official' shift from metaphor being viewed as a mere literary ornament, to acquiring one of the most important positions among the cognitive mechanisms that govern human cognition and conceptualization of the world. It is important to note that Lakoff and Johnson's work is grounded in the investigations of their predecessors, where some of the more prominent names include Embler (1966), Black (1962), Richards (1965[1936]), and Petrović (1967[1933])[5]. What is common to all these approaches is the postulation of two domains – the *source* and *target* domain[6]. The former is typically more tangible and experientially more salient, and as such is used to 'describe' the latter, which is normally more abstract and more difficult to understand (e.g., LAKOFF and JOHNSON 2003[1980]: 5). These domains are defined as bodies "of knowledge that organize related concepts" (EVANS and GREEN 2006: 190).

CMT also postulates the existence of systematic, partial, asymmetric, unidirec-

4 This remains to be addressed in a follow-up study.

5 A detailed overview of the work of each of these authors is beyond the scope of the present paper, and the reader is referred to the original references for more details.

6 Some authors refer to the two domains as vehicle and tenor (e.g., Richards 1965[1936]), or topic and tenor (e.g., Murphy 1996).

tional mappings from the source to the target domain, where the corresponding elements between the two domains are typically connected by similarity and/or analogy (LAKOFF 2006[1993]). In brief, this view assumes that only the contextually salient elements will be involved in the mappings, and, in turn, the function they perform, as well as the relationships that hold between them in their respective domains, will be equivalent in each of the domains. This is further connected to the concept of metaphorical entailments which suggests that "rich additional knowledge about a source [is] mapped onto a target" (KÖVECSES 2010: 122).

Finally, it is important to note that a conceptual metaphor serves as an abstract cognitive mechanism that affords the construction of specific metaphorical expressions that occur in discourse as combinations of particular linguistic units. In other words, conceptual metaphors refer "to the conceptual mapping, and the term 'metaphorical expression' […] to an individual linguistic expression [...] sanctioned by [the corresponding] mapping" (LAKOFF 2006[1993]: 192).

Grounded in the notion of embodied cognition (e.g., JOHNSON 1987), image schemas represent non-propositional structures that "organize our mental representations at a level more general and abstract than that at which we form particular mental images" (JOHNSON 1987: 23–24). Their import has been recognized both in the developmental context (e.g., Mandler 2012), as well as in the broader study of meaning construction (e.g., OAKLEY 2005), where they afford the construction of preconceptual scaffolding that supports higher-order cognitive processes and language. In the present paper, they will play a valuable role in identifying metaphorically used words based on their metaphorical projections of image schemas.

Based on the results of our corpus analysis, the following three image schemas have proven to be the most dominant: (i) CONTAINMENT, (ii) FORCE, and (iii) PATH. The CONTAINMENT schema stems from our experience with bounded objects, with our bodies constituting bounded objects themselves. This image schema can undergo metaphorical projections, whereby "it can be figuratively elaborated and extended so as to allow the landmark and trajector roles to be filled by entities that are no longer strictly physical or spatial in the prototypical senses" (JOHNSON 1987: 34). The FORCE schema is grounded in the embodied experience of forceful interactions, where physical entities can affect each other in various ways. Johnson (1987: 45–48) offers a detailed classification of the subtypes of the FORCE schema that includes the following items: COMPULSION, BLOCKAGE, COUNTERFORCE, DIVERSION, REMOVAL OF RESTRAINT, ENABLEMENT, and ATTRACTION. As the present paper will not delve into the specific instantiations of these subtypes of the FORCE schema, but rather on its metaphorical extensions alone, the reader is referred to the original reference for more details. Finally, the PATH schema is based on the physical experience of motion along a path that typically involves a starting point, a series of intermediary points, and an end point (JOHNSON 1987: 113). Its metaphorical projections yield a plethora of MOTION metaphors.

Starting from Fillmore's initial interest in a more thorough description of verb valence, and his critical approach to the compositional view of meaning (FILLMORE 1969: 91–96), the development of frame semantics in its fully-fledged form can be chronologically roughly traced through the following stages: (i) the scene-and-frame model (FILL-

MORE 1975); (ii) the emphasis on the connection between semantic frames, context, and prototypicality (FILLMORE 1976); (iii) frame semantics, in its most commonly cited form in recent literature (FILLMORE 1982); (iv) semantics of understanding (FILLMORE 1985); and (v) the frame-based lexicon (FILLMORE and ATKINS 1992). For the purposes of the present research, we will adopt the following definition of a semantic frame which entails:

> "any system of concepts related in such a way that to understand any one of them you have to understand the whole structure in which it fits; when one of the things in such a structure is introduced into a text, or into a conversation, all of the others are automatically made available" (FILLMORE 1982: 111).

Such a definition reflects the encyclopedic view of meaning, one of the guiding principles of cognitive semantic (EVANS and GREEN 2003: 160–162). Namely, according to this view, words are understood as access points to vast repositories of background knowledge (LANGACKER 1987: 173).

An important distinction in the context of discourse analysis should be made between evoked and invoked frames (FILLMORE 1982: 124). The former are presumably activated by the specific lexical items that the speaker (or writer) intentionally introduces into the text or talk in order to 'enforce' a specific viewpoint on the audience. The concept of viewpoint here refers to the fact that a speaker can "apply a frame to a situation" (FILLMORE 1982: 120) by opting for specific lexical items. The latter, on the other hand, allow "the interpreter [to assign] coherence to a text by'invoking'a particular interpretive frame" (FILLMORE 1982: 124) which need not be aligned with the initially intended frame evoked in the text. This in turn reflects the force dynamic interaction (in the sense of OAKLEY 2005) between interlocutors during online meaning construction. For instance, opting for metaphorical framing instead of a more 'neutral' viewpoint should exhibit certain rhetorical effects in discourse (e.g., BOYENAEMS et al. 2017).

3. Previous research on the use of conceptual metaphors in the study of artificial intelligence

Khadpe et al. (2020) explored the impact of various conceptual metaphors on users' perception of the chatbot *Wizard-of-Oz*. The study was based on the idea that the use of specific metaphors interacts with, and can have a strong impact on users' expectations about AI systems (KHADPE et al. 2020: 4–5). Participants in all experiments were required to plan a trip with the help of a chatbot, following a specific set of instructions. The authors selected 5 travel agents who were given specific instructions on how to act in order to mimic the work of a chatbot (e.g., if the answer to a given question required knowledge outside the presumed database, they should reply that they could not answer the question).

The study was based on the Stereotype Content Model, according to which the two main dimensions that affect social perception include warmth and competence (KHADPE et al. 2020: 7). In the first experiment, the authors designed four metaphorical conditions in which participants interacted with (the presumed) chatbots, which included the following: "TRAINED PROFESSIONAL TRAVEL ASSISTANT (high competence, high warmth), SHREWD TRAVEL EXECUTIVE (high competence, low warmth), TODDLER (low competence,

high warmth), and INEXPERIENCED TEENAGER (low competence, low warmth)" (KHADPE et al. 2020: 8). Before starting the experiment, each experimental group was primed for a specific expectation concerning the chatbot they were about to interact with. E.g., "The bot you are about to interact with is modeled after a shrewd travel executive" (KHADPE et al. 2020: 9). In other words, such construal was meant to evoke a metaphorical frame that should influence participants' assessment of the chatbot. The results showed that users showed more understanding for mistakes made by bots framed via low-competence metaphors, and less understanding for bots framed through high-competence metaphors. Additionally, participants' "intention to adopt and desire to cooperate decreases as the competence of the AI system metaphor increases" (KHADPE et al. 2020: 15). When it came to warmth, participants were more willing to interact with bots associated with high warmth, while warmth did not show a significant effect on participants' intention to continue using the chatbot (KHADPE et al. 2020: 15).

Although it does not explicitly deal with the use of conceptual metaphors, the study by Ho, Hanckock, and Miner (2018) offers implicit, correlational findings in favor of the beneficial use of the LIVING BEING metaphor when interacting with a chatbot. Namely, the authors explored potential differences in the degree of self-disclosure participants would show when interacting with another person, compared to interacting with a chatbot. Self-disclosure is defined as "revealing personal information to someone else" (HO, HANCKOCK, and MINER 2018: 1). The study involved a 2×2 design, where participants were instructed to share either factual or emotional information, and that they would talk to either a human or a chatbot. While the language used in the chatbot condition was simpler compared to the person condition, "participants who disclosed to chatbots experienced as many emotional, relational, and psychological benefits as participants who disclosed to a human partner" (HO, HANCKOCK, and MINER 2018: 11). This suggests that participants did not demonstrate any reservations when conversing with a chatbot, which led to an equivalent level of emotional engagement recorded in the person condition. Most likely this was due to the prevalent use of the LIVING BEING metaphor where AI systems are portrayed as humans.

Wyatt (2021) offers an overview of both more traditional and more novel metaphorical conceptualizations of the internet and AI. The author also draws attention to some of the main implications of their use by arguing that they go beyond the merely descriptive level and that they typically also have a normative function (WYATT 2021: 409). For instance, the metaphor of INFORMATION HIGHWAY depicts the internet as "a suitable object for state intervention, in terms of investment and to regulate 'the safety of those who pass on it'" (WYATT 2021: 408). Consequently, this reveals a direct link between technological development and the structure of public discourse. The author also discusses the use of FRONTIER, LIBRARY, KEEPER OF KNOWLEDGE, and TRADER metaphors, as well as their roles in public discourse. Some more recent metaphorical framings include CLOUD COMPUTING, BIG DATA, GOLDMINE/GOLD RUSH, OIL, DATA FLOOD, DATA DELUGE, DATA FLOWS, and JOURNEY. Again, such framings are used to enforce a specific construal. E.g., while CLOUD COMPUTING highlights the ease of accessibility of data, it simultaneously backgrounds the fact that it becomes more difficult to limit the access (WYATT 2021: 410).

West and Travis (1991: 66) begin their discussion by stressing the fact that "meta-

phors provide not only the basis for explaining the unknown but also significant heuristic value as guides to further investigation." In that sense, metaphorical framings are very important for understanding AI, and some common metaphors include COMPUTER IS A MIND, COMPUTING IS THINKING, and PATTERN-MATCHING IS SEEING (WEST and TRAVIS 1991: 67). Apart from discussing the import of metaphorical framings for understanding both scientific concepts in general and AI, the authors also express a certain level of apprehension when it comes to the use of metaphors. Namely, some metaphors may lead to oversimplification, while others have become so entrenched that they can hardly be viewed as metaphors any more. Also, the authors list three main reasons for the persistence of metaphors in scientific discourse, which include technological success, metaphoric conflation, and their expressive power (WEST and TRAVIS 1991: 70). Gozzi (1994) also discusses some more traditional metaphorical framings of AI, some of which include COMPUTER IS A BRAIN, THINKING IS COMPUTING, MIND IS A COMPUTER, and ROBOT IS MAN'S BEST FRIEND. Most of these constitute a broader category of LIVING BEING metaphors, most likely aimed at making potential users more open to new technologies.

In summary, previous research in the field has revealed a plethora of metaphorical framings typically used in the discourse dealing with various forms of AI, as well as their potential impact on users' perception of various AI tools. Some of the more common metaphorical framings involve the use of LIVING BEING, JOURNEY, CLOUD COMPUTING, DATA FLOOD, DATA LOW, FRONTIER, LIBRARY, KEEPER OF KNOWLEDGE, and TRADER metaphors. Building on these findings, we will also compare the metaphorical framings identified in our corpus to the framings that have been identified in previous research, and we will discuss their potential rhetorical roles in the online newspaper reports dealing with ChatGPT. We also stress the fact that the present paper is not limited to the analysis of metaphorical framings referring only directly to the conceptualizations of ChatGPT, but it also includes the analysis of broader metaphorical framings present in the online newspaper reports from our corpus.

4. Present research

Through a combined quantitative and qualitative analysis of a small specialized corpus, the present research aims to investigate (i) the range and frequency of metaphorical framings used in the New York Times (NYT) online press reports about ChatGPT, and (ii) the possible rhetorical effects of such framings. In that sense, the research was designed to answer the following research questions:

1) Which metaphorical framings were most common in the NYT online press reports about ChatGPT?
2) Can any interaction between the specific metaphorical framings be identified?
3) What are some of the possible rhetorical effects of the identified metaphorical framings?

4.1. Corpus, methodology, and metaphor identification

We used a small specialized corpus (in the sense of KOESTER 2010) that included 19 articles published in the online editions of the NYT, in the period between December 1,

2022 and January 30, 2023, with the total of 25,157 words. The articles were selected from the NYT online archives, using the search string "ChatGPT". The initial list of matches was filtered manually to make sure that all corpus units were indeed topically related.

All articles were obtained in electronic form as plain text files, and manually tagged for subsequent analyses in WordSmith Tools 6.0 (SCOTT 2014). The "search over tags" option allowed us to obtain a detailed insight into the frequencies, densities, and distributions of target items. The referent values used in the subsequent quantitative analysis were target item densities (i.e., the normalized projections per 1,000 words) which represent objective estimates that circumvent the potential confounds of unequal article length (in line with FIGAR 2021).

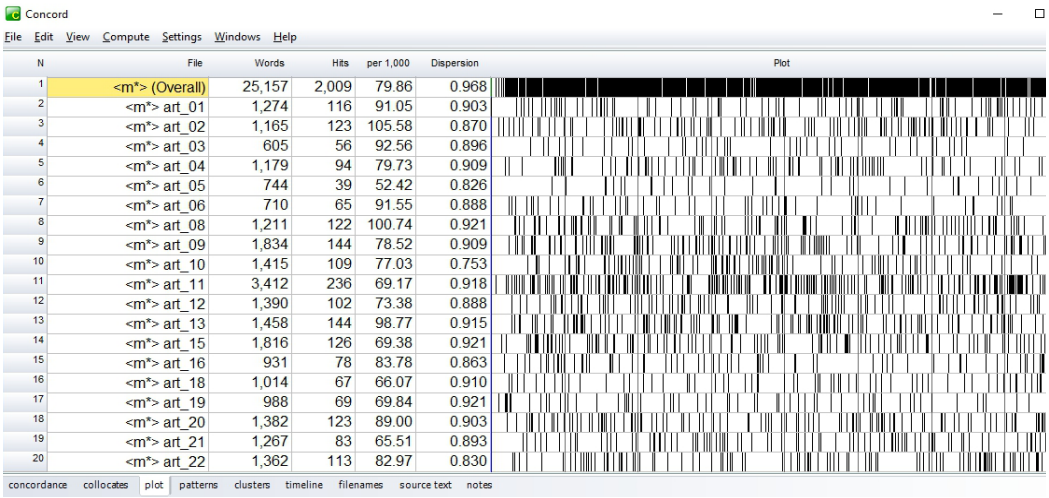
Metaphor identification was conducted using the modified MIPVU (STEEN et al. 2010) procedure outlined in Figar (2021). Namely, MIPVU proposes the following main steps: (i) reading the article to identify the topic and context; (ii) identifying lexical items (in line with STEEN et al. 2010); (iii) comparing the basic meaning of the identified lexical items against their contextual meaning in order to determine whether the use is metaphorical or literal; and (iv) performing the analysis in two passes, with ten days between the passes. In addition to these steps, Figar (2021: 210) also took into consideration the "potential image-schematic base that could serve as grounding for the contextualized, metaphorical extensions of meaning." Namely, while some items did not demonstrate a high degree of discrepancy between the literal and contextual meaning, "their pronounced image schematic base render[ed] their use in the given context metaphorical, rather than literal" (FIGAR 2021: 211). This was most evident with some instances of CONTAINMENT metaphors.

Additionally, for technical purposes, Figar (2021: 2011) adopted "the provisional operational annotation of the identified metaphors as members of specific groups of conceptual metaphors, and their overarching conceptual keys." Such an approach in no way stipulates the existence of conceptual mappings, and "it should be understood as the classification of possible conceptual patterns that can function recursively" (FIGAR 2021: 2011). We also fully acknowledge Steen's (2007: 286) position that the identification of conceptual mappings should be treated as "a research question of its own," as it can be subject to disagreement.

5. Quantitative corpus analysis and results

The quantitative data obtained from WordSmith Tools 6.0 showed a total of 2,009 metaphorically used words, with the overall average density of 79.86 metaphorically used words per 1,000 words (Figure 1). The most common groups of metaphorically used words and their respective densities are given in Figure 2.

As shown in Figure 2, the most common were CONTAINMENT metaphors, followed by MOTION, FORCE, and LIVING BEING metaphors. TOOL, CONFLICT, MACHINE, and STRUCTURE metaphors showed the lowest densities. To explore whether the differences in densities between any of the seven groups of metaphors also reached statistical significance, we conducted a repeated measures ANOVA. The initial analysis showed a statistically significant effect of metaphor group ($p<.001$, partial eta squared=.99, $F(6)=71.07$). The results of the subsequent pairwise comparisons are shown in Table 1.



N	File	Words	Hits	per 1,000	Dispersion	Plot
1	<m*> (Overall)	25,157	2,009	79.86	0.968	
2	<m*> art_01	1,274	116	91.05	0.903	
3	<m*> art_02	1,165	123	105.58	0.870	
4	<m*> art_03	605	56	92.56	0.896	
5	<m*> art_04	1,179	94	79.73	0.909	
6	<m*> art_05	744	39	52.42	0.826	
7	<m*> art_06	710	65	91.55	0.888	
8	<m*> art_08	1,211	122	100.74	0.921	
9	<m*> art_09	1,834	144	78.52	0.909	
10	<m*> art_10	1,415	109	77.03	0.753	
11	<m*> art_11	3,412	236	69.17	0.918	
12	<m*> art_12	1,390	102	73.38	0.888	
13	<m*> art_13	1,458	144	98.77	0.915	
14	<m*> art_15	1,816	126	69.38	0.921	
15	<m*> art_16	931	78	83.78	0.863	
16	<m*> art_18	1,014	67	66.07	0.910	
17	<m*> art_19	988	69	69.84	0.921	
18	<m*> art_20	1,382	123	89.00	0.903	
19	<m*> art_21	1,267	83	65.51	0.893	
20	<m*> art_22	1,362	113	82.97	0.830	

Figure 1. *WordSmith Tools output*

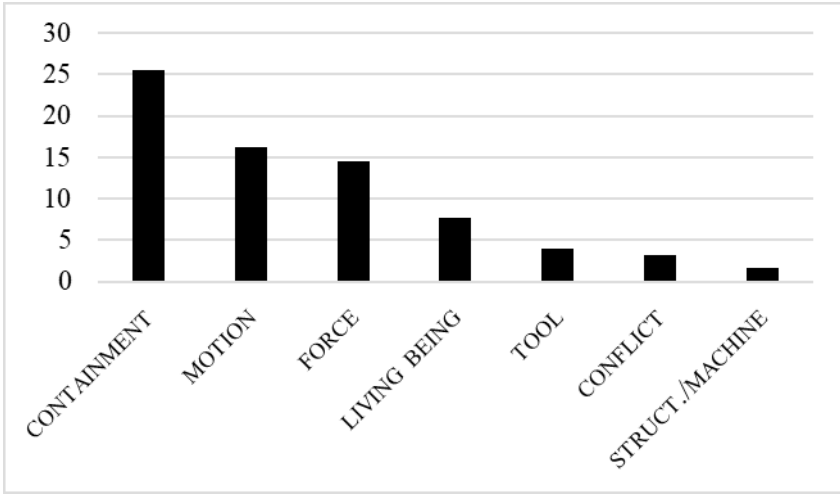


Figure 2. *Densities of the most common metaphor groups*[7]

Table 1. *Repeated measures ANOVA*

	CONTAINMENT	MOTION	FORCE	LIVING BEING	TOOL	CONFLICT	STRUCTURE/ MACHINE
CONTAINMENT		p=.016*	p=.002*	p=.004*	p<.001**	p<.001**	p<.001**
MOTION	p=.016*		p>.05	p=.202	p=.001**	p=.001*	p<.001**
FORCE	p=.002*	p>.05		p>.05	p<.001**	p=.001*	p=.002*
LIVING BEING	p=.004*	p=.202	p>.05		p=.455	p=.258	p=.014*
TOOL	p<.001**	p=.001*	p<.001**	p=.455		p>.05	p>.05
CONFLICT	p<.001**	p=.001*	p=.001*	p=.258	p>.05		p>.05
STRUCTURE/ MACHINE	p<.001**	p<.001**	p=.002*	p=.014*	p>.05	p>.05	

7 Note that some lexical units identified as having been used in the metaphorical sense could potentially be understood as representatives of at least two metaphor groups. For instance, in the example "Launched<m-force><m-motion> just weeks ago…" *launched* can be understood as a case of caused motion, triggered by some external force; therefore, this lexical item has been included in the counts and the overall densities of both MOTION and FORCE metaphors.

Containment metaphors showed significantly higher densities compared to all other metaphor groups. Motion metaphors showed significantly higher densities compared to tool, conflict and machine metaphors, while their density was significantly lower than that of containment metaphors. force metaphors also showed significantly higher densities compared to tool, conflict and machine metaphors. On the other hand, force metaphors showed a significantly lower density compared to containment metaphors, while the comparison with motion metaphors did not yield significance. Living being metaphors showed a significantly higher density only compared to machine metaphors. Apart from the significantly lower density compared to containment metaphors the remaining comparisons did not yield significance.

The correlation analysis revealed a large positive correlation (r=.58) between containment and motion metaphors that reached significance (p=.01). The analysis also revealed a medium positive correlation (r=.46) between containment and force metaphors that was marginally significant (p=.05). These positive correlations suggest that the increase in the density of containment metaphors is associated with the increase in the densities of motion and force metaphors. On the other, the decrease in the density of containment metaphors corresponds to the decrease in the density of the latter two groups. The analysis also showed a large negative correlation (r=-.73) between containment and living being metaphors that was also significant (p<.001). The negative correlation suggests that the densities of the two metaphor groups show opposing trends; i.e., the increase in the density of containment metaphors corresponds to the decrease in the density of living being metaphors, and vice versa.

Table 2. *Correlations*

		CONTAINMENT	MOTION	FORCE	LIVING BEING	TOOL	CONFLICT	STRUCTURE/ MACHINE
CONTAINMENT	Pearson Corr.	1	.575**	.455	-.728**	-.127	.086	.079
	Sig. (2-tailed)		.010	.050	.000	.627	.752	.789
MOTION	Pearson Corr.	.575**	1	.479*	-.493*	-.214	-.020	.287
	Sig. (2-tailed)	.010		.038	.032	.410	.941	.319
FORCE	Pearson Corr.	.455	.479*	1	-.696**	.299	.595*	-.175
	Sig. (2-tailed)	.050	.038		.001	.243	.015	.550
LIVING BEING	Pearson Corr.	-.728**	-.493*	-.696**	1	-.194	-.334	.288
	Sig. (2-tailed)	.000	.032	.001		.457	.206	.318
TOOL	Pearson Corr.	-.127	-.214	.299	-.194	1	.089	-.433
	Sig. (2-tailed)	.627	.410	.243	.457		.763	.139
CONFLICT	Pearson Corr.	.086	-.020	.595*	-.334	.089	1	-.257
	Sig. (2-tailed)	.752	.941	.015	.206	.763		.421
STRUCTURE/ MACHINE	Pearson Corr.	.079	.287	-.175	.288	-.433	-.257	1
	Sig. (2-tailed)	.789	.319	.550	.318	.139	.421	

Motion and force metaphors showed a positive medium correlation (r=.48) that was significant (p=.04). The correlation between motion and living being metaphors was negative and marginally large (r=.50), and it also reached significance (p=.03). Force metaphors revealed a large negative correlation with living being metaphors (r=.7) that was significant (p=.001), and a large positive correlation (r=.6) with conflict metaphors that also reached significance (p=.02). The remaining comparisons did not show any significant correlations (see Table 2 for details).

In order to test to what extent the densities of motion, force, and living being metaphors can be used to predict the variance in the density of containment metaphors, a multiple linear regression analysis was performed. The model reached statistical significance (p=.002), and it showed that the R Square=.61. This means that the model (motion, force, living being) explains 61% of variance in the density of containment metaphors in the present corpus (Adjusted R Square=.53). The overview of beta coefficients revealed that living being metaphors gave the strongest unique contribution to explaining the variance in the density of containment metaphors, when the variance explained by the remaining variables in the model is controlled for. Moreover, the contribution of living being metaphors was significant (Beta Coefficient=-.70, p=.009).

We also tested the inverse model to see how well densities of motion, force, and containment metaphors can be used to predict the variance in the density of living being metaphors. This model also reached statistical significance (p<.001), with R Square=.70. This means that the model (containment, motion, force) can be used to explain 70% of variance in the density of living being metaphors (Adjusted R Square=.64). The strongest unique contribution to explaining the variance in the density of living being metaphors, when the variance explained by the remaining variables in the model is controlled for, was afforded by containment metaphors, and it was significant (Beta Coefficient=-.54, p=.009). Force metaphors gave the second largest contribution, which was also significant (Beta Coefficient=-.47, p=.01).

Finally, we tested the (containment, motion, living being) model to see to what extent it could be used to predict the variance in force metaphors. The model reached significance (p=.009), with R Square=.53, which suggests that this model can be used to explain 53% of variance in the density of force metaphors (Adjusted R Square=.44). The strongest unique contribution was afforded by living being metaphors, and it also reached significance (Beta coefficient=-.74, p=.01).

Taken together, the results obtained from the correlation analysis and the discussed multiple linear regression models show a relatively high degree of cooccurrence and, in effect, potential for interaction between the four groups of metaphors with highest densities in the present corpus – containment, motion, force, and living being metaphors. These implications will be addressed in more detail in the discussion section.

6. Qualitative corpus analysis and results

In this section we turn to some specific examples from the corpus and discuss their potential rhetorical effects and the mechanisms that might facilitate them. As can

be seen from examples 1–16, metaphorically used words (or phrases) seldom appear in isolation. Rather, they tend to interact, thereby forming metaphor clusters that represent groups "of topically related metaphorical expressions found in ongoing discourse" (FIGAR 2019: 235). Bearing in mind that one of the main aims of the present study is to explore the possible rhetorical effects of metaphorical framings used in the NYT discourse about ChatGPT, we will focus on the impact of individual metaphorically used words and the specific viewpoints and evoked frames triggered by them. A more detailed exploration of metaphor clusters from the present corpus will be addressed elsewhere.

Since individual words can be understood as access points to frames (LANGACKER 1987), we can argue that each metaphorically used word *evokes* a specific metaphorical frame (in the sense of FILLMORE 1982). In turn, these frames can be seen as rhetorical tools used to enforce a specific viewpoint. Bearing in mind that metaphorically used words often exhibit clustering tendencies described above, we can also argue that the presence of multiple metaphorically used words also serves to evoke multiple frames that should work in concert to construct a desired perspective on the content of the article.

1. Launched<m-force><m-motion> just weeks ago, ChatGPT is already threatening<m-conflict><m-person> to upend<m-force> how we draft everyday communications. (Jan. 15, 2023)

2. Other universities are trying to draw boundaries<m-cont><m-force> for A.I. [Many universities] are drafting revisions to their academic integrity policies so their plagiarism definitions include<m-cont> generative A.I. (Jan. 16, 2023)

3. "We continue<m-motion> to test our A.I. technology internally<m-cont> to make sure it's helpful and safe, and we look forward to sharing more experiences externally<m-cont> soon," Lily Lin, a spokeswoman for Google, said in<m-cont> a statement. (Jan. 20, 2023)

4. We can expect lots of interesting advancements<m-motion> in<m-cont> A.I.-powered, language-processing tech, along with the same trends that have endured in<m-cont> the past few years, including<m-cont> advances<m-motion> in<m-cont> electric cars and the metaverse. (Dec. 29, 2022)

5. Some fear the company may be approaching<m-motion> a moment that the biggest Silicon Valley outfits dread — the arrival<m-motion> of an enormous technological change that could upend<m-force> the business. (Dec. 21, 2022)

In example 1, metaphorical framings are achieved through the use of FORCE, CONFLICT, MOTION, and LIVING BEING metaphors. ChatGPT is depicted as a living organism that presents an actual threat to the way we communicate. Combined with the FORCE metaphor (to upend), this evokes a framing of the situation in which the human kind appears to be under threat from an artificial living organism. In turn, such framing creates the atmosphere in which jobs of people responsible for drafting everyday communication are implicitly under threat.

In the second example, metaphorical framings are realized through CONTAINMENT and FORCE metaphors. Namely, the first CONTAINMENT metaphor in combination with the FORCE metaphor evokes the notion of boundaries that should protect us from the impact of AI, by creating a secluded container. In the final sentence, the CONTAINMENT

metaphor evokes a frame in which the collection of policies should include new ones that will protect us from the undesired impacts of AI. In example 3, CONTAINMENT metaphors are again used to construe a viewpoint which shows us that the development of AI is taking place behind closed doors, in a secure container, and as such does not present a threat. Only once the researchers have become certain it is safe to use, will they let it out.

In all, the first three examples suggest that evoking frames stemming from CONTAINMENT metaphors should most likely produce feelings of security, and the lack of threat. This is also in line with the main entailments of the CONTAINMENT image schema on which these metaphors are based (JOHNSON 1987). Framing a situation as a conflict, on the other hand, is likely to evoke a viewpoint where AI is construed as a threat, which could potentially lead to opposition for its implementation.

Examples 4 and 5 show the use of MOTION metaphors together with CONTAINMENT and FORCE metaphors, respectively. In example 4, technological progress is framed in terms of MOTION, which is grounded in the PATH image schema. Such metaphorical framing is somewhat similar to the INFORMATION HIGHWAY and JOURNEY metaphors disused in Wyatt (2021). On the other hand, technology, time, and advancement of technology are framed via CONTAINMENT metaphors. Unlike the first three examples, CONTAINMENT in this case has a more neutral role, as it is not used to construe the sense of safety. In example 5, MOTION is used to frame the development of the company; on the other hand, the approach of the new technology, in concert with the FORCE metaphor, can be interpreted as the arrival of a threat.

6. Mr. Howard […] came<m-motion> to see the chatbot as a new kind of personal tutor<m-person>. It could teach<m-person> his daughter math, science and English […] (Dec. 10, 2022)

7. A.I. writes<m-person> prose the way horror movies play with dolls. (Dec. 20, 2022)

8. "It [chatbot] seemed so genuine — so lifelike<m-person>. It could read<m-person> my texts and converse<m-person> with me and make plans that were mutually beneficial — that would allow both of us to get ahead<m-motion>. It also lied to me<m-person> and betrayed me<m-person>, like players frequently do." (Jan. 24, 2023)

Examples 6–8 reflect the use of LIVING BEING metaphors, whereby framing ChatGPT as a living being should bring it closer to the public and make it more appealing, which is in line with the results from previous research (e.g., KHADPE ET AL. 2020; HO, HANCKOCK, and MINER 2018; WEST and TRAVIS 1991; GOZZI 1991). Essentially, evoking such frames and such viewpoints is in stark contrast to the use of CONFLICT metaphors and CONTAINMENT metaphors described in examples 1 and 2. For instance, in example 6, ChatGPT is framed as a personal tutor who can give lessons to children, thereby bridging the gap between a human and a machine (in the sense of HO, NACKOCK, and MINER 2018). In example 7, the chatbot is depicted as a writer, while in example 8 it is framed as a living being that can even lie.

9. Google and OpenAI<m-cont> have an advantage<m-motion> because they have access<m-motion> to deep<m-cont> pockets and raw computing power, which are building blocks for the technology<m-machine/structure>. (Jan. 7, 2023)

10. Built<m-machine> by a team of artificial intelligence researchers from<m-cont> the

tech giant Meta […], Franz Broseph is among the new wave<m-motion> of online chatbots<m-person> that are rapidly moving machines<m-motion><m-force> into<m-cont> new territory. (Jan. 20, 2023)

11. OpenAI<m-cont> and other organizations are already using similar methods to build<m-machine> systems that can generate video of people and objects. Start-ups<m-motion> are building<m-machine> bots that can navigate<m-motion> software apps and websites [...] (Jan. 20, 2023)

12. In<m-cont> 2020, OpenAI<m-cont> built<m-machine> a milestone<m-motion> A.I. system, GPT-3, which could generate text on its own, including<m-cont> tweets, blog posts, news articles [etc.] (Jan. 23, 2023)

Metaphorical framings of ChatGPT as a machine are illustrated in examples 9–12. Again, in addition to MACHINE metaphors we can identify concomitant framings that include CONTAINMENT, MOTION, FORCE, and LIVING BEING metaphors. All these evoked metaphorical frames appear to work together to construe a specific viewpoint. Examples 9, 11, and 12, also show a somewhat different use of the CONTAINMENT metaphor, as the company that created ChatGPT is conceptualized as an open container. Such conceptualizations are licensed by the metaphorical projections of the CONTAINMENT image schema.

13. Everyone in<m-cont> my professional life […] is up in arms<m-conflict> about ChatGPT, the new artificial intelligence<m-person> tool<m-tool> that can write like a human being. (Dec. 20, 2022)

14. The Google search engine<m-tool> has served as the world's primary gateway<m-motion> to the internet. (Dec. 21, 2022)

15. Silicon Valley start-ups,<m-motion> including<m-cont> Stability AI and Character.AI, are also working on generative A.I. tools<m-tool>. (Jan. 20, 2023)

16. Are you a student in<m-cont> a place that has banned<m-force> this new tool<m-tool>, or are your teachers open to<m-cont> experimenting with it? (Jan. 24, 2023)

Examples 13–16 show the use of TOOL metaphors. Again, multiple metaphorical prompts give way to concomitant metaphorical viewpoints. In example 13, professional life is framed as a CONTAINER, which is followed by a CONFLICT metaphor that frames the turbulence in the workplace. Then the chatbot is framed as a TOOL that actually possesses the features of a human being. Such multifaceted construal should, in fact, remedy the potentially disruptive role of the CONFLICT metaphor. Namely, the fact that the chatbot is conceptualized as a human being should circumvent the potential conceptualization of a threat. In example 14, a search engine is framed as a TOOL that affords access to the internet. The use of a TOOL metaphor should most likely be associated to a means for achieving the goal; consequently, the search engine receives a favorable evaluation. Example 15 shows a similar use of the TOOL metaphor. In example 16 we see an interesting interplay of closed and open containers, where the first CONTAINMENT metaphor depicts a place with boundaries that block ChatGPT. The second CONTAINMENT metaphor, on the other hand, portrays teachers as potentially open containers who might allow the use of the chatbot.

7. Discussion

In the present section we attempt to provide answers to the main research questions outlined above.

RQ1. Which metaphorical framings were most common in the NYT online press reports about ChatGPT? Quantitative analysis showed the highest densities for CONTAINMENT, MOTION, FORCE, and LIVING BEING metaphors. TOOLS, MACHINE, and CONFLICT metaphors were also present, but not as frequent. Additionally, metaphorically used words most frequently appeared in groups, giving way to the construction of concomitant metaphorical framings.

RQ2. Can any interaction between the specific metaphorical framings be identified? Based on the explored multiple linear regression models, we can conclude that the most frequent metaphorical framings reveal a considerable degree of both cooccurrence and codependence. For instance, the model (MOTION, FORCE, LIVING BEING) explained 61% of variance in the density of CONTAINMENT metaphors, and was significant (p=.002). Also, the model (CONTAINMENT, MOTION, LIVING BEING) was significant (p=.009) in predicting the variance in the density of FORCE metaphors. Finally, the model (CONTAINMENT, MOTION, FORCE) can be used to explain 70% of variance in the density of LIVING BEING metaphors, and it also reached significance (p<.001). In turn, such results reveal the potential for the formation of metaphor clusters, and the cooccurrence and interaction of metaphor groups from the linear regression models is further evidenced in examples 1–16 above. However, a more detailed examination of clustering tendencies will be conducted elsewhere.

RQ3. What are some of the possible rhetorical effects of the identified metaphorical expressions? The identified metaphorical framings seem to offer a range of possible rhetorical functions. The most common rhetorical function of CONTAINMENT metaphors was to construct protective boundaries and create a feeling of security against the onset of AI. In a smaller number of cases open containers were used to construe the sense of open-mindedness towards AI. CONFLICT metaphors were used to frame AI as a threat, thereby making it less appealing. As suggested by the present corpus, LIVING BEING metaphors, on the other hand, were used to frame the new chatbot as a living organism, thereby making it more tangible and appealing to potential users. A similar function can be attributed to TOOL metaphors. Still, we recognize the fact that other corpora might also reveal alternative framings via LIVING BEING metaphors which could potentially signal a threat represented by the new AI model (e.g., such was the case in Example 1 above, where the CONFLICT metaphor was used to signal a threat from AI that was conceptualized as a living being). FORCE and MOTION metaphors appeared mainly in conjunction with other metaphor groups. For instance, MOTION was used to frame both the arrival of the new technology and the arrival of a potential threat. FORCE metaphors were used to signal the construction of boundaries, or the presence of a potential threat.

Overall, the obtained results suggest that the presence of concomitant metaphorical framings gives way to a range of dynamic conceptualizations of ChatGPT and the circumstances surrounding its development and application. Such conclusions are supported by both the results of the linear regression analysis, and the main results obtained from qualitative analysis.

8. Conclusions, limitations, and suggestions for future research

The present research used a combined quantitative-qualitative approach to investigate the variety of metaphorical framings that appeared in reports dealing with ChatGPT, published in the NYT online editions. The main aims of the paper were to identify the most frequent metaphorical framings, and to explore some of the possible rhetorical functions such framings might perform. The analysis was conducted on a small specialized corpus which was tagged manually for metaphorically used words following a modified MIPVU procedure (in line with FIGAR 2021). The results showed high densities of CONTAINMENT, FORCE, and MOTION metaphors, followed by LIVING BEING, TOOL, and CONFLICT metaphors. Multiple linear regression models: (i) (MOTION, FORCE, LIVING BEING) used to explain the variance in the density of CONTAINMENT metaphors; (ii) (CONTAINMENT, MOTION, LIVING BEING) used to predict the variance in the density of FORCE metaphors; and (iii) (CONTAINMENT, MOTION, FORCE) used to explain the variance in the density of LIVING BEING metaphors, were all significant and could be used to explain between 50% and 70% in the variance of target variables. Such results suggest that a fair degree of cooccurrence of the main metaphor groups should be expected. In that sense, future research should place additional focus on the investigation of metaphor clusters and their dynamics in discourse (in the sense of FIGAR 2019; 2021).

One of the main limitations of the present study resides in the fact that qualitative corpus analysis can offer only guidelines and assumptions in the form of testable hypotheses pertaining to the possible rhetorical effects of the identified metaphorical framings. In order to corroborate those findings, a follow up study in an experimental setting would be required. This could involve questionnaires for collecting participants' judgements relating to the persuasive power, or the impact on constructing a specific viewpoint that individual metaphorical framings might have. Such data would offer more precise and more objective results, and at the same time test the convergent validity of findings obtained from different research perspectives (in the sense of BOEYNAEMS et al. 2017).

Another possible limitation of the paper resides in the fact that the small specialized corpus was constructed immediately after the launch of ChatGPT, and, consequently, it includes only the initial reactions to the new chatbot recorded in the media. As it continues to develop and improve, ChatGPT will most likely become and indispensable tool in many industries, as well as in everyday life. As a result, the perception of the chatbot, and the ways in which it is framed could vary at least to a certain degree. Therefore, a comparison between the initially identified metaphorical framings, and the potentially novel metaphorical framings (e.g., which could be identified at least one year later) could reveal whether, and how the perception of ChatGPT changes over time.

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Vladimir N. Figar

METAFORIČKA UOKVIRAVANJA U NOVINSKIM ČLANCIMA IZ ONLAJN IZDANJA *NJUJORK TAJMSA* O ČETBOTU „CHATGPT"

Rezime

Glavni ciljevi istraživanja su da se kroz upotrebu kvantitativnih i kvalitativnih metoda identifikuju najučestalija metaforička uokviravanja u novinskim člancima koji se tiču četbota ChatGPT, kao i moguće retoričke funkcije koje takva uokviravanja mogu da imaju. Teorijski okvir rada povezuje osnovne postavke teorije pojmovne metafore, semantičkih okvira i slikovnih shema. Mali specijalizovani korpus je najpre anotiran (u skladu sa MIPVU protokolom), a zatim analiziran u WordSmith Tools 6.0. Rezultati su pokazali da najčešća metaforička uokviravanja uključuju metafore SADRŽATELJA, SILE, KRETANJA, ŽIVOG BIĆA, SUKOBA i ALATA. Između ostalog, analiza višestruke linearne regresije pokazala je da model (KRETANJE, SILA, ŽIVO BIĆE) može pouzdano objasniti 61% varijanse u gustini metafora SADRŽATELJA i pokazao je i statističku značajnost (p=.002). Pored toga, analizirani su i drugi modeli, koji su takođe pokazali statističku značajnost. Rezultati kvalitativne analize pokazali su veći broj mogućih retoričkih funkcija metaforičkih uokviravanja, od kojih neke uključuju sledeće: prikazivanje veštačke inteligencije kao pretnje, zaštita od takve pretnje, ili prikazivanje veštačke inteligencije kao živog bića, što bi trebalo da njenu upotrebu učini prihvatljivijom. Naglašavamo da rezultate kvalitativnog istraživanja treba shvatiti kao hipoteze koje bi trebalo podrobnije testirati kroz eksperimente kako bi se zaista potvrdio pravi retorički efekat identifikovanih metaforičkih uokviravanja.

Ključne reči: uokviravanje, pojmovna metafora, MIPVU, tačka gledišta, slikovne sheme, mali specijalizovani korpus, WordSmith, četbot